Distinguishing Motivation and Efficacy in the Critical Consciousness Framework: Psychometric Testing of Items in a Sample of US Young Adults

A thesis submitted by

SooYun S. Byeon

In partial fulfillment of the requirements for the degree of

Master of Arts in

Child Study and Human Development

Tufts University

May 2025

Committee Members

Sara K. Johnson, Ph.D. (Chair)

Eliot-Pearson Department of Child Study and Human Development, Tufts University

Ellen Pinderhughes, Ph.D.

Eliot-Pearson Department of Child Study and Human Development, Tufts University

Channing Mathews, Ph.D.

Department of Psychology, Community Area, University of Virginia

Abstract

The critical consciousness (CC) framework conceptualizes individuals' reflection on oppressive systems, motivation to act against oppression, and finally action. Although most models and measures of CC include critical reflection and critical action, the linking component has been referred to by various names (e.g., critical motivation, critical efficacy). To distinguish between critical motivation (i.e., desires and commitments to challenge oppression) and critical efficacy (i.e., perceived own and collective ability to create critical change), I assessed 48 items through the evaluation of two EFAs and two CFAs. Critical motivation and critical efficacy were related, but distinct, multifaceted constructs. There were seven critical motivation subscales: (1) *perspective taking,* (2) *emotional contagion,* (3) *interpersonal promoters and barriers,* (4) *mentorship,* (5) *personal barriers,* (6) *social dominance orientation, and* (7) *personal ethics*. There were five critical efficacy subscales: (1) efficacy for *interpersonal change*, (2) efficacy for *collective well-being*, (3) efficacy for *political change*, (4) efficacy for *personal change*, and (5) efficacy for *addressing denigration*. Strict measurement invariance was established across groups based on gender (cisgender women and men) and racial identification (Black- and White-young adults). Scalar measurement invariance was established between racial groups among cisgender women. Although further psychometric testing of these items is needed, they represent an incremental step in the measurement of such constructs within the CC framework. Understanding these constructs can facilitate research that is intended to empower individuals to challenge oppressive systems and advocate for equity in their communities.

Keywords: critical motivation, critical efficacy, critical consciousness, measurement, factor analysis, invariance testing, social justice

Table of Contents

Abstract 2
Introduction 5
Critical Consciousness 7
Rationale for Item Selection: Critical Motivation and Critical Efficacy 13
Measurement Invariance 15
The Current Study 17
Reflexivity Statement 19
Analysis 1: Exploratory Factor Analysis Method 20
Participants 22
Measures 24
Analysis Plan 27
Analysis 1: Exploratory Factor Analysis Results 27
Analysis 2: Confirmatory Factor Analysis Method 31
Analysis 2: Confirmatory Factor Analysis Results 32
Inter-Factor Correlations 33
Analysis 3: Measurement Invariance Testing Method 34
Analysis 3: Measurement Invariance Testing Results 36
Measurement Invariance Test by Gender Identification 36
Measurement Invariance Test by Racial Identification 37
Measurement Invariance Test by Gender and Racial Identification 37
Discussion 37
Dimensions of Critical Motivation and Critical Efficacy 38
Item Retention, Removal, and Suggestions for New Items ..... ***Error! Bookmark not defined.***
Measurement Invariance Testing 47
Limitations and Recommendations for Future Research 48
Conclusion 51
References 53

List of Tables

Table 1: *Existing Measures of Critical Consciousness and the Included Subscales* ***63***

Table 2: *Items in the Initial Exploratory Factor Analysis Organized by Hypothesized Factor Structures* ***64***

Table 3: *States in Which Participants Attended College* ***67***

Table 4: *Descriptive statistics for Items Put into Initial Exploratory Factor Analysis by Hypothesized Factor Structures* ***69***

Table 5: *Model Fit Indices for Exploratory Factor Analyses* ***72***

Table 6: *Measurement Model Parameters for Final Exploratory Factor Analysis Twelve-Factor Solution* ***73***

Table 7: *Measurement Model Parameters for Re-Specified Confirmatory Factor Analysis* ***78***

Table 8: *Summary of Factor Correlations* ***81***

Table 9: *Summary of Factor Correlations Continued* ***82***

Table 10: *Summary of Model Fit Statistics for Measurement Invariance Test between Women and Men* ***83***

Table 11: *Summary of Model Fit Statistics for Measurement Invariance Tests between Black- and White-Identifying Young Adults* ***84***

Table 12: *Summary of Model Fit Statistics for Measurement Invariance Tests for Black and White Women* ***85***

Distinguishing Motivation and Efficacy in the Critical Consciousness Framework: Psychometric Testing of Items in a Sample of US Young Adults

Marginalized youth experience systemic oppression and discrimination, which may shape their understanding of societal structures and their place within them. Interpersonal experiences with marginalization (e.g., racism, transphobia, classism) may motivate youth to challenge discriminatory institutions and systems (Hope & Jagers, 2014; Leath & Chavous, 2017). For adolescents and young adults, reflecting on oppression and acting against it may inform positive identity development and community outcomes (Delia & Krasny, 2018; Diemer et al., 2015; Watts et al., 2011). These experiences and reflections, although challenging, may serve as an avenue for personal growth and societal change.

Critical consciousness (CC) has often been used to understand individuals' awareness of and action against systemic oppression (Godfrey & Burson, 2018; Heberle et al., 2020; Watts et al., 2011). CC has been posited as a protective factor for people because it may be a source of personal empowerment and collective mobilization against systemic constraints on self-determination, or a person's ability to make decisions and manage their own life (Godfrey et al., 2019). Several models of CC have been proposed that vary in the subcomponents that are included. Most include critical reflection, which is defined as the analysis and awareness of sociopolitical inequities and the systemic nature of inequity, and critical action, which refers to actions against structural inequities (Diemer et al., 2017; Heberle et al., 2020; Jemal, 2017). Critical reflection and critical action are widely recognized and agreed upon as components of CC; however, the components that link reflection and action are less understood.

Although critical reflection and action are included in most models and measures of CC, additional components are often proposed to assess how individuals move from reflection to action. Most models include at least one other component (e.g., critical motivation) that is typically hypothesized to be the link between critical reflection (e.g., thinking about sources of oppression) and critical action (e.g., behaviors targeted at ending oppressive systems). However, there is a lack of consensus on what to label this linking element, which has been variously described as critical motivation (Diemer et al., 2022), critical efficacy (Baker & Brookins, 2014), critical agency (McWhirter & McWhirter, 2016), or political efficacy (Diemer & Rapa, 2016; Mathews et al., 2020; Uriostegui et al., 2021; Watts et al., 2011). This lack of consensus points to the complexity of the linking element and the need to study how and why these constructs differ.

These uses of different terms may conflate several potentially important processes. For example, motivation (feeling that addressing systems of oppression is necessary and important) and efficacy (feeling that one can act to change or dismantle systems) are different constructs, and each has its bodies of literature from various fields (e.g., psychology, education) (Baker & Brookins, 2014; Diemer et al., 2022). Given that they have distinct definitions, both motivation and efficacy may link critical reflection with action. The lack of empirical evidence exploring the roles of motivation and efficacy in CC models and measures highlights the need to explore these constructs and distinguish them from each other. To understand these constructs, it is important to have psychometrically strong measures, and that the available measures are tested for suitability within groups of young people who are diverse with respect to their positions within systems of oppression.

In this master's thesis, I evaluated the psychometric properties of several sets of items that were intended to represent critical motivation and efficacy. These sets of items were selected (and, in some cases, developed) by members of a research team at Tufts University as items that might represent critical motivation and critical efficacy. Specifically, I conducted exploratory factor analyses of the items and checked the obtained factor structure using confirmatory factor analyses. Finally, tested the measurement invariance of the identified factor structure between subgroups of young adults. Taken together, these analyses provide information about subcomponents of critical motivation and critical efficacy. Additionally, these items could be used in future studies to disentangle the roles of critical motivation and critical efficacy in young people's critical consciousness.

Critical Consciousness

Critical consciousness (CC), or "conscientização," was originally conceptualized by philosopher and educator Paulo Freire (1970), who defined CC as learning to perceive social, political, and economic contradictions and then acting against oppression. Freire worked with marginalized Brazilian laborers to understand how oppressed or marginalized people "read their world," (Freire, 1981). Freire observed that oppression was perpetuated by prevalent functional illiteracy (i.e., inability to read and write) and critical illiteracy (i.e., inability to perceive societal influences; Watts et al., 2011). Subsequently, he developed a pedagogical system in which members of oppressed groups congregated to reflect on and critique their sociopolitical reality and developed their capacity to change the structures that oppressed them (Diemer et al., 2006). With this system, marginalized Brazilian laborers were able to increase their functional and critical literacy, which empowered individuals to liberate themselves from oppressive

sociopolitical conditions. Freire's model of CC served as an important tool for empowering marginalized individuals to challenge and change oppressive systems.

CC continues to be an asset at both the individual and community levels. It has been found to have relationships with positive youth outcomes for individuals, such as academic achievement (e.g., Luginbuhl et al., 2016; Seider et al., 2020), school engagement (McWhirter & McWhirter, 2016), career aspirations (e.g., Diemer & Blustein, 2006; Diemer & Hsieh, 2008), sense of belonging (e.g., Delia & Krasny, 2018) and mental and physical health (e.g., Weitz, 1982; Stewart et al., 2008). CC also has been related to positive community outcomes such as ameliorating marginalized experiences (Ginwright & James, 2002) and fostering collective engagement and organization when facing oppression (Diemer et al., 2015; Watts et al., 2011); these positive community outcomes have implications for community-building, educational programs, policy change, and the reorganization of institutional structures (Berg et al., 2009; Christens & Dolan, 2011; Ginwright & Cammarota, 2007). Given its importance for personal empowerment and social change, psychometric research is essential to clarify the dimensions of CC and its measurement, with the aim of supporting efforts to enhance its impact.

Models of CC

Scholars have advanced Freire's foundational work by developing various models of CC with differing conceptualizations of key components, most of which include critical reflection and critical action but vary in how they label the linking component. Whereas early efforts to model CC conceptually were grounded in qualitative work such as pictorial scenarios to assess CC among Quechua indigenous peoples in Ecuador (Smith, 1975) and ethnographies among urban North American youth (Fine, 1991; McLaren, 1999; O'Connor, 1997), more recently

developmental scholars created quantitatively testable models of CC. Many of these models are similar in that they include critical reflection and critical action and refer to them by those terms (Diemer & Rapa, 2016; Hope et al., 2020; Mathews et al., 2020). However, there is a lack of consensus on additional element(s) of the model and how they should be named. Although the additional elements are similar in that these elements are often hypothesized to link reflection and action, there is a lack of consensus on which term to use: more specifically 1) whether to describe the component as motivation, efficacy, or agency; and 2) whether to frame the component as political or critical.

Motivation, Efficacy, or Agency. Three terms have been used to describe the component that links critical reflection to critical action: motivation, efficacy, and agency. Early sociopolitical development frameworks of CC used both efficacy and agency to refer to constructs aimed at understanding competence to challenge inequalities (Watts et al., 2011; Watts & Gusseous, 2006). In the early political science literature, 'agency' was defined as self-efficacy beliefs about the ability to impact political or social change (e.g., Morell, 2005; Niemi et al., 1991). The term critical motivation was adopted by CC scholars more recently and has been described as encompassing individuals' self-perceived abilities to advance equity and justice, either individually or collectively, and the desires and commitments to create change (Rapa et al., 2020). Outside of the CC framework, self-determination theorists have defined motivation as the needs, desires, and reasons underlying goal pursuit (Ryan & Deci, 2000; Ryan, 2019). Although these three terms are sometimes used interchangeably in CC work, they vary in focus: motivation emphasizes the desires and commitments to create change, whereas efficacy and agency center on perceived ability, whether individual or collective, to effect change.

I propose that although efficacy and agency are closely related, motivation is a separate and distinct construct. Efficacy and agency are nearly identical with one key difference: agency focuses on perceptions of individual abilities, whereas efficacy includes perceptions of both individual and group abilities. Motivation may be entirely different from efficacy and agency, as it incorporates desires and commitments to create change, which efficacy and agency do not include. The distinction lies in motivation being about desire and commitment, whereas efficacy and agency emphasize perceived actual ability. Efficacy and motivation may be connected, because believing in one's abilities (efficacy) could influence the desire and commitment to take action (motivation) or vice versa, but I conceptualized motivation and efficacy as separate but related constructs, both of which may link reflection with action.

Political or Critical. Another terminology distinction is related to the use of the adjectives of political and critical. Some models use *political* efficacy (e.g., Diemer & Rapa, 2016; Mathews et al., 2020; Uriostequi et al., 2021), whereas others use *critical* agency (e.g., Hope et al., 2020) and *critical* motivation (Diemer et al., 2022). At the time of this writing, there are no CC models in which the terms 'political motivation' or 'political agency' are used. In models where the focus of the study is on involvement in the formal structures of the government, the term political may be appropriate (e.g., Diemer & Rapa, 2016); however, the term political does not necessarily take all systems of oppression into account. For example, political efficacy may include participants' efficacy around their abilities to maintain a current oppressive structure, rather than their ability toward changing it. For the construct to be critical, it must contribute to challenging oppressive structures.

Because the items I analyzed were designed to address aspects of motivation and efficacy related to challenging systems of oppression, the items were intended to measure critical rather than political constructs. Thus, I focused on the constructs of critical motivation and critical efficacy and was not able to address or test the distinction between political and critical. However, it is an important distinction future research may explore.

Measurement of CC

Just as there is a lack of consensus on terminology within models of CC, there is considerable variety in the CC-related subscales and their labels. At the time of this writing, there were twelve tested measures of CC (listed in Table 1). These tested measures varied in the components of CC that they include. One commonality among these scales was that they included critical reflection and/or critical action (Table 1). However, they differed in their inclusion of subscales related to motivation, efficacy, and/or agency, as well as whether they labeled these constructs as being critical or political.

Efficacy. In the Sociopolitical Consciousness Scale, Baker and Brookins (2014) defined efficacy as the perceived capacity to affect social and political change through individual and/or collective action, and they operationalized it using two subscales. The first subscale, Localized Community Efficacy, measured how effective participants perceived local structures to be for addressing community issues, which suggested a component of collective efficacy. The second subscale, Problem-Solving Efficacy, measured individuals' perceptions of their ability to think analytically and empathetically during problem-solving, which suggested an individual-based efficacy. Through this operationalization of efficacy, Baker and Brookins highlighted efficacy as

a construct that may be localized or individual that does not address motivational aspects (such as desires or commitments to change).

Agency. In the Measure of Adolescent and Critical Consciousness, McWhirter and McWhirter (2016) tested a measure of critical agency, which was defined as youths' perceived capacity, motivation, and commitment to produce social change and make a difference against racial and economic inequalities (McWhirter & McWhirter, 2016). Some items addressed intentions to participate (e.g., "In the future, I will participate in activities and groups against discrimination"), and other items addressed reasons for participating (e.g., "I am motivated to end racism and discrimination."). The wording of these items about agency challenged oppressive structures and were subsequently labeled as 'critical" by McWhirter and McWhirter. Furthermore, the authors defined critical agency in a way that aligned with the current study, using "critical" to mean challenging oppressive systems and 'agency' to mean self-efficacy. This operationalization of agency is consistent with models that define agency as self-efficacy (e.g., Morell, 2005; Niemi et al., 1991).

Motivation. In the Short Critical Consciousness Scale (ShoCCS), Diemer et al. (2022) tested a measure of CC that established critical motivation as a distinct and related construct. This scale was a shortened version of a larger scale; however, it included a measure of critical motivation, which is not on the original Critical Consciousness Scale. Diemer et al. defined critical motivation as the degree to which individuals thought it was personally important for them to redress perceived inequities concerning sociopolitical engagement and social justice issues. This operationalization of critical motivation reflected a shift in the CC literature towards targeting an individual's interest in and perceptions about the *importance* of taking part in

change (Heberle et al., 2020; Watts et al., 2011) as opposed to targeting an individual's efficacy beliefs about their *ability* to promote change (e.g., Diemer & Rapa, 2016). This key difference in the definitions of motivation and efficacy as defined by these authors provides additional support for the idea that they are different constructs.

Given the variety of CC measures and the varied definitions of constructs such as efficacy, agency, and motivation, this study aimed to clarify these constructs by selecting specific items that represented critical motivation and critical efficacy. The following section detailed the rationale for selecting items that represented critical motivation and critical efficacy. By establishing consistent definitions and items, this study sought to provide a clearer understanding of how these constructs functioned within the framework of CC and to later assess their distinctiveness through factor analysis.

Rationale for Item Selection: Critical Motivation and Critical Efficacy

To distinguish between critical motivation and critical efficacy, the research team first selected items that represent these constructs from existing related measures. The team conceptualized critical motivation using emotion-based (e.g., empathy) and social justice-oriented constructs (e.g., perceived barriers to, and facilitators of, social justice participation), whereas items for critical efficacy were selected to represent two subcomponents of individual and collective aspects. When selecting these items, the research team was informed by theoretical foundations and empirical literature related to critical motivation and critical efficacy.

Critical Motivation

Emotion-Based Constructs. To select items to represent critical motivation in this study, the research team turned to the foundational work of Paulo Freire, who emphasized the essential

role of emotions in motivating action against oppression. Freire viewed hope as an ontological necessity and a central component of the struggle against oppression that, when coupled with critical action, may be powerful in changing systems of oppression (Freire, 2014). He positioned hope as a motivator for an individual to act critically, which suggested that hope may be a component of critical motivation. The role of love as a driving force for revolutionary efforts was also crucial (Freire, 2014). Freire argued that love must be not only genuine and supportive but also committed, as it served as the emotional foundation that empowers oppressed individuals to fight for justice (Freire, 2014). Freire's conceptualizations of love and hope align with definitions of compassion and empathy, which similarly involve a deep sense of connection and concern for others. This connection led the research team to include items related to compassion (Katz & Hass, 1988; Sprecher & Fehr, 2005), empathy–emotional contagion (Bowers et al., 2015), and empathy–perspective taking (Davis, 1980) in the constructs that might function as critical motivation study.

Social Justice Oriented Constructs. Additional constructs chosen by the research team to represent critical motivation included social dominance orientation, perceived barriers to social justice participation, and perceived promotors of social justice participation. Rejection of social dominance orientation – the belief that certain groups are inherently superior to others – was chosen to reflect a motivation to challenge hierarchical structures and seek equity (Pratto et al., 1994). Items related to barriers to social justice participation were included to assess how perceived obstacles might hinder individuals from engaging in critical action (Miller et al., 2009). Barriers to participation was chosen to represent critical motivation rather than critical efficacy because perceived obstacles relate to understanding the challenges that affect a person's

desires and willingness to act, rather than their belief in their own ability to act effectively. In contrast, critical efficacy focuses on the perceived capacity to overcome such challenges. Items related to promoters of social justice participation were selected to represent positive aspects that drive motivation (Miller et al., 2009). Combined with the emotion-related constructs (i.e., compassion, emotional contagion, and perspective taking), the research team chose these constructs to capture the motivation to act against oppression.

Critical Efficacy

Individual and Collective Constructs. The research team chose to represent critical efficacy with items relating to both individual efficacy and collective efficacy to challenge aspects of systems of oppression. Models and measures of CC that included critical efficacy or political efficacy established an individual and a collective component to efficacy (Baker & Brookins, 2014; Watts et al., 2011; Watts & Gusseous, 2006). There are no tested measures of individual critical efficacy and collective critical efficacy that call the constructs by those names, so the research team chose items from various measures to represent these constructs (Table 2). To assess individual critical efficacy, items about an individual's perceived capacity to create critical change were chosen (Torres-Harding et al., 2012; Miller et al., 2009; Nagda et al., 2004). Similarly, to represent collective critical efficacy, items about perceived group capacity to create critical change were chosen (van Zomeren et al., 2012; Yeich & Levine, 1994; DICE). Taken together, these items about critical individual efficacy and critical collective efficacy were intended to represent critical efficacy.

Measurement Invariance

Although selecting items was essential for defining what was being measured, confirming measurement invariance was equally important to ensure that the construct was being measured consistently across different groups. Specifically, measurement invariance testing assessed whether the items on a measure functioned the same way across groups, such as by racial or gender self-identification, rather than simply identifying mean differences in scores between groups (Kline, 2023; Rapa et al., 2020). When items on a measure are invariant, we can be more confident that individuals from different groups respond to the items similarly and that any differences in scores reflect true differences in the construct itself rather than in how groups respond to the items (Kline, 2023; Rapa et al., 2020).

Given that CC develops within specific contexts shaped by individual experiences with marginalization (Freire, 2000), it's likely that how people understand and respond to CC items may vary based on group membership; measurement invariance testing allowed us to determine if items held the same conceptual meaning across groups, such as different racial and gender self-identifications, rather than assuming this consistency. This assessment is critical because, without establishing measurement invariance, we could not confidently conclude that the measure captures the construct of CC equally across different groups, and thus conclusions comparing groups may be misleading. For example, levels of different aspects of CC may vary both between people and within an individual based on their experiences with marginalization (Causadias & Umana-Taylor, 2018; Diemer et al., 2015; Hershberg & Johnson, 2019; Mathews et al., 2019). The experiences of Black girls and Black boys are distinct because of the intersection of racialized and gendered marginalization that results in Black girls and women experiencing misogynoir (Combahee River Collective, 1977; Crenshaw, 1989). Such differences

in experiences with marginalization may lead to different scores on the same CC measure; however, to ensure these mean-level differences are not a function of how groups respond to the items, it is essential to establish measurement invariance.

Furthermore, individuals from different self-identified racial and gender groups may respond to CC items differently and this difference may reflect their unique perspectives, which are shaped by social contexts and lived experiences. For example, White women may respond to items about *social dominance orientation* through a lens of gender discrimination and subsequently connect more strongly with terms related to social justice than White men. In contrast, White men may encounter fewer experiences of gender-based discrimination and may respond to these items more abstractly; for example, White men may focus on principles of fairness rather than personal relevance. Similarly, Black respondents may respond to terms like "equity" or "justice" as evoking personal or community experiences with systemic racism, whereas White respondents might respond to these terms more generically and miss the specific implications of social justice that Black individuals might attach to them. Measurement invariance testing helped ensure that these differences in responses did not distort the constructs being measured and verified that participants responded to items about critical consciousness in the same way. In this study, I tested measurement invariance across self-identified racial and gender groups to verify that the measure's structure was equivalent across self-identified racial and gender groups.

The Current Study

Models and measures of CC shed light on the operationalization of motivation and efficacy, but they also reveal gaps in understanding how these constructs operate independently

or together to link critical reflection and action. Freire theorized that hope and love serve as motivators in the struggle against oppression; this theory indicated that hope and love were components of critical motivation, but not necessarily critical efficacy. Conversely, sociopolitical measures and theories suggest individual and collective components of efficacy, but not motivation. Given the varying operationalizations of motivation and efficacy, I hypothesized that the two are separate constructs. Although efficacy and agency are closely related—agency being more individual-focused, and efficacy encompassing both individual and collective dimensions—motivation is distinct in its inclusion of desires and commitments to effect change. In this paper, therefore, I conceptualized motivation and efficacy as separate but related constructs, both of which may bridge the gap between critical reflection and critical action.

To clarify the distinctions between critical motivation and critical efficacy, I explored and confirmed the factor structures of items related to these constructs and tested their psychometric properties across two racial and gender groups. This study involved three key analyses: an exploratory factor analysis (EFA) to identify the underlying factor structure, a confirmatory factor analysis (CFA) to test the fit of the initially identified structure in a separate sample, and measurement invariance testing to assess whether the identified structures were consistent between cis-gender men and women, between Black and White young adults; and between cis-gender White women and cis-gender women. The goal of the study was to evaluate items representing critical motivation and critical efficacy.

The hypothesized factor structure was based on the constructs described in item selection (Table 2). For the EFA, I hypothesized that the items would load onto eight distinct factors, six of which represent critical motivation (compassion, empathy–emotional contagion, empathy–

perspective taking, social dominance orientation, barriers to social justice participation, and promoters of social justice participation), and two that represent critical efficacy (individual critical efficacy and collective critical efficacy) with no substantial cross-loadings. For the CFA with the second sample, I hypothesized that a twelve-factor model – the best fitting model identified in the EFA –would fit the data best compared to 8-, 9-, 10-, and 11-factor models. Finally, for measurement invariance testing, I hypothesized that the best fitting model identified in the CFA would demonstrate configural, metric, and scalar invariance across racial and gender groups.

Reflexivity Statement

I believe that it is as important to acknowledge the positionality of the researcher as the positionality of the participants. As an Asian-American person in the United States in a White supremacist society, I can reflect on marginalizing experiences based on race/ethnicity and privileging experiences based on my US citizenship. I am a 1.5-generation Korean-American who grew up in majority White neighborhoods, so the earliest messages I received about race and ethnicity were microaggressions (e.g., jokes about my name), stereotypes (e.g., expectations for me to be good at math) and forms of othering (e.g., others pulling their eyes to mimic mine). However, I spoke English fluently, which was privileging, and I often worried about protecting my parents (who both have accents) from bias. My consciousness surrounding racial and ethnic identity is constantly growing as I work to advance anti-racism and to unlearn internalized racism.

As a cis-gender, straight-presenting, able-bodied, and upper-middle-class person who grew up in the United States, I have shortcomings when it comes to understanding the

experiences of people who are visibly queer, disabled, or low-income. I aim to listen to those most marginalized by the systems that have privileged and oppressed me (e.g., BIPOC individuals and other people of color, sexually minoritized individuals, and low-income individuals). My positionality has informed my interest in identity development and critical consciousness. Additionally, my marginalizing and privileging identities have led me to question why many people can reflect on oppression (e.g., in school settings), yet only some choose to act against it. This line of questioning has driven my desire to understand critical motivation more deeply, which culminated in my thesis distinguishing between motivation and efficacy in the critical consciousness framework.

Moreover, my background and experiences have shaped my choice of methods and analytical approaches in this research. I am committed to employing quantitative methods that allow for rigorous comparisons across diverse groups, which is essential in testing the constructs of critical motivation and critical efficacy. Assessing the factor structure of items representing critical motivation and critical efficacy allowed me to understand these constructs better and contribute to the field of CC measurement in hopes of fostering positive CC development for marginalized youth. This methodological choice stems from my recognition of the importance of equity in research and my commitment to ensuring that the voices of marginalized individuals are represented and heard in meaningful ways.

Analysis 1: Exploratory Factor Analysis Method

Procedure

Data used for Analysis 1 were part of a larger research project: The IDEntity and Actions (IDEAs) Project. The IDEAs Project was a survey-based, cross-sectional study of Black and

White young adults living in the U.S. that had the broad aim of studying the relationships between identity and critical consciousness. The data were collected by a team of researchers from Tufts University. An online self-report survey was distributed via snowball sampling and through Prolific (an online survey data collection platform). Participants were only eligible if they identified themselves as 1) young adults (18 - 25 years old), 2) Black or White, 3) currently enrolled in a college or university, 4) having lived in the U.S. for at least ten years, and 5) located in the U.S. at the time that they took the survey.

The survey was hosted on Qualtrics. Survey responses were only considered for analyses if more than half of the survey was completed, and two or more (out of four) attention check questions were answered correctly. Responses from participants who only answered two attention check questions correctly were inspected by a research assistant for completeness and evidence of careless responding (e.g., straight-lining). If participants answered a demographic question in a way that was inconsistent with their Prolific account, the answer they provided in the survey was used for analyses. Participants were only allowed to take the survey once. The average survey took approximately 45 minutes to complete, and participants were compensated $10.00.

Data collection occurred between November 2020 (following the presidential election), and October 2021. The timing of this period is significant, as it captures a critical historical context impacted by a national election and a global pandemic that may have influenced participants' perspectives on critical consciousness. This timeframe is particularly relevant given the heightened political polarization and the widespread activism surrounding issues such as police brutality, gun violence, and racial injustice. For example, the Black Lives Matter movement became increasingly visible following George Floyd’s murder in May 2020, and the

2020 election itself was a focal point for discussions around democracy and voter suppression. Similarly, the COVID-19 pandemic corresponded to increased Asian hate and violence. Because these events may have shaped individuals' perspectives on social justice and their motivations for engaging in activism, the historical context is crucial for understanding the findings of this study (as well as all other studies).

Participants

Overall Sample

A total sample of 1,539 people completed the survey, but 64 responses were excluded because they did not meet the criteria outlined above which left a final sample size of 1475.The average age was 21 years old (*SD* = 1.81) with a range from 18 - 25 years old. Slightly over half identified as cisgender women (*n* = 821; 55.7%); one participant identified as a transgender woman (0.1%). Approximately one-third identified as cisgender men (*n* = 479; 32.2%); 36 participants identified as transgender men (2.4%). There were 132 participants (8.9%) who identified as genderqueer, and 11 (0.7%) who had another gender identification not provided as an option. About two-thirds of the participants identified as White/European (*n* = 968; 65.1%) and about one-third (*n* = 518; 34.9%) identified as Black/African American. The majority identified as heterosexual (*n* = 936; 63.2%), 318 (21.5%) identified as bisexual, 141 (9.5%) identified as homosexual, 29 (2.0%) identified as asexual, and 58 (3.9%) had another sexual identity not provided as an option. Finally, nearly half of the sample identified as “middle class” (*n* = 737; 49.7%), 418 (28.2%) identified as “working class,” 214 (14.4%) identified as “lower-income,” and 115 (7.7%) identified as “affluent”; these labels were provided by Prolific, not

chosen by the research team. All participants were living in the United States and reported where they went to college; participants attended college in 49 states across the U.S (Table 3).

I chose not to include the one transgender woman and 36 transgender men for two reasons. First, transgender individuals, as a group, likely have different perspectives on critical consciousness stemming from their experiences with transphobic discrimination, Second, the group size was too small to test in analysis three (measurement invariance testing). I also chose not to include the group of genderqueer participants in the EFA because the group size (n = 132) was not large enough to be included later in measurement invariance testing. These exclusions reduced the final sample to 1306 participants.

Prior to conducting the EFA, I randomly split the overall sample described above into two subsamples, the first of which was used for the EFA and the second of which was used for the CFA and invariance tests (Analyses 2 and 3). This splitting of the datasets allowed the the EFA and CFA to be conducted on independent samples to assess whether the factor structure identified in EFA was consistent with data from the independent sample (Worthington & Whittaker, 2006).

Data from 506 participants was used for the first analysis (EFA). Their average age was also 21 years (SD = 1.81), with ages ranging from 18 to 25. In this group, 70% identified as cisgender women and 30% as cisgender men. About 36% were Black or African American, and 64% were White or European American. Most identified as heterosexual (n = 342; 68%), followed by 106 (20.9%) bisexual, 37 (7.3%) homosexual, 7 (1.4%) asexual, and 14 (2.8%) with another sexual identity not listed. Just over half identified as "middle class" (n = 266; 52.6%), 152 (30.0%) as "working class," 70 (13.8%) as "lower-income," and 18 (3.6%) as "affluent".

Measures

Critical Motivation

Critical motivation was measured through several constructs. For some of these constructs, the research team chose measures that were already in use, and in other cases, the items were adapted by the research team.

Social Dominance Orientation. To index participants' social dominance orientation or their comfort with certain groups doing better than others in society, we used six items from Pratto and colleagues (1994). Examples of the items include "It is a good thing that certain groups are at the top and other groups are at the bottom" and "It would be good if groups could be equal." Participants responded to each item on a slider-bar scale from 0 = *Strongly disagree* to 10 = *Strongly agree*, with higher scores indicating higher levels of social dominance orientation.

Compassion. To index participants' compassion towards others, we used three items from the Compassionate Love for Humanity Scale (Sprecher & Fehr, 2005) (e.g., "I feel considerable compassionate love for people from everywhere") and three items from the Humanitarianism – Egalitarianism Scale (Katz & Hass, 1988) (e.g., "A person should be concerned about the well- being of others"). Participants responded on a slider-bar scale from 0 = *Strongly disagree* to 10 = *Strongly agree*, with a higher score indicating higher levels of compassion for others.

Empathy – Emotional Contagion and Perspective Taking. We measured two components of empathy: emotional contagion and perspective taking. Emotional contagion is defined as "the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge

emotionally" (Hatfield, Cacioppo, & Rapson, 1993, p. 96). We adapted three items from the Arthur Interactive Media Study to measure emotional contagion (e.g., "When I see someone is sad, I also feel sad") (Bowers et al., 2015). Participants were asked to respond on a slider-bar scale from 0 = *Strongly disagree* to 10 = *Strongly agree*.

To index participants' empathy and perspective taking, we adapted three items from the Arthur Interactive Media Study to measure emotional contagion (e.g., "When I see someone is sad, I also feel sad") (Bowers et al., 2015), and five items from the Davis Interpersonal Reactivity Index (Davis, 1980) to measure perspective taking (e.g., "I try to look at everybody's side of a disagreement before I make a decision"). Participants were asked to respond on a slider-bar scale from 0 = *Strongly disagree* to 10 = *Strongly agree*.

Barriers to Social Justice Participation. To index barriers that may prevent participation in social justice activities, we used four items from the Social Issues Questionnaire (Miller et al., 2009). The prompt was: "We are interested in learning about the types of situations that could help or hinder your plans to engage in social justice activities. If you were to engage in social justice activities, how likely would you be to..." Participants rated on a slider-bar scale from 0 = *Not at all likely* to 10 = *Extremely likely*, situations that may hinder plans to engage in activities. Examples include, "Worry that getting involved would require too much time or energy" and "Receive negative comments or discouragement from friends and family members about your engagement in social justice activities." Higher scores on individual items indicated stronger barriers to participation in social justice activities.

Promoters of Social Justice Participation. To index promoters that may facilitate participation in social justice activities, we used five items from the Social Issues Questionnaire

(Miller et al., 2009). The prompt was: "We are interested in learning about the types of situations that could help or hinder your plans to engage in social justice activities. If you were to engage in social justice activities, how likely would you be to…" Participants rated on a slider-bar scale from 0 = *Not at all likely* to 10 = *Extremely likely*, situations that may promote engagement in activities. Examples include, "Feel that your family members support this decision" and "Have access to a mentor who could offer you advice and encouragement." Higher scores on individual items indicated stronger promoters of participation in social justice activities.

Critical Efficacy

Critical efficacy was measured by two subconstructs: individual critical efficacy and perceptions of collective critical efficacy.

Individual Critical Efficacy. To index individual critical efficacy, or the extent to which participants felt confident in their ability to engage in actions that promote justice, we used and adapted 16 items from the Social Justice Scale (Torres-Harding et al., 2012), Social Issues Questionnaire (Miller et al., 2009), and items developed by Nagda, Kim, and Truelove (2004). Example items included participants rating their confidence in their ability to "have a positive impact on others' lives" and "recognize and challenge the biases that affect my own thinking." Participants responded on a slider-bar scale from 0 = *Not at all confident* to 10 = *Extremely confident*, with higher scores indicating higher levels of individual efficacy.

Collective Critical Efficacy. To index collective critical efficacy, or the extent to which participants feel confident in societies' ability to change, we adapted three items developed by van Zomeren and colleagues (2004). For example, we asked participants, "As a country, I think we can reduce social inequality," to which participants responded on a slider-bar scale from 0 =

Not at all confident to 10 = *Extremely confident*, with higher scores indicating higher levels of collective efficacy.

Analysis Plan

First, I conducted preliminary data analyses using SPSS 28 (IBM, 2021) and examined the distributional properties, univariate outliers of each item, multivariate outliers, and bivariate relationships. The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's Test of Sphericity were conducted to test the minimal adequacy of the data for exploratory factor analysis. Additionally, I conducted a parallel analysis using R Studio (R Core Team, 2020), which informed the number of factors to retain for testing.

Next, I conducted an EFA using R Studio (R Core Team, 2020). Competing models were compared based on fit indices, factor loadings, and consistency with expectations. The factor loadings were used to inform the retention or removal of items. To be retained, an item needed to load onto a distinct factor with at least two other items, have a factor loading of at least .40, and the difference between its highest factor loading and any cross-loadings must be .15 or larger (Worthington & Whittaker, 2006). Because the missingness of data was low (i.e., no item had more than three missing scores) and data were not expected to be missing systematically, Full Information Maximum Likelihood (FIML) estimation was used (Muthén & Muthén, 1998-2012).

Analysis 1: Exploratory Factor Analysis Results

To begin exploring the factor structure of items related to critical motivation and critical efficacy, I conducted a series of EFAs. I hypothesized that an eight-factor model would fit best based on the five subconstructs chosen to represent critical motivation in addition to the two subconstructs chosen to represent critical efficacy. First, I conducted an EFA with 48 items. Seven items were removed after this initial EFA because they had factor loadings below .40,

cross-loadings above .15, and did not fit theoretically with the other factor items. I subsequently conducted another EFA with 41 items. To assess model fit, I used Hu and Bentler's (1999) guidelines for model fit indices: (1) Comparative fit index (CFI) > .95; Tucker-Lewis index (TLI) > .95; and root mean square error of approximation (RMSEA) < .06; SRMR < .08. The final model contained twelve factors, which included seven subcomponents of critical motivation and five subcomponents of critical efficacy.

Initial EFA

The first EFA included 48 items and was estimated with oblique rotation (oblimin) and Maximum Likelihood (ML) estimation. Descriptive statistics for these items, organized by hypothesized factor structures, are in Table 4. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .91. I conducted Bartlett's test of sphericity v2 (1128) = 14683.92, $p < .001$, which indicated that the correlation structure is adequate for factor analyses. Next, I conducted a parallel analysis, which indicated that a ten-factor model would fit best. Given that I hypothesized eight factors, I chose to test 8 through 12 factors in the initial EFA. This choice considered my hypothesized eight-factor model, the ten factors suggested by the parallel analysis result, and extended to twelve factors to ensure no potentially important factor structure was overlooked. This initial analysis laid the groundwork for identifying the best-fitting factor structures from which to further refine.

I tested 8 through 12 factors; model fit information from all tested models is shown in Table 5. The twelve-factor solution was the best fit for the data (RMSEA = .051, 90% CI [.047, .053]; SRMR = .02; TLI = .89). Seven items were removed because they had a factor loading below .40, cross-loadings above .15, and did not fit in theoretically with the other items in their factors. To maintain conceptual breadth, some items that did not meet the factor loading

and cross-loading criteria were retained nonetheless. For example, the compassion items were conceptually valuable because they were emotion-based items, which aligned with Freire's theories of love and hope, so they were retained despite not meeting all of the retention criteria. After the seven items were removed, I conducted another EFA with the same sample.

Final EFA

I conducted a second EFA with oblique rotation (oblimin) and Maximum Likelihood (ML) to assess the factor structure of 41 items related to critical motivation and critical efficacy. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .89. Using Bartlett's test of sphericity v2 (820) = 12754.2, p <.001, I decided that the correlation structure was adequate for factor analyses. Next, I conducted a parallel analysis, which suggested that a ten-factor model may fit best. In consideration of the hypothesized eight-factor model, the ten-factor model suggested by the parallel analysis result, and to ensure no potentially important factor structure was overlooked, I tested 8 through 12 factors in the second EFA. This second preliminary analysis helped me choose which models to examine closer for further refinement.

Next, I evaluated the global fit of each model and looked closer at the factor loadings in the best-fitting models. Model fit information from all tested models is shown in Table 5. The twelve-factor model had the best model fit (RMSEA = .054, 90% CI [.050, .058]; SRMR = .02; TLI = .897), and it provided a better model fit in comparison to the the twelve-factor model in the initial EFA (Table 6). These twelve factors were investigated further to assess whether the items grouped in ways consistent with the hypothesized factor structure and to explore any additional meaningful factor structures.

Critical Motivation Factors. Inspection of the twelve-factor model suggested that seven factors, or latent constructs, were related to critical motivation based on the items that made up

each factor (Table 6). Six of the seven factors about critical motivation were consistent with the hypothesized item structure based on previous studies: (1) *social dominance orientation* (Pratto et al., 1994); (2) *empathy – emotional contagion* (Bowers et al., 2015); (3) *empathy – perspective taking* (Davis, 1980); (4) *interpersonal promoters and barriers* (Miller et al., 2009); (5) *mentorship* (Miller et al., 2009); (6) *personal barriers* (Miller et al., 2009). The seventh factor related to critical motivation – (7) *personal ethics* – included items about advocacy and compassion (e.g., I wish to be kind and good to fellow human beings). These findings suggest that critical motivation is multi-dimensional, involving empathy, interpersonal dynamics, and ethical commitments that inspire action against social inequities.

Factors about Critical Efficacy. Inspection of the twelve-factor model suggested that five factors were related to critical efficacy based on the items they included (Table 6). The five factors relating to critical efficacy suggested that there may be more specificity to critical efficacy than just individual and collective (given that the original expectation was only two factors). I chose to name the efficacy factors as follows based on the items they included: (1) efficacy for *interpersonal change* (e.g., confidence to have a positive impact on your community), (2) efficacy for *collective well-being* (e.g., confidence to reduce social inequality as a society), (3) efficacy for *political change* (e.g., confidence to challenge discriminatory institutional policies), (4) efficacy for *personal change* (e.g., confidence to recognize and challenge own biases), and (5) efficacy to *address denigration* (e.g., confidence to refuse to participate in jokes that are derogatory to any group). These factors suggest that critical efficacy is a multifaceted construct that includes efficacy related to interpersonal impact, political engagement, personal reflection, and addressing denigration use in social justice efforts.

The twelve-factor model from the second EFA offered a well-fitting and interpretable factor structure for both critical motivation and critical efficacy. There were no items with factor loadings below .40 and cross-loadings above .15; thus, no items were removed from this model. Given that the model fit was good and no items were removed, I chose to confirm this model using a CFA.

Analysis 2: Confirmatory Factor Analysis Method

Procedure

The confirmatory factor analysis was conducted with data from the IDEAs Project, described in Analysis 1.

Participants

This analysis used the other portion of the sample that was split, with data from 800 participants used for the second analysis (CFA). Their average age was also 21 years (SD = 1.81), with ages ranging from 18 to 25. In this group, 59% (*n* = 472) identified as cisgender women and 41% (*n*=328) as cisgender men. About 37.5% (*n* = 300) were Black or African American, and 62.5% (*n* = 500) were White or European American. Most identified as heterosexual (*n* = 586; 73.3%), followed by 126 (15.8%) bisexual, 59 (7.4%) homosexual, 3 (.4%) asexual, and 122 (2.8%) with another sexual identity not listed. Just over half identified as "middle class" (*n* = 409; 51.1%), 194 (24.1%) as "working class," 109 (13.6%) as "lower-income," and 87 (10.9%) as "affluent"; these labels were provided by Prolific.

Measures

The measures used in Analysis 2 were the same as those in Analysis 1.

Analysis Plan

The best fitting factor solution from the EFA in Analysis 1 was tested using a CFA with Full Information Maximum Likelihood (FIML) estimation using R Studio (R Core Team, 2020). Competing models were compared based on fit indices, factor loadings, and consistency with expectations. Item retention criteria for factor loadings and cross-loadings were the same as in Analysis 1. I also examined modification indices to determine if any adjustments to the model were necessary, and if so, I estimated a revised model (described below).

Analysis 2: Confirmatory Factor Analysis Results

To evaluate 41 items that were intended to measure critical motivation and critical efficacy, I estimated a twelve-factor CFA using Maximum Likelihood (ML) estimation. The model fit the data well (RMSEA = .067, 90% CI [.065, .069]; SRMR = .068; CFI = .856; TLI = .835) (Table 7). The items significantly loaded onto their expected factors; however, many modification indices had values above 3.84. I considered these modifications indices to make decisions about how to re-specify the 12-factor model to improve model fit and address previously unmodeled associations and shared residual variances.

The re-specified model added cross-loadings and correlated errors. Cross-loadings included 1) an item about critical efficacy (i.e., confidence to challenge or address institutional policies that are covertly or overtly discriminatory) cross-loaded onto three factors (critical efficacy – *personal change*, critical efficacy – *interpersonal change*, and critical motivation – *personal ethics*) and 2) two items about compassion (i.e., there should be equality for everyone because we are all human and I wish to be kind and good to fellow human beings) cross-loaded onto the critical efficacy – *collective well-being* factor to better capture relationships between these items and the latent constructs. Additionally, the re-specified model included correlated error terms for four-item pairs, which suggested there was shared measurement variance that was

not accounted for in the original model. These correlated error terms also made sense from a conceptual standpoint. The correlated error terms are listed in the notes of Table 7.

The model fit improved with these modifications (RMSEA = .048, 90% CI [.046, .051]; SRMR = .044; CFI = .926; TLI = .914) compared to the model used in the initial CFA. Given that the re-specified model fit was good, the factor loadings were above .40, and there were no high cross-loadings, I chose this model as the final one. I next explored the inter-factor correlations to better understand the relationships between the identified factors related to critical motivation and critical efficacy. Then, I moved on to the measurement invariance testing.

Inter-Factor Correlations

Inter-factor correlations provided insights into the relationships among factors related to critical motivation and critical efficacy. All inter-factor correlations are shown in Tables 8 and 9. Factor correlations ranged from -.60 to .81, and all but two of the correlations were statistically significant. The critical motivation factors *perspective taking* and *personal barriers* had a non-significant correlation. Similarly, the critical motivation factors emotional contagion and personal barriers were not significantly correlated. The remainder of the factor correlations were statistically significant.

There were several strong positive correlations among factors representing critical efficacy *for personal change*, critical efficacy *for interpersonal change*, and *personal ethics* (critical motivation factor). The strongest correlation was between critical efficacy for *personal change* and critical efficacy for *personal ethics*. Similarly, critical efficacy for *interpersonal change* and critical efficacy for *personal ethics* had the second strongest correlation. Finally, the correlation between the critical efficacy constructs of critical efficacy for *personal change* and critical efficacy for *collective well-being* was also significant and strong (Table 8).

Two critical motivation factors had negative relationships with all critical efficacy factors. There was a negative correlation between *social dominance orientation* (a critical motivation factor) and each of the critical efficacy constructs; the strongest negative correlations were with critical efficacy for *personal change* and critical efficacy for *collective well-being*. Additionally, there were negative associations between *personal barriers* (a critical motivation factor) and each of the critical efficacy factors; the strongest negative correlation was with critical efficacy for *interpersonal change and for political change*.

Analysis 3: Measurement Invariance Testing Method

Procedure

Measurement invariance testing was conducted using data from the IDEAs Project. These are the same data that were used in Analyses 1 and 2.

Participants

The participants from Analysis 2 were categorized based on two different criteria: gender and racial identification. In terms of gender identification, there were 821 cisgender women (55.7%) and 479 cisgender men (32.2%). For racial identification, 300 participants (37.5%) identified as Black or African American and 500 participants (62.5%) identified as White or European American. For the third set of measurement invariance testing, there were 255 Black women (53%) and 222 White women (47%).

Analysis Plan

Measurement invariance was tested to assess if the measurement model properties were similar for different groups of participants, which is necessary to be able to make group comparisons (although group comparisons were not the focus of this thesis). I assessed the

measurement invariance separately across gender groups (i.e., Cis-Women or Cis-Men) and ethnic-racial groups (i.e., Black or African American and White or European American) and finally between Black or African American and White or European American specifically among the group of cisgender women. Testing for measurement invariance involved examining four levels of invariance—configural, metric, scalar, and strict—by adding successive constraints to the same multigroup CFA (Vandenberg & Lance, 2000; van de Schoot et al., 2012). These models were estimated using R Studio (R Core Team, 2020). The process of examining four levels of invariance was repeated to compare three sets of groups: 1) cisgender women and cisgender men, 2) Black- and White- identifying individuals, and 3) cisgender Black women and cisgender White women.

I followed the same procedure for each set of measurement invariance tests. First, I tested for configural invariance by estimating a multigroup CFA. Model fit was assessed using the same guidelines as Analyses 1 and 2. The establishment of configural invariance indicated that the same structure of items loading onto factors fit well for different groups. Next, I tested for metric invariance, which involved constraining the model so that corresponding factor loadings (i.e., of the same item between groups) were equalized. Metric invariance was established if $\Delta CFI \leq |.01|$ and suggested that associations between items and latent variables were equal between groups (Cheung & Rensvold, 2002; Vandenberg & Lance, 2000). After metric invariance was established, I tested for scalar invariance, which involved constraining the model further so that corresponding measurement intercepts were equalized. If the intercepts can be equated across groups, it means that individuals from different groups (e.g., cisgender men and women or Black- and White-identifying individuals) who have the same level of the latent

construct (such as critical motivation or critical efficacy) will have equivalent expected responses on the items. In other words, it ensures that any observed differences in item responses reflect true differences in the underlying construct, rather than being influenced by systematic bias or differences in how groups respond to the items. Finally, after scalar invariance was established, I tested for strict invariance, which involves constraining the corresponding measurement residuals**.** The establishment of strict invariance suggested that the error variances of the items were consistent across groups. In summary, establishing configural through strict invariance demonstrated that the measurement model functions equivalently across different groups, thereby enhancing the robustness of subsequent interpretations regarding group differences in mean levels of the constructs.

Analysis 3: Measurement Invariance Testing Results

Measurement Invariance Test by Gender Identification

Table 10 shows the model fit information from the tests of measurement invariance between cis-gender men and cis-gender women. Four multigroup CFAs were analyzed: 1) an initial multigroup CFA to establish configural invariance; 2) a second model with constrained factor loadings to establish metric invariance; 3) a third model with constrained intercepts to establish scalar invariance; and 4) a fourth model with constrained residuals to establish strict invariance. All four models demonstrated good model fit, and the change in CFI values when comparing each model was < .01 (Table 10). Following Cheung and Rensvold's (2002) guideline that $\Delta CFI \leq |.01|$ indicates that the null hypothesis (i.e., invariance between two models) should not be rejected, configural, metric, scalar, and strict invariance between cisgender women and cisgender men appeared to reasonable for these items representing critical motivation and critical efficacy.

Measurement Invariance Test by Racial Identification

Table 11 shows the model fit information from the tests of measurement invariance between Black or African-American-identifying participants and White or European American identifying participants. The model fit of each of the tested models was good, and the change in CFI values when comparing each model was < .01 (Table 9). Therefore, these items about critical motivation and critical efficacy were considered to have configural, metric, scalar, and strict measurement invariance between Black- and White-identifying young adults.

Measurement Invariance Test by Gender and Racial Identification

Table 12 shows the model fit information from the tests of measurement invariance between Black or African-American-identifying cisgender women and White or European American identifying cisgender women. The models for the first three tested models (i.e., configural, metric, scalar) were good, and the change in CFI values when comparing each model was < .01 (Table 12). However, the change in CFI from the scalar model to the strict model was 0.012. Thus, strict invariance was not established. Therefore, these items about critical motivation and critical efficacy were considered to have through scalar measurement invariance between Black- and White-identifying cisgender women.

Discussion

This study aimed to facilitate a clearer understanding of the similarities and differences between motivation and efficacy within the Critical Consciousness framework. To distinguish between critical motivation and critical efficacy, I explored and confirmed the factor structures of items related to these constructs across different racial and gender groups of young adults in the United States. The best-fitting model contained more factors for both critical motivation and critical efficacy than were initially hypothesized based on the sets of items that were included,

which suggested that these constructs may be multifaceted with nuanced subcomponents. The factor analyses identified subcomponents related to motivation that included empathy, social connectedness, and contextual influences—such as relational support and barriers to social justice participation—along with internal values and ethical considerations. In addition, the results related to critical efficacy suggest that it may be specific to who initiates the change, who benefits from it, and the type of change being pursued. The factors were correlated, which suggested that these factors about critical motivation and critical efficacy are related to one another but should not be conflated (Table 7). Measurement invariance testing showed that configural, metric, scalar, and strict invariance were established across gender groups (cis-women and cis-men) and race groups (Black- and White-identifying young adults). Scalar invariance was established between race groups among cisgender women. These findings shed light on the domain specificity of components of critical motivation and critical efficacy, and the relationship between these components.

Dimensions of Critical Motivation and Critical Efficacy

Critical Motivation

I originally hypothesized six factors related to critical motivation, but a model with seven factors provided the best fit to the data. To understand the seven factors related to critical motivation, I turned to definitions of motivation from CC (i.e., the desires and commitments to create critical change) and self-determination theory (i.e., the needs, desires, and reasons underlying goal pursuit) (Diemer et al., 2020; Ryan, 2019).

Empathy. Factors about empathy (i.e., *perspective taking and emotional contagion)* were hypothesized, confirmed, and aligned with Freire's ideas of love and hope as critical motivators. These items, which emphasized connection with and concern for others, reflected Freire's view

of love and hope as driving forces within CC. However, the items were not necessarily critical (e.g., "I believe there are two sides to every question and try to look at them both") and not necessarily reflective of an individual's desires or commitments to make *critical* change. Thus, empathy may or may not necessarily be a component of critical motivation specifically, but rather a facilitator of critical motivation (in other words, skills in perspective taking and emotional contagion may enable individuals to increase their critical motivation by fostering a deeper understanding of marginalized experiences, and enhancing emotional investment). However, that cannot be determined through the analyses conducted as part of this thesis but must be addressed in future research by including empathy as part of larger studies of critical action. By emphasizing interpersonal connection and emotional engagement, these factors also reflect broader theoretical frameworks in CC and other fields that highlight the role of relational and affective dimensions in motivating action against oppression.

The compassion items were conceptually valuable because they were emotion-based items, which aligned with Freire's theories of love and hope. Four items about *compassion* were flagged for their low factor loadings and high cross-loadings, but two of them were retained to maintain conceptual breadth. The items that were removed were either worded vaguely (i.e., "I spend a lot of time concerned about the well-being of humankind") or referenced compassion too directly (i.e., "I feel compassion for people everywhere."), in which case participants may respond according to social expectations rather than their actual feelings. The two items that were retained presented more nuanced conceptions of compassion (e.g., "I wish to be kind and good to fellow human beings"). It was important to keep items about compassion because compassion was conceptually similar to hope and love in that they stem from positive emotions and may motivate social action. Given that four items about compassion were flagged but they

were theoretically important, future research may test additional compassion items that may be worded more clearly and in a way that is more connected to a critical orientation. Some possible new items to test include: “I feel deep concern for others when they face injustice,” and “I feel a strong desire to alleviate the suffering of others”. Additionally, these new items reflect more critical aspects of compassion, which the tested compassion items lack.

In the evaluation of emotional contagion items, there was one item removed: “When I see somehow is happy, I also feel happy.” As it was the only positive phrased item, its removal left the factor with only items about negative emotional contagion. (e.g., “When I see someone is sad, I also feel sad”). These are not necessarily the opposite of happy emotional contagion and thus may be the reason the one positively phrased item did not meet the item retention criteria. For this reason, the item about happy emotional contagion was removed after the initial EFA. Happy contagion may be a part of critical motivation, but this subconstruct needs to be tested with more items about various emotional contagions. Possible new items include: “When I see someone experiencing joy, I feel joy too,” “Seeing others celebrate makes me feel a sense of happiness,” “When someone expresses excitement, I feel excited as well,” and, “When I see someone is nervous, I also feel nervous.” Including such items could provide a more balanced understanding of how both positive and negative emotional contagion contribute to critical motivation. Given that empathy was a positive correlate of critical motivation and critical efficacy, for empathy to be considered a subconstruct of these constructs, the items would need to be written in a more critical way. Alternatively, if the items cannot be made more critical, empathy should be viewed as a correlate rather than a subconstruct.

Social Connectedness and Contextual Barriers. Factors about relational and contextual influences for engaging in social justice activities (i.e., *interpersonal promoters and barriers of social justice participation, mentorship, personal barriers of social justice participation*) functioned as intended and the content of these items (i.e., social connectedness and external circumstances) aligned with theoretical understandings of critical motivation (Miller et al., 2009). Perceived supportive interactions, such as family encouragement or mentorship, may foster a sense of connectedness that facilitates participation in social justice activities; in contrast, perceived barriers, such as discouragement from important others or concerns about time and social fit, may hinder participation. These relationship factors are consistent with Miller et al. (2009), who investigated the role of barriers and promoters of social justice participation.

Further clarification regarding the aspects of critical motivation that may be represented by these items comes from viewing these items within the types of motivation hypothesized by Self Determination Theory (Ryan & Deci, 2000). Each of the items in the identified factors aligned with Ryan & Deci's (2000) definition of extrinsic motivation, or motivation that stems from factors that are external to the task or activity. More specifically, Ryan & Deci (2000) defined extrinsic motivation as a function of external regulation (i.e., motivated by external contingencies such as anticipated rewards or punishments controlled by other people) and identified/integrated regulation (i.e., behavior motivated by the value a person places on an associated with an activity or by the desire to be self-congruent). For example, one item stated, "if you were to engage in social justice activities, how likely would you be to feel pressure from parents or other important people to change your mind regarding your decision to engage in social justice activities)," and this item reflects externally regulated extrinsic motivation because it describes behaviors guided by anticipated punishments by other people. Another item, "If you

were to engage in social justice activities, how likely would you be to feel that there are people "like you" engaged in the same activities," reflects identified/integrated extrinsic motivation because it reflects a behavior to be self- congruent. Furthermore, these factors suggest that perceived social connectedness and contextual barriers are important to critical extrinsic motivation and play a role in whether or not a person would act against oppression and in favor of social justice. While this study does not explicitly define critical extrinsic motivation as a distinct construct, these items may serve as a starting point for integrating Self Determination Theory and CC in conceptualizing motivation.

Internal and Ethical Factors. The factor analysis also identified subscales related to internal and ethical factors (i.e., *personal barriers, personal ethics, social dominance orientation*), which suggested that the items about personal challenges and values functioned as expected. Like the social connectedness and contextual barriers factors, these sets of items included information about values and barriers to action; However, they differ in that these factors included items about to the individual rather than interpersonal. The *social dominance orientation* factor, which represented attitudes toward social hierarchy and power dynamics developed by Pratto et al. (1994), aligned with Ryan's (2019) definition of motivation, more specifically reasons underlying goal pursuit. The items in the personal barriers factor aligned with definitions of extrinsic motivation (e.g., "If you were to engage in social justice activities, how likely would you be to worry that getting involved would require too much time or energy"). These findings suggested that individual beliefs and perceived personal obstacles may be components of motivation to disrupt and challenge systems of oppression.

The items in the *personal ethics* factor were different from the others because they did not align with definitions of motivation. Two of the items were hypothesized to be individual

critical efficacy and the third item was about compassion. After closer examination, I concluded that this factor was not a direct component of critical motivation or critical efficacy. Overall, these findings highlight the complexity of critical motivation, suggesting that it encompasses both internal and external influences, including empathy, social connectedness, contextual barriers, and personal values aligning with definitions of motivation through CC and Self Determination Theory.

Critical Efficacy

The results regarding critical efficacy point to it as a multidimensional construct that was more complex than originally hypothesized, wherein there were different factors specific to who initiates the change, who benefits from it, and the type of change being pursued. Whereas previous work framed the two dimensions of individual and collective efficacy as a person's confidence to create social change, either individually or collectively (e.g., Watts et al., 2011), my analyses identified additional subcomponents. Specifically, the *interpersonal* and *collective well-being* factors shifted the focus from who initiates the change to who receives the change. In other words, critical efficacy may be specific to the *initiator* of change (i.e., the individual), the *recipient* of change (i.e., personal or collective), and the *type* of critical change (e.g., political, denigrating messages).

Efficacy for change in self. The *personal change* factor involved self-efficacy in recognizing and addressing one's own biases and obstacles, and it was consistent with (but more specific than) previous research on individual self-efficacy (e.g., Baker & Brookins, 2014). In this case, the individual is both the initiator and recipient of change because the individual is challenging their own biases. To further understand if critical efficacy is specific to the initiator of change, future researchers should test similar items related to collective critical efficacy,

which could focus on broader social or group efforts to challenge individual biases (e.g., "I feel confident in working with others to address biases in our community").

Efficacy for Change in Society or Others. The *interpersonal and collective well-being* factors represented individual confidence to make interpersonal and collective critical change. The identification of these factors suggests that critical efficacy may be sensitive to the recipient of change being addressed because change in self was a separate factor from change in society and others. For example, interpersonal change focused on an individual's ability to influence their immediate social circles, such as peers, friends, or family, and their confidence in promoting social justice within these relationships. The collective well-being factor emphasized the belief in one's capacity to contribute to larger societal movements or structural changes, such as reducing social inequality or challenging discriminatory policies. In these cases, the people who benefitted from the critical action were collective. These factors suggested that an individual's critical efficacy may be affected by the scope and scale of the change they are working to affect, whether it is at a personal level, within their community, or on a larger societal scale.

Type of Change. Other factors addressed the various types of critical change that can be done (e.g., political change and addressing denigration). The *political change* factor represented confidence in engaging with institutional policies and challenging systemic discrimination, which suggested that the capacity to address structural issues is an aspect of critical efficacy. The *addressing denigration* factor captured the confidence to effectively challenge language that demeans individuals or groups and reinforces stereotypes or social hierarchies. This factor suggested that communication skills are an essential consideration for critical efficacy. Taken together, the results pointed to critical efficacy as a multidimensional construct that may be

domain specific to the *initiator* of change (i.e., the individual), the *recipient* of change (i.e., personal or collective), and the *type* of critical change (e.g., political, denigrating messages).

There were other factors where several items were removed for not meeting retention criteria or for inconsistent wording with other items in their respective factors. These included a perspective-taking item ("I try to understand my friends better by imagining how things look from their perspective"), a promoter of social justice participation item ("Feel that there are people 'like you' engaged in the same activities"), an individual critical efficacy item ("Call, write, or in some way protest when a book, newspaper, television show, etc. perpetuates or reinforces a bias or prejudice"), and a collective critical efficacy item ("It is possible to reduce social inequality as an individual"). These items were removed to improve the precision of the measurement model. However, one individual critical efficacy item, "Recognize and challenge the biases that affect your own thinking," was flagged but retained for its conceptual importance. This item emphasized self-awareness within critical efficacy and addressed an aspect that was not addressed by other items, despite some ambiguity in its loading pattern.

Enhancers and Inhibitors of Critical Motivation and Critical Efficacy

Positive Correlates of Critical Motivation and Critical Efficacy. Positive inter-factor correlations suggested that certain subconstructs of critical motivation and critical efficacy are correlated with individuals' motivations and perceived capacities for change. For example, several strong positive correlations among factors representing *personal change*, *interpersonal change*, and *personal ethics* suggested that individuals with more critical ethical values had greater perceived ability to effect personal and interpersonal change. Similarly, the significant positive correlation between *personal change* and *collective well-being* suggested that personal growth and self-improvement may be related to an individual's sense of responsibility and ability

to contribute to collective social change. Overall, the positive inter-factor correlations suggested that the subconstructs of critical motivation and critical efficacy were distinct constructs, given that the correlations were not equal to one. In addition, the identified factor structure shed light on factors that may not be components of critical motivation and critical efficacy, but rather positive correlates of them. These findings indicate that ethical considerations, along with personal and interpersonal growth, are positively correlated with critical motivation and critical efficacy and may be considered by future researchers when measuring these constructs.

Negative Correlates of Critical Motivation and Critical Efficacy. Negative inter-factor correlations highlighted factors that were negatively associated with critical motivation and critical efficacy. For example, negative correlations between factors suggested that higher levels of social dominance orientation were correlated with lower critical efficacy levels, indicating that certain beliefs or attitudes, such as social dominance orientation, may hinder the development of critical motivation and efficacy for social change. Additionally, the negative associations between *personal barriers* (a critical motivation construct) and critical efficacy factors such as *addressing denigration*, suggested that people with more perceived barriers had lower perceived capacity to critically challenge derogatory messages. In other words, individuals who perceived more barriers to social justice participation had lower critical efficacy to challenge denigration. These findings emphasize the need to address personal barriers and reduce social dominance orientation to foster critical motivation and critical efficacy. Future researchers may look at social dominance orientation and perceived personal barriers as negative correlates of critical motivation and critical efficacy.

Overall, the findings suggested that critical motivation and critical efficacy concepts include multiple subconstructs that are interrelated yet distinct. Positive relationships between

ethical considerations, personal change, and interpersonal change suggested that these constructs were positively associated with critical motivation and critical efficacy. The item wording of factors like *empathy* and *personal barriers* suggest they may be augment critical motivation. Negative relationships with social dominance orientation and perceived personal barriers highlighted factors may be related to lower levels of critical motivation and critical efficacy. However, these relationships do not imply causation, and further research is needed to explore the mechanisms through which these factors influence critical motivation and critical efficacy.

Measurement Invariance Testing

The twelve-factor model demonstrated strict (residual) invariance between gender groups (cisgender women and cisgender men) and race groups (Black- and White-identifying young adults). When comparing race groups within gender groups (Black- and White-identifying women), the model demonstrated partial strict invariance. These findings suggested that future research using these items to measure critical motivation and critical efficacy may reliably attribute group differences in scores to actual differences in the latent variable, rather than differences in the psychometric properties of the measure, if they are comparing cisgender men and women or Black-and White identifying young adults. However, when adding a layer of intersectionality to the group comparison, the model demonstrated partial strict invariance, which suggested that residual variances were not equal across groups. This pattern suggested that although the constructs are measured similarly, there may be group-specific differences in how participants responded to the items due to factors not captured by the model (e.g., Black women's unique experiences with systemic racism and gender discrimination). These findings are limited to the groups that were tested (Black- and White-identifying cisgender men and cisgender women), and similar levels of measurement invariance may not be established if other

social group memberships (e.g., sexual orientation, socioeconomic status) were included. Future research should test measurement invariance across groups with other sociodemographic characteristics not examined in this study such as additional racial identification groups or transgender- and genderqueer people.

Limitations and Recommendations for Future Research

Although this thesis contributed to CC literature and highlighted novel similarities and differences between critical motivation and critical efficacy, several limitations to this study should be acknowledged. First, additional testing needs to be done to understand critical motivation and critical efficacy, as well as how they may relate to critical reflection and action. Next, the sample was limited to Black and White-identifying young adults, which have implications for the generalizability of this study. In addition, this measurement model may be specific to the systems of oppression at the time of data collection in 2020. Finally, additional testing may be done to assess how these items function at different levels of critical motivation and critical efficacy.

It was found that potential subconstructs of critical motivation and critical efficacy are related but distinct constructs, but there is still a need to 1) assess the content validity of the model and whether we can say these subconstructs are truly subcomponents of critical motivation and critical efficacy and 2) how these constructs may link reflection with action. This study focused solely on exploring items related to critical motivation and critical efficacy to determine their similarities and differences, which leaves open the question of how these constructs interact with other components of the critical consciousness framework, such as critical reflection and critical action. Understanding these relationships is crucial, as they may provide context on the roles that motivation and efficacy play in driving people from reflection

to social action. Future research should investigate whether these subconstructs of critical motivation and critical efficacy act as mediators in the process of moving from critical reflection to critical action. This future work could suggest constructs that may enhance critical social justice participation.

Another limitation of this study is that the sample was limited to only Black- and White-identifying young adults. This sampling strategy was used to have racial subgroup sizes that were large enough to be able to detect within-group differences; however, it came at the cost of lack of diversity in the sample. Therefore, the generalizability is limited to Black- and White-identifying young adults. Additionally, this limitation restricted the ability to conduct measurement invariance testing across more racial groups. The small group sizes for genderqueer and transgender participants limited measurement invariance testing across more gender groups than just cisgender women and cisgender men. Future research should test critical motivation and critical efficacy items with a sample of participants with other racial identities and ages and continue to explore how these items work for different groups of people.

This measurement model may be temporally or historically bound in that it's specific to the nature of the marginalization happening at a given point in time. Data collection for this study took place during a period marked by heightened political polarization (2020 national election), the rise of social movements (e.g., Black Lives Matter and Stop Asian Hate), and the ongoing global COVID-19 pandemic. The events during this period likely influenced participants' perspectives on CC as well as their motivation and efficacy to act against oppression. Thus, it is likely this factor structure is at least partially specific to the sociopolitical contexts in which the data were collected. For example, measures of racism were less nuanced 30 years ago than now because explicit racism was more acceptable in U.S. society at the time.

Subsequently if those same items were used today, the wording of the questions may not necessarily capture nuances in systemic racism (e.g., Modern Racism Scale; McConahay, 1986). However, there may be aspects of factor structures that remain relevant across time because systemic oppression will not be gone in 20 years. Future researchers may need to reword items to make them more nuanced as the larger sociopolitical contexts change.

Additional psychometric testing may be done to evaluate how these items function across different levels of the constructs, especially for the flagged and removed items that were discussed in the item-level discussion. There was variation in the scores – scores were generally high for items about compassion and empathy, but not for barriers to social justice participation. Item Response Theory (IRT) methods could be used to assess the extent to which items provide useful information across low, average, and high levels of critical motivation and critical efficacy. Such analyses may help identify whether certain items are more effective at measuring these constructs in specific subgroups or levels of traits, potentially offering information valuable for the creation of new items to represent subconstructs of critical motivation and critical efficacy.

Finally, it is important to note that four of the twelve factors in the final model only had two items in them (i.e., denigration, emotional contagion, mentorship, and personal barriers), which is below the ideal of three items for reliable parameter estimates (Marsh et al., 1998). Despite this limitation, these factors were retained for their conceptual importance because otherwise those factors (which were conceptually important) would have been eliminated entirely. Future research should test develop and test additional items to better represent these subconstructs. For efficacy to confront denigration, possible new items include “How confident are you in your ability to model inclusive language with friends and family” and “to correct

harmful stereotypes when they are shared in conversations", which would shed light on whether the factor is really about denigration. For emotional contagion, possible items were discussed previously. For the mentorship factor, future research may test additional items including, "If you were to engage in social justice activities, how likely would you be to seek advice from a trusted individual about balancing social justice responsibilities" and "have access to encouragement to persist despite setbacks." Finally, for the personal barriers factor, some new items to test are, "If you were to engage in social justice activities, how likely would you be to worry about financial costs associated with participating in social justice activities" and "feel uncertain about whether your identity will be accepted in activist spaces." Testing these additional items would enhance the comprehensiveness and reliability of the measurement model, providing a more accurate representation of critical motivation and critical efficacy.

Conclusion

In this thesis, I evaluated 48 items that were hypothesized to represent critical motivation and critical efficacy to distinguish between these two constructs. Through the evaluation of two EFAs and two CFAs, I found evidence supporting that critical motivation and critical efficacy are both multifaceted constructs, that are related to each other but not the same. There were seven subscales for critical motivation: (1) *perspective taking,* (2) *emotional contagion,* (3) *interpersonal promoters and barriers,* (4) *mentorship,* (5) *personal barriers,* (6) *social dominance orientation, and* (7) *personal ethics*. There were five subscales for critical efficacy: (1) critical efficacy for *interpersonal change*, (2) critical efficacy for promoting *collective well-being*, (3) critical efficacy for for *political change*, (4) critical efficacy for for *personal change*, and (5) critical efficacy to *address denigration*. Through measurement invariance testing, I found evidence suggesting measurement invariance across gender and racial groups. Although more

work with these items must be done before they are usable measures of critical motivation and critical efficacy, these analyses represent an incremental step in the operationalization of these constructs within the CC framework. By understanding the roles of critical motivation and critical efficacy, we may empower individuals to actively challenge and dismantle oppressive systems, fostering transformative change and encouraging people to advocate for equity in their communities.

References

Baker, A. M., & Brookins, C. C. (2014). Toward the development of a measure of sociopolitical consciousness: Listening to the voices of Salvadoran youth. *Journal of Community Psychology, 42*(8), 1015–1032. https://doi.org/10.1002/jcop.21668

Berg, M., Coman, E., & Schensul, J. J. (2009). Youth action research for prevention: A multi-level intervention designed to increase efficacy and empowerment among urban youth. *American Journal of Community Psychology*, *43*, 345-359. https://doi.org/10.1007/s10464-009-9231-2

Burson, E., Godfrey, E. B., Brown, R. M., & Ibrahim, D. A. (2023). Making Reflection Critical: Structural and Historical Attributions for Inequity.

Bowers, E. P., Hilliard, L. J., Batanova, M., Stacey, D. C., Tirrell, J. M., Wartella, K., & Lerner, R. M. (2015). The Arthur Interactive Media Study: Initial Findings From a Cross-Age Peer Mentoring and Digital Media-Based Character Development Program. *Journal of Youth Development*, *10*(3), 46–63. https://doi.org/10.5195/jyd.2015.7

Causadias, J. M., & Umaña-Taylor, A. J. (2018). Reframing marginalization and youth development: Introduction to the special issue. *American Psychologist, 73*(6), 707–712. https://doi.org/10.1037/amp0000336

Chan, R. C. (2023). Development and validation of the Critical Reflection Scale for youth in China: Factor structure and measurement invariance across age, gender, and sexual orientation. *Applied Developmental Science*, *27*(3), 238-250. https://doi.org/10.1080/10888691.2022.2059481

Chavous, T. M., Bernat, D. H., Schmeelk-Cone, K., Caldwell, C. H., Kohn-Wood, L., & Zimmerman, M. A. (2003). Racial identity and academic attainment among African–

American adolescents. *Child Development, 74*(4), 1076–1090. https://doi.org/10.1111/1467-8624.00593.

Cohen, C. J. (2010). *Democracy remixed: Black youth and the future of American politics*. Oxford University Press.

Collective, T.C.R. (2014). A Black Feminist Statement. *WSQ: Women's Studies Quarterly 42*(3), 271-280. https://doi.org/10.1353/wsq.2014.0052

Crenshaw, K. (2013). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. In *Feminist legal theories* (pp. 23-51). Routledge.

Christens, B. D., & Dolan, T. (2011). Interweaving youth development, community development, and social change through youth organizing. *Youth & Society, 43*(2), 528–548. https://doi.org/10.1177/0044118X10383647

Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *Catalog of Selected Documents in Psychology*, *10*(85).

Delia, J., & Krasny, M. E. (2018). Cultivating positive youth development, critical consciousness, and authentic care in urban environmental education. *Frontiers in Psychology*, *8*, 1-14. https://doi.org/10.3389/fpsyg.2017.02340

Denise, E. J. (2012). Multiple forms of perceived discrimination and health among adolescents and young adults. *Journal of health and social behavior*, *53*(2), 199-214. https://doi.org/10.1177/0022146512444289

Diemer, M. A. (2020). Pushing the envelope: The who, what, when, and why of critical consciousness. *Journal of applied developmental psychology*, *70*, 101192. https://doi.org/10.1016/j.appdev.2020.101192

Diemer, M. A., & Blustein, D. L. (2006). Critical consciousness and career development among urban youth. *Journal of Vocational Behavior*, *68*(2), 220–232. https://doi.org/10.1016/j.jvb.2005.07.001

Diemer, M. A., Frisby, M. B., Pinedo, A., Bardelli, E., Elliot, E., Harris, E., ... & Voight, A. M. (2022). Development of the short critical consciousness scale (ShoCCS). *Applied developmental science*, *26*(3), 409-425. https://doi.org/10.1080/10888691.2020.1834394

Diemer, M., & Hsieh, C. (2008). Sociopolitical development and vocational expectations among lower socioeconomic status adolescents of color. *The Career Development Quarterly*, *56*(3), 257–267. https://doi.org/10.1002/j.2161-0045.2008.tb00040.x

Diemer, M., Kauffman, A., Koenig, N., Trahan, E., & Hsieh, C.-A. (2006). Challenging racism, sexism, and social injustice: Support for urban adolescents' critical consciousness development. *Cultural Diversity & Ethnic Minority Psychology*, *12*, 444–460. https://doi.org/10.1037/1099-9809.12.3.444

Diemer, M. A., McWhirter, E. H., Ozer, E. J., & Rapa, L. J. (2015). Advances in the conceptualization and measurement of critical consciousness. The Urban Review, 47, 809-823. https://doi.org/10.1007/s11256-015-0336-7

Diemer, M. A., & Rapa, L. J. (2016). Unraveling the complexity of critical consciousness, political efficacy, and political action among marginalized adolescents. Child development, 87(1), 221-238. https://doi.org/10.1111/cdev.12446

Diemer, M. A., Rapa, L. J., Park, C. J., & Perry, J. C. (2017). Development and validation of the critical consciousness scale. *Youth & Society*, *49*(4), 461-483. https://doi.org/10.1177/0044118X14538289

Else-Quest, N. M., & Hyde, J. S. (2016). Intersectionality in quantitative psychological research: II. Methods and techniques. *Psychology of Women Quarterly*, *40*(3), 319-336. https://doi.org/10.1177/0361684316647953

Freire, P. (1973). *Education for critical consciousness*. Bloomsbury Publishing.

Freire, P. (2014). *Pedagogy of Hope*. Bloomsbury Academic.

Flanagan, C. A. (2013). *Teenage citizens: The political theories of the young*. Harvard University Press.

Gee, M. N. (2022). *Testing the Psychometric Properties of the Critical Reflection on Sexism Scale (CROSS) Among Young Adults in the US* [Master's thesis]. Tufts University.

Ginwright, S., & Cammarota, J. (2007). Youth activism in the urban community: Learning critical civic praxis within community organizations. *International Journal of Qualitative Studies in Education, 20*(6), 693–710. https://doi.org/10.1080/09518390701630833

Ginwright, S., & James, T. (2002). From assets to agents of change: Social justice, organizing, and youth development. In B. Kirshner, J. L. O'Donoghue, & M. McLaughlin (Eds.), *Youth participation: Improving institutions and communities* (pp. 27–46). Jossey-Bass.

Hope, E. C., Keels, M., & Durkee, M. I. (2016). Participation in Black Lives Matter and deferred action for childhood arrivals: Modern activism among Black and Latino college students. *Journal of Diversity in Higher Education*, *9*, 203–215. https://psycnet.apa.org/doi/10.1037/dhe0000032

Huynh, V. W. (2012). Ethnic microaggressions and the depressive and somatic symptoms of Latino and Asian American adolescents. *Journal of youth and adolescence*, *41*, 831-846. https://doi.org/10.1007/s10964-012-9756-9

Jemal, A. (2017). Critical consciousness: A critique and critical analysis of the literature. *The Urban Review, 49*(4), 602–626. https://doi.org/10.1007/s11256-017-0411-3.

Johnson, S., Gee, M., Diaz, A., Herschberg, R. (2023). Measurement and analysis in quantitative critical consciousness research: Attending to the complexities of systems and selves. In Rapa, L., & Godfrey, E. (Eds.). (2023). *Critical Consciousness: Expanding Theory and Measurement (pp. 14-19)*. Cambridge University Press. https://doi.org/10.1017/9781009153751

Katz, I., & Hass, R. G. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology*, *55*(6), 893–905. https://doi.org/10.1037/0022-3514.55.6.893

Kiang, L., Christophe, N. K., & Stein, G. L. (2021). Differentiating pathways between ethnic-racial identity and critical consciousness. Journal of youth and adolescence, 50(7), 1369-1383. https://doi.org/10.1007/s10964-021-01453-9

Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford publications.

Knight, G. P., Roosa, M. W., & Umaña-Taylor, A. J. (2009). Measurement and measurement equivalence issues. *Studying Ethnic Minority and Economically Disadvantages Populations. American Psychological Association*, 29-78. https://psycnet.apa.org/doi/10.1037/11887-004

Leath, S., & Chavous, T. (2017). "We really protested": The influence of sociopolitical beliefs, political self-efficacy, and campus racial climate on civic engagement among Black

college students attending predominantly White institutions. *The Journal of Negro Education, 86*(3), 220–237. https://doi.org/10.7709/jnegroeducation.86.3.0220

Luginbuhl, P. J., McWhirter, E. H., & McWhirter, B. T. (2016). Sociopolitical development, autonomous motivation, and education outcomes: Implications for low-income Latina/o adolescents. Journal of Latina/o Psychology, *4*(1), 43–59. https://doi.org/10.1037/lat0000041

Miller, M. J., Sendrowitz, K., Connacher, C., Blanco, S., de la Peña, C. M., Bernardi, S., & Morere, L. (2009). College students' social justice interest and commitment: A social-cognitive perspective. *Journal of Counseling Psychology*, *56*(4), 495–507. https://doi.org/10.1037/a0017220

Maker Castro, E., Wray-Lake, L., & Cohen, A. K. (2022). Critical consciousness and wellbeing in adolescents and young adults: A systematic review. *Adolescent Research Review*, *7*(4), 499-522. https://doi.org/10.1007/s40894-022-00188-3

Mathews, C. J., Medina, M. A., Bañales, J., Pinetta, B. J., Marchand, A. D., Agi, A. C., ... & Rivas-Drake, D. (2020). Mapping the intersections of adolescents' ethnic-racial identity and critical consciousness. *Adolescent Research Review*, *5*, 363-379. https://doi.org/10.1007/s40894-019-00122-0

McConahay, J. B. (1986). Modern racism, ambivalence, and the modern racism scale. In J. F. Dovidio & S. L. Gaertner (Eds.), Prejudice, discrimination, and racism (pp. 91–125). *Academic Press*.

McWhirter, E. H., & McWhirter, B. T. (2016). Critical consciousness and vocational development among Latina/o high school youth: Initial development and testing of a

measure. *Journal of Career Assessment, 24*(3), 543–558. https://doi.org/10.1177/1069072715599535

Morrell, M. E. (2005). Deliberation, democratic decision-making and internal political efficacy. *Political Behavior*, *27*, 49-69. https://doi.org/10.1007/s11109-005-3076-7

Muthén, L. K., & Muthén, B. O. (1998-2012). MPlus user's guide (7th ed.). Los Angeles, CA: Muthén & Muthén.

Nagda, B. (Ratnesh) A., Kim, C., & Truelove, Y. (2004). Learning about difference, learning with others, learning to transgress. *Journal of Social Issues*, *60*(1), 195–214. https://doi.org/10.1111/j.0022-4537.2004.00106

Niemi, R. G., Craig, S. C., & Mattei, F. (1991). Measuring internal political efficacy in the 1988 National Election Study. *American Political Science Review*, *85*(4), 1407-1413. https://doi.org/10.2307/1963953

Phinney, J. (2003). Ethnic identity and acculturation. In K. Chun, P. Organista & G. Marin (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 63–81). *American Psychological Association*.

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, *67*(4), 741–763. https://doi.org/10.1037/0022-3514.67.4.741

Rapa, L. J., Bolding, C. W., & Jamil, F. M. (2020). Development and initial validation of the short critical consciousness scale (CCS-S). *Journal of Applied Developmental Psychology*, *70*, 101164. https://doi.org/10.1016/j.appdev.2020.101164

R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Ryan, R. M. (2019). Inside the black box: Motivational science in the 21st century. In R. M. Ryan (Ed.), *The Oxford Handbook of Human Motivation* (pp. 1-9). Oxford, UK: Oxford University Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78. https://psycnet.apa.org/doi/10.1037/0003-066X.55.1.68

Schmitt, N., & Kuljanin, G. (2008). Measurement invariance: Review of practice and implications. *Human resource management review*, *18*(4), 210-222. https://doi.org/10.1016/j.hrmr.2008.03.003

Seider, S., Clark, S., & Graves, D. (2020). The development of critical consciousness and its relation to academic achievement in adolescents of color. *Child Development*, *91*(2), 451–474. https://doi.org/10.1111/cdev.13262

Shin, R. Q., Ezeofor, I., Smith, L. C., Welch, J. C., & Goodrich, K. M. (2016). The development and validation of the Contemporary Critical Consciousness Measure. *Journal of counseling psychology*, *63*(2), 210. https://psycnet.apa.org/doi/10.1037/cou0000137

Shin, R. Q., Smith, L. C., Lu, Y., Welch, J. C., Sharma, R., Vernay, C. N., & Yee, S. (2018). The development and validation of the contemporary critical consciousness measure II. *Journal of Counseling Psychology*, *65*(5), 539–555. https://doi.org/10.1037/cou0000302

Singh, S., Javdani, S., Berezin, M. N., & Sichel, C. E. (2020). Factor structure of the critical consciousness scale in juvenile legal system-involved boys and girls. *Journal of Community Psychology*, *48*(5), 1660-1676. https://doi.org/10.1002/jcop.22362

Sprecher, S., & Fehr, B. (2005). Compassionate love for close others and humanity. *Journal of*

Social and Personal Relationships, *22*(5), 629–651. https://doi.org/10.1177/0265407505056439

Stewart, S., Riecken, T., Scott, T., Tanaka, M., & Riecken, J. (2008). Expanding health literacy: Indigenous youth creating videos. *Journal of Health Psychology*, 13, 180–189. https://doi.org/10.1177/1359105307086709

Teran, M., Lu, Y., Shin, R. Q., Ashai, S., TaeHyuk Keum, B., & Baig, A. (2024). Further development and validation of the contemporary critical consciousness measure-short. *Research in Human Development*, 1-19. https://doi.org/10.1080/15427609.2024.2405328

Thomas, A. J., Barrie, R., Brunner, J., Clawson, A., Hewitt, A., Jeremie-Brink, G., & Rowe-Johnson, M. (2014). Assessing critical consciousness in youth and young adults. *Journal of research on adolescence*, *24*(3), 485-496. https://doi.org/10.1111/jora.12132

Torres-Harding, S. R., Siers, B., & Olson, B. D. (2012). Development and psychometric evaluation of the social justice scale (SJS). *American Journal of Community Psychology*, *50*(1–2), 77–88. https://doi.org/10.1007/s10464-011-9478-2

Torres-Harding, S. R., Steele, C., Schulz, E., Taha, F., & Pico, C. (2014). Student perceptions of social justice and social justice activities. *Education, Citizenship and Social Justice*, *9*(1), 55–66. https://doi.org/10.1177/1746197914520655

van Zomeren, M., Spears, R., Fischer, A. H., & Leach, C. W. (2004). Put your money where your mouth is! Explaining collective action tendencies through group-based anger and group efficacy. *Journal of Personality and Social Psychology*, *87*(5), 649–664. https://doi.org/10.1037/0022-3514.87.5.649

Uriostegui, M., Roy, A. L., & Li-Grining, C. P. (2021). What drives you? Black and Latinx youth's critical consciousness, motivations, and academic and career activities. *Journal of youth and adolescence*, *50*(1), 58-74. https://doi.org/10.1007/s10964-020-01343-6

Watts, R. J., & Flanagan, C. (2007). Pushing the envelope on youth civic engagement: a developmental and liberation psychology perspective. *Journal of Community Psychology*, *35*, 779–792. https://doi.org/10.1002/jcop.20178

Weitz, R. (1982). Feminist consciousness-raising, self-concept, and depression. *Sex Roles, 8*(3), 231–241. https://doi.org/10.1007/BF00287307

Yeich, S., & Levine, R. (1994). Political efficacy: Enhancing the construct and its relationship to mobilization of people. *Journal of Community Psychology*, *22*(3), 259-271. https://doi.org/10.1002/1520-6629(199407)22:3

Table 1

Existing Measures of Critical Consciousness and the Included Subscales

	Critical Reflection	Critical Action	Critical Motivation	Critical Efficacy	Political Efficacy	Critical Agency
The Critical Consciousness Inventory (Thomas et al., 2014)	X					
Measure of Adolescent Critical Consciousness (McWhirter & McWhirter, 2016)		X				X
Contemporary Critical Consciousness Measure (Shin et al., 2016)	X					
Contemporary Critical Consciousness Measure II (Shin et al., 2018)	X					
Contemporary Critical Consciousness Measure–Short (Teran et al., 2023)	X	X		X		
Sociopolitical Consciousness Scale (Baker & Brookins, 2014)	X				X	
The Critical Consciousness Scale (Diemer et al., 2017)	X	X				
The Short Critical Consciousness Scale (ShoCCS; Diemer et al., 2022)	X	X	X			
The Critical Consciousness Scale-Short (CCS-S; Rapa et al., 2020)	X	X	X			
The Critical Reflection on Sexism Scale (Gee, 2022)	X					
Critical Reflection Scale for Youth in China (Chan, 2023)	X					
Burson et al.'s (2023) critical reflection on racism scale that has Subscales for structural and historical thinking	X					

Table 2

Items in the Initial Exploratory Factor Analysis Organized by Hypothesized Factor Structures

Latent Variable and Indicators	Source
Critical Motivation: Social dominance orientation	
(1) It is OK if some groups have more of a chance in life than others	Pratto et al. (1994)
(2) To get ahead in life, it is sometimes okay to step on other groups	Pratto et al. (1994)
(3) It is a good thing that certain groups are at the top and other groups are at the bottom	Pratto et al. (1994)
(4) We should have increased social equality[a]	Pratto et al. (1994)
(5) It would be good if groups could be equal[a]	Pratto et al. (1994)
(6) Group equality should be our ideal[a]	Pratto et al. (1994)
Critical Motivation: Compassion	
(1) I spend a lot of time concerned about the well-being of humankind	Sprecher & Fehr (2005)
(2) I feel compassion for people everywhere[†]	Sprecher & Fehr (2005)
(3) I wish to be kind and good to fellow human beings[†]	Sprecher & Fehr (2005)
(4) There should be equality for everyone, because we are all human	Katz & Hass (1988)
(5) A good society is one in which people feel responsible for one another	Katz & Hass (1988)
(6) A person should be concerned about the well-being of others	Katz & Hass (1988)
Critical Motivation: Empathy, Emotional Contagion	
(1) When I see someone is sad, I also feel sad	Bowers et al. (2015)
(2) When I see someone is upset, I also feel upset	Bowers et al. (2015)
(3) When I see someone is happy, I also feel happy	Bowers et al. (2015)
Critical Motivation: Empathy, Perspective Taking	
(1) I try to understand my friends better by imagining how things look from their perspective	Davis (1980)
(2) I believe that there are two sides to every question and try to look at them both	Davis (1980)
(3) When I see someone is happy, I also feel happy	Davis (1980)
(4) Before criticizing somebody, I try to imagine how I would feel if I were in their place	Davis (1980)
(5) I try to look at everybody's side of a disagreement before I make a decision	Davis (1980)

Critical Motivation: Barriers of social justice participation

(1) If you were to engage in social justice activities, how likely would you be to receive negative comments or discouragement from friends and family members about your engagement in social justice activities[a]	Miller et al. (2009)
(2) If you were to engage in social justice activities, how likely would you be to worry that getting involved would require too much time or energy	Miller et al. (2009)
(3) If you were to engage in social justice activities, how likely would you be to feel that you didn't fit in socially with other people involved in the same activities	Miller et al. (2009)
(4) If you were to engage in social justice activities, how likely would you be to feel pressure from parents or other important people to change your mind regarding your decision to engage in social justice activities[a]	Miller et al. (2009)

Critical Motivation: Promoters of social justice participation

(1) If you were to engage in social justice activities, how likely would you be to have access to a role model (i.e., someone you can look up to and learn from by observing)	Miller et al. (2009)
(2) If you were to engage in social justice activities, how likely would you be to feel support for this decision from important people in your life	Miller et al. (2009)
(3) If you were to engage in social justice activities, how likely would you be to feel that there are people "like you" engaged in the same activities	Miller et al. (2009)
(4) If you were to engage in social justice activities, how likely would you be to feel that your family members support this decision	Miller et al. (2009)
(5) If you were to engage in social justice activities, how likely would you be to have access to a mentor who could offer you advice and encouragement	Miller et al. (2009)

Critical Efficacy: Individual efficacy

(1) How confident are you in your ability to have a positive impact on others' lives[†]	Torres-Harding et al. (2012)
(2) How confident are you in your ability to have a positive impact on your community[†]	Torres-Harding et al. (2012)
(3) How confident are you in your ability to influence others to promote fairness and equality[†]	Torres-Harding et al. (2012)
(4) How confident are you in your ability to raise others' awareness of the oppression and marginalization of specific groups[§]	Miller et al. (2009)
(5) How confident are you in your ability to encourage and convince others to participate in community-specific social issues	Miller et al. (2009)

(6) How confident are you in your ability to discuss issues related to racism, classism, sexism, heterosexism, and ableism with your friends	Miller et al. (2009)
(7) How confident are you in your ability to challenge others on racial/ethnic/sexually derogatory comments	Nagda et al. (2004)
(8) How confident are you in your ability to refuse to participate in jokes that are derogatory to any group	Nagda et al. (2004)
(9) How confident are you in your ability to avoid using language that reinforces negative stereotypes	Nagda et al. (2004)
(10) How confident are you in your ability to call, write, or in some way protest when a book, newspaper, television show, etc. perpetuates or reinforces a bias or prejudice	Nagda et al. (2004)
(11) How confident are you in your ability to examine my own worldview, biases, and prejudicial attitudes[§]	Miller et al. (2009)
(12) How confident are you in your ability to recognize and challenge the biases that affect your own thinking	Nagda et al. (2004)
(13) How confident are you in your ability to educate yourself about other groups (e.g., other ethnic groups, genders, or sexual orientations)	Nagda et al. (2004)
(14) How confident are you in your ability to challenge or address institutional policies that are covertly or overtly discriminatory	Miller et al. (2009)
(15) How confident are you in your ability to advocate for social justice issues by becoming involved in local government	Miller et al. (2009)
(16) How confident are you in your ability to address inequalities by becoming politically active (e.g., helping to create government policy) [†]	Miller et al. (2009)
Critical Efficacy: Collective efficacy	
(1) As a country, I think we can reduce social inequality[†]	van Zomeren et al. (2012)
(2) Dramatic change could occur in the US if people banded together and demanded change[†]	Yeich & Levine (1994)
(3) It is possible to reduce social inequality as an individual[a]	Research Team (2019)

Note. [a]indicates reverse-coded item; [†]indicates item was adapted from its original source; no label indicates item was used directly from its original source

Table 3

States in Which Participants Attended College

State	Frequency	Percent	Cumulative Percent
Alabama	20	1.3	1.8
Alaska	1	0.1	1.9
Arizona	25	1.7	3.6
Arkansas	6	0.4	4
California	133	9	12.9
Colorado	9	0.6	13.5
Connecticut	13	0.9	14.4
Delaware	4	0.3	14.7
Florida	97	6.5	21.2
Georgia	54	3.6	24.8
Hawai'i	1	0.1	24.9
Illinois	46	3.1	28
Indiana	22	1.5	29.5
Iowa	13	0.9	30.3
Kansas	11	0.7	31.1
Kentucky	9	0.6	31.7
Louisiana	33	2.2	33.9
Maine	46	3.1	37
Maryland	27	1.8	38.8
Massachusetts	166	11.2	50
Michigan	40	2.7	52.7
Minnesota	16	1.1	53.8
Mississippi	5	0.3	54.1
Missouri	24	1.6	55.7
Nebraska	7	0.5	58.1
Nevada	5	0.3	58.4
New Hampshire	7	0.5	58.9
New Jersey	19	1.3	60.2
New Mexico	1	0.1	60.2
New York	80	5.4	65.6
North Carolina	41	2.8	68.4
North Dakota	2	0.1	68.5
Ohio	53	3.6	72.1
Oklahoma	7	0.5	72.5
Oregon	18	1.2	73.8
Pennsylvania	61	4.1	77.9

Rhode Island	5	0.3	78.2
South Carolina	27	1.8	80
South Dakota	2	0.1	80.1
Tennessee	20	1.3	81.5
Texas	94	6.3	87.8
Utah	15	1	88.8
Vermont	6	0.4	89.2
Virginia	32	2.2	91.4
Washington	86	5.8	97.2
Washington DC	16	1.1	98.3
West Virginia	5	0.3	98.6
Wisconsin	21	1.4	100
Total	1451	100	

Table 4

Descriptive statistics for Items Put into Initial Exploratory Factor Analysis by Hypothesized Factor Structures

Latent Variable and Indicators	*N*	*M*	*SD*	Skew	Kurtosis
Critical Motivation: Social dominance orientation					
(1) It is OK if some groups have more of a chance in life than others	502	1.57	2.16	1.69	2.47
(2) To get ahead in life, it is sometimes okay to step on other groups	503	1.16	1.82	2.12	4.76
(3) It is a good thing that certain groups are at the top and other groups are at the bottom	504	0.95	1.59	2.06	3.59
(4) We should have increased social equality[a]	506	8.40	2.29	-1.83	3.10
(5) It would be good if groups could be equal[a]	506	8.56	2.03	-1.71	2.56
(6) Group equality should be our ideal[a]	506	7.94	2.38	-1.28	1.20
Critical Motivation: Compassion					
(1) I spend a lot of time concerned about the well-being of humankind	506	7.28	2.62	-0.87	-0.10
(2) I feel compassion for people everywhere[†]	506	7.91	2.27	-1.36	1.60
(3) I wish to be kind and good to fellow human beings[†]	506	9.17	1.62	-2.95	10.3
(4) There should be equality for everyone, because we are all human	506	8.84	2.04	-2.19	4.62
(5) A good society is one in which people feel responsible for one another	506	7.50	2.61	-1.10	0.54
(6) A person should be concerned about the well-being of others	506	8.94	1.77	-2.09	4.39
Critical Motivation: Empathy, Emotional Contagion					
(1) When I see someone is sad, I also feel sad	506	6.93	2.55	-0.83	-0.001
(2) When I see someone is upset, I also feel upset	506	6.44	2.77	-0.61	-0.49
(3) When I see someone is happy, I also feel happy	506	7.04	2.53	-0.84	0.13
Critical Motivation: Empathy, Perspective Taking					
(1) I try to understand my friends better by imagining how things look from their perspective	506	8.50	1.78	-1.59	2.82
(2) I believe that there are two sides to every question and try to look at them both	506	7.62	2.24	-0.95	0.61
(3) When I see someone is happy, I also feel happy	506	6.55	2.79	-0.69	-0.37
(4) Before criticizing somebody, I try to imagine how I would feel if I were in their place	506	6.90	2.51	-0.68	-0.31
(5) I try to look at everybody's side of a disagreement before I make a decision	506	7.35	2.27	-0.82	0.27
Critical Motivation: Barriers of social justice participation					
If you were to engage in social justice activities, how likely would you be to…					

(1) Receive negative comments or discouragement from friends and family members about your engagement in social justice activities[a]	505	3.47	3.07	0.63	-0.83
(2) Worry that getting involved would require too much time or energy	504	4.25	2.86	0.16	-1.08
(3) Feel that you didn't fit in socially with other people involved in the same activities	505	4.04	2.94	0.34	-0.94
(4) Feel pressure from parents or other important people to change your mind regarding your decision to engage in social justice activities[a]	505	3.23	2.93	0.72	-0.56
Critical Motivation: Promoters of social justice participation					
If you were to engage in social justice activities, how likely would you be to…					
(1) Have access to a role model (i.e., someone you can look up to and learn from by observing)	505	5.83	3.08	-0.50	-0.89
(2) Feel support for this decision from important people in your life	505	7.12	2.71	-1.05	0.35
(3) Feel that there are people "like you" engaged in the same activities	505	7.60	2.45	-1.32	1.28
(4) Feel that your family members support this decision	504	6.67	3.03	-0.81	-0.46
(5) Have access to a mentor who could offer you advice and encouragement	505	5.76	3.09	-0.42	-1.00
Critical Efficacy: Individual efficacy					
How confident are you in your ability to…					
(1) Have a positive impact on others' lives[†]	504	7.31	2.32	-0.95	0.57
(2) Have a positive impact on your community[†]	504	6.88	2.48	-0.77	0.12
(3) Influence others to promote fairness and equality[†]	504	6.96	2.40	-0.71	-0.03
(4) Raise others' awareness of the oppression and marginalization of specific groups[§]	504	6.90	2.57	-0.77	-0.06
(5) Encourage and convince others to participate in community-specific social issues	504	6.07	2.70	-0.41	-0.67
(6) Discuss issues related to racism, classism, sexism, heterosexism, and ableism with your friends	504	7.82	2.43	-1.36	1.33
(7) Challenge others on racial/ethnic/sexually derogatory comments	504	7.28	2.56	-0.94	0.24
(8) Refuse to participate in jokes that are derogatory to any group	504	7.89	2.70	-1.46	1.32
(9) Avoid using language that reinforces negative stereotypes	504	8.17	2.47	-1.71	2.33
(10) Call, write, or in some way protest when a book, newspaper, television show, etc. perpetuates or reinforces a bias or prejudice	504	5.61	3.14	-0.31	-1.04
(11) Examine my own worldview, biases, and prejudicial attitudes[§]	504	8.28	2.07	-1.70	2.93
(12) Recognize and challenge the biases that affect your own thinking	504	8.18	2.02	-1.54	2.50
(13) Educate yourself about other groups (e.g., other ethnic groups, genders, or sexual orientations)	504	8.43	2.03	-1.80	3.40

(14) Challenge or address institutional policies that are covertly or overtly discriminatory	504	6.79	2.65	-0.69	-0.33
(15) Advocate for social justice issues by becoming involved in local government	504	4.75	3.25	0.14	-1.26
(16) Address inequalities by becoming politically active (e.g., helping to create government policy) †	503	4.73	3.31	0.15	-1.27
Critical Efficacy: Collective efficacy					
(1) As a country, I think we can reduce social inequality†	506	7.95	2.30	-1.28	1.22
(2) Dramatic change could occur in the US if people banded together and demanded change†	506	7.95	2.31	-1.32	1.44
(3) It is possible to reduce social inequality as an individual[a]	506	4.71	2.94	0.05	-0.97

Note. [a]indicates reverse-coded item; †indicates item was adapted from its original source; no label indicates item was used directly from its original source; all ranges were approximately 0-10.

Table 5

Model Fit Indices for Exploratory Factor Analyses

	Initial EFA					Final EFA				
	8-Factor	9-Factor	10-Factor	11-Factor	12-Factor	8-Factor	9-Factor	10-Factor	11-Factor	12-Factor
RMSEA [90% CI]	.067 [.064-.07]	.064 [.061-.067]	.06 [.056-.063]	.056 [.052-.059]	.051 [.047-.054]	.075 [.072-.079]	.07 [.067-.074]	.066 [.062-.07]	.06 [.056-.064]	.054 [.05-.058]
RMSR	.03	.03	.03	.02	.02	.03	.03	.03	.02	.02
TLI	.808	.825	.848	.868	.89	.802	.826	.846	.873	.897

Note. RMSEA = root mean square error of approximation, RMSR = root mean square residual, TLI = Tucker Lewis Index

Table 6

Measurement Model Parameters for Final Exploratory Factor Analysis Twelve-Factor Solution

	Factor Loadings											
Item Description	**F2**	**F6**	**F3**	**F5**	**F1**	**F11**	**F7**	**F4**	**F8**	**F9**	**F10**	**F12**
Factor 2: Critical Efficacy – Interpersonal Change												
How confident are you in your ability to…												
Have a positive impact on your community	**0.9**	-0.04	-0.01	0.03	0.01	-0.03	0	-0.01	0.01	-0.02	-0.03	-0.03
Have a positive impact on others' lives	**0.87**	-0.06	0.08	-0.03	0	0.03	-0.03	0.01	0.03	0.08	0.01	-0.08
Influence others to promote fairness and equality	**0.78**	0.04	0.02	0.04	-0.03	0.05	0.01	0.01	0.03	-0.04	-0.02	0.08
Encourage and convince others to participate in community-specific social issues	**0.5**	0.05	-0.02	0.21	0.04	-0.03	0.09	0.08	0.1	-0.14	0.03	0.18
Raise others' awareness of the oppression and marginalization of specific groups	**0.47**	0.2	-0.05	0.08	0.16	-0.02	0.09	0.08	0.02	-0.07	0.05	0.33
Factor 6: Critical Efficacy – Collective Well-being												
Group equality should be our ideal (reverse code)	0	**0.72**	0.07	0.02	-0.02	0.01	0	-0.03	0.01	-0.04	-0.08	0.1
It would be good if groups could be equal (reverse code)	0	**0.68**	0.06	0.05	-0.07	0.05	-0.03	0.03	0.01	0.02	-0.22	0.02
There should be equality for everyone, because we are all human	0.02	**0.59**	0.01	0.02	-0.05	0.21	-0.01	0.03	-0.01	0.02	-0.13	-0.07
We should have increased social equality (reverse code)	-0.08	**0.57**	-0.02	0.04	0.3	0.06	0.06	0.04	-0.01	-0.03	0.02	-0.04
Dramatic change could occur in the US if people banded together and demanded change	0.01	**0.47**	0.04	-0.03	0.07	0.05	0.14	0.03	0.02	-0.11	-0.02	0.03
As a country, I think we can reduce social inequality	0.13	**0.44**	-0.1	-0.04	0.16	0.03	0.11	0.03	-0.01	-0.08	0.07	-0.07

A good society is one in which people feel responsible for one another	-0.08	**0.35**	0.06	0.06	0.3	-0.13	0.03	-0.01	0.06	0.06	-0.05	-0.03
Factor 3: Critical Motivation – Empathy - Perspective Taking												
I try to look at everybody's side of a disagreement before I make a decision	-0.02	0	**0.87**	-0.03	0.01	-0.02	-0.07	0.01	0.03	0.01	0	0.09
Before criticizing somebody, I try to imagine how I would feel if I were in their place	0.03	0.02	**0.74**	0.05	0.04	0.02	0.09	0.01	-0.01	-0.08	0.03	-0.07
When I see someone is happy, I also feel happy	0.01	-0.02	**0.64**	0.1	0.04	0	0.19	0	-0.05	0	0.02	-0.06
I believe that there are two sides to every question and try to look at them both	0.12	0.05	**0.62**	-0.05	-0.03	0.01	0.01	0.01	0	0.06	-0.05	-0.08
Factor 5: Critical Efficacy – Political Change												
How confident are you in your ability to…												
Advocate for social justice issues by becoming involved in local government	-0.03	-0.03	0.02	**0.97**	-0.01	-0.01	-0.02	0	0.02	-0.01	-0.02	-0.04
Address inequalities by becoming politically active (e.g., helping to create government policy)	0.03	0.01	0	**0.89**	-0.01	0	0.01	0	-0.02	-0.02	0.03	0.01
Challenge or address institutional policies that are covertly or overtly discriminatory	0.15	0.05	-0.07	**0.46**	0.23	0.02	0.03	0.02	-0.03	0.01	-0.08	0.12
Factor 1: Critical Efficacy – Personal Change												
How confident are you in your ability to examine my own worldview, biases, and prejudicial attitudes	0.05	0.02	0.08	0.07	**0.68**	0.17	0.01	0.01	0.03	0.07	-0.02	0.02
How confident are you in your ability to recognize and challenge	0.03	-0.05	0.12	0.05	**0.64**	0.2	0.01	-0.01	0.08	-0.03	-0.05	0.1

the biases that affect your own thinking												
How confident are you in your ability to educate yourself about other groups (e.g., other ethnic groups, genders, or sexual orientations)	0.04	0.07	0.08	0.03	**0.56**	0.17	0	0.02	0.02	-0.02	-0.16	0.12
A person should be concerned about the well-being of others	0.1	0.26	0	0.02	**0.5**	-0.02	0.12	-0.03	0.07	0.09	-0.02	-0.25
Factor 11: Critical Efficacy – Addressing Denigration												
How confident are you in your ability to…												
Refuse to participate in jokes that are derogatory to any group	-0.03	-0.01	-0.01	0.01	0	**0.89**	0.04	0.02	0	0	-0.02	-0.02
Avoid using language that reinforces negative stereotypes	0.04	0.04	0.01	0	0.06	**0.83**	0	-0.02	0	-0.04	0	0.02
Factor 7: Critical Motivation – Empathy - Emotional Contagion (Negative)												
When I see someone is upset, I also feel upset	-0.03	0.02	0.02	0.02	-0.03	-0.03	**0.92**	0.02	0	-0.01	0	-0.01
When I see someone is sad, I also feel sad	0.01	-0.05	0.02	-0.05	-0.01	0.05	**0.86**	-0.04	0.01	0.02	-0.02	0.02
Factor 4: Critical Motivation – Interpersonal Promoters and Barriers												
If you were to engage in social justice activities, how likely would you be to…												
Feel that your family members support this decision	0.05	0.06	0.04	0.06	-0.07	0.06	0	**0.82**	0.1	0.17	0.05	0.03
Feel pressure from parents or other important people to change your mind regarding your decision to engage in social justice activities	0.05	0.08	-0.03	0.05	-0.09	0.07	0.04	**-0.63**	0.06	0.39	0.09	0.02
Feel support for this decision from important people in your life	0.07	0.1	-0.01	0.04	0.09	0.02	0.06	**0.53**	0.24	0.12	0.05	0.06
Receive negative comments/ discouragement from friends/ family	-0.04	0.11	0.08	0.1	0.01	0.05	0.01	**-0.53**	0.07	0.34	0.09	0.07

members about engagement in social justice activities												
Factor 8: Critical Motivation – Mentorship												
If you were to engage in social justice activities, how likely would you be to…												
Have access to a role model (i.e., someone you can look up to and learn from by observing)	0	-0.05	0.01	-0.04	0.06	-0.04	0.02	-0.03	**0.89**	0	-0.07	0.01
Have access to a mentor who could offer you advice and encouragement	0.02	0.02	-0.02	0.04	-0.07	0.03	-0.01	0.07	**0.83**	-0.06	0.08	-0.03
Factor 9: Critical Motivation – Personal Barriers												
If you were to engage in social justice activities, how likely would you be to…												
Worry that getting involved would require too much time or energy	-0.05	-0.08	-0.05	-0.06	0.09	-0.06	0.03	0.1	-0.06	**0.69**	-0.03	0.02
Feel that you didn't fit in socially with other people involved in the same activities	0.03	-0.02	0.01	-0.09	-0.03	-0.02	0.02	-0.03	-0.07	**0.64**	0.03	-0.05
Factor 10: Critical Motivation – Social Dominance Orientation												
It is a good thing that certain groups are at the top and other groups are at the bottom	-0.04	-0.17	-0.04	0.04	-0.02	0.06	0.02	0.04	-0.02	0	**0.72**	-0.04
To get ahead in life, it is sometimes okay to step on other groups	0	0.06	0.07	-0.05	-0.02	-0.13	-0.12	-0.05	0.02	-0.02	**0.61**	0.07
It is OK if some groups have more of a chance in life than others	0.05	-0.08	0.12	-0.07	-0.05	-0.13	0.03	0.01	-0.04	0.02	**0.44**	0.02
Factor 12: Critical Motivation – Personal Ethics												
How confident are you in your ability to challenge others on racial/ethnic/sexually derogatory comments	0.13	0.05	0.05	0.09	0.22	0.22	0.01	0.07	0.03	0.05	0.04	**0.38**
How confident are you in your ability to discuss issues related to racism, classism, sexism,	0.19	0.18	0	0.05	0.26	0.09	0.09	0.08	0.06	0.05	-0.04	**0.33**

heterosexism, and ableism with your friends												
I wish to be kind and good to fellow human beings	0.21	0.25	0.12	-0.04	0.24	0.17	0.1	0.01	0.01	0.01	0.02	**-0.33**

Note. F1 = Critical Efficacy (CE) Personal Change, F2 = CE Interpersonal Change, F3 = Critical Motivation (CM) Perspective Taking, F4 = CM Interpersonal Promoters and Barriers, F5 = CE Political Change, F6 = CE Collective Well-being, F7 = CM Emotional Contagion, F8 = CM Mentorship, F9 = CM Personal Barriers, F10 = CM Social Dominance Orientation (SDO), F11 = CE Addressing Denigration, F12 = CM Personal Ethics.

Table 7

Measurement Model Parameters for Re-Specified Confirmatory Factor Analysis

Factor Name and Item	Std. Estimate	*SE*	R^2
Factor 1: Personal Change – Critical Efficacy			
How confident are you in your ability to examine my own worldview, biases, and prejudicial attitudes	0.88***	0.01	0.78
How confident are you in your ability to recognize and challenge the biases that affect your own thinking	0.91***	0.01	0.82
How confident are you in your ability to educate yourself about other groups (e.g., other ethnic groups, genders, or sexual orientations)	0.85	0.01	0.73
A person should be concerned about the well-being of others	0.08	0.04	0.51
Factor 2: Interpersonal Change – Critical Efficacy			
How confident are you in your ability to…			
Have a positive impact on your community	0.74***	0.02	0.58
Have a positive impact on others' lives	0.67***	0.03	0.55
Promote fairness and equality	0.86***	0.02	0.45
Encourage and convince others to participate in community-specific social issues	0.80***	0.02	0.74
Raise others' awareness of the oppression and marginalization of specific groups	0.79***	0.02	0.64
Ability challenge or address institutional policies that are covertly or overtly discriminatory	0.18**	0.06	0.63
Factor 3: Empathy-Perspective-Taking			
I try to look at everybody's side of a disagreement before I make a decision	0.78***	0.02	0.58
Before criticizing somebody, I try to imagine how I would feel if I were in their place	0.77***	0.02	0.61
When I see someone is happy, I also feel happy	0.71***	0.02	0.60
I believe that there are two sides to every question and try to look at them both	0.60***	0.03	0.50
Factor 4: Interpersonal Promoters and Barriers – Critical Motivation			
If you were to engage in social justice activities, how likely would you be to…			
Feel that your family members support this decision[a]	0.78***	0.02	0.36
Feel pressure from parents or other important people to change your mind regarding your decision to engage in social justice activities	0.42***	0.03	0.62
Feel support for this decision from important people in your life[a]	0.91***	0.02	0.18
Receive negative comments/ discouragement from friends/ family members about engagement in social justice activities	0.39***	0.04	0.82

Factor 5: Political Change – Critical Efficacy			
How confident are you in your ability to…			
Advocate for social justice issues by becoming involved in local government	0.90***	0.02	0.15
Address inequalities by becoming politically active (e.g., helping to create government policy)	0.93***	0.01	0.81
Challenge or address institutional policies that are covertly or overtly discriminatory	0.37***	0.04	0.87
Factor 6: Collective Well-being – Critical Efficacy			
Group equality should be our ideal	0.74***	0.02	0.58
It would be good if groups could be equal	0.73***	0.02	0.54
There should be equality for everyone, because we are all human	0.74***	0.02	0.54
We should have increased social equality	0.81***	0.02	0.55
Dramatic change could occur in the US if people banded together and demanded change	0.59***	0.03	0.65
As a country, I think we can reduce social inequality	0.61***	0.02	0.35
A good society is one in which people feel responsible for one another	0.55***	0.03	0.38
A person should be concerned about the well-being of others	0.66***	0.04	0.30
I wish to be kind and good to fellow human beings	0.68***	0.04	0.51
Factor 7: Emotional Contagion – Critical Motivation			
When I see someone is upset, I also feel upset	0.90***	0.02	0.81
When I see someone is sad, I also feel sad	0.93***	0.02	0.86
Factor 8: Mentorship – Critical Motivation			
If you were to engage in social justice activities, how likely would you be to…			
Have access to a role model (i.e., someone you can look up to and learn from by observing)	0.88***	0.02	0.78
Have access to a mentor who could offer you advice and encouragement	0.85***	0.02	0.73
Factor 9: Personal Barriers – Critical Motivation			
If you were to engage in social justice activities, how likely would you be to…			
Worry that getting involved would require too much time or energy	0.67***	0.06	0.45
Feel that you didn't fit in socially with other people involved in the same activities	0.63***	0.05	0.39
Factor 10: Social Dominance Orientation – Critical Motivation			
It is a good thing that certain groups are at the top and other groups are at the bottom	0.76***	0.03	0.57
To get ahead in life, it is sometimes okay to step on other groups	0.68***	0.03	0.46
It is OK if some groups have more of a chance in life than others	0.69***	0.03	0.47
Factor 11: Addressing Denigration – Critical Efficacy			
How confident are you in your ability to…			

Refuse to participate in jokes that are derogatory to any group	0.84***	0.02	0.70
Avoid using language that reinforces negative stereotypes	0.92***	0.02	0.84
Factor 12: Personal Ethics – Critical Motivation			
How confident are you in your ability to challenge others on racial/ethnic/sexually derogatory comments	0.72***	0.02	0.70
How confident are you in your ability to discuss issues related to racism, classism, sexism, heterosexism, and ableism with your friends	0.82***	0.02	0.84
I wish to be kind and good to fellow human beings	0.04	0.04	0.70
How confident are you in your ability to challenge or address institutional policies that are covertly or overtly discriminatory	0.31**	0.10	0.84

Note. [a]indicates reverse-coded item. Correlated error terms were included for the following item pairs: Individual Critical Efficacy 02 ~~ Individual Critical Efficacy 01, Critical Motivation-Barriers 04[a] ~~ 01[a], Critical Motivation-Compassion 06 ~~ Critical Motivation-Compassion 03, and Individual Critical Efficacy 05 ~~ Individual Critical Efficacy 04. Item naming for these correlated error terms is based on the hypothesized factor structure in Table 3. $p < .05$.

Table 8

Summary of Factor Correlations

	F1	F2	F3	F4	F5	F6
F1: Personal Change – Critical Efficacy	1					
F2: Interpersonal Change – Critical Efficacy	0.60***	1				
F3: Empathy-Perspective-Taking – Critical Motivation	0.45***	0.39***	1			
F4: Interpersonal Promoters and Barriers – Critical Motivation	0.44***	0.47***	0.26***	1		
F5: Political Change – Critical Efficacy	0.27***	0.57***	0.18***	0.22***	1	
F6: Collective Well-being – Critical Efficacy	0.67***	0.51***	0.41***	0.48***	0.25***	1
F7: Emotional Contagion – Critical Motivation	0.34***	0.2***	0.43***	0.22***	0.11**	0.43***
F8: Mentorship – Critical Motivation	0.33***	0.46***	0.22***	0.59***	0.30***	0.29***
F9: Personal Barriers – Critical Motivation	-0.12*	-0.29***	-0.06	-0.15**	-0.26***	-0.09**
F10: Social Dominance Orientation – Critical Motivation	-0.45***	-0.34***	-0.15**	-0.30***	-0.14**	-0.60***
F11: Addressing Denigration – Critical Efficacy	0.67***	0.46***	0.28***	0.35***	0.24***	0.55***
F12: Personal Ethics – Critical Motivation	0.81***	0.77***	0.29***	0.47***	0.44***	0.64***

Note. ***$p < .001$, **$p < .01$, *$p < .05$.

Table 9

Summary of Factor Correlations Continued

	F7	F8	F9	F10	F11	F12
F1: Personal Change – Critical Efficacy						
F2: Interpersonal Change – Critical Efficacy						
F3: Empathy-Perspective-Taking – Critical Motivation						
F4: Interpersonal Promoters and Barriers – Critical Motivation						
F5: Political Change – Critical Efficacy						
F6: Collective Well-being – Critical Efficacy						
F7: Emotional Contagion – Critical Motivation	1					
F8: Mentorship – Critical Motivation	0.23***	1				
F9: Personal Barriers – Critical Motivation	-0.06	-0.12**	1			
F10: Social Dominance Orientation – Critical Motivation	-0.31***	-0.15**	0.38***	1		
F11: Addressing Denigration – Critical Efficacy	0.28***	0.24***	-0.22***	-0.40***	1	
F12: Personal Ethics – Critical Motivation	0.29***	0.37***	-0.21***	-0.51***	0.59***	1

Note. ***$p < .001$, **$p < .01$, *$p < .05$.

Table 10

Summary of Model Fit Statistics for Measurement Invariance Test between Women and Men

	X^2 (*df*)	CFI	ΔCFI	TLI	RMSEA	SRMR
Configural	3364.3 (1471)	0.906		0.889	0.053	0.056
Metric	3014.0 (1442)	0.912	0.006	0.9	0.052	0.054
Scalar	3150.4 (1471)	0.906	-0.006	0.895	0.053	0.056
Strict	3326.3 (1512)	0.898	-0.008	0.89	0.055	0.059

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual.

Table 11

Summary of Model Fit Statistics for Measurement Invariance Tests between Black- and White-Identifying Young Adults

	X^2 (*df*)	CFI	ΔCFI	TLI	RMSEA	SRMR
Configural	3263.35 (1471)	0.901		0.89	0.055	0.059
Metric	3098.3 (1442)	0.909	0.008	0.896	0.054	0.056
Scalar	3263.35 (1471)	0.901	-0.008	0.89	0.055	0.059
Strict	3388.07 (1512)	0.896	-0.005	0.888	0.056	0.063

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual.

Table 12

Summary of Model Fit Statistics for Measurement Invariance Tests for Black and White Women

	X^2 (*df*)	CFI	ΔCFI	TLI	RMSEA	SRMR
Configural	2808.531 (1471)	0.883		0.869	0.062	0.062
Metric	2678.774 (1442)	0.891	0.009	.876	0.060	0.060
Scalar	2808.531 (1471)	0.883	-0.009	0.869	0.062	0.060
Strict	3002.144 (1512)	0.869	-0.013	0.858	0.065	0.076

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual.