Institutional racism, racial trauma, and mental health in BIPOC graduate students and professionals.

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INSTITUTIONAL RACISM, RACIAL TRAUMA, AND MENTAL HEALTH IN BIPOC GRADUATE STUDENTS AND PROFESSIONALS

By

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B.A., University of Pennsylvania, 2014
M.Ed., University of Louisville, 2022

A Dissertation
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A Dissertation Approved on

May 18, 2023

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DEDICATION

This dissertation is dedicated to my parents Julia and Xiao Xiang Zhong, to my grandmother Xiluan Wu, and to my ancestors.
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My heartfelt gratitude goes to my dissertation chair, advisor, and elder, Dr. Lali McCubbin. You shaped me into the scholar I am and taught me invaluable lessons on how to survive academia. Mahalo. Sincere thanks to Dr. Amanda Mitchell for your thoughtful feedback and for many conversations regarding why we do what we do; to Dr. Ahmad Washington for your wisdom and for always guiding me to think critically; and to Dr. Jason Immekus for your groundedness and support. I could not have asked for a better committee.

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ABSTRACT

INSTITUTIONAL RACISM, RACIAL TRAUMA, AND MENTAL HEALTH IN BIPOC GRADUATE STUDENTS

Jody Zhong

May 18, 2023

While there is increasing mainstream focus on diversity, equity, and inclusion (DEI) amongst U.S. college campuses, institutional racism and everyday racist events continue to be common experiences for Black/Brown, Indigenous, and People of Color (BIPOC) students (Bartz, 2019; Noltemeyer et al., 2012; Pieterse et al., 2010; Regis, 2016; Vaishnav, 2020). Research has shown that subtle, everyday racist slights, known as microaggressions, can have a substantial effect on the mental health and functioning of BIPOC, leading to the development of posttraumatic stress and to negative impacts on psychological well-being (Abdullah et al., 2021; Le et al., 2021; Lui & Quezada, 2019; Seaton et al., 2011). However, less is known about the mechanism through which these impacts can occur. The present study examined whether race-based traumatic stress mediated the relationship between microaggressions and two outcome variables of posttraumatic stress and psychological well-being. A significant indirect effect of race-based traumatic stress was found for both outcome variables, indicating that microaggressions influenced posttraumatic stress and psychological well-being through the mechanism of race-based traumatic stress. This study also examined whether ethnic-racial socialization, or messages that instill cultural pride and prepare one for bias,
functioned as a protective factor by moderating the relationships between microaggressions and the two outcomes. No significant conditional effect was found, suggesting that ethnic-racial socialization did not function as a buffer against the effect of microaggressions on the outcome variables. Future research directions as well as clinical and programmatic implications are discussed.
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INTRODUCTION

In U. S. history, the right and access to quality education have been systematically and intentionally denied to Black, Brown, and Indigenous peoples (Bartz, 2019; Noltemeyer et al., 2012). For several centuries, pseudo-scientific ideologies of White supremacy and the intellectual inferiority of Black and Indigenous peoples were used to justify anti-literacy laws and the practice of “separate but equal” educational facilities for Black Americans (Bartz, 2019; Span, 2015), as well as the use of boarding schools to perpetrate genocide and cultural erasure against American Indians (Duran et al., 1998). In the last century, advocacy has led to major steps in combating racial inequities in education, including the seminal cases of Brown v. Board of Education (1954, 1955) and passage of the 1964 Civil Rights Act (Bartz, 2019; Span, 2015).

Today, many institutions of higher education in the U.S. have publicly championed diversity, equity, and inclusion (DEI), and universities have generally come to be viewed as bastions of liberal thought and tolerance (Joseph-Salisbury, 2019; Patton, 2004). Despite this, Black, Indigenous, and People of Color (BIPOC) have continued to experience racism in the academy, including in graduate programs, which are often regarded as a reliable path of upward mobility and are gatekeepers and “essential socialization site[s]” (Nagbe, 2020, p. 6) for professions that require advanced training (Blockett et al., 2016; Ma et al., 2016). In the literature, accounts abound of BIPOC graduate students and post-graduate professionals in Predominantly White Institutions (PWIs) experiencing racism in their programs (Burrell, 1997; Cook, 2010; Davis &
Livingstone, 2016; Foster, 2013; Gildersleeve et al., 2011; Ginsburg, 2019; Hughley, 2019; Proctor et al., 2018; Warner, 2019). What, then, accounts for the discrepancy between the DEI values espoused by institutions of higher education and the lived experiences of BIPOC graduate students and early career professionals (ECPs)?

Scholars have highlighted institutional racism, a set of systematic set of procedures, practices, and policies (Griffith et al., 2007) that disadvantage and punish BIPOC, as foundational and deeply entrenched in the past and present of higher education in the U.S. (Museus et al., 2015; Nagbe, 2020). These systemic forces are rooted in ideologies that simultaneously equate Whiteness with intellect while couching academic success in terms of meritocracy (Joseph-Salisbury, 2019; Museus et al., 2015). Joseph-Salisbury (2019) notes that due to the association of Whiteness with intellect (European enlightenment, reason, etc.), the university as an institution has been constructed through and around Whiteness. This is apparent in the privileging of White male thinkers in the academic “canon” and in the defense that this privileging is unrelated to race, an assertion that highlights how Whiteness has been normalized within the academy (Joseph-Salisbury, 2019). Patton (2004) notes how this normalization is put in practice as “hegemonic civility,” in which White academics avoid discussions of racism in classrooms and academic settings to maintain a veneer of “niceness.” This civility is used to suppress antiracist discourse, which serves to maintain the White social order. Therefore, while efforts have been made to right systemic wrongs in the form of affirmative action and other policies, the purpose of these policies to combat systemic racism is often obscured by a sole focus on race or racial quotas, allowing for opponents
to mount colorblind arguments that affirmative action is unnecessary in a post-racial, equitable world (Museus et al., 2015).

Despite narratives to the contrary, institutional racism is alive and well today in higher education. It can be seen in the continued use of standardized testing to gatekeep postsecondary education despite testing’s roots in the eugenics movement (Joseph-Salisbury, 2019; Museus et al., 2015). It can also be seen in university faculty and administrators’ attribution of Black, Indigenous, and Hispanic/Latinx underrepresentation in academia to the “leaky pipeline” of individual achievement gaps rather than systemic bias (Museus et al., 2015; Span, 2015). Both the pervasiveness of racism and the silence that surrounds it have negative implications for the well-being and success of BIPOC graduate students and ECPs in PWIs. BIPOC graduate students at PWIs have reported lower sense of belonging (Vaishnav, 2020), self-doubt and imposterism (Ingram, 2013; McGee et al., 2022), isolation (Burrell, 1997; Ingram, 2013; Peters, 2020), and a host of mental health concerns (Burrell, 1997; Cueva, 2013; Peters, 2020; Stewart, 2019; Truong et al., 2016). Historically Black Colleges and Universities (HBCUs) and other Minority-Serving Institutions (MSI) constitute exceptions in their powerful legacies of academic and social support for Black and other minority students (McGee, 2020). However, the very existence of HBCUs and MSIs is a reminder of our “separate but equal” education systems, which remain evident in the under-funding of HBCUs (McGee, 2020) and in the Supreme Court’s recent ruling against affirmative action on the basis of race (Students for Fair Admissions, Inc. v. President and Fellows of Harvard College, 2023; Students for Fair Admissions, Inc. v. University of North Carolina et al., 2023). Promoting the success and well-being of BIPOC graduate students should not be the sole purview of
HBCUs and other MSIs. In turning away from the realities of racism experienced by BIPOC graduate students and ECPs at PWIs, we are complicit in perpetuating the inequity that has characterized U.S. education for centuries.

The purpose of this study is to contribute to a growing body of work on the racism experienced by BIPOC in academia and the psychological impacts of these experiences. As stated before, graduate programs serve as gatekeepers for many professions; therefore, the experiences of BIPOC graduate students and ECPs are the focus of this study. This study seeks to illuminate the discrepancy between an environment that both publicly espouses DEI and privately leaves its BIPOC scholars feeling alienated. This study explores how navigating this environment commonly involves encountering microaggressions, defined as seemingly small moments of everyday racism, each of which can carry its own stress. This study examines how the accumulation of this stress can have lasting negative effects on mental health, such as the development of posttraumatic stress symptoms and impacts on other outcomes such as psychological well-being. Finally, this study explores whether a protective factor against these negative effects exists in the form of messages that encourage cultural pride or prepare individuals to encounter bias. This study contributes to our societal understanding of how racism manifests in institutions of higher education and how institutional racism can have reverberating impacts for BIPOC.
LITERATURE REVIEW

Defining Racism

Race is a social construction that was originally created to lend scientific credibility to a system of White supremacy that subjugates and subordinates Black peoples (Thompson & Neville, 1999). Clark et al. (1999) define racism as encompassing “beliefs, attitudes, institutional arrangements, and acts that denigrate individuals or groups based on phenotypical appearance or ethnic group affiliation” (p. 805). Bryant-Davis and Ocampo (2005) note that racism is an ideology that motivates and justifies racist incidents, while racist incidents are racially charged cognitive/affective assaults. Sanchez-Hucles (1999) emphasizes that, unlike prejudice, which can exist between any groups, racism can only be perpetrated by the dominant group – Whites – against BIPOC.

While the term *racism* may invoke images of physical violence or virulent slurs, subtler incidents of racism, which may not seem overtly racially motivated, have become pervasive in the lives of BIPOC (Bryant-Davis & Ocampo, 2005; Essed, 1991; Sanchez-Hucles, 1999). Additionally, racism is not limited to individual attitudes or actions but takes the form of structural practices and policies that “systematically penalize, disadvantage, and exploit individuals who are members of nonwhite racial/ethnic groups” and “reinforce white skin privilege in all facets of American life” (Better, 2008, p. 11). Per Jones (2000), racism manifests in multiple forms: interpersonal racism, institutional racism, and internalized racism. Embedding racism in institutional policies and procedures provides Whites an avenue through which to perpetuate racial oppression.
while maintaining White innocence, as “a climate of racism generally facilitates and legitimizes these strategies [of racial stratification...Within this system, many White Americans tend to maintain racism by employing strategies that mask its existence” (Thompson & Neville, 1999, p. 157). Manifestations of institutional racism have been documented repeatedly in various contexts, from police violence against Black/African American individuals (Edwards et al., 2019) to disparities in access to key components of health and well-being such as nutritious food; housing in areas free from environmental hazards; affordable healthcare; financial capital; and immigration safety (Bailey et al., 2017; Gee & Ford, 2011).

Given the myriad ways racism can manifest, it is unsurprising that many scholars have attempted to categorize forms of racism. Carter and Helms (2009) distinguish between aversive/avoidant racism, or behaviors, actions, policies and strategies that minimize contact or maintain distance between Whites and BIPOC, and dominative/hostile racism, which is comprised of actions, strategies, and policies that communicate BIPOC’s subordinate or inferior status relative to White people (p. 114). Scurfield and Mackey (2001) note that types of racist incidents include discrete events, covert or subtle instances, or chronic and pervasive exposure to racism. Harrell (2000) identifies six categories of racism: race-related life events, vicarious racism, daily racism, chronic-contextual racism, collective racist experiences, and transgenerational transmission of racism. Daily or everyday racism (Essed, 1991) has been discussed synonymously with microaggressions (Pierce, 1979; 1995; Sue et al., 2007), which are the focus of the present study.

**Microaggressions**
The term microaggressions was coined by Black psychiatrist Chester Pierce to describe “everyday subtle, stunning, often automatic, and non-verbal exchanges which are ‘put downs’ of Blacks by offenders… often innocuous” (Pierce et al., 1977, p. 66). Sue, Capodilupo, et al. (2007) define microaggressions as brief, covert everyday occurrences, comments, or situations that are derogatory or hostile to a member of an oppressed group. Often the perpetrator lacks awareness of their own implicit biases and thus can deny the racialized component of their actions. This denial results in ambiguity and stress for the individual who experienced the microaggression as they struggle to make sense of their experience. Sue, Capodilupo, et al. (2007) posit that it is the “invisible nature” of microaggressions and perpetrators’ unwillingness to “[confront] their own complicity in creating psychological dilemmas” (p. 272) that make microaggressions potentially even more harmful than overt forms of racism. This echoes Black women participants in Essed’s (1991) study who described engaging in an exhausting cycle of evaluation to determine whether incidents of everyday racism were intentional, acceptable, or excusable.

While microaggressions have often been operationalized as individual or interpersonal occurrences, they can and should be understood as expressions of systemic racism and historical trauma. White supremacist ideology underpins and justifies racial microaggressions, and microaggressions (mediated by institutional racism) in turn reinforce White supremacy (Johnson & Joseph-Salisbury, 2018; Pérez Huber & Solorzano, 2015). As such, microaggressions often reflect the unique histories of violence and oppression perpetrated against different BIPOC groups. For example, Black and African American individuals are often confronted with messages that Blackness is
abnormal, that Black people are dangerous, or that Black people are intellectually inferior and incapable of achievement (Sue et al., 2008). These microaggressions, which serve to dehumanize, can be traced back to White supremacist ideologies that have been used to justify slavery, colonialism, segregation, and modern-day forms of oppression. The link between unique histories of systemic racism and specific microaggressive messaging appears borne out in the differences in self-reported frequency of various types of microaggressions across BIPOC groups (Torres-Harding et al., 2012).

**Microaggressions as Institutional Racism**

Within institutions, including higher education, racial microaggressions can be understood as representations of institutional racism. Mekawi and Todd (2021) state that “students point us to the connections between the quotidian experiences of microaggressions and the culpability of…[the] institution” (p. 11). Microaggressions have generally been operationalized and measured as discrete incidents that occur interpersonally (Nadal et al., 2019; Sue, Capodilupo, et al., 2007; Torres-Harding et al., 2012), which has allowed critics to frame microaggressions as subjective and question their veracity (Lilienfeld, 2017). Conversely, institutional racism in higher education has often been framed in structural terms, with discussion of the “leaky pipeline” (Museus et al., 2015), whitewashing of curriculum, and the use of standardized testing (Joseph-Salisbury, 2019). While attention to these forms of institutional racism is necessary, the framing in purely structural terms allows us to sidestep recognition of institutional racism as intentionally enacted. Harper (2012) illustrates this sidestepping in the frequency with which education researchers euphemize or qualify racism in their writing (e.g., “chilly climate,” “may possibly be due to”), and the tendency to search for structural
explanations (the “anything but racism” effect; Bonilla-Silva & Baiocchi, 2001) – for example, attributing lower GPAs amongst Black students to lack of educational resources rather than negative bias in faculty grading.

The relationship between microaggressions and institutional racism is intimate and cyclical. First, microaggressions can be understood as expressions of White supremacy. They spring from the construction and normalization of Whiteness as intellect (Joseph-Salisbury, 2019), and “epistemologies of ignorance” (Johnson & Joseph-Salisbury, 2018, p. 144) that depict knowledge production as neutral and objective when it is deeply rooted in assumptions of White male intellectual superiority (McGee, 2020). The centering of White intellectual work has led to lack of support for research that focuses on diversity issues; BIPOC scholars interested in this work may be accused of doing “me-search” and pressured to conform to more colorblind research agendas (Museus et al., 2015; Nagbe, 2020). This normalization of Whiteness as intelligence also leads to commonplace questioning of the intellect or competence of BIPOC, particularly Black scholars (Burrell, 1997; Ingram, 2013; Peters, 2020). As Nagbe (2020) states, interpreting microaggressions through an organizational lens “helps us identify a more nuanced understanding of institutional racism that pushes beyond our tendency to reduce its manifestations to mere “racist acts” between individuals” (p. 12).

While microaggressions can be understood as expressions of White supremacy, they also serve to uphold White supremacy. Mekawi and Todd (2021) note how microaggressions reinforce and reproduce existing structures of power through reminding BIPOC of their inferior status or punishing them for pushing against dominant White paradigms (Carter & Helms, 2009); silence BIPOC by minimizing experiences of racism;
and reduce sense of belonging by asserting Whiteness as norm and othering BIPOC scholars (DeLapp & Williams, 2015). For example, through comments that assume the intellectual inferiority of Black scholars and the underrepresentation of Black scholars in faculty, Black scholars receive constant reminders that they are “out of place” in White academic spaces (Burrell, 1997; Ginsburg, 2019; Ingram, 2013; Joseph-Salisbury, 2019; Torres-Harding et al., 2012). In reference to underrepresented minorities (URMs, primarily Black, Hispanic/Latinx, and Indigenous students) in STEM graduate studies, McGee (2020) notes that students are pressured to conform to a “neutral” scientist identity and to erase their cultural selves to succeed. Narratives of grit and meritocracy, rooted in 19th and 20th century notions of “survival of the fittest,” justify the lack of support provided to URM students and reinforce systems of White privilege and URM group marginalization. Gomez (2015) notes that an institution’s dismissive or punitive response to microaggressions can further normalize environments of racial trauma, which reinforce exclusion of BIPOC from academia. Therefore, microaggressions are foundational to replicating the systems of White supremacy and privilege that undergird many institutions of higher education.

Racism and Stress

There is widespread empirical evidence for the association between racial discrimination (behavioral manifestations of racism; Carter, Lau, et al., 2017) and health outcomes. Racism has been positively associated with greater perceived stress and mental health concerns (e.g., depression, anxiety, posttraumatic stress, general psychological distress), and negatively associated with indices of well-being such as self-esteem, life satisfaction/quality of life, and positive affect (Chou et al., 2012; Paradies et al., 2015;
Pascoe & Smart Richman, 2009; Pieterse et al., 2012). The relationship between racial discrimination and mental health outcomes has been found in African Americans (Chou et al., 2012; Lee & Ahn, 2013; Pieterse et al., 2012), Latinx individuals (Choi et al., 2022; Chou et al., 2012; Lee & Ahn, 2012), and Asian Americans (Lee & Ahn, 2011). Racial discrimination has also been found to produce significant elevations in stress and somatization and to have a negative effect on physical health outcomes, though some meta-analyses have found this effect to be smaller than discrimination’s effect on mental health (Carter, Lau, et al., 2017; Paradies et al., 2015; Pascoe & Smart Richman, 2009).

Scholars have hypothesized pathways through which racial discrimination impacts psychological health. Models of racism-related stress (Clark et al., 1999; Harrell, 2000; Ong et al., 2009) have drawn heavily from the transactional model of stress and coping (Lazarus et al., 1985). In the transactional model, stress results from a simultaneous two-part appraisal process, with the primary appraisal comprising the individual’s view of the stressor event as positive, neutral, or negative, and the secondary appraisal concerning the individual’s beliefs regarding their capacity to weather the stressor through coping and other supports (DeLongis et al., 1982). The transactional model departs from other stress models that have assigned weights to stressors based on their magnitude, instead arguing that stressors of any magnitude can be experienced as stressful if they are appraised as threatening and overwhelm the individual’s capacity to cope (DeLongis et al., 1982).

Generally, models of race-related stress have incorporated the importance of the appraisal process in determining the degree to which an incident of racism is stressful while distinguishing between types of racism and their potential unique contributions to
overall race-related stress (Brondolo et al., 2005; Clark et al., 1999; Harrell, 2000; Landrine & Klonoff, 1996; Ong et al., 2009; Utsey & Ponterotto, 1996). Distinctions have been made between chronic race-related stress associated with enduring racial stressors, and acute race-related stress that results from discrete, time-limited stressful encounters (Clark et al., 1999; Ong et al., 2009). Harrell (2000) further categorizes acute racial stressors and the resultant stress into race-related life events, which can be directly experienced or vicarious, and daily microstressors. Harrell (2000) conceptualizes race-related life events as infrequent but significant with a long-lasting impact, such as instances of police violence or being rejected for a loan due to discrimination. Racial microstressors are subtler and smaller in magnitude but occur more often, indeed constituting the bulk of modern-day racial discrimination (Bryant-Davis & Ocampo, 2005; Essed, 1991; Harrell, 2000; Sanchez-Hucles, 1999). Though the magnitude of individual microstressors and the resultant stress may be smaller than life events, the repetitive nature of microstressors and their ambiguity can lead to a greater buildup of stress over time (Harrell, 2000; Ong et al., 2009).

Racism and Trauma

In recent years the relationship between racism and trauma has gained increasing interest. A growing body of work has found significant associations between racism and posttraumatic stress symptoms (Abdullah et al., 2021; Cheng & Mallinckrodt, 2015; Kirkinis et al., 2021; Loo et al., 2001; Pieterse et al., 2010; Sibrava et al., 2019; Wei et al., 2012) as well as between racism and dissociation (Polanco-Roman et al., 2016). While these studies support the hypothesis that racism can have a traumatic impact, there is less empirical work examining how racism can incur such a heavy toll.
In the literature, stress and trauma have generally been studied as two distinct phenomena. While much research on stress has focused on chronic or everyday stressors and the importance of appraisal in the stress-coping process, research on trauma has clearly distinguished trauma from other forms of stress as severe and life-threatening (Carter, 2007). The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition Text Revision (DSM-5-TR; American Psychiatric Association, 2022) defines a traumatic event as exposure to actual or threatened death, serious injury, or sexual violence by direct experience, witnessing the event in-person, learning that the event occurred to a loved one, or repeated exposure to distressing details of the event. Only with the occurrence of a traumatic event can the diagnosis of PTSD be given, even if symptoms of posttraumatic stress are present. If one abides by the DSM-5-TR criteria for traumatic events, many experiences of racism are discounted by virtue of not being life-threatening or physically injurious (Sanchez-Hucles, 1999). This lack of recognition has earned criticism from scholars who argue that DSM-5-TR recognition of racism as traumatic would aid in assessment and treatment of race-related PTSD and depathologize BIPOC’s responses to racism (Bryant-Davis, 2007; Carter, 2007). These scholars note the parallels between posttraumatic stress symptoms and accounts of BIPOC’s reactions to racism. As Butts (2002) states,

…the devastating emotional responses to the racist acts are unsettling. The range and intensity of emotional responses varies from mild to overwhelming, and the duration of such responses varies from days to months or years. With a fair degree of frequency, Black individuals who experience racial discrimination report symptoms consistent with a diagnosis of PTSD. (p. 337)

Bryant-Davis (2007) compares the psychological impact of racial trauma to the distrust and internalization of blame that often follows abuse or sexual violence. Both
abuse and racism are acts of psychological othering, oppressive dynamics that hinge on an imbalance of power wherein the perpetrator seeks to maintain control over the victim by employing strategies to distort the victim’s reality (Adams, 2012; Sanchez-Hucles, 1999). These strategies include denigration, annihilation of the victim’s sense of self, projection of blame from the perpetrator to the victim, and gaslighting to confuse meaning. In an especially piercing description, Adams (2012) describes the cycle of abuse as “soul murder” (p. 39), which echoes Indigenous conceptions of the soul wound (Duran et al., 1998). Abuse and sexual violence can be especially traumatic when (as is typical) they are perpetrated by a person the victim trusted; similarly, racial trauma can often involve a violation of trust, whether between an individual and a human perpetrator or the individual and an institution (Bryant-Davis & Ocampo, 2005). The pain of these betrayals often goes unacknowledged. Instead, survivors of abuse and sexual violence as well as BIPOC are inundated with societal messages that deny the intent or harmful impact of sexual violence and racism, and that rationalize or blame survivors of sexual violence and BIPOC for their own trauma and oppression. In both rape culture and colorblind ideology, explicit (e.g., threats of future violence) and implicit (e.g., shaming and guilting messages) means are used to force survivors of abuse and racial trauma to align with an agenda of silence (Adams, 2012; Sanchez-Hucles, 1999).

**Distinguishing Features of Racial Trauma**

While there is scholarly support for racism’s inclusion into the DSM-5-TR list of Criterion A traumatic events, many of the same researchers have acknowledged the complicated legacy of the PTSD diagnosis and questioned whether including racism in the DSM-5-TR might perpetuate victim-blaming and lead to inadequate treatment. Carter
(2007) notes that PTSD is unique among psychiatric diagnoses in that it must be precipitated by an external event, in contrast to many disorders that center the source of distress within the individual. However, “gold standard” trauma-focused treatments still reflect a bias towards the internal, in which the onus is placed on the patient to adjust their thoughts, feelings, and behaviors to enable their continued functioning in society. Carter (2007) suggests that for racism, the term “injury” might be more fitting than “trauma,” as the term injury invokes the idea of a harm that was clearly external in origin. The blame thus shifts away from the individual onto the external force that perpetrated this violating act, and the pain of racism can be viewed as a natural, normative response.

As an alternative to incorporating racism into the existing diagnostic criteria for PTSD, Bryant-Davis (2007) has proposed a separate diagnostic category for racial trauma, which could allow for “a more precise description of the psychological consequences of interpersonal or institutional traumas motivated by the devaluing of one’s race” (p. 138). Bryant-Davis (2007) and Carter (2007) have highlighted several features of racial trauma that may meaningfully differentiate it from “standard” PTSD. For one, a racist incident does not need to involve physical harm or the threat of such harm to be traumatic (Bryant-Davis & Ocampo, 2005; Carter, 2007; Sanchez-Hucles, 1999). Instead, Bryant-Davis (2007) defines racial trauma as

(a) an emotional injury that is motivated by hate or fear of a person or group of people as a result of their race;
(b) a racially motivated stressor that overwhelms a person’s capacity to cope;
(c) a racially motivated, interpersonal severe stressor that causes bodily harm or threatens one’s life integrity; or
(d) a severe interpersonal or institutional stressor motivated by racism that causes fear, helplessness, or horror. (p. 135-6)
Thus, a wide range of race-related stressors may elicit traumatic responses, including interpersonal or structural racism and overt as well as covert incidents of racism (Carter, 2007). Racist incidents that result in traumatic responses can also vary in intensity (Carter, 2007).

Aside from its characterization as emotional injury and its ability to be precipitated by multiple forms of race-related stressors, racial trauma (in this paper, defined as encompassing both stressor and stress response) is unique from PTSD in its cumulative nature, with new racist incidents occurring not in a vacuum but in the context of a BIPOC person’s prior experiences with racism (Bryant-Davis & Ocampo, 2005; Carter, 2007; Root, 1992). For example, everyday occurrences of microaggressions may lead to the development of racial trauma when a BIPOC individual is chronically exposed to them. This accumulation may come from repeated instances of the same type of microaggression, or it may be comprised of different types of race-related stress that compound each other (Pieterse et al., 2010). For example, for BIPOC who lived through Hurricane Katrina, racial trauma resulted not only from the physical danger of the natural disaster and loss of property, but also from the federal government’s ineffectual response and negative media portrayals of Black survivors as looters and rioters (Bryant-Davis & Ocampo, 2005). In a similar vein, Asian American Vietnam War veterans faced multiple race-related stressors in addition to the trauma of combat, including the fear of friendly fire from U.S. soldiers due to being mistaken as Viet Cong forces, anti-Asian hostility from fellow soldiers, and having to dehumanize the also-Asian Viet Cong forces in order to kill them (Loo et al., 1998).
A third manifestation of racial trauma’s cumulative nature can be seen when racist incidents occur in the context of historical trauma or vicarious trauma. *Historical trauma*, which has also been referred to as transgenerational transmission (Harrell, 2000), is the accumulation of traumatic stress across generations of racial violence and oppression (Duran et al., 1998; Nagata et al., 2019). Duran et al. (1998) compares historical trauma to the soul wound, which is “mourning that has not been completed” for traumatic oppression perpetrated against the ancestors of a cultural group (p. 342). The Native American soul wound was opened by the U.S. government’s physical and “cultural genocide” (p. 344) against American Indian tribes for several centuries (Duran et al., 1998), and the impact of this historical trauma has been felt in subsequent generations, sometimes in viscerally emotional ways (Duran et al., 1998; Gone et al., 2019; Hartmann et al., 2019). The term *vicarious trauma* has been used to refer to instances of race-based violation – such as police violence against Black persons – whose impact reverberates through the larger racial/ethnic community (McCann & Pearlman, 1990). BIPOC need not be direct victims of violence to experience fear, horror, rage, and grief in response to said violence. As Williams et al. (2019) write, “The disproportionate display of minority victims in the news has been compared to lynchings, where slain African Americans are put on display for public consumption. These events convey the omnipresent threat of violence—that merely walking down the street or driving a car can be life-threatening” (p. 41).

Racial trauma adapts existing definitions of trauma and traumatic stress by integrating multiple strands of research, including work on race-related stress along with historical and vicarious trauma. Racial trauma is not confined to acts of physical violation
but is characterized by emotional injury (Bryant-Davis & Ocampo, 2005; Carter, 2007). This injury may result from a discrete event of high severity or from the repeated occurrence of racist incidents, whether across a person’s lifetime or across generations, whether through direct experience or vicariously (Bryant-Davis & Ocampo, 2005; Carter, 2007). The impact of the racist injury manifests as race-based traumatic stress (RBTS; Carter, 2007).

**Differences Between RBTS and Race-Related Stress**

Hargons et al. (2022) note the confusion that accompanies the proliferation of terms to describe racism’s traumatic impact. While some scholars have used the terms racial trauma, race-based traumatic stress, and race-related stress interchangeably to refer to the race-related stressor and its sequelae (Comas-Díaz et al., 2019), others have differentiated race-related stress from racial trauma in that race-related stress is a stress response to racism that may or may not lead to racial trauma (Clark et al., 1999). Truong and Museus (2012) similarly define racism-related stress as “emotional, physical, and psychological discomfort and pain resulting from experiences with racism,” while racial trauma “denote[s] severe cases of racism-related stress” (p. 228). Hargons et al. (2022) note that “Not every racist stressor leads to racial trauma, but those that are especially intense or frequent are more likely to elicit racial trauma” (p. 55).

Drawing from qualitative research on Black students’ definitions of race-related stress and racial trauma, Hargons et al. (2022) identify key features of RBTS. Regarding the nature of the racial stressor(s), Hargons et al. emphasize both its repetition and its longevity. Participants in Hargons et al.’s study characterized racial trauma as repeated vicarious exposure to a cycle of racialized violence, the effects of which are not dealt
with and so “stick with” a person (p. 54). While repetitiveness or accumulation of racial stressors can lead to both non-traumatic race-related stress and RBTS, participants in Hargons et al.’s study seemed to describe a compounding effect with RBTS, in which new incidents of racism result in greater injury because the pain of past incidents has not been processed or coped with. While Brondolo et al. (2005) did not explicitly study RBTS, results from their study of lifetime exposure to racial/ethnic discrimination in Black and Latinx participants seem to highlight the compounding nature of RBTS. For Brondolo et al.’s (2005) participants, new incidents of discrimination were viewed as more harmful or threatening when lifetime exposure to discrimination was greater, and greater lifetime exposure was also associated with greater use of anger coping styles. Brondolo et al. (2005) note that participants “did not appear to ‘get used to’ racism” (p. S5-18). Instead, the stressful impacts of repeated exposure to racism contributed to greater stress responses to new racist incidents. This dovetails with definitions of RBTS as an injury that can result from cumulative or chronic exposure to race-based events (Hargons et al., 2022).

In addition to its compounding nature, racial trauma has also been defined by the severity of its impact and its potential for downstream effects on psychological health. Carter (2007) notes that for RBTS to be present, the racial stressor(s) must be perceived as emotionally painful, sudden, and uncontrollable. Bryant-Davis and Ocampo (2005) emphasize the profound level of distress that accompanies racial trauma, stating that “race-based traumatic stress violates one’s existing way of making sense of the world and creates intense fear and destabilization. Nontraumatic stress requires coping but not restructuring of one’s ability to make meaning” (p. 485). The severity of response in
racial trauma can lead to more chronic shifts in mood, cognition, and physiology such as intense hopelessness, aggression, and hyperarousal or hypervigilance (Carter, 2007; Hardy, 2013). These shifts represent some of the symptom clusters of the PTSD diagnosis, suggesting that the downstream impacts of racial trauma can include posttraumatic stress.

**Institutional Racism, Microaggressions, and Racial Trauma in BIPOC Graduate Students**

The potential for microaggressions to have a chronic, traumatic impact on mental health is of great concern for BIPOC graduate students and post-graduate professionals, who are “immersed into systems, institutions, and outlets steeped in racism and other social oppressions that may expose them to race-related events more frequently and that are readily accessible in any space they occupy” (T. R. Williams et al., 2022, p. 52). While the links between microaggressions, RBTS, and mental health outcomes have been minimally explored through quantitative research, the qualitative literature on BIPOC graduate student experiences speaks to students’ encounters with institutional racism in the form of microaggressions, the cumulative nature and stress of these microaggressions, and the long-term impacts these stressors have on students’ mental health. Each of these themes is explored in greater detail below.

In multiple studies, participants explicitly related institutional racism with microaggressions and described how institutional racism manifested in classrooms, training spaces, and relationships with faculty and peers. These microaggressions included tokenism and lack of representation; lack of inclusion and cultural isolation; assumptions of intellectual inferiority; invisibility or dismissal of participants’ opinions
and contributions; and assumptions of criminality or other negative stereotypes (Burrell, 1997; Ginsburg, 2019; Hughley, 2019; Ingram, 2013; Peters, 2020; Stewart, 2019; Truong et al., 2016). The result of these messages was often that students “didn’t think that this world was made for me,” as one participant stated (Ingram, 2013, p. 11).

Participants also noted the insidiousness of institutional racism, describing it as subtle, ambiguous, and even intangible (Burrell, 1997; Hughley, 2019), with a participant from one study stating “I don’t know how to explain it, but I feel it…and that makes it even harder” (Burrell, 1997, p. 225). The microaggressions participants encountered reflected larger institutional values and practices, such as White students’ willful ignorance of structural privilege; institutional negligence in the form of lack of faculty response to classroom racist incidents; hostile institutional responses to participants’ self-advocacy; and lack of structural supports such as mentoring and student groups for BIPOC students (Burrell, 1997; Cueva, 2013; Ginsburg, 2019; Ingram, 2013; Peters, 2020; Truong et al., 2016). This preservation of the White intellectual status quo is reflected in one study’s finding of a “false pretense of diversity” (Ginsburg, 2019, p. 53), and a participant in another study distinguishing between diverse representation and true diversity, stating “there seems to be nothing behind it besides numbers” (Hughley, 2019, p. 83).

Participants also noted that these microaggressions elicited shock, stress, and negative emotional reactions such as anger, sadness, and anxiety (Burrell, 1997; Truong et al., 2016).

In keeping with the notion of racial trauma as cumulative, participants of multiple studies reported experiences of racism in the academy compounding on themselves or on experiences of racism that predated graduate school (Alkhoury, 2017; Burrell, 1997;
Cook, 2010; Stewart, 2019). Stewart (2019) used the term “race-related inundation” (p. 61) to denote the inescapable intersection of sociopolitical issues and vicarious or everyday racism, with one of their participants describing racism and the resultant stress as “the little drip of water that keeps hitting the rock until the rock breaks” (p. 55). Participants described the long-term psychological impacts of this cumulative weight of racism in the form of depression, anxiety, chronic strain, avoidance, hypervigilance and lack of psychological safety, dissociation, and numbing; and even physiological conditions of chronic pain, fatigue, headaches, and gastrointestinal distress (Cueva, 2013; Peters, 2020; Stewart, 2019; Truong et al., 2016). Participants in these studies directly named the impact of racial trauma in the form of posttraumatic stress. A participant in one study noted the pervasive impact of racial trauma and the numbing that can develop in response:

I guess that I feel like everybody…who has a history of trauma related to race…not their lives, but in their ancestry, is impacted by racism. So, I insistently feel that people of color are impacted by racism even if they are not aware of it. I think that they probably do experience it on a regular basis, but it's become such a baseline for them that they don't identify it. But they do in fact experience it. (Cook, 2010, p. 167)

Taken together, these studies paint a visceral picture of the stressful and at times traumatic impact of institutional racism on BIPOC graduate students. These participants’ experiences lay plain the fact that admission to the highest echelons of intellectual life in the U.S. is admission not to a postracial utopia of inclusivity but to a system constructed on and perpetuating White supremacy. As research in this area continues to grow, quantitative research has a role in complementing the findings of these critical qualitative studies. The present study seeks to support the work of these scholars (many of them BIPOC graduate students and ECPs themselves) by examining the relationship between
microaggressions and posttraumatic stress and the potential mediating role of race-based traumatic stress in this relationship.

**Racism and Psychological Well-Being**

Most existing literature examining the mental health impact of racism has focused on indices of subjective well-being, such as psychological symptoms, positive and negative affect, and life satisfaction (Ryff, 1989; Ryff & Keyes, 1995). Ryff (1989) proposed the construct of *psychological well-being* (PWB) to refer to other domains of mental health, including self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, and autonomy. In arguing for the importance of studying PWB, Ryff et al. (2004) note that “the presence of the negative…does not automatically imply an absence of the positive” (p. 418).

In the limited literature on the relationship between racial discrimination and PWB, evidence has varied for whether a significant association exists and if so, which direction it takes. While the bulk of the evidence supports a significant negative relationship between discrimination and some or all domains of PWB (Cobb et al., 2019; Le et al., 2021; Melvin, 2019; Seaton et al., 2011; Urzúa et al., 2018, 2020, 2021; Yang, 2014), there is also a smaller body of evidence that discrimination is positively associated with the domains of autonomy (Urzúa et al., 2020) and personal growth (Yang, 2014). Additionally, at times no relationship has been found between discrimination and some or all domains of PWB (Iwamoto & Liu, 2010; Warner, 2019; Yang, 2014). Only one study has examined the relationship between discrimination and PWB in a graduate student sample, finding no significant relationship (Warner, 2019).
While scant quantitative literature exists, findings from the qualitative literature on BIPOC graduate students’ experiences of racism suggest the possibility that domains of PWB may be impacted by racism. Amongst these qualitative studies, a common theme was the enduring effect of race-related stress on participants’ view of themselves, with participants noting intense feelings of shame, imposterism, self-doubt, assumptions of inferiority, worthlessness, and low self-esteem (Ginsburg, 2019; Ingram, 2013; Peters, 2020; Truong et al., 2016). These areas seem to reflect several domains of PWB, most clearly self-acceptance but also purpose in life or personal growth, both domains that are self-referential. Participants across several studies also noted the effects of race-related stress on their relationships in the form of social withdrawal, lower levels of connectedness to others, difficulty trusting, and feelings of helplessness (Burrell, 1997; Ingram, 2013; Peters, 2020). These areas are reminiscent of the PWB domains of positive relations with others as well as environmental mastery. It would be fruitful to further explore whether these findings are borne out through a significant negative relationship between racial microaggressions and psychological well-being. It is also worth exploring whether the impact of microaggressions on psychological well-being is a function of a severe stress response associated with cumulative racial stressors – that is, whether the relationship is mediated by race-based traumatic stress.

**Ethnic-Racial Socialization as Protective Factor**

While there is ample evidence linking racial discrimination to negative mental health outcomes in BIPOC, researchers have also explored whether the negative effects of racism on mental health can be buffered by protective factors. One oft-studied protective factor is *ethnic-racial socialization* (ERS), variously referred to as racial
socialization or cultural socialization. ERS refers to the messages that BIPOC receive throughout childhood (or later) that help them understand the meaning of their racial/ethnic identity in a larger sociopolitical context – that is, one in which racism is prevalent in various forms (Hughes & Chen, 1997). Several distinct dimensions of ERS have been proposed that represent differing socialization messages, including cultural socialization, or teachings about one’s own culture and history or emphasize cultural pride; pluralism, or educating about diversity and positive awareness of other groups; preparation for bias; and promotion of mistrust, or warning children about other racial groups (Hughes & Chen, 1997; Hughes & Johnson, 2001). In research, cultural socialization and pluralism are often combined (Reynolds & Gonzales-Backen, 2017; Umaña-Taylor & Hill, 2020).

Evidence has been mixed regarding the effectiveness of ERS as a protective factor, which has led scholars to recommend that the dimensions of socialization be examined independently to determine whether specific messages have differing impacts (Lee & Ahn, 2011, 2013; Umaña-Taylor & Hill, 2020; Wang et al., 2020). Support has been found for cultural socialization, and to a lesser extent preparation for bias, as protective factors in the relationship between racism and psychological outcomes (Brown & Tylka, 2011; Granberg et al., 2012; Reynolds & Gonzales-Backen, 2017; Stokes et al., 2020; Umaña-Taylor & Hill, 2020; Yasui et al., 2015). However, these studies have largely focused on outcomes of depression and anxiety.

There are apparently no studies to date examining ERS as a protective factor against the traumatic effects of racism. This constitutes a gap worth exploring, as scholars of racial trauma have proposed the theoretical importance of coping and psychological
resources as mitigating the traumatic impact of racism. Carter (2007) notes that the ability to attribute racial stressors to racism and not personal failure may aid in weathering race-related stress, while internalized racial stereotypes and negative views of self may generate more intense stress. Similarly, Truong and Museus (2012) suggest that racial socialization can lead to “meta-analytic critical consciousness through self-knowledge and appreciation of culture” (p. 229), and that messages can be “proactive expressions” about cultural pride or “protective expressions” that prepare BIPOC for encountering bias and responding to racially charged situations. Truong and Museus (2012) also propose that multiple types of socialization messages can provide BIPOC a sense of “where they fit within a system of oppression, facilitate racial identity development, and catalyze coping process with racism” (p. 229). There may be tentative support for these ideas in the qualitative literature on BIPOC graduate students’ experiences with racism. Participants in a few studies noted the importance of certain types of coping to manage stress associated with microaggressions, including a sense of membership and togetherness with their community (Stewart, 2019) and preparation for future encounters with racism (Cook, 2010; Truong et al., 2016). These findings suggest the need to explore ERS as a potential protective factor or moderator of the relationship between racial microaggressions and mental health.

**Purpose of the Present Study**

The present study is a quantitative investigation of the relationships between racial microaggressions, race-based traumatic stress, posttraumatic stress, psychological well-being, and ethnic-racial socialization amongst BIPOC graduate students and early career professionals. The study is concerned with two research questions:
$H_1$: Is the relation between racial microaggressions and posttraumatic stress mediated by race-based traumatic stress and moderated by ethnic-racial socialization?

$H_2$: Is the relation between racial microaggressions and psychological well-being mediated by race-based traumatic stress and moderated by ethnic-racial socialization?

**Significance**

At the core of racial trauma theory is the idea that microaggressions – subtle, everyday manifestations of institutional racism – can have a traumatic impact on BIPOC. While BIPOC may experience racial trauma at any institution, institutional racism may be particularly traumatic for BIPOC in academia due to its apparent dissonance with stated organizational values of diversity and inclusivity. In an environment where the reality of racism is often categorically denied as a means of upholding existing structures of power (Harper, 2012; Johnson & Joseph-Salisbury, 2018; McGee, 2020; Mekawi & Todd, 2021; Patton, 2004), “healing” may only come through “recognition” (Bryant-Davis, 2007), with each additional work of scholarship making BIPOC’s lived experiences of racial trauma harder to ignore or deny. This study contributes to the growing literature on racial trauma in academia by investigating the relationships between microaggressions, race-based traumatic stress and mental health outcomes as well as the potential mitigating role of ethnic-racial socialization, amongst BIPOC graduate students and ECPs.
METHODS

Participants

Inclusion Criteria

Participants in this study were graduate students (inclusive of master’s, doctoral, and professional programs) receiving education in the U.S., or recent graduates, defined as graduating within the last 10 years per APA’s definition of early career professionals (ECPs). Participants were required to identify as Black/Brown, Indigenous, or a Person of Color (BIPOC) and could be international students.

Sample Size

Fritz & MacKinnon (2007) simulated multiple approaches to simple mediation to estimate necessary sample sizes to detect effects of various magnitude (see Figure 1). When using a percentile bootstrapping approach, a sample size of approximately 160 was necessary to detect medium-small (0.26) effects for both predictor-mediator and mediator-outcome relationships, while a sample size of approximately 125 was necessary to detect a medium-small effect for one path and a medium effect (0.39) for the other. Studies examining the relationship between racial discrimination and posttraumatic stress symptoms have yielded effect sizes ranging from $r = .1$ to $.68$, with close to 40% of studies finding an effect size of .45 or above (Carter et al., 2020). Based on Fritz and MacKinnon’s simulations and the findings available from studies on racism and PTSD, a sample size of 160 was determined to be adequate.
A total of 196 participants comprised the final dataset. Initially, 431 consented to participate in the study, but 125 consented respondents provided insufficient data (e.g., no data, crucial demographics missing) and were excluded from the dataset. One hundred and nine participants completed all or part of the study survey but did not pass the study’s validity checks, while one participant did not meet inclusion criteria; these cases were also excluded from the final dataset. Diagnostic analyses and internal consistencies were run on a subsample of complete, valid data \((n = 157)\). Thirty-nine participants provided valid partial data (no data missing for demographic covariates but values missing on predictor and outcome variables) and were added to the complete cases to create the final dataset \((N = 196)\), which was used to run multiple imputation and the main study analyses.

**Sample Demographics**

Table 1 includes demographics for the sample \((N = 196)\), which are also described here. Thirty-four percent of the sample was recruited via community outreach and snowball sampling, while 65.8% of the sample was recruited through Prolific. The mean age of the sample was 30.23 \((SD = 6.54)\). Forty-three percent of participants identified as Asian \((n = 85)\), followed by 28.6% identifying as Black \((n = 56)\), 18.4% identifying as biracial/multiracial \((n = 36)\), 7.1% identifying as White Hispanic/Latinx \((n =14)\), and one participant identifying as Native American/Alaska Native. The majority of participants identified as cisgender women (55.6%, \(n = 109\)), followed by cisgender men.

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1 The demographic survey did not include an explicit “Hispanic/Latinx” option under race. Multiple participants wrote in “Hispanic/Latinx” under the race “Other” option, while other participants identified as Hispanic/Latinx (or a regional variant, e.g., “Mexicana) through an open-ended ethnicity question. These participants’ racial identities were recoded as “Hispanic/Latinx.”

2 Participants who identified as “Hispanic/Latinx” in addition to another racial category were recoded as bi- or multi-racial.
(36.2%, \( n = 71 \)), non-binary (2.6%, \( n = 5 \)), transgender man (0.5%, \( n = 1 \)), and genderqueer (0.5%, \( n = 1 \)), with 1% of participants listing more than one identity (\( n = 2 \)). On average, participants rated themselves a 5.84 (Likert scale 1 to 10) on a scale of subjective social status. Fifty-two percent of the sample (\( n = 103 \)) were current students and 47.4% (\( n = 93 \)) were recent graduates/early career professionals. Of current students, approximately 34% (\( n = 35 \)) were master’s students and 62.1% were doctoral or professional students (\( n = 64 \))\(^3\). Forty-two percent of current students (\( n = 82 \)) were enrolled full-time, 9.2% part-time (\( n = 18 \)), and 1.5% some other enrolment status (\( n = 3 \)). On average, current students were in their third year of their program. Of early career professionals, 68.8% identified the master’s as their highest level of education and 23.7% identified a doctoral or professional degree as their highest level of education. For ECPs, an average of four years had elapsed since degree conferral. Participants attended programs located across the U.S., including the Northeast (25%, \( n = 49 \)), Midwest (14.3%, \( n = 28 \)), South (37.2%, \( n = 73 \)), West (23%, \( n = 45 \)), and U.S. territories (0.5%, \( n = 1 \)). Approximately 92.4% (\( n = 145 \)) of participants reported attending a Predominantly White Institution (PWI) and 7.6% (\( n = 15 \)) of participants reported attending a Minority-Serving Institution (MSI).

**Study Procedures**

Study procedures were reviewed and approved by the University of Louisville IRB. Participants were recruited through electronic community outreach/snowball sampling and through the paid research platform Prolific. A template email with a

\(^3\)As the study originally recruited only doctoral/professional participants, a question for education level was not added to the demographic survey. Education status was determined by proxy via recruitment waves (i.e., first wave targeted only doctoral/professional students; master’s and doctoral/professional students were recruited in separate waves on Prolific). Therefore, subgroup sizes are approximate.
description of the study, inclusion criteria, and an invitation to participate was sent to
tools of professional organizations (e.g., American Sociological Association),
specifically targeting listservs for graduate students and/or early career professionals. The
recruitment email was also sent to organizations geared towards professionals of color
(e.g. Asian American Psychological Association, Blacks in Technology). Listserv
coordinators and participants were invited to forward the recruitment email to potential
participants. Participants recruited through community outreach were invited to take part
in a raffle for one of four $25 Amazon gift cards. The study was also advertised on
Prolific (prolific.com), an online platform where individuals can participate in research
for compensation. Prolific distinguishes itself from competitor platforms (e.g., Amazon
Mechanical Turk) by utilizing quality recruitment methods and requiring researchers to
pay participants at minimum wage, measures that are both intended to increase data
quality. While Prolific is a relatively new platform, researchers have found success with
collecting data of comparable quality to those collected from undergraduate samples
(Palan & Schitter, 2018; Stanton et al., 2022). Prolific allows researchers to utilize
screening questions at no additional cost to narrow the pool of individuals towards which
the study will be advertised. For this study, both current graduate students and early
career professionals who identified as BIPOC were recruited through Prolific. Current
graduate students were invited to participate through Prolific’s built-in screening
questions. As Prolific did not have a built-in screening question for years since
graduation, a brief (1-2 minutes) screening questionnaire was created and deployed
through Prolific to identify eligible early career professionals, who were then invited to
complete the study survey. Participants from Prolific were compensated roughly $5.35
for completing the study survey, or at a rate of about $8.15 USD per hour (the study took between 35-40 minutes to complete). Individuals who completed the screening questionnaire for ECPs were compensated $0.55 USD regardless of their eligibility for the study.

Data were collected using Qualtrics. Potential participants were able to access the link to the survey through recruitment emails, approved postings on organizational newsletters or opportunity boards, or through a study advertisement on Prolific. Participants reviewed a preamble consent form and could proceed to the survey questions after indicating their consent through a forced-choice question. At the end of the survey, participants were provided a list of resources (e.g., links to articles, videos) for coping with race-related stress.

**Measures**

Internal consistencies for scales are reported in Table 2.

**Gender.** Participants were asked to choose all options that fit best: Cisgender man, Cisgender woman, Nonbinary, Transgender man, Transgender woman, Not listed, and Prefer not to say. Those who chose Not listed were invited to self-identify through an open-ended question.

**Age.** Participants were asked to indicate their age on an interval scale.

**Racial category.** Participants were asked to choose all options that fit best: African American, Asian, Latinx, Native American/Alaskan Inuit, Native Hawaiian/Pacific Islander, White, Not listed, and Prefer not to say. Participants who chose Not listed were asked to self-identify.
Educational status, student year/years since graduation, & enrolment.
Participants were instructed to indicate whether they were a current graduate student or early career professional (up to 10 years post-graduation). Current students were further prompted to indicate their enrolment status (full-time, part-time, or other) and their year of study. ECPs were asked to indicate how many years had elapsed since conferral of their graduate degree.

Geographic region of program. Participants were asked to indicate the U.S. state or territory in which their program was located. Participants’ responses were subsequently coded into one of five major demographic areas, encompassing the Northeast, Midwest, South, West, and U.S. Territories.

Institution type. Participants were asked to indicate whether their institution had been classified as one or more types of Minority-Serving Institution or MSIs per the U.S. Department of Education guidelines (Historically Black College or University; Predominantly Black Institution; Hispanic-Serving Institution, Tribal College or University/Native American-Serving Non-tribal Institution; Asian American, Native Hawaiian, and Pacific Islander-Serving Institution; Alaska Native-Serving Institution).

MacArthur Scale of Subjective Social Status (SSS; Adler et al., 1999). The SSS is a 2-item self-report scale that measures the respondent’s perception of their own social status. The first item asks participants to identify where on a visual 10-rung ladder they would place themselves relative to others in the nation. The second item asks participants to identify where they would place themselves on a 10-rung ladder relative to others in their community. In a racially diverse sample, Operario et al. (2004) found adequate 6-month test-retest reliability with a correlation coefficient of $r = 0.62$ ($p <$
0.01). The SSS was also found to be significantly correlated with self-rated health; health had a slightly stronger correlation to the SSS \( (r = 0.31) \) than to objective proxies of social status such as income and education \( (r = 0.25) \). The significant association between the SSS and self-reported health has been replicated across other studies and has been found comparable to or greater than the association between objective social status measures and self-reported health (Tan et al., 2020).

**Racial Microaggressions Scale (RMAS; Torres-Harding et al., 2012).** The RMAS is a 32-item self-report instrument designed to gather information about the respondent’s experience of a variety of racial microaggressions. The respondent is presented with a list of racial microaggressions and is asked to indicate how often they have experienced each microaggression and how distressing they experienced the microaggression to be on a 4-point Likert scale of 0 (never/not at all) to 3 (often or frequently/high level). Torres-Harding et al. (2012) developed items from categories of microaggressions suggested by Sue et al. (2007) and through factor analysis derived six distinct subscales: 1) Foreigner/Not Belonging, 2) Assumption of Criminality, 3) Sexualization/Exoticization, 4) Low-Achieving/Undesirable Culture, 5) Invisibility, and 6) Environmental Microaggressions. The RMAS has demonstrated convergent validity with other measures of racial discrimination (Torres-Harding et al., 2012). In this study, internal consistency for the total RMAS was found to be high (Cronbach’s \( \alpha = .94 \)) as well as for the subscales (Foreigner \( \alpha = .84 \), Criminality \( \alpha = .86 \), Sexualization \( \alpha = .88 \), Low-Achieving \( \alpha = .88 \), Invisibility \( \alpha = .89 \), Environmental \( \alpha = .82 \)). The total RMAS score was utilized in the conditional process analyses.
Race-Based Traumatic Stress Symptom Scale Short Form (RBTSSS-SF; Carter & Pieterse, 2020). The RBTSSS-SF is a 22-item self-report scale designed to assess the respondent’s level of traumatic stress in response to an experience of perceived racism. The respondent is asked to list three notable experiences with racism and choose the one that is most memorable. Referencing this event, the respondent is asked to indicate whether they experienced various reactions right after the event (Time 1) or more recently (Time 2) using a 5-point Likert scale of 0 (does not describe my reaction) to 4 (this reaction would not go away). The RBTSSS was originally a 52-item instrument that yielded seven factors through exploratory factor analysis (Carter et al., 2013). Confirmatory factor analysis on the sample used by Carter et al. (2013) supported the same 7-factor structure in the 22-item shortened RBTSSS-SF (Carter & Pieterse, 2020). The seven factors include 1) Depression, 2) Intrusion, 3) Anger, 4) Hypervigilance, 5) Physical Symptoms, 6) Low Self-Esteem, and 7) Avoidance. In this study, internal consistency for the entire RBTSSS was high (α = .93), Internal consistencies for the subscales varied widely (Depression α = .78, Intrusion α = .87, Anger α = .82, Hypervigilance α = .83, Physical Symptoms α = .85, Low Self-Esteem α = .77, Avoidance α = .45). The total RBTSSS score from Time 1 was utilized in the conditional process analyses.

Ethnic-Racial Socialization Scale (ERS; Tran & Lee, 2010). The Ethnic-Racial Socialization Scale is a 16-item scale designed to measure the respondent’s perception of the frequency of ethnic-racial socialization messages from their parents/caregivers over the lifetime and in the past year. The ERS includes three subscales: Preparation for Bias, Cultural Socialization/Pluralism, and Promotion of Mistrust. Respondents are asked to
indicate how often their parents/caregivers engaged in certain activities (e.g., discuss racism towards other minority groups) over the respondent’s lifetime using a 5-point Likert scale ranging from 1 (never) to 5 (very often). Tran and Lee (2010) found evidence supporting a 3-factor scale using exploratory factor analysis. In this study, the full ERS scale demonstrated high internal consistency (α = .90), as did the subscales (Cultural Socialization α = .85; Preparation for Bias α = .93; Cultural Mistrust α = .90). However, exploratory factor analysis revealed a rough trend of the items from the Cultural Mistrust subscale demonstrating a negatively valenced relationship with the other two subscales of Cultural Socialization/Pluralism and Preparation for Bias. Out of concern that utilizing the total ERS score as a moderator would dilute its effect (see Results section for fuller explanation), the two subscales of Cultural Socialization and Preparation for Bias were combined into one variable that was used in analyses.

**PTSD Checklist for DSM-5 (PCL-5; Blevins et al., 2015).** The PCL-5 is a 20-item self-report measure designed to assess the presence and severity of posttraumatic stress symptoms. Its 20 items correspond to the DSM-5 diagnostic criteria for PTSD and are grouped into four symptom clusters: Re-Experiencing, Avoidance, Changes in Mood and Cognition, and Arousal and Hyperactivity. Items are scored on a Likert scale ranging from 0 (not at all) to 4 (extremely). The PCL-5 has demonstrated strong psychometric properties (Blevins et al., 2015). Participants in the present study were asked to complete the PCL-5 keeping in mind the experience of racism they identified in the RBTSSS. In this study, internal consistency for the total PCL-5 was high (α = .94) and adequate for the subscales (Re-experiencing α = .85, Avoidance α = .79, Changes in Mood/Cognition
α = .87, Arousal α = .83. The total PCL-5 score was utilized in the conditional process analyses.

**Psychological Well-Being Scale (PWB; Ryff, 1989; Ryff & Keyes, 1995).** The PWB is a 42-item self-report measure that assesses well-being along six dimensions, including 1) personal growth, 2) environmental mastery, 3) purpose in life, 4) self-acceptance, 5) positive relations with others, and 6) autonomy. While Ryff (1989) proposed these six dimensions after synthesizing multiple western theories of positive human functioning and found empirical support for them (Ryff & Keyes, 1995), evidence for the six-factor structure in subsequent studies has been mixed. In a sample of Canadian university students (Kafka & Kozma, 2002) and in secondary analyses of a large, combined sample from the MIDUS, NSFHII, and WLS longitudinal studies (Springer & Hauser, 2006), authors were unable to find support for six distinct dimensions of well-being. Additional research has found evidence for high correlations between the factors of environmental mastery, purpose in life, self-acceptance, and personal growth (Abbott et al., 2010; Burns & Machin, 2009). Some scholars have suggested a 3-factor solution for the PWB comprised of 1) autonomy, 2) personal relations, and 3) an ‘EGPS’ factor combining environmental mastery, personal growth, purpose in life, and self-acceptance (Burns & Machin, 2009). However, Hsu et al., (2017) found a six-factor model to be the best fit for data drawn from the original MIDUS study. Citing variations in survey length across studies as a potential factor in mixed support for the 6-factor structure, Burns and Machin (2009) have recommended utilizing longer versions of the PWB. In the present study, the 42-item version was utilized. The total PWB score was utilized in the mediation analyses. Internal consistency for the total full PWB scale was high.
(Cronbach’s $\alpha = .95$) and adequate for the subscales (Autonomy $\alpha = .81$, Environmental Mastery $\alpha = .86$, Personal Growth $\alpha = .77$, Positive Relations with Others $\alpha = .82$, Purpose in Life $\alpha = .82$, Self-Acceptance $\alpha = .90$).
RESULTS

The present study utilized conditional process analysis to test the main study hypotheses. Multiple imputation was used to treat missing data. The following paragraphs recount procedures for ensuring data quality and treating missing data, followed by a description of the conditional process analyses and their results.

Data Screening and Validity

Per recommendations by Buchanan and Scofield (2018), a combination of data validity indicators were utilized in this study. The first validity indicator method utilized in this study was to incorporate several nonsensical items into the survey; responding affirmatively to these items would be implausible and suggest a lack of attention or comprehension on the part of the respondent. Huang et al. (2015) developed a series of eight validity check items, seven of which were used in this study. Curran and Hauser (2019) found that the first seven items accurately identified careless or bogus responding and recommended using them together to increase accurate identification. The eighth validity item performed considerably worse than the first seven (Curran & Hauser, 2019) and was therefore not utilized. These nonsensical items were distributed equally across the full survey. Per the recommendation of Curran and Hauser (2019), participants in this study who responded in an implausible manner to four or five of the nonsensical items were flagged for further inspection. The second validity indicator utilized was examination of open-ended responses. Per Huang et al. (2015), nonsensical or irrelevant answers on open-ended questions may indicate the presence of a bot (non-human
Several items in this survey required a text response, including questions regarding participants’ field of study, ethnic identity, and descriptions of their experiences with racism.

Within this study, examination of the validity items and open-ended questions led to the flagging of 93 cases. Eighty-eight of these cases were completed between July 3-9, 2022 following the advertisement of this study on Reddit, while four cases came from Prolific recruitment. Responses from these cases to the question “How do you identify in terms of ethnic identity?” included “direct,” “homogenous,” “listen to your language and your skin color,” and “no racial discrimination.” Outside of these 93 cases, nearly all participants responded to this question by identifying their own ethnic identity (e.g., “Pakistani,” “Filipino”), suggesting that incomprehension of the question was not a widespread issue. Similarly nonsensical responses were provided in many of the 93 cases to questions about field of study (e.g., “the computer,” “my project is psychology”) and experiences with racism (e.g., “difference in race,” “break the glass,” “drink to fight”), or these items were left blank (rare for all other participants in this study). Given these nonsensical responses, a high level of failed validity items (85% of the 93 cases failed three or more out of seven), and (in the case of Reddit) the high volume of submissions in a short time period (uncommon for the community arm of recruitment in this study), these 93 cases were removed from the dataset.

Study completion time, a form of paradata (or data regarding respondents’ survey-taking process), was initially planned as another validity check. Prior to administration, the study survey was disseminated amongst a few volunteers who provided an estimate of 30-40 minutes to complete the survey. However, this method was ultimately utilized due
to evidence that it was not a strong indicator of case validity. In comparing participants who completed the survey and passed other validity indicators ($n = 157, M = 35.13, SD = 45.78$) with participants who completed the survey and failed one or more other validity indicators ($n = 93, M = 29.94, SD = 43.94$), no significant difference in completion time was found ($t = 0.88, df = 248$, two-sided $p = 0.381$). Additionally, numerous participants who completed the survey and passed other validity indicators completed the survey in less than 20 minutes. This may be partially attributable to the inclusion of Prolific-recruited participants, who may have been experienced survey-takers and who are incentivized to complete surveys quickly but accurately.

Analyses were conducted in SPSS 28 and 29. Categorical predictors – race, gender, student or graduate status, type of institution, and discipline – were dummy coded prior to being added to regression equations using a binary (0, 1) coding scheme. Within categorical variables, some groups had to be combined due to insufficient $n$ – for example, one participant identified himself as Middle Eastern and had his race recoded as Asian before dummy coding. Table 3 identifies the groups that were ultimately dummy coded and added to regression analyses and the referent group used for each categorical predictor.

**Descriptives**

Descriptive statistics for the main study variables can be found in Table 4. Bivariate correlations between main study variables can be found in Table 5. Several study variables were found to be significantly correlated with each other; however, Pearson’s $r$ did not exceed .8 for any variable dyads, suggesting that study variables represented distinct constructs.
**Assumptions**

Diagnostic tests were run on the subset of complete cases ($n = 157$). To assess for normality of the data, distributions of each main variable of interest were examined for skewness, kurtosis, and via visual examination of histograms. With the exception of the PCL-5 data (posttraumatic stress), measures of skewness and kurtosis for all variables were $< |1|$, indicating minimal to low levels of non-normality (Blanca et al., 2013). Measures of skewness and kurtosis for the PCL-5 data fell between 1 and 2, indicating that the data was moderately positively skewed (mean greater than median or mode) and moderately leptokurtic (values concentrated more around the mean compared to a normal distribution). The Kolmogorov-Smirnov one-sample test of goodness-of-fit was conducted to test whether the distributions of study variables deviated significantly from the expectation of normality. The KS test was significant for both the RBTS ($p < 0.001$) and the PCL-5 ($p < 0.001$). Hayes (1996) states that the validity of statistical inferences is typically only significantly affected if non-normality is extreme and the sample size is small. Bootstrapping can also be robust against violations of normality since the repeated resampling provides confidence intervals that are adjusted to the non-normal distribution (Mackinnon, 2010). Given only moderate non-normality, a moderate sample size, and the use of bootstrapping, statistical inferences in this study were deemed valid.

The assumptions of linearity and homoscedasticity were explored by examining scatterplots of standardized predicted Y values against standardized residuals after entering all predictors into a linear regression model (demographic covariates in Block 1, predictor in Block 2). P-P plots of observed Y values and expected Y values were also examined. These steps were conducted with all hypothesized relationships between
variables (e.g., predictor to mediator, mediator to outcomes, predictor to outcomes). Graphical analysis of scatterplots did not indicate strong patterns, nor did P-P plots demonstrate considerable deviations from a linear relationship. Independence of errors was examined using the Durbin-Watson statistic. For all relationships, the Durbin-Watson statistic fell between 1.5 and 2.5, suggesting that non-independence of errors was not a major concern. Multicollinearity between predictors was examined using the variance inflation factor (VIF). All values of VIF fell between 1 and 3, indicating that predictors were likely not collinear.

**Treatment of Missing Data**

Researchers have historically often used row-wise (list-wise) deletion to deal with missing data. However, strong arguments have been made against using complete case analysis/listwise deletion, namely that it may result in data that is considerably skewed, as participants who do not complete the study may differ from participants who do complete the study in meaningful ways (Mackinnon, 2010). Thus, complete case analysis may introduce bias into results, the degree and manner of which is unknown; listwise deletion can also reduce power considerably (Jakobsen et al., 2017; Mackinnon, 2010). Complete case analysis can be used under rare circumstances, such as if data are missing completely at random and/or if the proportion of missing data does not exceed 5% (MCAR) (Jakobsen et al., 2017; van Buuren, 2018). More often data may be missing at random (MAR) or not missing at random (NMAR). When data is MAR, a proportion of data is missing systematically, but the reason for missingness can be determined from existing data. When data is NMAR, data may be missing for systematic reasons, but these reasons cannot be discerned from the data. Unfortunately, determining whether data are
MAR or NMAR is challenging, as this determination would require access to the missing observations to observe any patterns within the missingness (Mackinnon, 2010).

While various imputation methods exist for dealing with missing data, multiple imputation has been increasingly recommended when certain conditions of the data are met. In multiple imputation, missing data is replaced by a sample of plausible values to form a complete dataset, and this imputation process is conducted multiple times to yield multiple datasets (see Figure 2). Analyses are conducted with each imputed dataset and results from each dataset are pooled to yield a single set of results. To account for slight variations across datasets (a result of uncertainty regarding which value the algorithm should use), both within-dataset and between-dataset variances are estimated and incorporated into the pooled results (Jakobsen et al., 2017; van Buuren, 2018). Multiple imputation has been recommended as ideal to use with data that is MAR; while there are limitations to using MI with data that is suspected to be NMAR, multiple imputation is still preferable over other approaches such as complete case analysis or single imputation methods that may yield biased results (Madley-Dowd et al., 2019). In this study, multiple imputation was used to handle missing data for several reasons. First, the proportion of missing data exceeded the 5% cutoff suggested for complete case analysis but did not exceed 40%, which has been recommended as the upper limit of when MI is appropriate to use (Jakobsen et al., 2017). To explore the possibility that data were missing completely at random, Little’s MCAR test was utilized. Results ($\chi^2 = 91.31, df = 53, p = 0.001$) rejected the null hypothesis that data is missing at random, indicating that the data was most likely either MAR or NMAR.
Rates of missingness were calculated in SPSS for all demographic covariates of interest, the predictor variable (racial microaggressions), the mediator (race-based traumatic stress) and moderator (ethnic-racial socialization), and the two outcome variables (posttraumatic stress and psychological well-being). Rates of missingness are reported in Table 6 and patterns of missing data can be observed in Figure 3. Psychological well-being had the highest percentage of missing data (16.3%, cases with missing values \( n = 32 \)), followed by posttraumatic stress (13.8%, \( n = 27 \)) and race-based traumatic stress (13.8%, \( n = 27 \)), then ethnic-racial socialization (12.2%, \( n = 24 \)), and racial microaggressions with the smallest percentage of missing data (1.0%, \( n = 2 \)). While most missing data fell into a monotonic pattern (i.e., within a case, values are uniformly missing after a given observation and values before this observation are uniformly present), some values were also missing seemingly at random. Therefore, fully conditional specification was used as the method of imputation. Predictive mean matching was utilized as the model type for selecting values in continuous variables. Predictive mean matching draws from similar existing cases, allowing for better preservation of existing relationships in the data and reducing the likelihood that illogical values (i.e., a negative value for participant age) will be drawn (Heymans & Eekhout, 2019). As predictive mean matching was used, constraints were not manually set for imputed values. All demographic covariates to be included in the mediation analyses were also included in the imputation model as predictors, while main study variables, which all had data missing, were both used as predictors and imputed. Five imputations were executed. After five complete datasets with imputed values were generated, descriptives (mean, SD, range) of main study variables in each dataset were reviewed to
ensure no implausible values were imputed. All values fell within the correct ranges based on the study measures.

Conditional Process Analyses

Hayes (2022) defines conditional process analysis as the integration of mediating (explanatory) and moderating (conditional) effects within a linear regression model. While Baron and Kenny’s (1986) causal steps method has been utilized broadly to test mediation, it has been criticized for requiring every path in the model to have a significant effect in order to declare the presence of mediation, and for not providing a direct estimate of the indirect effect (Hayes, 2022; Hayes & Rockwood, 2017; MacKinnon et al., 2007). Hayes (2022) recommends estimating the indirect effect itself by testing the significance of the product $ab$ rather than separately testing the significance of $a$ and $b$. Within a conditional process model, either the direct effect ($c'$ path) or indirect effects ($a$ path and $b$ path) of a predictor variable $X$ on an outcome variable $Y$ are conditioned on a moderator variable $W$ (Hayes, 2022). Conditional process analysis helps illuminate complexity within mediation relationships, allowing the mediator’s effect to vary as a function of categorical moderators such as gender or continuous moderators such as age. This can aid in the accurate specification of regression models.

The PROCESS 4.0 macro was utilized with SPSS versions 28 and 29 to conduct conditional process analysis. In line with current recommended practice (Hayes, 2022; Hayes & Rockwood, 2017; MacKinnon et al., 2007), the PROCESS macro does not require all causal steps to be met, directly calculates the indirect effect within a mediational relationship (product of $a$ and $b$), and uses bootstrapping to calculate confidence intervals. Within PROCESS, Model 5 (one mediator, one moderator of the
direct effect) was utilized to test the study hypotheses. Demographic variables (age, subjective social status, race/ethnicity, gender, geographic region, institution type, discipline) were entered into the model as covariates. Prior research has found that the Cultural Mistrust subscale of the Ethnic-Racial Socialization scale yields factor loadings that trend in the opposite direction of the other two subscales, Cultural Socialization/Pluralism and Preparation for Bias. Exploratory factor analysis of the ERS scale items in this study revealed a similar trend. Therefore, a variable combining only the dimensions Cultural Socialization/Pluralism and Preparation for Bias (ERS-CSP) was utilized in analyses. In analyses of both study hypotheses, RBTS was entered as a mediator of the relationship between the focal predictor and the outcome variables and ERS-CSP was entered as a moderator of the direct effect between focal predictor and outcomes. Both Model 1 and Model 2 were run using each imputed dataset, and parameters were pooled across all five imputed datasets using Rubin’s rules (Heymans & Eekhout, 2019; van Buuren, 2018), with Fisher’s $z$ transformation used in conjunction with Rubin’s rules to pool coefficients of determination ($R^2$; Harel, 2009). Bootstrapping with 5,000 iterations was used to generate 95% confidence intervals.

The following sections summarize the results of the conditional process analyses. Model summary statistics and regression coefficients are reported in Tables 7 and 8. For Model 1, the overall model accounted for 60% of the variance in the outcome variable of posttraumatic stress ($R^2 = 0.60, F(20, 175) = 12.89, p < .001$). A significant relationship was found between the focal predictor and mediator: after accounting for demographic covariates, greater frequency of experiencing racial microaggressions was associated with higher levels of race-based traumatic stress ($\beta = 11.07, t = 5.33, p < .001, [10.78, 11.35]$).
The relationship between race-based traumatic stress and posttraumatic stress tended towards significance, with higher levels of race-based traumatic stress predicting higher levels of posttraumatic stress ($\beta = 0.47, t = 12.57, p = 0.05, [0.38, 0.56]$). The indirect effect of racial microaggressions through race-based traumatic stress on posttraumatic stress was significant ($\beta = 6.47, [3.78, 9.37]$), as evidenced by both limits of the confidence interval being above zero. Conversely, the direct effect of racial microaggressions on posttraumatic stress was not found to be significant ($\beta = -4.06, t = -1.32, p = 0.20, [-3.91, -4.20]$). Ethnic-racial socialization was not found to significantly moderate the direct effect of racial microaggressions on posttraumatic stress ($\beta = 0.14, t = 1.88, p = 0.09, [0.14, 0.15]$).

For Model 2, the overall model accounted for 60% of the variance in the outcome variable of psychological well-being ($R^2 = 0.60, F(20, 175) = 12.89, p < .001$). The relationship between mediator (race-based traumatic stress) and outcome (psychological well-being) was significant, with higher levels of race-based traumatic stress predicting decreased levels of psychological well-being ($\beta = -0.82, t = -4.93, p < .001, [-0.79, -0.84]$). The indirect effect of racial microaggressions through race-based traumatic stress on psychological well-being was also significant ($\beta = -9.03, [-14.77, -4.44]$), as evidenced by both limits of the confidence interval being above zero. However, the direct effect of microaggression on psychological well-being was not significant ($\beta = 16.50, t = 1.23, p = 0.22, [16.06, 16.94]$). Ethnic-racial socialization was not found to significantly moderate the direct effect of racial microaggressions on psychological well-being ($\beta = -0.65, t = -1.87, p = 0.07, [-0.61, -0.64]$).
DISCUSSION

The purpose of this study was to test two conditional process models examining the relationships between racial microaggressions, race-based traumatic stress, ethnic-racial socialization, posttraumatic stress, and psychological well-being. Race-based traumatic stress was hypothesized to mediate the relationship between racial microaggressions and posttraumatic stress. Race-based traumatic stress was also hypothesized to mediate the relationship between microaggressions and psychological well-being. In Model 1, frequency of racial microaggressions was significantly associated with race-based traumatic stress. The indirect effect of racial microaggressions on posttraumatic stress through race-based traumatic stress was found to be significant, but the direct effect of microaggressions on posttraumatic stress was not significant. Ethnic-racial socialization was hypothesized to moderate the direct effect of racial microaggressions on posttraumatic stress symptoms, but this moderation effect was not found to be significant. In Model 2, frequency of racial microaggressions was significantly associated with race-based traumatic stress and race-based traumatic stress was in turn significantly associated with psychological well-being. While the direct effect of microaggressions on psychological well-being was not significant, a significant indirect effect through the mediator of race-based traumatic stress was found. Ethnic-racial socialization was not found to moderate the direct effect of microaggressions on psychological well-being.

Microaggressions and Trauma
An extensive body of literature has found perceived racial discrimination to be associated with symptoms of posttraumatic stress (Cheng & Mallinckrodt, 2015; Kirkinis et al., 2021; Pieterse et al., 2010; Polanco-Roman et al., 2016; Wei et al., 2012). One question that arises is the mechanism by which this occurs. The diagnosis of PTSD is tightly defined and requires the presence of a Criterion A traumatic event that involves threat of physical or sexual harm (American Psychiatric Association, 2022). In contrast, racism takes many forms, some of which would not meet DSM-5-TR criteria as a traumatic event; examples include race-related daily hassles or microaggressions as well as structural and environmental racism (Harrell, 2000). In this study, racial microaggressions were of interest due to their prevalence in academic settings (McGee et al., 2022; Nagbe, 2020; Warner, 2019) and to the potential traumatic impact of such subtle innocuous incidents despite them not meeting criteria as traumatic events. There is preliminary evidence to support the link between racial microaggressions and posttraumatic stress in BIPOC individuals (Abdullah et al., 2021; Nadal et al., 2019). In the present study, a significant indirect relationship was found between racial microaggressions and posttraumatic stress wherein race-based traumatic stress functioned as a mediator, with the direct effect between microaggressions and posttraumatic stress not significant. These findings bolster the possibility of race-based traumatic stress being the mechanism by which microaggressions can lead to developing posttraumatic stress.

Race-based traumatic stress can result from many types of racist events, including major racialized life events, microaggressions, and environmental racism (Bryant-Davis, 2007; Carter, 2007). In the present study, a significant relationship was found between racial microaggressions and race-based traumatic stress, representing one path within the
indirect effect. However, the relationship between race-based traumatic stress and posttraumatic stress was marginally non-significant, and the direct effect between microaggressions and posttraumatic stress was also non-significant. These findings suggest that it is the combination of microaggressions and associated race-based traumatic stress that is linked to posttraumatic stress. This is meaningful in part because these specific relationships between microaggressions, race-based traumatic stress, and posttraumatic stress have not yet been explored in the literature. These findings also have implications for scholars’ understanding of the psychological effects of racism. Researchers have discussed the possibility that it is not frequency of microaggressions alone but also the degree of “bother” that predicts symptomatology (Awad et al., 2019; Le et al., 2021; Seaton et al., 2011), an idea that echoes Lazarus et al.’s (1985) conceptualization of psychological distress as a buildup of perceived stress that exceeds one’s ability to cope. The findings in this study align with the idea that cumulative incidents of racism become a burden that overtaxes one’s resources, thereby leading to clinical distress.

**Microaggressions, RBTS, and Psychological Well-Being**

Similar hypotheses have emerged in the literature examining the relationship between racial discrimination and psychological well-being. Unlike posttraumatic stress, which could be considered a form of subjective well-being or distress, psychological well-being concerns other areas of functioning such as sense of purpose, self-acceptance, autonomy, and interpersonal relationships. There is evidence for the deleterious impact of racism on psychological well-being (Cobb et al., 2019; Iwamoto & Liu, 2010; Le et al., 2021). However, little of this research specifically concerns microaggressions. To date,
only one other study has examined the relationship between racial microaggressions and psychological well-being in a BIPOC college student sample, and found that this relationship was non-significant (Warner, 2019). The present study extends research into the effect of microaggressions on psychological well-being and adds a novel component of examining a possible mechanism – race-based traumatic stress – for that effect. Contrary to Warner (2019), this study did find a significant indirect effect of racial microaggressions on psychological well-being through race-based traumatic stress. These findings lend credence to other scholars’ hypothesis that it is the buildup of stress or “bother” associated with microaggressions that can have a negative impact on psychological well-being (Le et al., 2021; Seaton et al., 2011).

**Ethnic-Racial Socialization as Protective Factor**

Ethnic-racial socialization has often been studied as a protective factor against psychological distress for BIPOC individuals, and several studies have examined the potential buffering role of ethnic-racial socialization against the negative impact of racial discrimination on mental health outcomes such as depression (Bynum et al., 2007; Granberg et al., 2012; Yasui et al., 2015), with mixed results for ethnic-racial socialization playing such a buffering role (Lee & Ahn, 2013). In the present study, ethnic-racial socialization was not found to be a significant moderator of the relationship between microaggressions and posttraumatic stress, nor was it found to significantly moderate the relation between microaggressions and psychological well-being. Prior scholarship has pointed to the importance of considering dimensions of ethnic-racial socialization separately; as a result, the ethnic-racial socialization variable in this study was comprised of two dimensions (cultural pluralism and preparation for bias; ERS-CSP).
that have more consistently been found as protective factors (Bynum et al., 2007; Granberg et al., 2012; Reynolds & Gonzales-Backen, 2017; Yasui et al., 2015) and that were more closely correlated with each other within the present study. However, ERS-CSP was still not found to significantly moderate the relationship between microaggressions and posttraumatic stress or psychological well-being. This suggests that greater exposure to messages of cultural pluralism or preparation for bias may not be strong enough to mitigate the development of posttraumatic stress or negative impacts to psychological well-being in response to experiences with racism.

An important consideration when interpreting this finding is to keep in mind that this is the first study to date to examine ethnic-racial socialization as a moderator of the relationship between microaggression and posttraumatic stress or psychological well-being, which may limit the degree to which findings can be meaningfully interpreted in the context of past research. For example, posttraumatic stress shares some symptoms with depression and anxiety, outcomes that have been previously studied in relation to ethnic-racial socialization, but posttraumatic stress is also comprised of unique dimensions. Ethnic-racial socialization may buffer against negative beliefs about oneself (a shared symptom of depression and PTS), but it may have little impact on the frequency of posttraumatic intrusive thoughts, nightmares, and flashbacks. Therefore, it may prove fruitful for future research to test whether ethnic-racial socialization moderates the relationship between microaggressions and specific symptom categories of PTS.

Limitations

Findings from this study should be considered in light of several limitations. First, some scholars have stated that mediational analyses should be limited strictly to
longitudinal or experimental designs through which causal relationships can be established (Hayes, 2022). Hayes (2022) has argued that mediational analyses conducted with cross-sectional data can still yield meaningful results, but that these results should be interpreted carefully. As data in the present study were cross-sectional, the indirect effects of racial microaggressions on the two outcome variables through race-based traumatic stress cannot be considered causal. Further investigations examining these variables in a longitudinal study would be fruitful to establish causality.

While efforts were made to increase the total sample size through multiple imputation, the sample size still limited what analyses could be conducted. For example, post-hoc tests for analysis of variance were not feasible given the small size of some groups, making comparisons between demographic categories inadvisable (Brooks & Johanson, 2011). Similarly, while recommendations have been made to study the variables of racial microaggressions (Torres-Harding et al., 2012), race-based traumatic stress (Carter et al., 2016), ethnic-racial socialization (Reynolds & Gonzales-Backen, 2017), and psychological well-being (Burns & Machin, 2009; Kafka & Kozma, 2002) at the subscale or domain level, doing so would have resulted in an elevated Type I error rate.

Data collection in this study was comprised solely of retrospective self-report, sometimes for events that occurred years ago. Scholars have raised concerns regarding the accuracy of using retrospective self-report to assess experiences, particularly traumatic ones (Widom, 2019). The Race-Based Traumatic Stress Symptom Scale in particular asks individuals to rate their symptoms at two timepoints: immediately after the event, and more recently. For the present study, the timepoint immediately after the event
was utilized in analyses, and in light of concerns with retrospective self-report, study findings should be interpreted with caution.

This study would have benefited from collecting data on additional variables that may have led to greater model accuracy. A question on participants’ degree type (e.g., master’s, doctorate, professional) was not included in the demographic questionnaire which could have been included as a covariate in the main analyses or as a predictor in group comparisons. Additionally, scholars have raised the question of how much variance in posttraumatic stress can be attributed to microaggressions as opposed to non-race-related trauma, general life stress, or other forms of racism such as overt or structural racism (Abdullah et al., 2021; Kirkinis et al., 2021; Wei et al., 2012). In their systematic review of the relation between racial discrimination and trauma, Kirkinis et al. (2021) noted that the strongest associations were found in samples of combat-exposed BIPOC veterans. This led the authors to suggest that “controlling” for the effect of other types of trauma is necessary to glean a more accurate estimate of how much variance in posttraumatic stress can truly be attributed to racial stressors. Similarly, future studies would benefit from the inclusion of measures of structural racism – or what Awad et al. (2019) term the “macrolevel” component of cumulative racial-ethnic trauma – and internalized racism to parse the unique contributions of each type of racism on posttraumatic stress more accurately.

**Future Directions**

As this is the first study examining the relationship between microaggressions, race-based traumatic stress, and posttraumatic stress together, additional research is needed to determine whether the findings of the present study are replicable.
Longitudinal studies, with microaggressions at Time 1, race-based traumatic stress at Time 2, and posttraumatic stress or psychological well-being at Time 3 would make it possible to interpret the presence or absence of a mediation effect with greater certainty. It may also be fruitful to explore whether similar findings emerge when other forms of racism, such as major events or structural racism, are used as predictors or covariates.

Future research can also focus on the relation between specific classes of microaggressions and specific symptoms or subdomains of the outcome variables. While this study utilized a total score from the RMAS in analyses, Torres-Harding et al. (2012) found no evidence for a unidimensional model in the RMAS and suggested that specific classes of microaggression should be considered as separate variables. Carter et al. (2016) also propose examining the relationship between types of racism and specific symptoms of race-based traumatic stress. Therefore, future studies could examine the relationships between specific categories of microaggressions as predictors and RBTS symptoms such as low self-esteem, hypervigilance, or intrusion as separate outcome variables. Additionally, specific RBTS symptoms can be investigated as mediators of the relationship between microaggressions and other long-term outcomes. Prior research has found associations between exposure to racism and depression, anxiety, and other forms of psychological distress (Awad et al., 2019; Choi et al., 2022; Lui & Quezada, 2019); increased substance use (Cheng & Mallinckrodt, 2015; Skewes & Blume, 2019); and to a lesser degree with heightened physiological stress responses and poorer physical health outcomes (Paradies et al., 2015; Pascoe & Smart Richman, 2009). In line with this study’s finding that race-based traumatic stress mediated the relationship between microaggressions and posttraumatic stress and psychological well-being, future studies
can test whether a build-up of specific race-based traumatic stress symptoms leads to downstream negative impacts in the form of other psychopathology, substance use, or poorer physical health. For example, the RBTS symptoms of hypervigilance and intrusion could mediate the relationship between microaggressions and increased substance use, as individuals may resort to using substances to relax or to escape distressing intrusive thoughts.

It may also be fruitful to replicate study analyses with demographic subgroups. Multiple scholars have noted the possibility that certain racist themes or messages may be more commonly encountered by some racial/ethnic groups than others. For example, Sue et al. (2008) found that Black Americans often confront microaggressions that are dehumanizing and assume criminality or intellectual inferiority, while Sue et al. (2007) found that Asian Americans often face microaggressions that communicate the “forever foreigner” stereotype, deny racial issues, or exoticize Asian women. Similarly, Proctor et al. (2018) proposed that participants with different intersecting identities (e.g., race and gender) may encounter types of microaggressions at different rates and may also experience differing levels of distress in response. Thus, comparing findings between racial/ethnic groups may contribute to the field’s understanding of commonalities or important distinctions in the racial microaggressions and racial trauma experiences of different BIPOC groups. The same considerations exist for the hypothesized protective factor of ethnic-racial socialization. Lee and Ahn (2013) have proposed that the mitigating effect of racial socialization may be especially strong for Black Americans due to the long history of subjugation they have faced and the necessity of developing ways of coping with oppression to survive.
Finally, while ethnic-racial socialization was the sole hypothesized protective factor in this study, future studies could examine the effects of other constructs found to be associated with mental health outcomes in BIPOC individuals, such as racial identity. In a meta-analysis of racial/ethnic identities, racial socialization, and discrimination-related distress in Black Americans, Lee and Ahn (2013) found certain categories of racial identity to be associated with differences in perceived frequency of discrimination and psychological distress. Carter et al. (2017) also found that externally defined racial identity statuses, such as conformity, dissonance, or immersion/emersion, were linked to higher levels of RBTS symptoms, whereas the more flexible identity status of internalization was linked to lower levels of RBTS symptoms. Thus, analyses that include racial identity as a moderator, possibly alongside ethnic-racial socialization, may provide additional information on factors that can mitigate the harmful effects of racism.

**Conclusion**

The findings from this study contribute further preliminary evidence to racial trauma theory (Bryant-Davis, 2007; Carter, 2007), specifically the hypothesis that everyday racial microaggressions can elicit stress responses (in this study, race-based traumatic stress) that accumulate into more chronic posttraumatic stress symptoms and impact psychological well-being. This challenges the notion that major traumatic events, including overt incidents of racism that involve the threat of physical harm, are the only events that can contribute to the development of posttraumatic stress symptoms.

Racial microaggressions are unavoidable experiences for many BIPOC individuals. All participants in the present study endorsed encountering at least one racial microaggression in their lifetime. This suggests that BIPOC individuals are likely to be
exposed to incidents of racism, and these experiences could give rise to stress responses with subsequent impacts on mental health. This study centers the experiences of BIPOC graduate students and early career professionals out of recognition that racism—particularly everyday racism such as microaggressions—is a lived reality for many current and former graduate students over the course of their professional education. The literature has found that BIPOC graduate students encounter environmental microaggressions in the form of limited representation (Minikel-Lacocque, 2013), questions from faculty or other students regarding their competence or intelligence (Burt et al., 2020), treatment in the classroom that leads to feelings of invisibility (Hughley, 2019), and even assumptions of their criminality (Cook, 2010). Yet denial or dismissal of these experiences by White faculty, staff, or classmates is pervasive (Gildersleeve et al., 2011; Hubain et al., 2016; Ingram, 2013). Colorblind racial ideology, a set of beliefs that denies the existence of present-day racism, manifests in higher education in both structural forms (e.g., opposition to affirmative action policies) and in interpersonal interactions (e.g., dismissing BIPOC students’ accounts of being treated prejudicially by campus law enforcement) (Neville & Spanierman, 2013). Pilkington (2018) notes previous scholars’ observations that Whiteness is deeply embedded throughout the system of higher education, and that while scholars of color are often conscious of this, White faculty and staff are complicit in “rationalizing” and normalizing this status quo (p. 37).

Often, what exacerbates the negative impact of racism is the denial that it has occurred (Sue, Capodilupo, et al., 2007). BIPOC scholars may often find themselves stuck as they attempt to reconcile the reality of stress from racially charged encounters
with their White colleagues’ denial that such encounters even occurred. What may also contribute to poorer psychological outcomes is the build-up of stress from repeated instances of these racist events over time. It is not difficult to imagine that many of this study’s participants moved through their tertiary education with historical experiences of racism and the associated stress and accumulated more stress secondary to racism encountered in graduate school. By the time BIPOC graduate students have progressed partway through their programs, this accumulation of race-based stress may snowball into more enduring mental health impacts (Cueva, 2013; DeLapp & Williams, 2015), all of which can make completing their degrees more challenging for BIPOC students.

There are both clinical and programmatic implications for this study’s findings. For clinicians working with BIPOC graduate students or new faculty and staff, it is imperative to assess for their experiences with different types of racism and to explore the impact of these experiences on their mental health. Failing to broach these experiences may lead to a limited understanding of the full scope of stressors that BIPOC graduate students and early career professionals (ECPs) encounter, potentially negatively impacting the efficacy of interventions and the therapeutic alliance (Owen et al., 2011, 2016). Conversely, prior research has found that social support that provides a safe and supportive environment can help BIPOC graduate students weather the hostile climates of their classrooms or programs (Alkhoury, 2017; Cook, 2010; Gildersleeve et al., 2011). Therefore, clinicians who effectively affirm BIPOC students’ experiences with racism may provide a crucial source of support for these students in their efforts to persist through the degree.
For faculty and administrators of graduate programs, it is important to critically examine how programmatic practices and policies may give rise to racially microaggressive experiences and uphold structural racism (Burt et al., 2020; Gildersleeve et al., 2011; Ginsburg, 2019; Hughley, 2019) and to be open to ways in which policies can be changed to decrease re-perpetration of harm for BIPOC students. Faculty and staff should also be open to recognizing how racism manifests in everyday interactions or in the larger climate of their classrooms, programs, departments and even the university at large, and to consider how they can enact change on an interpersonal level. Neville (2013) identifies the classroom as a prime context for educators to implement anti-racist pedagogy and notes that critical consciousness-raising can be a crucial step towards promoting anti-racist attitudes in White students. Given the high burden of stress that comes with asserting the reality of racism for many BIPOC individuals, willingness to acknowledge this reality amongst White faculty, staff, and students is a necessary first step to supporting BIPOC graduate students’ well-being and professional goals.
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**APPENDICES**

Table 1

*Sample Characteristics*

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Note. ECPs = Early career professionals; PWI = Predominantly White Institution; HBCU = Historically Black Colleges & Universities; PBI = Predominantly Black Institution; HSI = Hispanic-Serving Institution; AANHPISI = Asian American, Native Hawaiian & Pacific Islander-Serving Institution; NHSI = Native Hawaiian-Serving Institution.

¹ Percentage derived from total number of subgroup.
Table 2

*Internal Consistencies of Regression Variable Scales and Subscales*

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<td>Invisibility</td>
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<td>Low-Achieving/Undesirable Culture</td>
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<tr>
<td>Sexualization/Exoticization</td>
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### Table 3

*Categorical Variables and Referent Groups within Regression Model*

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<td>Gender</td>
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<td>Cisgender woman, Gender minority (includes trans-identified, non-binary, and more)</td>
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Table 4

*Descriptive Statistics for Regression Variables, Pooled across Imputations*

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<td>Psychological Well-Being (PWB)</td>
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<td>39.58</td>
<td>42-294</td>
<td>73</td>
<td>285</td>
</tr>
</tbody>
</table>

$^{1}$ *Note.* Calculated by averaging across 5 imputations.
**Table 5**

*Bivariate Correlations between Regression Variables, Pooled across Imputations*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Racial microaggressions (RMAS)</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Race-based traumatic stress (RBTSSS)</td>
<td>.459***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Ethnic-racial socialization (ERS)</td>
<td>.221**</td>
<td>.124</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Posttraumatic stress (PCL-5)</td>
<td>.357***</td>
<td>.724***</td>
<td>.180*</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>5. Psychological Well-Being (PWB)</td>
<td>-.095</td>
<td>-.290***</td>
<td>.151*</td>
<td>-.379***</td>
<td>—</td>
</tr>
</tbody>
</table>

* indicates $p < .05$; ** $p < .01$; *** $p < .001$
Table 6

Missing Data by Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cases with missing values</th>
<th>Valid N</th>
<th>% Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Racial Microaggressions (RMAS)</td>
<td>2</td>
<td>194</td>
<td>1.0</td>
</tr>
<tr>
<td>Race-Based Traumatic Stress (RBTSSS)</td>
<td>27</td>
<td>169</td>
<td>13.8</td>
</tr>
<tr>
<td>Ethnic-Racial Socialization (ERS)</td>
<td>24</td>
<td>172</td>
<td>12.2</td>
</tr>
<tr>
<td>Posttraumatic Stress (PCL-5)</td>
<td>27</td>
<td>169</td>
<td>13.8</td>
</tr>
<tr>
<td>Psychological Well-Being (PWB)</td>
<td>32</td>
<td>164</td>
<td>16.3</td>
</tr>
</tbody>
</table>
Table 7
Model 1 Summary and Coefficients, Outcome = Posttraumatic Stress (PCL-5)

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>RBTS ($M$)</th>
<th>Consequent</th>
<th>PCL-5 ($Y$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$SE$</td>
<td>$t$</td>
</tr>
<tr>
<td>Constant</td>
<td>48.92</td>
<td>9.71</td>
<td>5.26</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.14</td>
<td>0.19</td>
<td>-0.77</td>
</tr>
<tr>
<td>SSS Nat.</td>
<td>-1.34</td>
<td>0.88</td>
<td>-1.58</td>
</tr>
<tr>
<td>SSS Comm.</td>
<td>0.74</td>
<td>0.75</td>
<td>1.00</td>
</tr>
<tr>
<td>Prolific</td>
<td>-6.44</td>
<td>3.37</td>
<td>-2.02</td>
</tr>
<tr>
<td>Ciswomen</td>
<td>2.38</td>
<td>2.67</td>
<td>0.90</td>
</tr>
<tr>
<td>GM</td>
<td>8.75</td>
<td>4.46</td>
<td>2.00</td>
</tr>
<tr>
<td>Black</td>
<td>-2.62</td>
<td>2.95</td>
<td>-0.89</td>
</tr>
<tr>
<td>Latinx</td>
<td>1.26</td>
<td>4.26</td>
<td>0.30</td>
</tr>
<tr>
<td>Multiracial</td>
<td>1.71</td>
<td>3.16</td>
<td>0.55</td>
</tr>
<tr>
<td>Graduate</td>
<td>-2.09</td>
<td>2.56</td>
<td>-0.82</td>
</tr>
<tr>
<td>Midwest</td>
<td>-1.05</td>
<td>3.95</td>
<td>-0.28</td>
</tr>
<tr>
<td>South</td>
<td>-3.10</td>
<td>2.98</td>
<td>-1.08</td>
</tr>
<tr>
<td>West</td>
<td>-1.78</td>
<td>3.39</td>
<td>-0.53</td>
</tr>
<tr>
<td>MSI</td>
<td>5.61</td>
<td>4.27</td>
<td>1.32</td>
</tr>
<tr>
<td>STEM-H</td>
<td>-3.31</td>
<td>3.37</td>
<td>-1.03</td>
</tr>
<tr>
<td>Soc. Sci.</td>
<td>-6.00</td>
<td>3.51</td>
<td>-1.78</td>
</tr>
<tr>
<td><strong>Predictors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMAS ($X$)</td>
<td>11.07</td>
<td>2.14</td>
<td>5.33</td>
</tr>
<tr>
<td>RBTS ($M$)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ERS-CSP ($W$)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>X × $W$</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>XM</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

$R^2 = 0.31$
$F(17, 178) = 4.64, p < .001$

$R^2 = 0.60$
$F(20, 175) = 12.89, p < .001$
Table 8
Model 2 Summary and Coefficients, Outcome = Psychological Well-Being (PWB)

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Consequent</th>
<th>PWB (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RBTS (M)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>β</td>
<td>SE</td>
</tr>
<tr>
<td>Constant</td>
<td>48.92</td>
<td>9.71</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.14</td>
<td>0.19</td>
</tr>
<tr>
<td>SSS Nat.</td>
<td>-1.34</td>
<td>0.88</td>
</tr>
<tr>
<td>SSS Comm.</td>
<td>0.74</td>
<td>0.75</td>
</tr>
<tr>
<td>Prolific</td>
<td>-6.44</td>
<td>3.37</td>
</tr>
<tr>
<td>Ciswomen</td>
<td>2.38</td>
<td>2.67</td>
</tr>
<tr>
<td>GM</td>
<td>8.75</td>
<td>4.46</td>
</tr>
<tr>
<td>Black</td>
<td>-2.62</td>
<td>2.95</td>
</tr>
<tr>
<td>Latinx</td>
<td>1.26</td>
<td>4.26</td>
</tr>
<tr>
<td>Multiracial</td>
<td>1.71</td>
<td>3.16</td>
</tr>
<tr>
<td>Graduate</td>
<td>-2.09</td>
<td>2.56</td>
</tr>
<tr>
<td>Midwest</td>
<td>-1.05</td>
<td>3.95</td>
</tr>
<tr>
<td>South</td>
<td>-3.10</td>
<td>2.98</td>
</tr>
<tr>
<td>West</td>
<td>-1.78</td>
<td>3.39</td>
</tr>
<tr>
<td>MSI</td>
<td>5.61</td>
<td>4.27</td>
</tr>
<tr>
<td>STEM-H</td>
<td>-3.31</td>
<td>3.37</td>
</tr>
<tr>
<td>Soc. Sci.</td>
<td>-6.00</td>
<td>3.51</td>
</tr>
<tr>
<td><strong>Predictors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMAS (X)</td>
<td>11.07</td>
<td>2.14</td>
</tr>
<tr>
<td>RBTS (M)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ERS-CSP (W)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>X × W</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>XM</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.31 \]
\[ F(17, 178) = 4.64, p < .001 \]

\[ R^2 = 0.37 \]
\[ F(20, 175) = 5.10, p < .001 \]
Figure 1

*Simulated Estimates of Sample Sizes Required for .8 Power (Reproduced from Fritz & MacKinnon, 2007)*

<table>
<thead>
<tr>
<th>Test</th>
<th>SS</th>
<th>SH</th>
<th>SM</th>
<th>SL</th>
<th>HS</th>
<th>HH</th>
<th>HM</th>
<th>HL</th>
<th>MS</th>
<th>MH</th>
<th>MM</th>
<th>ML</th>
<th>LS</th>
<th>LH</th>
<th>LM</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BK (r’ = 0)</td>
<td>20,886</td>
<td>6,323</td>
<td>3,039</td>
<td>1,561</td>
<td>6,070</td>
<td>1,830</td>
<td>883</td>
<td>445</td>
<td>2,682</td>
<td>820</td>
<td>397</td>
<td>204</td>
<td>1,184</td>
<td>364</td>
<td>175</td>
<td>92</td>
</tr>
<tr>
<td>BK (r’ = .14)</td>
<td>562</td>
<td>445</td>
<td>427</td>
<td>414</td>
<td>444</td>
<td>224</td>
<td>179</td>
<td>153</td>
<td>425</td>
<td>178</td>
<td>118</td>
<td>88</td>
<td>411</td>
<td>147</td>
<td>84</td>
<td>53</td>
</tr>
<tr>
<td>BK (r’ = .39)</td>
<td>531</td>
<td>403</td>
<td>402</td>
<td>403</td>
<td>405</td>
<td>158</td>
<td>124</td>
<td>119</td>
<td>405</td>
<td>125</td>
<td>75</td>
<td>59</td>
<td>405</td>
<td>122</td>
<td>60</td>
<td>38</td>
</tr>
<tr>
<td>BK (r’ = .59)</td>
<td>530</td>
<td>404</td>
<td>402</td>
<td>403</td>
<td>406</td>
<td>158</td>
<td>124</td>
<td>120</td>
<td>405</td>
<td>125</td>
<td>74</td>
<td>58</td>
<td>404</td>
<td>122</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>Joint significance</td>
<td>530</td>
<td>402</td>
<td>403</td>
<td>403</td>
<td>407</td>
<td>159</td>
<td>124</td>
<td>120</td>
<td>405</td>
<td>125</td>
<td>74</td>
<td>58</td>
<td>405</td>
<td>122</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>Sobel</td>
<td>667</td>
<td>450</td>
<td>422</td>
<td>412</td>
<td>450</td>
<td>196</td>
<td>144</td>
<td>127</td>
<td>421</td>
<td>145</td>
<td>90</td>
<td>66</td>
<td>410</td>
<td>129</td>
<td>67</td>
<td>42</td>
</tr>
<tr>
<td>PRODCLIN</td>
<td>539</td>
<td>402</td>
<td>401</td>
<td>402</td>
<td>402</td>
<td>161</td>
<td>125</td>
<td>120</td>
<td>404</td>
<td>124</td>
<td>74</td>
<td>57</td>
<td>404</td>
<td>121</td>
<td>58</td>
<td>35</td>
</tr>
<tr>
<td>Percentile bootstrap</td>
<td>558</td>
<td>412</td>
<td>406</td>
<td>398</td>
<td>414</td>
<td>162</td>
<td>126</td>
<td>122</td>
<td>404</td>
<td>124</td>
<td>78</td>
<td>59</td>
<td>401</td>
<td>123</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>Bias-corrected bootstrap</td>
<td>462</td>
<td>377</td>
<td>400</td>
<td>385</td>
<td>368</td>
<td>148</td>
<td>115</td>
<td>118</td>
<td>391</td>
<td>116</td>
<td>71</td>
<td>53</td>
<td>396</td>
<td>115</td>
<td>54</td>
<td>34</td>
</tr>
</tbody>
</table>

*Note.* All sample sizes have been rounded up to the next whole number. In the condition labels, the first letter refers to the size of the α path, and the second letter refers to the size of the β path; S = 0.14, H = 0.26, M = 0.39, and L = 0.59 (e.g., condition SM is the condition with α = 0.14 and β = 0.39). All results, except for those for Baron and Kenny’s (1986) test (BK), have been collapsed across r’ conditions.
Figure 2

Scheme of Main Steps in Multiple Imputation (Reproduced from van Buuren, 2018)

Incomplete data  Imputed data  Analysis results  Pooled result
Figure 3

*Patterns of Missing Values*
Figure 4

*Statistical Diagram of Model 1*

![Diagram showing the relationships between variables X, M, Y, and W with respective values for coefficients a, b, ab, c', and indirect effect.]

*Note.* $X$ = predictor variable; $M$ = mediator variable; $Y$ = outcome variable; $a =$ effect of $X$ on $M$; $b =$ effect of $M$ on $Y$; $ab =$ indirect effect of $X$ on $Y$; $c'$ = direct effect.
Figure 5

Statistical Diagram of Model 2

Note. $X$ = predictor variable; $M$ = mediator variable; $Y$ = outcome variable; $a$ = effect of $X$ on $M$; $b$ = effect of $M$ on $Y$; $ab$ = indirect effect of $X$ on $Y$; $c'$ = direct effect of $X$ on $Y$. 
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Asian American Psychological Association, 2020-2023