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Critical Consciousness of Educators: The Development and Psychometric Validation of a Measure Using Structural Equation Modeling

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Critical Consciousness of Educators:

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I dedicate this dissertation to my husband, Robert. I love you and thank you for the relentless support you've shown me. Having met and married you while in the middle of this program, you've never known me not to be buried in projects or homework or research. I can't wait to spend more time with you and move on to the next chapter of our life together! Thank you for your patience and tolerance of what it has taken for me to complete this.

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CHAPTER ONE: INTRODUCTION

Conscientizacao, or *critical consciousness*, a concept developed by Freire (1970), is the process of "learning to perceive social, political, and economic contradictions and to take action against the oppressive elements of reality" (p. 17). The concept of critical consciousness (CC) is inclusive of those who have been historically marginalized (Freire, 1970), and those in positions of power or privilege (Jemal, 2017; Shin, Ezeofor, Welch, Smith, & Goodrich, 2014). Educators can develop CC through awareness of oppression and privilege, critical reflection on the experiences and perspectives of students from historically marginalized groups, engagement in anti-oppression, and advocacy for historically marginalized groups (Freire, 1974).

Context for the Study

This study examines CC within the preK-12 public educator population at a suburban school district in the Rocky Mountain Region of the western United States. This population is demographically representative of the majority population of educators

nationally. School District X employs approximately 1,000 teachers and administrators. Teaching staff is reportedly 94% White (Colorado Department of Education). These demographics align with national trends. The majority of educators, or teachers and leaders, 82% and 80% respectively, identify as White (U.S. Department of Education, 2016; School District X). The student population of School District X is approximately 15,000, from pre-kindergarten through twelfth grade. The approximate demographic breakdown of students in School District X is as follows: 86% White, 17% Hispanic, 1% other races, 10% special education, 5% English Language Learners, 20% qualify for free/reduced lunch, approximately 100 students are homeless, 20% of students are optionally enrolled from outside of the district, and there are over 60 languages spoken (School District X, 2017). The goal of this the school district is that "100% of students will graduate prepared for meaningful post-secondary opportunities," this is commonly referred to by the district as the "100% Goal." (School District X, 2016).

The need for educational equity and access for all students has been studied in school districts in the United States (Blankstein & Noguera, 2015). The public school student population is projected to increase in diversity, demanding more attention for this work. The National Center for Education Statistics (NCES) predicts that White students will represent 46 percent of public school students in 2024, a drop from 51 percent of the student population in 2012. During the same 12-year time frame, the proportion of Hispanic and Asian/Pacific Islander students is projected to increase. Hispanic public school students are projected to represent 29 percent of total enrollment in 2024 (compared to 24 percent in 2012) and Asian/ Pacific Islander students are projected to

represent 6 percent of total enrollment in 2024 (compared to 5 percent in 2012). Black student enrollment is projected to drop from 16 percent to 15 percent in 2024 (U.S. Department of Education, 2014, 2016). As stated earlier, the teaching profession in the U.S. does not share these demographics.

School District X reports academic gaps for many of its historically marginalized student subgroups (especially students of color, English Learners, and students who qualify for free and reduced lunch price). In this study, students in these categories are referred to as CLD learners. In 2017, School District X saw gaps in achievement between CLD learners and White students who had achieved proficient scores in reading and mathematics by more than 25 percentage points (School District X, 2017). The graduation rate for CLD learners in School District X was 72% while White students graduated at a rate of 90% (Colorado Department of Education, 2017). Additionally, suspension rates were more than double for CLD learners in School District X (School District X, 2017). These trends mimic the NCES's report of academic disparities between White and CLD learners (U.S. Department of Education, 2014). Nation-wide differences in achievement are tracked between White students and black students, and between White students and Hispanic students. Differences in mean scores of reading and math achievement tests have shown to be statistically significant, $p = .05$ between groups between White and Hispanic students, and White and Black students (Hemphill & Vanneman, 2010), with White students having higher average scores than the other two groups. Additionally, School District X recognizes disproportionate numbers of CLD

students in suspension and dropout rates, as well as a greater percentage of White students in honors, gifted, and AP class rosters.

In the fall of 2017 the board of education of School District X developed and voted to approve *A Resolution to Reaffirm the School District X Board of Education Inclusive Practices and Beliefs that 'All Means All'* (School District X, 2017). School District X vowed to support all students' ability to succeed by cultivating learning environments that are physically and emotionally safe and supportive, embrace and value diversity, and act quickly to prevent and address "any and all issues" of discrimination and harassment (School District X, 2017). School district X further asserted in and excerpt from this document that:

> Diversity is a source of strength in a democratic society and that all students- regardless of race, ethnicity, religion, seen or unseen disability, twice exceptionality, giftedness, immigration status, home language, sexual orientation, homelessness, socioeconomic status- matter and will be welcomed in the schools of School District X. In order to implement our core values and focus areas, it is our responsibility as a school district to stand against hateful thought and ideology by creating a culture of acceptance, so every student and family knows immediately they matter and we care. (*Resolution*, School District X, 2017).

Additionally, the Resolution document articulates a stance of the Board of Education to eradicate academic inequity in the school district's programming. As such, the Board of Education voted in the spring of 2018 to approve funding that would support the 100% Goal through additional hired staff, guest speakers, and professional development for administrators and teachers. This included professional development in educational equity for administrators and teachers. In support of the 100% Goal, School District X worked to establish a baseline measure of attitudes, mindsets, beliefs, and practices related to equity in education, these would inform professional development.

The author of this study, an administrative employee of School District X, was charged with the development, administration, and analysis of such a measure. The author developed a measure based on key tenets of CC and culturally relevant practices to be given to the educators of School District X. The measure was fitted to length and time constraints of the organization so that it would be economical, efficient, and possible to administer within a two-week response time frame.

Statement of the Problem

Academic disparities are present between CLD students and White students (U.S. Department of Education, 2017; Hemphill & Vanneman, 2010). The majority of educators in the U.S. do not identify as culturally or linguistically diverse; the majority or educators represent the White, dominant culture of the U.S. Approximately half of the students in the United States are CLD learners (U.S. Department of Education, 2017). According to the U.S. Department of Education, approximately 80% of public school teachers identify as White. As such, the demographic of teachers in the United States does not reflect that of students. Scholars theorize that a lack of cultural, linguistic, and socioeconomic awareness in teachers contributes to academic disparities between White and CLD students (Delpit, 2006; Ladson-Billings, 1992; McKenzie & Phillips, 2016; Nieto, 2013; Sensoy & DiAngelo, 2017).

This study emphasizes scholarship that addresses the problem with two theories, the first theorizes a way to positively affect the problem, and the second theorizes a negative contribution to the problem. Firstly, Culturally Relevant Pedagogy (CRP) positively affects the academic experience of CLD students (Gay, 2000; Ladson-Billings,

1992; 1995; 2009; 2014; Nieto, 2013; Salazar & Lerner, 2018). Secondly, White teachers have a lack of cultural awareness, including awareness of dominant culture, which contributes to the academic disparities of CLD students (Case, 2013; Ladson-Billings, 2009; 2014; DiAngelo, 2018; Moore, 2015). These two theoretical assertions are connected to CC. CRP connects to CC of educators as one of three essential domains of culturally relevant teachers (Ladson-Billings, 2014). Freire (1970; 1974; 2005) connects the *conscientization* process of teachers to a cultural awareness stage, asserting the need to recognize oppression and one's own societal position as a component of CC development.

CRP, Cultural Awareness, and CC. Qualitative studies (Ladson-Billings, 1995, 2009; Salazar & Lerner, 2018) have provided evidence for the impact of increased cultural awareness in teachers on effective teaching practices for CLD students. CRP has a positive an impact on the achievement of CLD students through effective teaching practices that specifically reach these learners (Gay, 2000, Ladson-Billings, 2009; 2014; 1995). CRP theory connects CC to educators as an essential domain needed to meet the needs of CLD learners (Duncan-Andrade & Morrell, 2008; Freire, 1974; Gay, 2007; Ladson-Billings, 1995; Salazar, 2013).

This study will refer to Ladson-Billings' (2014) three domains of CRP, which were developed through qualitative research with effective teachers of African-American students. They are: 1) academic success of students (defined as intellectual growth of students), 2) cultural competence (defined as the ability to help students culturally identify with themselves and another culture), and 3) sociopolitical consciousness

(defined as the ability to take learning to the world and identify and analyze its problems) (Ladson-Billings, 2014). The domain of sociopolitical consciousness compares to Freire's CC, as Ladson-Billings (1995) writes, "Freire's work in Brazil was not radically different from work that was being done in the southern United States to educate and empower African Americans who were disenfranchised" (p.162). As such, this study will focus on the CC of educators as the sociopolitical consciousness domain of CRP. CRP scholarship supports the need for this focus. While the other two domains of Ladson-Billings' CRP (academic success of students and cultural competence) are no less important, CC of educators is de-emphasized in teacher development (Gay & Kirkland, 2003). Ladson-Billings (2014) expresses similar concern in her observations. "Even when people have demonstrated a more expansive knowledge of culture, few have taken up the sociopolitical dimension of the work, instead dulling its critical edge or omitting it altogether" (p.77).

As discussed above, CC of educators supports an essential, yet overlooked domain of CRP. Additionally, Freire asserts that CC development requires critical awareness of oppression and one's own societal position (1970). Others describe this awareness in relationship to society as racial consciousness, racial awareness, racial identity, cultural awareness, and cultural identity (Diangelo, 2018; Mirra, Garcia, & Morrell, 2016; Singleton, 2015). Freire's connection between critical awareness and CC further supports the concern that the CC domain in CRP is overlooked. The relationship between CC and CRP as it relates to impacting the problem of academic disparities for CLD learners is: Critical awareness is essential for CC development (Freire, 1970), CC

development is essential for CRP completeness (Ladson-Billings, 2014), CRP is essential for reaching CLD learners (Gay, 2000; Ladson-Billings,1995; 2009; 2014; Salazar & Lerner, 2018).

Freire asserts that educators can develop CC through recognition of oppression and privilege, reflection on the experiences and perspectives of students from historically marginalized groups, engagement in anti-oppression, and advocacy historically marginalized populations (Freire, 1974). Educational scholars connect CC to educators, asserting the need for increased cultural, linguistic, and socioeconomic awareness to impact teacher effectiveness (Ladson-Billings, 1995, 2009; Salazar 2013).

The author of this study asserts that the latent trait of CC in educators needs to be conceptualized and measured. In doing so, CC trait development in educators and its impact on CRP can be better studied. Furthermore, the conceptualization and measurement of CC in educators may help further understand the theorized relationship between positive academic experiences for CLD learners and CRP. No model or instrument exists to conceptualize or measure CC in educators.

Research Purpose

The purpose of this study is to develop and examine the psychometric properties of a measure of CC in order to estimate self-reported critical consciousness as a latent trait present in educators. This study uses quantitative methods to measure the CC of educators in a predominantly White, suburban school district whose educator population is representative of the teaching population found in many school districts in the United States. Through a review of conceptual models and measures of CC, the author proposes

a three-factor model of CC of educators consisting of critical awareness, critical reflection, and critical action. First, this study will examine the factor structure of the CC of Educators Scale (CCES) using exploratory and confirmatory factor analyses. Second, a reliability coefficient, Cronbach's alpha, will also be examined to obtain initial evidence of construct validity among samples from School District X on the measure as a whole as well as sub factor scales. Third, measurement invariance will be examined to determine if the CCES behaves differently among different groups of educators.

Definition of Terms

The following terms are used throughout the study, with definitions offered from a synthesis of literature reviewed in Chapter 2:

- Critical Consciousness (CC): one's ability to recognize oppression and privilege as it relates to their own status or the status of others, reflect upon the impact of oppressiveness and/or unfair advantage or privilege, and act to end oppression through humanizing behaviors and advocacy (Friere, 1970).
- Critical awareness: ability to identify oppressed status and oppression, including one's relationship between self and society (Friere, 1970; Houser & Overton, 2001).
- Critical reflection: ability to perceive inequalities and recognize dominant culture privilege (Diemer, Rapa, Park, & Perry, 2014).
- Critical action: engagement in social and political activity and advocacy with the intent to disrupt and change perceived inequalities (Diemer, Rapa, Park & Perry, 2014).

- Culturally and Linguistically Diverse (CLD) learner(s): students of color, students learning English, or both (Salazar & Lerner, 2018).
- Educator: those who are in employed in a public-school district in the capacity of educational classified staff (i.e., teacher aids), licensed teacher or principal, or district administrator (Author's definition).
- Teacher: educators whose primary responsibility is for a caseload of students (i.e., classroom teachers) (Author's definition).
- Marginalization: treatment of a person, group, or concept as insignificant, peripheral, or optional (Merrium-Webster, 2019). For the CCES measure, respondents were offered the following description of marginalization: being valued to a lesser extent and/or disrespected, stereotyped, disregarded, ignored, dismissed, undervalued, or not given a chance.
- Oppressed: members of a general population who have been historically marginalized by the dominant culture (Freire, 1970).
- Privileged: members of the dominant culture who benefit from social advantage, immunity, and association with the culture of power (Case, 2013).

CHAPTER TWO: LITERATURE REVIEW

The chapter begins with an overview of Critical Theory and Freire's conceptualization of CC. Next, the following questions are addressed:

1. How has CC been conceptually modeled and in what contexts has it been studied?
2. What measures of CC exist? What are the factor models and target populations?
3. How can a theoretical model of CC in educators be developed and informed by the literature?

Critical Theory and Freire's Critical Consciousness

Max Horkheimer of the Frankfurt School of Sociology first defined critical theory in his 1937 essay, *Critical and Traditional Theory* (Horkheimer, 2002). Influenced by Marxism, he contrasts critical theory against traditional theory as a way of understanding or explaining society and as an approach to questioning society's ideologies and resulting

dominant cultural aspects. Horkheimer specifies critical theory's purpose "to liberate human beings from the circumstances that enslave them" (p. 244). Horkheimer and later critical theorists, influenced by Marxism, continued to posit critical theory as a radical approach to critiquing and moving society forward, with the end goal of emancipation (Held, 1980).

Conscientizacao, or *critical consciousness,* emerges from critical theory and the seminal work of Brazilian educator, Paulo Freire. Freire developed the construct of critical consciousness through his advocacy with historically marginalized populations in Brazil. CC was originally defined as the ability to evaluate, reflect, and challenge the oppressive social forces shaping their life and community (Freire, 1970). Freire initially developed CC to help illiterate Brazilian workers learn to "read the word" as well as "read the world" so that oppressed people could be empowered to reflect and take action for change (Freire, 1993). Freire incorporates a wide span of philosophical world views in his concept of CC, most frequently operating amongst Christianity and Marxist philosophies (1970, 1974). Freire describes the acquisition of CC through an initial step of reflection on social inequities, including one's own position in society. This awareness is followed by actions towards anti-oppression and liberation (Freire, 1974). In short, Freire describes CC as "reflection and action upon the world in order to transform it" (Freire, 1994, p.51).

CC Conceptual Models and Contexts

Freire does not offer a conceptual model of CC, which has allowed for scholars to model the construct in a variety of different contexts (Jemal, 2016; Diemer, Rapa, Voight, & McWhirter, 2016). Researchers have proposed theoretical models in contexts predominantly characterized by historically marginalized populations; some state that the construct of CC has one, two, or three factors (Jemal, 2017). The following three factors are often described in conceptual models: critical awareness, critical reflection, and critical action. *Critical awareness* is defined as one's ability to identify oppressed status and oppression, including one's relationship between self and society (Freire, 1974; Houser & Overton, 2001). *Critical reflection* is defined as one's ability to perceive inequality and recognize privilege (Diemer, 2014; Case, 2013). At times, the definitions of *critical awareness and critical reflection* are combined as one factor. *Critical action* is defined as engagement in social and political activity to disrupt and change perceived inequalities (Diemer et al., 2014).

CC as a single-factor model. Critical reflection and awareness present as a single component in the unidimensional model of CC (Jemal, 2017; Mustakova-Possardt, 1998; Watts & Abdul-Adil, 1998). This single-factor model of critical consciousness identifies a critical, metacognitive awareness of self and society (Houser and Overton, 2001; Jemal, 2017). This single-factor model includes a temporal dimension to explore the relationship between social issues that transcend time and current social circumstances as part of the exploration of critical reflection and awareness of socially unjust circumstances (Jemal, 2017, Watts et. al, 1998, Diemer, & Voight, 2011). However,

critics of this model state that Freire's end goal of liberation cannot be accomplished through the means of reflection and awareness alone (Freire, 1974; Jemal, 2017).

CC as a two-factor model. Two-factor models of CC have also been presented in the literature, namely critical reflection and awareness as the first factor and the *capacity for critical action* as the second factor (Diemer & Blustein, 2006; Jemal, 2017). The capacity for critical action has been described as an individual's potential, based on thoughts, attitudes, and mindset, to take action when presented with the opportunity (Jemal, 2017). Critics of this model assert that one's capacity for critical action does not necessarily indicate that actions will take place to impact oppression or liberate (Jemal, 2017; Watts and Abdul-Adil, 1998). As such, Diemer et. al (2016) offer a two-factor model incorporating *critical action* instead of capacity for critical action as the second factor. Three studies offer a conceptual model of CC with critical reflection and awareness and critical action as factors, which shows agreement among scholars for the two-factor construct (Campbell & MacPhail, 2002; Diemer & Blustein 2006; Diemer & Li, 2011). This agreement is meaningful for a construct which has been modeled in such a variety of different contexts (Jemal, 2016; Diemer et. al, 2016).

CC as a three-factor model. Three-factor models of CC are more uncommon and exist with more variety (Jemal, 2017). Some three-factor models have developed from both theory and empirical outcomes. For example, in 2014 Diemer et al. (2014) developed and tested a measure of CC using the two factors of *critical reflection* and *critical action*. After conducting an exploratory factor analysis, the two sub-factors of critical reflection, *perceived inequality* and *egalitarian beliefs,* did not correlate as

expected, suggesting a separate third factor (Diemer et al., 2014; Jemal, 2017). Other scholars have presented three-factor models by adding to the two-factor models previously discussed. *Critical attitude* or *critical motivation*, defined as one's sociopolitical efficacy, is a third factor of the CC constructs (Morrell, 2003, Hatcher, de Wet, Bonnell, Strange, Phetla, & Proynk, 2010). Another three-factor model includes: *analysis of oppression* (defined as knowledge of the relationship between oppression and privilege); *navigation of oppression* (defined as the identification of one's oppressed status and relationship to society); and *challenging oppression* (defined as sociopolitical action) (Seider, Tamerat, Clark, & Soutter, 2017). Lastly, Shin et al. (2016) presented a model for "contemporary" critical consciousness with three intersecting factors: *racism-based critical consciousness, classism-based critical consciousness,* and *heterosexism-based critical consciousness.* These factors indicated identification of oppressed status, inequality, and privilege structures within the intersecting contexts of race, class, and sexual orientation (Shin et al., 2016). There is more variety of factors within three-factor models of CC compared to models with one or two factors.

Contexts of CC models. The construct of CC has traditionally been studied within the context of oppressed populations. It has usually included 1) the description of the struggle experienced by those who are oppressed to recognize their social position and 2) their process of developing human agency as a way to push through limitations imposed by societal systems (Diemer, Rapa, Park, & Perry, 2017). Recently, the study of CC has expanded to the development of CC in contexts of historically privileged and marginalized populations alike (Thomas, Barrie, Clawson, Jeremie-Brink, Brunner,

Hewitt, & Rowe-Johnson 2014; Shin et al., 2016). Considering both privileged and marginalized positions as contexts for CC study has had an impact on the development of the construct. Specifically, it has led to an increased understanding of the dynamics between privilege and the perpetuation of oppression (Carbado, 2005; Case, 2013, Sensoy & DiAngelo, 2017, Kushamiro, 2015). Furthermore, studying CC within the context of privilege has revealed ways in which oppression can be diminished through alliances between oppressed and privileged groups (Anzaldua, 1999; Edwards, 2006; Roades & Mio, 2000). For example, Shin, Ezeofor, Smith, Welch, and Goodrich (2016) make a unique contribution to CC research by studying the construct within the context of privilege and the analytical framework of *intersectionality.* This study offers implications for those holding multiple oppressive (*intersecting*) identities simultaneously.

CC Measures

Shin et. al (2016) asserts that there are five published measures of CC as of 2016. The author searched PSYCHinfo and ERIC databases, as well as Google Scholar using the words "critical consciousness measure" and "critical consciousness scale" for additional instruments in existence after 2016. This search produced no results.

The disparate contexts of CC study have characterized the field with inconsistency in conceptualization and lack of CC measurement (Watts et al., 2011). Some claim that no scale exists to measure critical consciousness in its purest form due to the fragmentation of the construct through measurements designed specifically for certain contexts (Watts, Diemer, & Voight, 2011). As mentioned, others point to few published

critical consciousness instruments, with no measures prior to 2014, and only five scales in existence as of 2016 (Shin et al., 2016). As such, the measurement of critical consciousness has moved at glacial speed (Diemer, et al., 2014). Of the five measures reviewed, four examined Freirean-based constructs of CC within the traditional context of oppression in youth from historically marginalized groups, while one measured CC in adults. The earlier measures of CC each tested different two-factor models, while the two most recent measures tested different three-factor models. Table 1 below provides a summary of existing measures:

Table 1

Current CC Measures

Measure	Factors	Items	Target Population
Critical Consciousness Scale (Diemer, et. al, 2014)	1. Critical Reflection: egalitarianism and perceived inequality 2. Critical Action	22	marginalized high school-aged youth *N* = 326
Critical Consciousness Inventory (Thomas, Barrie, Brunner, Clawson, Hewitt, Jeremie-Brink, Rowe-Johnson, 2014)	1. Sociopolitical development 2. Social perspective-taking	9	youth of color *N* = 200
Sociopolitical Consciousness Scale (Baker & Brookins, 2014)	1. Perceptions of one's ability and knowledge of sociopolitical development 2. Beliefs about collective and structural aspects of sociopolitical development	35	El Salvadorian adolescents (primarily rural and lower socioeconomic class) *N* = 682
Measure of Adolescent Critical Consciousness (McWhirter & McWhirter, 2015)	1. Critical awareness of inequity 2. Political efficacy or agency to respond to injustice 3. Engagement in behaviors to transform unjust conditions	17	Latino/a youth *N* = 476
Contemporary Critical Consciousness Measure (Shin, et al., 2016)	1. Classism 2. Racism 3. Heterosexism	19	Adults; recommendation for use with counselors/psychologists *N* = 606

Of the existing measures, the Critical Consciousness Scale (CCS) (Diemer et al., 2014) and the Contemporary Critical Consciousness Scale (CCCS) (Shin et al., 2016) were selected to inform this study. The CCCS was selected based on transferability of factor and item content, as well as the extensive scholarly contributions by first author, Matthew Diemer to the field of CC study (Diemer & Bluestein, 2006; Diemer, Kauffman, Koenig, Trahan, & Hsieh, 2006; Diemer & Hsieh, 2008; Diemer & Li, 2011; Diemer et al., 2014; Diemer, Rapa, Voight, & McWhirter, 2016). The CCCS was chosen for its uniqueness in being the only CC measurement that did not target a historically marginalized group and was designed for an adult population.

The CCS (Diemer et al., 2014) was designed for and administered to a population of marginalized high school-aged youth (sic). The CCS measures the seminal construct of critical consciousness with two factors: 1) critical reflection through two sub-factors of critical awareness (defined as perceived inequality) and *egalitarian beliefs* (defined as ideological thoughts about equal social status), and *critical action* as socio-political participation (Diemer et al., 2014). This measure provides confirmation of the construct through both exploratory and confirmatory factor analyses and reveals opportunities for further research within new contexts (Diemer et al., 2014).

As mentioned above, the developers of the CCCS (Shin et. al, 2016) took a different approach in designing their instrument. The CCCS aimed to measure the contemporized construct by intersecting three dimensions of institutionalized oppression: *racism*, *classism*, and *heterosexism* (Shin et al., 2016). In contrast to the CCS, this instrument measured critical consciousness among a population of 68% White and 53%

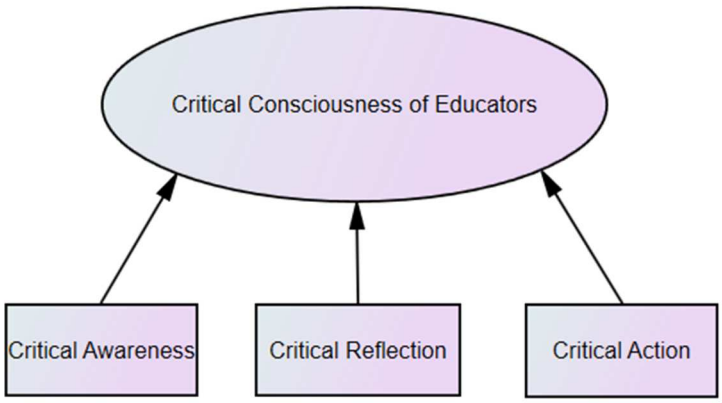
middle or upper middle class adult participants. Like the CCS, the CCCS showed good model fit through confirmatory and exploratory factor analyses (Shin et al., 2016). Shin et al. (2016) also suggest implications for future research within different contexts and intersections of oppression and privilege.

CC of Educators: A Three-Factor Model

The author proposes a three-factor model of CC of educators consisting of critical awareness, critical reflection, and critical action (see Figure 1). This model presents a separation of the critical awareness and reflection factor that was present in the one and two factor conceptual models discussed above. This is now two factors: critical awareness and critical reflection. Critical awareness is developed as a single factor in response to the theorized lack of awareness in White teachers who teach CLD students. Critical reflection and critical action are adopted and modified from Diemer's CCS (2014).

Figure 1

Theoretical Model of CC of Educators



Factor one: critical awareness. In the models of CC reviewed, critical awareness was a common factor. Combining the seminal work of Freire and more recent research in a first grade classroom, critical awareness will be defined as *one's ability to identify oppression and be aware of one's own consciousness* (Freire, 1974; Houser & Overton, 2001). The author asserts the importance of measuring critical awareness separately from critical reflection, unlike Diemer's CCS model, for a predominantly White educator population due to the scholarship that questions their cultural awareness, or lack of it. As such, critical awareness will be characterized by two sub factors: *identification of oppression* (Freire, 1970) and *awareness of one's own consciousness* (Houser & Overton, 2001).

Critical awareness: identification of oppression. Freire places importance on one's own awareness of marginalization as an initial step towards CC (1970). Shin et al. (2014) and Freire (1970) agree that an important principal of the concept of CC involves identifying multiple, connected systems of oppression in addition to one's own position. White teachers have been characterized in the literature as struggling to see their societal position in relation to oppression, culminating in racial neutrality, lack of individual cultural identity, avoidance of race acknowledgement, and lack of cultural competence (DiAngelo, 2018; Ladson-Billings, 2009; Landsman, 2018; Moore, 2018). Racial and cultural neutrality have been theorized to perpetuate racism by failing to acknowledge the beauty and existence of culture and race, as well as failing to recognize one's own racial identity (Bonilla-Silva, 2018; Landsmen, 2015). DiAngelo (2018), Landsmen (2015), and Moore (2015) describe the lack of awareness of Whiteness in White teachers who also do

not acknowledge the existence of a dominant culture. Many were trained in their teacher preparation programs to "not see color" (Landsmen, 2015). Dominant culture membership and its association with oppression has made racial identity for Whites a realization to conveniently avoid (Bonilla-Silva, 2018).

Critical awareness: awareness of one's own consciousness. Houser and Overton (2001) conducted an ethnographic study on the development of critical awareness in teachers and students in a first grade classroom. They assert that:

> A critical consciousness for freedom of choice would require not only a critical awareness of the relationship between self and society, but also an awareness of the existence of consciousness itself, and of the importance of remaining critical and conscious of one's own ever-evolving consciousness. (p. 592)

The awareness of one's own consciousness is supported by CC scholars who have described it as the metacognitive activity that occurs when one's consciousness changes (Diemer et al., 2014; Freire, 1974; Watts et al., 2011). Robyn DiAngelo (2018) writes as a White woman teaching mostly White pre-service teachers about the need for critical awareness. She states that it is important for White teachers to be aware of their own changes in consciousness and perspectives as a first step to being able to "draw connections, contrasts, and parallels" between their own selves and those whose world view is different than theirs (p.85).

Factor two: critical reflection. In the conceptual models of CC reviewed, critical reflection was also a factor. The researcher defines the factor of critical reflection as *perceived inequality and recognition of privilege* (Case 2013; Diemer, 2014). The

definition for *perceived inequality*, one of the subdomains of critical reflection offered by Diemer et al., will be utilized for this factor: "a critical analysis of perceived social inequalities, such as racial/ethnic, gendered, and socioeconomic constraints on educational and occupational opportunity" (2014, p. 2). This definition was chosen for its usefulness and reference to an educational context. However, along with other scholars, the researcher asserts that a critical analysis of perceived inequalities cannot come without simultaneously *recognizing privilege* structures (Moore, 2018; McIntosh, 2012; Sue, 2016). The identification of one's privilege is paramount to critical reflection (Case, 2013; DiAngelo, 2018; Landsman, 2018; Moore, 2018). Some scholars have discussed an absence of focus on deconstructing privilege in Freirean CC, asserting that oppression and privilege reinforce each other and should be discussed in tandem (Adams, Blumenfeld, Castaneda, Hackman, Peters, & Zuniga, 2013; Case, 2013; Jemal, 2017). Reflecting upon the relationship between privilege and oppression is essential to being able to take action as an educator through instructional planning, curriculum design, assessment, and decision making about student trajectories (DiAngelo, 2018, 2018; Moore, 2018; Rothenberg, 2016; Singleton, 2015).

Factor three: critical action. In order to serve Freire's purpose of liberation (1970; Diemer et al, 2016; Jemal, 2007; Watts et. al, 1998), *critical action* is included in this theoretical model of CC of educators as a third factor. The author of this study modifies Diemer's (2014) critical action, which he defines as "participating in individual and/or collective action to produce sociopolitical change." In the context of education, the author defines critical action as *sociopolitical activity and advocacy by educators to*

eliminate academic disparities experienced by CLD students. Freirean CC asserts that humanizing actions taken by both the oppressed and privileged work to bring liberation for the oppressed (Freire, 1970). Diemer et.al (2016) describes critical action as one's engagement in social and political activity to disrupt and change perceived inequalities. Ladson-Billings (2014) describes such action of culturally relevant teachers as part of the essential domain of sociopolitical consciousness. Critical action taken by culturally relevant teachers, as noted in her book *The Dream Keepers*, include:

- Students whose educational economic, social, political, and cultural futures are most tenuous are helped to become intellectual leaders in the classroom.
- Students' real-life experiences are legitimized as they become part of the "official" curriculum.
- Teachers and students engage in a collective struggle against the status quo.
- Teachers are cognizant of themselves as political beings

(2009, Ladson-Billings, pp. 127-128).

CC of Educators: The Need for a Measure

Due to the multiple models that have come forth in CC conceptualization and measurement, further research demands the articulation of CC factors (Baker & Brookins, 2014; Diemer et al., 2014a; Watts et al, 2011). Additionally, measures of the CC construct prevail in youth populations from historically marginalized groups but significant gaps exist in measuring CC among adult populations who do not identify as oppressed in the existing instruments. While much has been theorized about the role of CC in the effectiveness of educators of CLD learners, little is known about the

development of CC in educators or its impact on students. The development of the Critical Consciousness of Educators Scale (CCES) will be a significant contribution to the field of educator development and CC measurement.

Summary

This chapter synthesizes research about theoretical models and measures of CC used to develop the CCES. Scholars have conceptualized a variety of CC models of the original concept of Freire's CC in different contexts. The contexts of CC study have broadened to include populations from both historically privileged and oppressed groups. Current measures of CC were reviewed, which were sparse, and no measure for CC in educators was found. Literature was reviewed in support of the importance of CC in effective educators of CLD students. A three-factor model conceptualizing CC in educators was proposed, and the need for measuring CC in educators was asserted.

Research Questions

1. What is the underlying factor structure to the CCES?
2. Does the proposed theoretical model of CC in educators fit the collected data?
3. Does CCES factor structure vary across educator groups: licensed versus classified and elementary versus secondary educators? If so, are there plausible modifiers?

Research Hypotheses

The CC of educators can be measured through a self-report measure assessing a three-factor theoretical construct of CC. The three factors (1) critical awareness (2) critical reflection, and (3) critical action, situated within the context of educators, are

hypothesized to capture loadings from items developed and validated for content from the literature. Measurement invariance is hypothesized to exist within factors among educator groups.

CHAPTER THREE: METHOD

This chapter will present the CCES instrument, designed to measure the theoretical model of CC of educators presented in chapter two. The population of respondents, CCES factors and original 25 items, and the procedure for how the CCES was administered by School District X, are described. The proposed analyses used for this study of secondary data are presented.

Sample

A sample of 988 public educators from School District X responded to all items on the CCES measure. This sample was comprised of administrators, teachers, and classified educational staff (i.e., teacher aids and educational paraprofessionals) of School District X. Additionally, respondents identified as elementary (grades K-5) educators or secondary (middle and high school grades 6-12) educators, if applicable to their role. No other personally identifying information (e.g., race, age, years in profession, gender) was collected, as respondents were assured of the anonymous nature of the CCES. As

mentioned in chapter one, 96% of School District X teachers report as White. Additionally, the majority of educators in School District X identify as female (Colorado Department of Education, 2017). The respondents are a representative sample of the population of School District X educators.

CCES Instrument

The CCES is based on the three-factor model of CC of educators presented in chapter two: critical awareness, critical reflection, and critical action. Critical awareness is characterized by two sub-factors: awareness of oppression and awareness of one's own consciousness (Freire, 1970; Houser & Overton, 2001). Critical reflection is described as perceived inequality and recognition of privilege in educational contexts (Case, 2013; Diemer, 2014). Critical action is described as sociopolitical activity and advocacy by educators to eliminate academic disparities experienced by CLD students (Author; Diemer, 2014). These three factors are chosen from the conceptual models reviewed and are ordered in the way they were reviewed: the one-factor model of CC consisted of critical awareness and reflection as one dimension, Diemer's two-factor model (2014) consisted of the aforementioned factor plus critical action. The author of this study presents a 3-factor model taken from separating critical awareness and reflection from the unidimensional model into two factors, and using the second factor in the two-factor model, critical action, as the third factor in the CCES model. The factors are placed in this order in alignment with previously developed factors and models from the literature, and do not imply a successive order or causal relationships.

The CCES was developed to test a 3-factor construct of CC utilizing 25 items that align with themes found in the literature (Appendix C). Two additional demographic items (#1 and 27) were added to the measure upon the request of the district to help explain the results to the organization: #1 captures position rank (licensed or classified staff) and workplace location within the organization (e.g., elementary, middle, high school, central office) #27 is included at the request of the organization to explain levels of critical action among groups and to inform organizational morale.

Factor one: critical awareness. This first sub factor of critical awareness measured one's awareness of oppression through marginalizing experiences (Case, 2013). It is supported by both Freirean and contemporary philosophies of oppressed or privileged populations realizing the position of the oppressed in society (Case, 2013; Freire, 1970; Jemal, 2017; Shin et al., 2014). This factor is built upon the concern expressed by scholars that academic disparities experienced by CLD learners are connected to a lack of cultural awareness in a predominantly White teaching force (DiAngelo, 2018; Moore, 2015; Singleton, 2015). It is thought that this lack of cultural awareness perpetuates the oppression experienced by CLD learners in the education system (Case, 2013; Salazar, 2013; Sensoy & DiAngelo; 2017).

The items for this factor give the respondent the opportunity to affirm their recognition of oppression through their own experience or through the experience of someone with whom they share a close relationship. For the CCES measure, respondents given the following definition of marginalization: being valued to a lesser extent and/or disrespected, stereotyped, disregarded, ignored, dismissed, undervalued, or not given a

chance (Author, 2018; Merrium-Webster, 2018). Items (all responses are Yes/No) expected to load on this factor were:

2. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender?
3. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to race, culture, or native language?
4. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to seen or unseen disability?
5. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to religious affiliation?
6. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low socioeconomic status?
7. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to sexual orientation?

Two items ask participants to declare if their awareness of another person's marginalized experience had influenced their thinking and perspectives towards others. Items on this subfactor of critical awareness support the need for empathy in teachers through taking on perspectives of their students or others in society whose positions are different from theirs (Warren, 2018). These two items served to measure the sub-factor of critical awareness: awareness of one's own consciousness (Houser and Overton, 2005; Wernick, 2012). (answers are Yes/No):

8. I feel that some of my life experiences or the experiences of people close to me have allowed me a deeper perspective towards certain student groups.
9. Without having had a specific experience myself, I have been influenced by media (e.g., book, movie, documentary, or speaker), to change the way I think about a certain group(s) of people who had a marginalizing experience.

Factor two: critical reflection. This factor measured critical reflection though perceived inequality and recognition of privilege (Case, 2013; Diemer, 2014). It is supported by seminal Freirean thought (1970, 1974) as well as consistent representation in the scholarship reviewed for one, two, and three-dimensional CC models (Jemal, 2014). This factor shapes the need for educators to perceive inequalities for CLD students and see the advantages for White students in the educational system (Ladson-Billings, 2009; Singleton, 2015). CRP scholars assert the need for reflection in lesson planning, critical consumership of curriculum, individualized learning, and cultural identity of teacher and student (Delpit, 2006; Gay, 2000; Ladson-Billings, 2009; Nieto, 2013).

Diemer et al. (2014) also used critical reflection as one of the sub-factors of CC, answering to a 6-point Likert scale, with several items that were easily adapted for this measure. Instead of a 6-point scale like Diemer et al.'s (2014), responses to these items are on a seven-point Likert scale: 1 is disagree strongly, 2 is disagree, 3 is disagree somewhat, 4 is no opinion, 5 is agree somewhat, 6 is agree, and 7 is agree strongly. An odd-number Likert scale was chosen deliberately to capture neutrality on category 4 (Bonilla-Silva, 2018). Items expected to load on this factor were:

10. Certain racial or ethnic groups of students have fewer chances to get a quality education.
11. Students who come from poverty have fewer chances to get a quality education.
12. Students with disabilities have fewer chances to get a quality education
13. Girls have fewer career opportunities than boys.
14. Students who come from poverty have fewer career opportunities than students who come from middle class.
15. Students from certain racial or ethnic groups have fewer career opportunities than White students.
16. Students with disabilities have fewer career opportunities than those without disabilities.
17. Every student who preservers and works hard has an equal chance at success.
18. Students from certain racial or ethnic groups are more accepted in educational settings when they act White.
19. Evidence of societal privilege is found in the disproportionately greater number of White, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes.
20. Curriculum materials in the core academic subject areas (e.g., reading, writing, math science, social studies) are designed to reach all students.

Factor three: critical action. Critical action was measured by the sociopolitical activity and advocacy by educators to eliminate academic disparities experienced by CLD students (Author, 2018; Diemer, 2014). This factor is also supported by seminal Freirean teachings (1970, 1974) as well as CRP theory (Ladson-Billings, 2009, 2014). Critical action is seen as an outcome of critical awareness and reflection, and is imperative to Freire's end goal of liberation of the oppressed (Freire, 1970; Jemal, 2014; Watts et al., 2011). It is an important factor in conceptualizing CC of educators because it gauges actions taken by educators to provide pathways and facilitate agency that can liberate CLD learners (Duncan-Adrade & Morrell, 2014; Freire, 1974; Ladson-Billings, 2009, 2014; Singleton, 2015).

Diemer et al.'s seven-item critical action factor in his CCS measure for youth was adapted for this measure to assess one's sociopolitical engagement as it pertains to educational justice for CLD learners. Diemer et al., uses a five-point Likert scale for this domain, which was used for all but one item in this factor: 1 is seldom or never did this, 2 is once or twice last year, 3 is every few months, 4 is at least once a month, and 5 is at least once a week. There was one exception, with item # 21 having a slightly different 5-point Likert scale: 1 is seldom or never, 2 is occasionally, 3 is about half the time, 4 is often, but not every time, and 5 is consistently, almost every time. The following items were expected to load on the third factor of critical action:

21. When I have heard someone talk about a student(s) in a marginalizing way, I confront the person's thinking.

22. I have participated in sociopolitical action (e.g., march demonstration, petition, writing a letter to or calling a public official, membership in a social justice organization) to advocate for the rights or awareness of a marginalized group (e.g., women, LGBTQ, disabilities, mental health, immigration, people of color, religious freedom).
23. I have enhanced (or encouraged a teacher to change) curriculum material to include non-dominant culture perspectives and/or learning styles.
24. I have raised questions about the validity and/or reliability of assessments and data analyses for certain groups of students.
25. I have raised questions about policies and/or procedures that intentionally or unintentionally exclude students and/or their families (e.g., school-parent communication, homework policies, family events, access to activities or classes, fees, fair ADA accommodations, discipline procedures, adequate social-emotional/behavior supports).
26. I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them.

Scoring. On the first factor, critical awareness, a lower score depicting more "yes" answers to items indicates one's many lived or observed experiences that support awareness of oppression and societal positon. Research supports heightened awareness with more intersections of marginalizing factors (Case, 2013), so the more times a respondent affirmed a statement in this factor, the higher their critical awareness is

indicated. Items on the second and third factors using Likert scale responses indicate a higher level of CC when respondents reported at the high end of the Likert scale. Two exception are #17 and #20 which indicated higher CC with a lower Likert choice (this was done to avoid having to write the question in the negative), and was re-coded during analyses. All factors were expected to contribute to the higher-order factor of CC.

Procedure

As part of an in-depth analysis of organization-wide request of an assessment of equity and access mindsets, the CCES was given to every administrator, teacher, and classified educator in School District X over a two-week time frame. The name that School District X used when giving the CCES to the organization was "Equity Observations and Experiences Inventory." It was referred to as a "survey."

Respondents were contacted via email utilizing Survey Monkey Premier Version as the platform. An email message was sent to respondents (Appendix C) indicating to the purpose of the measure, its alignment to goals set forth by district 100% goal and the Board of Education's Resolution document, as well as assurance of anonymity. While this was a strong request of the organization that employees complete the survey, participation was required. Respondents were informed it would take approximately five to seven minutes to complete. Respondents could also choose if they wanted to take the survey in a language other than English through a feature on the Survey Monkey Platform. Finally, the president of the teacher's union endorsed the measure by jointly signing off on the email message to the organization, encouraging participation to help inform district goals.

After reading the message and general purpose and instructions for the measure, respondents were able to click on a unique link to the measure that is only usable once. All 27 items (25 original CCES items plus two additional items that were organization-specific) were required to answered in order to submit it. Respondents could go back to any question and review or change their responses, but had to answer each item. As such, the analyses of the CCES had no issues related to missing data.

After the two-week time frame elapsed, the link to the measure expired and no more data was collected by the organization. Secondary data was obtained through permission from both the IRBs of School District X and the University of Denver to be used for this study. This secondary data analysis did not qualify as human subjects research, according to the University of Denver's human subjects research criteria, and was therefore granted exemption status for the secondary data analysis.

Analysis

In this section, each research question and its associated analyses are discussed. All analyses utilized SPSS (IBM, 2016), and/or M Plus 8.0 (Muthan & Muthan, 2018) statistical software. To address the inquiry of factor structure, model fit, and measurement invariance addressed in all three questions, an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted with the same set of items, but utilizing two different samples each equal to half of the total population of respondents (De Vellis, 2003; Fabrigar, MacCallum, and Strahan, 1999). In doing so, the factor structure of the CCES was discovered and confirmed with independent samples. The sample was randomly split in half to conduct these factor analyses. Both EFA and

CFA, $n = 494$, exceeded minimum sample guidelines for these analyses (Tabachnick & Fiddell, 2013).

Tests for internal consistency measuring Cronbach's alpha were conducted to see how items held within each of the three sub factors as well as the overall scale. Reliability estimates of $\geq .70$ are considered acceptable for research in the social sciences, suggesting a unified dimension within a group of items (Bobko, 1995).

Research Question 1: EFA. What is the underlying empirical factor structure to the CCES?

An oblique rotational method (promax) was used because any obtainable factors are theoretically hypothesized to be related (Freire, 1973; Watts et al., 2011) and evidence suggests that CC components are empirically correlated (Diemer & Li, 2006). The nature of the instrument does not permit for missing data, so imputation was unnecessary. Data was analyzed using Full Information Maximum Likelihood (FIML), which utilizes all existing data points and provides goodness of fit evaluation (Muthen & Muthen, 2010; Brown, 2015).

Factors were selected according to Kaiser's criterion of retaining factors with eigenvalues greater than one, the interpretability of obtained factor solutions, the internal consistency of obtained factors, and model fit indices (Brown, 2015). EFA was also used to advise keeping or removing certain items depending on their loading behavior. Items were examined for loading values, with item loadings $\leq .4$ (20% of the variance) dismissed from the factor. Additionally, items with loadings $> .4$ on more than one factor were also discarded. Factors with fewer than three items loading were not retained.

After items or factors that were dropped through EFA, the new EFA solution was run again in the same sample to verify new model fit, factor retention, and item loadings. Models were compared for goodness of fit using various available indices provided in the literature and in the software: RMSEA < .08, CFI ≥ .90, and (S)RMR < .08 (Kline, 2016). The results of EFA were used to inform the feasibility of the proposed factor structure within the CCES.

Research Question 2: CFA. Can the proposed theoretical model of CC in educators be fitted to the data?

After first using EFA to study factor structure of the CCES, CFA was conducted using an independent sample, $n = 494$, that was equal to half of the total sample for the study. In CFA, items are only allowed to load on one of the three specified factors, so all other loading possibilities were fixed to zero (Muthen & Muthen, 2010). Additionally, due to using an oblique rotation in the EFA, the correlations between all factors were estimated in the initial three-factor CFA. Next, the higher order factor CFA model with the overarching latent trait of CC was fitted to the data.

Determination of model fit for both the three-factor and the higher order factor models was examined using a chi-square significance test, as well as comparison against the following indices and threshold values: RMSEA < .08, CFI ≥ .90, and (S)RMR < .08 (Kline, 2016). It is ideal for all items that significantly load onto certain factors in the EFA to do so in CFA. This provides psychometric support for the CCES and its factor structure due to replicating results with an independent sample through CFA (Brown, 2015; Kline, 2016).

Research Question 3: Measurement Invariance. Do the CCES results vary across educator groups? If so, are there plausible modifiers?

Using a multiple-groups solution CFA method, configural invariance was tested, examining the equivalency of the CFA higher order model fit in two sets of educator groups: elementary teachers versus secondary teachers and licensed versus classified educators. Measurement invariance (MI) involves determining whether scores from the operationalization of a construct retain uniform meaning under different circumstances, which could mean different testing environments, times, populations, or administration methods (Kline 2016). As such, MI testing is useful in determining how well a measurement model generalizes across groups of individuals (Brown, 2015). In this way, test bias for or against certain participant groups can be examined when noninvariance is detected. Configural invariance is the least restrictive level of invariance, which states that "the same factors are manifested in somewhat different ways in each group" (Kline, 2016, p. 397). If this baseline quality is not met, then the measure does not meet invariance requirements at any level. Therefore, MI is desirable in a well-constructed measure.

The nature of the CCES instrument demands careful consideration of measurement invariance methods. Because the CCES measure produces categorical data (binary on factor one, 7-point categorical on factor two, and 5-point categorical on factor three), weighted least squares estimation (WLS) was needed to correct for otherwise arbitrary categorical distinctions (Muthén & Muthén, 2010). As such, this analysis used robust WLS estimators with theta parameterization for identification (Muthén & Muthén,

2010). Due to having binary variables in the data, only configural and scalar tests for invariance are allowed to run on Mplus (Muthen & Muthen, 2013). According to Muthen & Muthen (2013) "the metric invariance setting is not allowed for WLS because the model is not identified for binary variables due to scale factors or residual variances being allowed to vary across groups" (p. 6). Therefore, after establishing baseline measurement through configural invariances tests with WLS estimation and theta parameterization, invariance at the scalar level was examined as the next possible level of constraint capable of being analyzed by Mplus for data with binary variables.

According to Sass et al (2014), in a review of invariance testing methods, the chi-squared difference test ($\Delta\chi^2$) is the best measure of model fit when comparing models with categorical or ordinal indicators analyzed using robust WLS estimation. Chen (2007) found that commonly used fit indices such as RMSEA, CFI, and Tucker Lewis Index (TLI) are sensitive to a lack of invariance. Conversely, Bovaird and Koziol (2012) caution that further study is needed to determine the best model fit indicators for invariance analysis. As such, each test of invariance in this study will be examined using multiple indicators to determine plausibility for adequate fit at each level of invariance for each of the two sets of educator groups. Model fit for each level of invariance will check against the following thresholds: CFI $\geq$ .9; TLI $\geq$ .95; RMSEA < .08, SRMR < .08; and $\Delta\chi^2$ between configural versus scalar models should not be significant, $p \geq .05$ (Kline, 2016).

Summary

Exploratory factor analysis was used to determine the empirical factor structure of the CCES, retention of items and factors, and reliability estimates for the factors and overall measure. CFA was conducted to test whether the theoretical model was an adequate fit to the data using several fit indices. The three-factor CFA model was tested for fitness first, then the higher-order CFA model. Using the higher-order CFA model, MI was tested between two sets of educator groups, beginning with configural invariance and progressing to scalar invariance. This was done to determine CCES measurement behavior across different groups of educators. If invariance is achieved beyond a baseline configural model, then the CCES can be said to have invariance across educator groups.

CHAPTER FOUR: RESULTS

This chapter shares the results of analyzing the CCES data. First, descriptive statistics for the respondent population are shared. Then, the research questions are addressed, with results of the exploratory factor analysis (EFA) presented first. Next, confirmatory factor analysis results are shared with three-factor and higher-order factor model illustrations. Lastly, results of measurement invariance tests are presented and compared to determine if the CCES is invariant across various educator groups.

Sample

A sample of 988 public educators from School District X responded to all items on the CCES measure (Appendix A). Demographic information about educators was not collected by the CCES. However, demographics for School District X licensed teachers are reported by the state department of education in Appendix D, (Colorado Department of Education, 2018), which is useful for approximating the sample of respondents to the CCES. Of the 988 School District X educators responding to the CCES, 639 identified as

licensed teachers, representing approximately 74% of the population reported by the state in Appendix D (Colorado Department of Education, 2018). The largest demographic subgroups in the state-reported data were White teachers (94%) and female teachers (77%). The positions not represented by these state-reported data are classified staff (e.g., hourly paid educators such as teacher aids) and administrative staff (district administrators and building principals). The CCES collected information on educator position (Table 2) and age level of students taught (Table 3). For position, respondents identified as elementary (grades K-5) educators or secondary (middle and high school grades 6-12) educators, if applicable to their role. Respondent information such as race, gender, education level, or years in profession was not collected due to protecting anonymity of respondents.

Table 2

CCES Respondents by Position

Position	Count	Percent of Total
Administrative	53	5
Licensed Teacher	639	65
Classified staff	296	30
Total	988	100

Table 3

CCES Respondents Identifying Specifically as Elementary or Secondary Educators

Educator Level	Count	Percent of Total
Licensed Elementary	234	23.5
Classified Elementary	173	17.5
Licensed Secondary	322	33
Classified Secondary	88	9
Other PK-12 staff	171	17
Total	988	100

Initial CCES Summary Data

Descriptive results and frequency tables for all items can be found in Appendices E and F, respectively. Some of the results discussed later in this chapter first stood out in review of the summary data.

The first factor, critical awareness, asked respondents six yes/no questions about if they or someone they knew closely had experienced marginalization due to gender, race, socioeconomic, religion, disability, or sexual orientation. This measures awareness of oppression. The most affirmed experience was gender marginalization, at $n = 504$, or 51% responding "yes" to this experience. The total number of respondents who answered "no" to all of all of the items on factor one, to those who answered "yes" to all six items, were calculated. Thirty-one percent of educators responded "no" to all of the items in factor one, and nearly half of all respondents identified with one marginalizing experience. The frequency of respondents identifying two or more of the scenarios began to deteriorate for those answering "yes" to three or more items.

Table 4

Factor 1: Number of Yes Responses to Items

Number of Yes Responses	Frequency	Percent	Cumulative Percent
0 (did not say Yes to any items in F1)	303	31	31
1	144	14.5	45.5
2	115	12	57.5
3	117	12	69.5
4	102	10	79.5
5	94	9.5	89
6 (said Yes to all items in F1)	113	11	100
Total	988	100	

The second factor, critical reflection, produced summary data with emerging trends. This factor measured perceived inequality and recognition of privilege. As stated in chapter three, offering the response category, "no opinion" was intentional, as this indicated neutrality. The items with the highest frequency of response in the "no opinion" category were all items measuring perceived racial inequality and White privilege (Table 5). Conversely, the three items with the lowest "no opinion" response rates measured critical reflection in the areas of poverty and disability (Table 6).

Table 5

Factor 2: Items with Highest "No Opinion" Response Frequency:

Item	Frequency	Percent
Q18 Students from certain racial or ethnic groups are more accepted in educational settings when they act White	244	24.7
Q19 Evidence of societal privilege is found in the disproportionately greater number of White, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes	208	21.1
Q15 Students from certain racial or ethnic groups have fewer career opportunities than White students	95	9.6

Table 6

Factor 2: Items with Lowest "No Opinion" Response Frequency

Item	Frequency	Percent
Q11 Students who come from poverty have fewer chances to get a quality education	32	3.2
Q16 Students with disabilities have fewer career opportunities than those without disabilities	51	5.2
Q14 Students who come from poverty have fewer career opportunities than students who come from middle class	54	5.5

Lastly, items Q13 and Q16 had the lowest and highest means, respectively, in factor two. Item Q13 measured perceived gender inequality and recognition of male privilege. This item was the only one whose mean was $\mu < 4.0$, indicating more than half of educators in this study did not perceive females to have inequality compared to males. Only 16% of respondents agreed or strongly agreed to unequal career opportunities based on gender (Table 7). Item Q16 had the highest mean, the only one with $\mu > 5.0$, indicating this population of educators overwhelmingly perceived students with disabilities to have unequal career opportunities. Less than 10% of respondents disagreed in any way with this item (Table 8).

Table 7

Factor 2: Item with Lowest Mean

Q13: Girls have fewer career opportunities than boys	Frequency	Percent	Cumulative Percent
Disagree strongly	129	13.1	13.1
Disagree	198	20	33.1
Disagree somewhat	148	15	48.1
No opinion	81	8.2	56.3
Agree somewhat	271	27.4	83.7
Agree	124	12.6	96.3
Agree strongly	37	3.7	100

Table 8

Factor 2: Item with Highest Mean

Q16: Students with disabilities have fewer career opportunities than those without disabilities	Frequency	Percent	Cumulative Percent
Disagree strongly	14	1.4	1.42
Disagree	33	3.3	4.8
Disagree somewhat	46	4.7	9.4
No opinion	51	5.2	14.6
Agree somewhat	334	33.8	48.4
Agree	333	33.7	82.1
Agree strongly	177	17.9	100

Factor three, critical action, showed the highest frequency of responses consistently falling into category one. Critical action measured the sociopolitical activity and advocacy taken by educators to eliminate CLD academic disparities. Category one indicated "seldom or never," as a response to reporting how often one had taken a specific critical action for students. In all of the items in factor three, category one was selected by 42-47% of the respondents, indicating less variance in responses than factor two's seven categories.

The mean of all items was calculated for each factor. Critical awareness (binary scale, 1 = yes, 2 = no) mean of all items was μ =1.61, indicating a tendency to answer "no" more frequently. Critical reflection (7-point scale, with higher categories indicating higher CC), was μ = 4.62, indicating population tendency to answer in more central categories that show soft disagreement, neutrality, or soft agreement. Critical action (5-point scale, with higher categories indicating higher CC) was μ = 2.08, indicating population tendency to answer at the lower end of the scale.

Research Question 1: What is the underlying empirical factor structure of the CCES?

EFA was conducted with a randomly selected sample (n = 494) equal to half of the overall number of respondents (n = 988). EFA was used to determine the underlying empirical factor structure of the CCES. The analysis was conducted using MPlus 8.0 (Muthen & Muthen, 2018). Yes/no answers to the first factor were recoded to align the direction of the scale on each factor to reflect higher scores with higher CC. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .92, which fell within the

recommended .8-1.0 range, and Bartlett's test of sphericity was significant, $\chi^2 = 5354.81$ (300), $p < .001$, which indicated that the relationship between CCES items was strong enough to conduct factor analyses (Worthington & Whittaker, 2006). Factors were extracted using WLSMV (Weighted Least Squares, Mean, and Variance-adjusted) estimation for the categorical indicators. There were no missing data because the CCES could only be submitted by respondents if fully completed.

A factor structure solution was obtained by referring to Kaiser's criterion (retaining factors with eigenvalues greater than one), the interpretability of obtained factors, the internal consistency of obtained factors, and model fit indices provided by MPlus. Initially the EFA results suggested competing three, four, and five factor models. EFA was also used to inform the retention and removal of CCES items (Worthington & Whittaker, 2006). Items were removed if they did not load substantially on a distinct factor with a minimum of three items. Items that met the priori criteria loading of ≥ .4 and with no significant cross-loadings onto other factors at ≥ .4, were retained. As such, six items from the original 25-item measure were not retained. Item 8 was the only item loaded onto the fourth factor, thereby eliminating the fourth factor and item 8. Item 9 did not load significantly at ≥ .4 criteria on any factor. Item 17 was removed for its interference with internal consistency of the measure, possibly due to semantics and being a re-coded item. Item 20 was removed because it was the only item loaded on the fifth factor, thereby eliminating the fifth factor and item 20. Lastly, items 21 and 22 did not load on any factor at the loading of ≥ .4 criteria, so they both were eliminated.

In comparing the three, four, and five factor models and factor and item behavior, consideration of these criteria resulted in a final model of three factors with 19 items. The three-factor model was determined to be the final EFA model because it yielded a much more interpretable factor structure than the competing four or five factor solutions (Horthington & Whittaker, 2006). Model fit indices suggested that the three factor solution was a relatively good fit to the data. The Standardized Root Mean Square Residual (SRMR) value (.049) was a below the suggested .08 cutoff for very good fit; the Root Mean Square Error of Approximation (RMSEA) value (.054) was below the .06 cutoff for "very good" fit (Kline, 2016).

This solution was composed of three conceptually meaningful factors reflective of the proposed CC conceptual model. The first factor, critical awareness consisted of six items that measure respondents' identification of oppression through affirmation of marginalizing experiences. The second factor, critical reflection, consisted of nine items that measure perceptions of inequality and recognition of privilege in the context of education. The third factor, critical action, consisted of four items that measured actions of advocacy for culturally and linguistically diverse (CLD) learners in the context of education.

The three CCES factors correlated with one another at statistically significant levels, $p < .001$. Critical awareness and critical reflection correlated most strongly, $r = .46$, followed by critical awareness and critical action, $r = .38$, and critical reflection with critical action, $r = .37$. Table 9 shows the factor correlation matrix.

Table 9

Factor Correlation in EFA (n = 494)

Factor	1: Critical Awareness	2: Critical Reflection	3: Critical Action
1	1.000		
2	0.463*	1.000	
3	0.377*	0.372*	1.000

* $p < .01$

Table 10 shows the EFA loadings of items on factors. Items are grouped by factor, and loadings < .4 (20% of variance) are replaced by zeros for ease of interpretation. The resulting 19-item, three-factor model is supportive of the proposed theoretical model. The Cronbach's alpha for the full 19-item CCES measure is $\alpha = .85$, which exceeds the $\geq .80$ level for "good" internal consistency for reliability (DeVellis, 2003; Kline, 2016). The first and third factors, critical awareness, $\alpha = .80$, and critical action, $\alpha = .81$, also meet this criterion. The second factor, critical reflection, $\alpha = .92$, exceeds the $\alpha \geq .90$ level for "excellent" internal consistency for reliability (DeVellis, 2003; Kline, 2016).

Table 10

Critical Consciousness of Educators Exploratory Factor Analysis ($n = 494, \alpha = .86$)

Factor name and items	Loadings		
	1	2	3
F1: *Critical Awareness* ($\alpha = .80$)			
Q2	0.679*	.00	.00
Q3	0.767*	.00	.00
Q4	0.771*	.00	.00
Q5	0.652*	.00	.00
Q6	0.852*	.00	.00
Q7	0.843*	.00	.00
Factor 2: *Critical Reflection* ($\alpha = .92$)			
Q10	.00	.889*	.00
Q11	.00	.924*	.00
Q12	.00	.677*	.00
Q13	.00	.722*	.00
Q14	.00	.951*	.00
Q15	.00	.916*	.00
Q16	.00	.643*	.00
Q18	.00	.734*	.00
Q19	.00	.771*	.00
Factor 3: *Critical Action* ($\alpha = .81$)			
Q23	.00	.00	.632*
Q24	.00	.00	.694*
Q25	.00	.00	.831*
Q26	.00	.00	.749*

*$p < .01$

The results of EFA suggest that the CCES consists of three factors. Each subscale demonstrated strong internal consistency with $\alpha \geq .70$ Moreover, based on factor loadings, the subscales were distinct enough to be considered as separate scales. In summary, the results of the EFA offer preliminary support for the likelihood of measuring CC among educators with these factors and items.

Research Question 2: Does the proposed theoretical model of CC among educators fit the observed data adequately?

The three-factor model identified in EFA was further validated by CFA, with an independent sample of randomly selected participants (n = 494) equal to half the total number of respondents (Worthington & Whittaker, 2006). The analysis was conducted using MPlus 8.0 statistical software (Muthen & Muthen, 2018). The initial three-factor CFA was an adequate fit to the data: $\chi^2 = 410.97(149)$, $p < .001$; RMSEA = .06, 90% confidence interval [CI] = [.05, .07], CFI = .98, SRMR = .075). RMSEA exceeded the ≤ .08 threshold for good fit, CFI was above the ≥ .95 threshold, and SRMR was just below the ≤ .08 threshold for good fit (Hu & Bentler, 1999; Kline, 2016). Factors were positively correlated as in EFA (Table 11) The three CCES subscales were internally consistent, demonstrating Cronbach's alpha estimates of α = .84 (*critical awareness*), α = .93, (*critical reflection*), and α = .77 (*critical action*), with overall α = .86 for the CCES. These internal consistency values met or exceeded the α =.70 general threshold for adequate internal consistency (Bobko,1995). Figure 2 illustrates the final CFA three-factor model of the CCES with unstandardized estimates. Figure 3 shows the final CFA model with the higher-order factor. Appendix G shows standardized and unstandardized estimates, standard errors, and r-squared values for the factor loadings in the CFA analysis.

Table 11

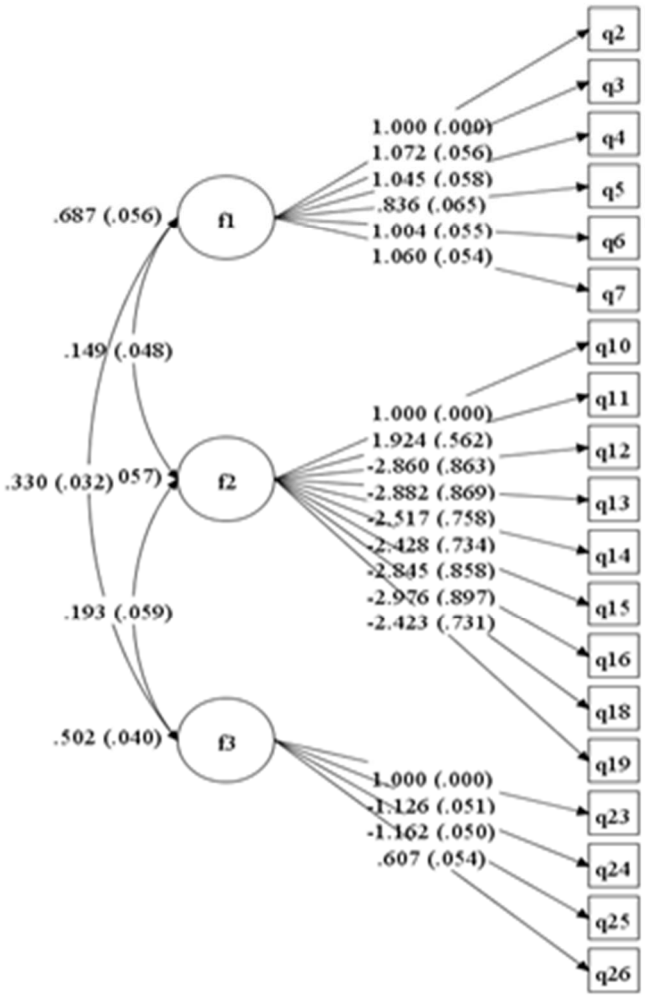
Factor Correlation in CFA (n = 494)

Factor	1: Critical Awareness	2: Critical Reflection	3: Critical Action
1	1.000		
2	0.149*	1.000	
3	0.330*	0.193*	1.000

* $p < .0$

Figure 2

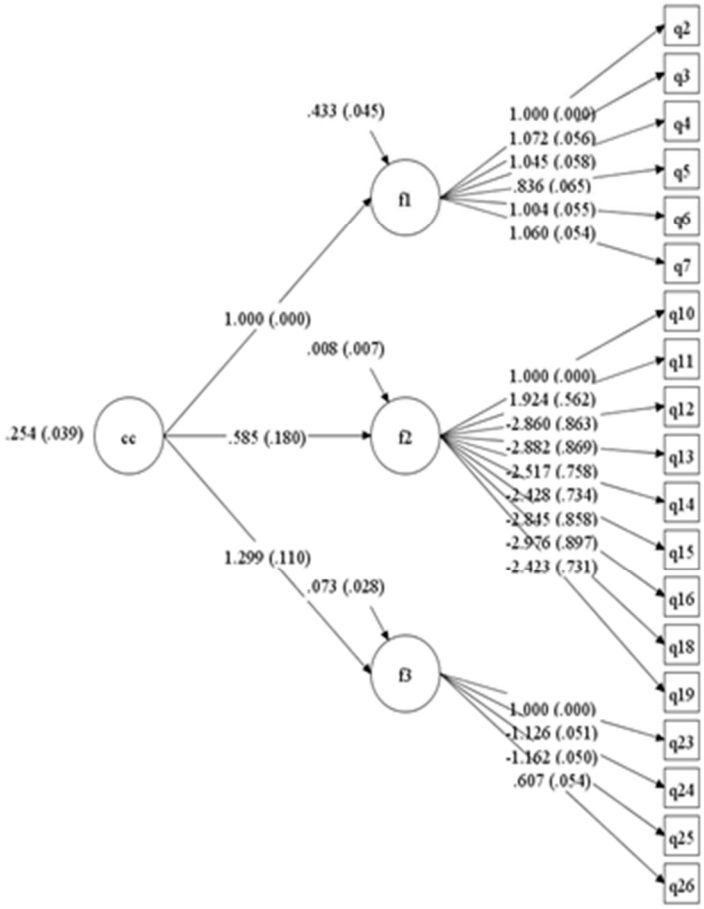
Three-Factor CFA Model with Unstandardized Estimates



The higher-order CFA model also fit the data: $\chi^2 = 410.97(149)$, $p < .001$; RMSEA = .06, 90% confidence interval [CI] = [.05, .07], CFI = .98, SRMR = .075). RMSEA exceeded the ≤ .08 threshold for good fit, CFI was above the ≥ .95 threshold, and SRMR was just below the ≤ .08 threshold for good fit (Hu & Bentler, 1999; Kline, 2016). Figure 3 shows the final CFA model with higher order factor of CC.

Figure 3

Final CFA Model with Higher Order Factor (Unstandardized)



The empirical factor structure produced by EFA was supported in CFA, which provided psychometric support for construct validity (Kline, 2016; Worthington & Whittaker, 2006). The relationship between each factor and items are discussed below.

Appendix D provides a table of internal consistency estimates, unstandardized and standardized factor loadings, standard errors, and R-square values for the final CFA model.

Factor 1: critical awareness. Significant proportions of variance were explained by the relationship between the latent trait of critical awareness and all items on this factor, $p < .01$: 69% of the variance in Q2 can be explained by its relation to critical awareness, 79% in Q3, 75% in Q4, 48% in Q5, 69% in Q6, and 77% in Q7. The greatest amount of variance explained by an item's relation to critical awareness was in Q3, which asked respondents to identify marginalization due to race, culture, or native language. Conversely, the least amount of variance explained by the relationship to critical awareness was seen by item Q5 which asked participants to identify marginalization due to religious affiliation.

Factor 2: critical reflection. Significant proportions of variance were explained by the relationship between the latent trait of critical reflection and all items on this factor, $p < .01$. Ten percent of the variance in Q10 can be explained by its relation to critical reflection, 35% in Q11, 78% in Q12, 79% in Q13, 60% in Q14, 56% in Q15, 77% in Q16, 84% in Q18, and 56% in Q19. The greatest amount of variance explained by an item's relation to critical awareness was in Q18, which asked respondents to rate their agreement with the following statement: Students from certain racial or ethnic groups are more accepted in educational settings when they act White. Conversely, the least amount of variance explained by the relationship to critical reflection was seen by item Q10

which asked participants to rate their agreement with the following statement: Certain racial or ethnic groups have fewer chances to get a quality education.

Factor 3: critical action. Significant proportions of variance were explained by the relationship between the latent trait of critical action and all items on this factor, $p <$ .01. Fifty percent of the variance in Q23 can be explained by its relation to critical action, 64% in Q24, 68% in Q25, and 19% in Q26. The greatest amount of variance explained by an item's relation to critical action was in Q25, which asked respondents to rate their frequency response to the following statement: I have raised questions about policies or procedures that intentionally or unintentionally exclude student and and/or their families. Conversely, the least amount of variance explained by the relationship to critical awareness was seen by item Q26, which asked respondents to rate their frequency response to the following statement: I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them.

Higher-order Factor: CC. All three factors of CC explained significant portions of variance with the higher order factor of CC. The amount of variance in critical awareness factor explained by the higher order latent trait of CC was 37% ($p < .01$). Of the three factors in this model, critical awareness had the least amount of variance explained by its relationship to the higher order CC factor. Of the three factors in this model, critical reflection had the most amount of variance explained by its relationship to the higher order CC factor at 92% ($p < .01$). The amount of variance explained by the

relationship between critical action factor and the higher order latent trait of CC was 85% ($p < .01$).

The data fit both the three-factor model and the higher-order model equivalently and adequately. The higher-order model will be used in subsequent analyses for this study because it portrays the proposed theoretical construct of CC of educators, with the higher order factor of CC made up of the three factors of critical awareness, critical reflection, and critical action.

Research Question 3: Does CCES results vary across educator groups?

Using MPlus statistical software, MI for the CCES was tested for sets of groups of educators based on position and grade level of students taught. For Invariance Test 1, all educators were licensed teachers (not administrators or classified staff), and all identified as either teaching elementary (grades K-5) ($n = 234$) or secondary (grades 6-12) ($n = 322$) students. For Invariance Test 2, educators were randomly selected from the data to create balanced groups of licensed educators ($n = 312$) (salaried teachers and administrators in a role requiring a state-issued license) or classified educators ($n = 314$) (hourly paid with no teaching license requirement). Table 3 provides a summary of the **frequencies** in these groups for the entire sample.

Model identification. As explained in chapter three, the CCES measure produces categorical data, therefore weighted least squares estimation (WLS) with theta parameterization was used for proper identification (Muthén & Muthén, 2010). For data with binary variables using WLS estimation and the theta parameterization, the configural invariance tests have factor loadings and thresholds freed across groups,

residual variances for all groups fixed at one, and factor means for all groups fixed at zero. For proper identification using theta parameterization in configural invariance tests, if the metric of a factor is set by freeing all factor loadings and fixing the factor variance to one, then the factor variance is fixed at one in all groups (Muthen & Muthen, 2013). Due to binary variables in the data, only configural and scalar tests for invariance are allowed to run on Mplus as the metric invariance model is not identifiable for these data conditions (Muthen & Muthen, 2013). Therefore, for this study, after establishing baseline measurement through configural invariance, invariance at the scalar level was examined as the next possible level of constraint for models with binary variables.

According to Muthen & Muthen (2010) the scalar invariance test using WLS estimates with theta parameterization has factor loadings and thresholds constrained to be equal across groups, residual variances fixed at one in one group and free in the other group, and factor means fixed at zero in one group and free in the other group. Additionally, if the metric of a factor is set by fixing a factor loading to one, factor variances are free across groups; and if the metric of a factor is set by freeing all factor loadings within a group and fixing the factor variance to one, the factor variance is fixed at one in one group and is free in the other groups (Muthen & Muthen, 2010).

The chi-squared difference test ($\Delta\chi^2$) as well as RMSEA, SRMR, CFI, and Tucker Lewis (TLI) indices are all sensitive to a lack of invariance and will be used to determine adequate model fit for invariance constraints across elementary and secondary teachers (Sass et. al, 2014; Chen, 2007). Model fit for each level of invariance will check against

the following thresholds: CFI ≥ .9; TLI ≥ .95; RMSEA < .08, SRMR < .08; and $\Delta\chi^2 \geq$ .05.

Test 1: elementary versus secondary configural invariance. An examination of the extent to which the higher-order CFA model measuring CC of educators exhibited measurement invariance between elementary and secondary teachers was conducted using Mplus software (Muthén & Muthén, 1998-2018). WLSMV estimation and theta parameterization was used to estimate configural models (Muthén & Muthén, 1998-2018). The factor variances were fixed to one and the factor means were fixed to zero in each group for identification, such that all item factor loadings and thresholds were then estimated. As stated above, the residual variances are not identified in the configural invariance model; as such, they were all constrained to one in both groups. As shown in Table 13, the configural model had adequate fit, χ^2 (299) = 538.50, $p < .01$; RMSEA = .05, CFI = .98; TLI = .98; SRMR = .05. This test established a baseline model to which increasing scalar invariance constraints could be compared next. Configural invariance results indicated that items load onto factors in the same pattern across elementary teachers and secondary teachers, supplying evidence that the data fit the constraints of configural invariance adequately. Diagrams of the configural results for the elementary and secondary teacher groups is shown in Appendix I.

Test 1: elementary versus secondary scalar invariance. Equality of the item thresholds across groups was examined in a scalar invariance model. The factor variances and means were fixed to one and zero, respectively, in elementary teachers for identification, but the factor variances and means were then estimated for secondary

teachers. All factor loadings and item thresholds were constrained to be equal across groups. Residual variances were constrained to one for elementary teachers, then allowed to be free for secondary teachers. The scalar invariance model was right at the threshold value for determining if it did not fit significantly worse than the configural invariance model, $\Delta\chi^2$ (71) = 92.21, p = .05 (rounded from actual *p*-value of .0462). The scalar model showed overall good model fit, χ^2 (370) = 601.93, $p < .01$; RMSEA = .05; CFI = .99; TLI = .99; SRMR = .05 (Table 12). The results of the scalar invariance test provide evidence for measurement invariance at higher levels of constraint across elementary and secondary teachers. Scalar invariance tests if thresholds have the same intercepts across groups. By testing this, scalar invariance determines if an incremental change in the measure for elementary teachers is equal to a similar incremental change in the measure of secondary teachers (on the same scale). The scalar invariance constraints fit these data adequately.

In conclusion, these analyses showed that scalar invariance was obtained across elementary and secondary teachers (Table 12). It can be said that the relationships of the items to the latent factor of CC of educators were equivalent between elementary and secondary teachers, and that no measurement bias was detected for either group. The diagram for scalar invariance for the elementary group is shown in Appendix I.

Table 12

Results of Measurement Invariance Tests for Elementary vs. Secondary Teachers

Model	χ^2	$\Delta\chi^2$	RMSEA	CFI	TLI	SRMR
Configural	538.50 (299)*	---	.05	.98	.98	.05
Scalar	601.93 (370)*	(71) 92.21**	.05	.99	.99	.05

*$p < .01$

**$p \geq .05$

Test 2: licensed versus classified configural invariance results. An examination of the extent to which the higher-order CFA model measuring CC of educators exhibited measurement invariance between licensed and classified educators was conducted using Mplus software (Muthén & Muthén, 1998-2018). WLSMV estimation and theta parameterization was used to estimate configural models (Muthén & Muthén, 1998-2018). The factor variances were fixed to one and the factor means were fixed to zero in each group for identification, such that all item factor loadings and thresholds were then estimated. As stated above, the residual variances are not identified in the configural invariance model; as such, they were all constrained to one in both groups. As shown in Table 14, the configural model had adequate fit, χ^2 (299) = 568.90, $p < .01$; RMSEA = .05, CFI = .99; TLI = .98; SRMR = .05. This test established a baseline model to which increasing scalar invariance constraints could be compared next. Configural invariance results indicated that items load onto factors in the same pattern across licensed and classified educators, supplying evidence that the data fit the constraints of configural invariance adequately. Diagrams of the configural results for the licensed and classified educator groups are shown in Appendix I.

Test 2: licensed versus classified scalar invariance results. Equality of the item thresholds across groups was examined in a scalar invariance model. The factor variances and means were fixed to one and zero, respectively, in licensed educators for identification, but the factor variances and means were then estimated for classified educators. All factor loadings and item thresholds were constrained to be equal across groups. Residual variances were constrained to one for licensed educators, then allowed to be free for classified educators. The scalar invariance model fit significantly worse than the configural invariance model, $\Delta\chi^2$ (71) = 166.38, p < .01. The scalar model showed adequate model fit, χ^2 (370) = 717.82, $p < .01$; RMSEA = .06; CFI = .98; TLI = .98; SRMR = .05 (Table 13). The results of the scalar invariance test provide some evidence for measurement invariance across licensed and classified educators, but show a breakdown in measurement invariance from the configural model.

In conclusion, the analyses in Test 2 showed that the CCES measure had more difficulty holding to the constraints of scalar invariance for licensed versus classified educators. There may be bias present in the measure between these two groups. A plausible modifier could be the educational preparation for licensed versus classified educators. Licensed educators are required to carry a state-issued license that verifies one's completion of a formal teacher or administrator preparation program and college coursework. Classified educators are not required to have a license or specific college coursework other than a two-year degree in many cases. The diagram for scalar invariance for the licensed group is shown in Appendix I.

Table 13

Results of Measurement Invariance Tests for Licensed vs. Classified Educators

Model	χ^2	$\Delta\chi^2$	RMSEA	CFI	TLI	SRMR
Configural	568.90* (299)	---	.05	.99	.99	.05
Scalar	717.82* (370)	(71) 166.38*	.06	.98	.98	.05

*$p < .01$

Summary

Results from summary data for the CCES established emerging trends in other analyses in the chapter, including population homogeneity and the incidence of neutrality in response to items isolating race. EFA results indicated a three-factor model fit the data best, resulting in a 19-item scale with good reliability overall and for each subscale on the CCES. Factors were correlated in both the three-factor EFA and CFA models. CFA tested the three-factor and higher-order theoretical factor models and found both to have good model fit by various indices. Lastly, measurement invariance was tested using WLS estimation between two sets of educator groups at configural and scalar levels (not metric). This was due to binary variables in the categorical data and the need to properly identify such models within the theta parameterization. Results from the invariance tests indicated that the CCES has invariance among educator groups, and that the measure held up more strongly through scalar constraints for the elementary versus secondary groups.

CHAPTER FIVE: DISCUSSION

This chapter discusses results in three parts: 1) summary of findings, 2) significance of measure, and 3) implications of CC measurement and development for educators.

Summary of Findings

A three-factor model was the best fit to the data; both empirical and confirmatory results supported this. The agreement of results between EFA and CFA further validated the theoretical model of CC proposed in chapter two. In addition to the measure demonstrating strong reliability, each of the factors had strong reliability and exhibited statistically significant directional correlations.

Summary data. A first glimpse at the descriptive and frequency data showed two important findings discussed further in this chapter. Firstly, 31% of School District X respondents answered "no" to having experienced marginalization themselves or witnessed a marginalizing experience of someone with whom they had a close

relationship. This is an important finding because it provides evidence for the hypothesized low cultural awareness in White teachers (DiAngelo, 2018; Moore, 2015).

The second important finding in the descriptive data is the significant increase in "no opinion" responses for the critical reflection factor when the item assessed perceived inequality or recognition of privilege related to race. For example, 5% of respondents responded "no opinion" to item Q16: students with disabilities have fewer career opportunities than those without disabilities. However, 25% of respondents selected "no opinion" to item Q18: students from certain racial or ethnic groups are more accepted in educational settings when they act White. As chapter 3 discusses, the response choice of "no opinion" was offered deliberately to capture neutrality. Responses of neutrality were highest in items about race on the CCES and lowest in items about disability. This adds to the scholarship describing lacking racial and cultural awareness and racial identity in White teachers (DiAngelo, 2018; Moore, 2015; Singleton, 2015). They may not see themselves as White, as members of a dominant culture and/or avoid the topic of race altogether (Bonilla-Silva, 2018; Moore, 2018; Singleton, 2105), hence the response of "no opinion." This finding has significant implications that will be discussed further in in this chapter.

Factor relationships. Factors showed directional correlations in both empirical and theoretical models. For example: higher levels of critical awareness were correlated to higher levels of critical reflection; higher levels of critical reflection were correlated to higher levels of critical action; higher levels of critical awareness were correlated to higher levels of critical action. Directional correlations imply relationships that move in

the same direction for each variable (Bobko, 1996). Thus, the same is true for a lower level of critical awareness, critical reflection, and critical action: lower levels of one of these sub-traits of CC correlate with a proportionally lower level in the others. The strongest correlation was observed empirically between the factors of critical awareness and critical reflection, $r = .463$. These findings are important because they show that these sub-traits of the higher order latent trait of CC interact and influence each other.

A second finding was in the factor relationships with the higher order factor of CC of educators. The amount of variance explained between each of the three factors and the higher order latent trait of CC of educators was 37% critical awareness, 92% critical reflection, and 85% critical action. This is an important finding for two reasons. First, it shows that the factors of critical reflection and critical action have more shared variance with the higher order trait of CC of educators than critical awareness, which places higher value on their contribution to understanding the CC development in educators. Secondly, critical awareness had a much lower proportion of variance explained by its relationship to overall CC compared to the other two factors. These relationships show that critical awareness alone is a smaller, but necessary contributor to overall CC, but does not have the impact to the overall CC construct that critical reflection and critical action have.

Model fit. The theoretically proposed three-factor model is the best fit to the data. All retained items loaded on one of three factors. The CFA model showed to be a "good fit" to the data, as indicated by meeting or exceeding threshold values in CFI, RMSEA, and SRMR fit indices (Muthen & Muthen, 2018). Internal consistency estimates showed good reliability of the entire measure as well as each individual factor. This offered

psychometric validation of the proposed latent construct of CC of educators. This is an important finding because it adds to the body of three-factor CC models and measures, as well as furthers the conceptualization of CC with a new population.

Measurement invariance. The CCES held better through scalar invariance in elementary versus secondary teachers. This means that the CFA (theoretical) model of CC of educators fit these two groups of educators in this sample. Within these two groups, factors demonstrated that they loaded equivalently, which shows the magnitude of the relationships between the CCES items and the underlying CC of educators are the same in these groups (Brown, 2015). This is an important finding because it can be said that the factors in the CCES are not biased for either elementary or secondary teachers (Brown, 2015). The scalar invariance model shows that elementary and secondary teachers have invariance in threshold intercepts across groups. This means that incremental changes in the CCES for elementary teachers are equal to similar incremental changes for secondary teachers (on the same scale). These results provide evidence for measurement invariance at a high level of constraint, which is desirable for measurement behavior.

While scalar constraints fit the data in the test of invariance between licensed and classified educators, this test did not show the same level of strength as the elementary versus secondary group. The significant chi-square difference test compared to the configural model indicated significantly worse fit for the scalar model. However, other fit indices showed adequate fit for the scalar model, but bias could be present in the CCES for groups of educators who do not have the same college preparation for their roles.

Significance of Measure

The psychometric validation of a three-factor model of CC through the CCES contributes significantly to the fields of CC conceptualization, CC measurement, and education.

Contribution to CC conceptual models. Scholars have conceptualized CC as having one, two, or three factors. Jemal (2017) noted that three factor models are more uncommon and exist with more variety than one and two-factor models. This study makes a unique contribution to the disparate number of three-factor CC models by combining factors reviewed in one-and two-factor models. The model tested by the CCES separates the single factor *critical awareness and reflection* (Jemal, 2017; Mustakova-Possardt, 1998; Watts & Abdul-Adil, 1998) into two separate factors, *critical awareness* and *critical reflection*. The second factor of two-factor models reviewed, *critical action* (Campbell & MacPhail, 2002; Diemer & Blustein 2006; Diemer & Li, 2011), was included in this conceptual model of CC of educators as a third factor. The CC of educators as a conceptual model is a unique contribution because it combines three factors that were included in separate, previous models.

Contribution to CC measurement. This study makes a significant contribution to the field of CC measurement. The literature review indicated a dearth of CC measures, especially in adult populations and majority-privileged populations. The confirmation of the proposed theoretical model through EFA and CFA bolsters the psychometric validity of measurement model. The CCES is the third CC measure in existence that tested a three-factor model of CC. It is one of two measures of CC in an adult population as well

as a population whose majority do not identify with historically marginalized groups. This measure is the first measure of CC in educators. The CCES is the first measure to test critical awareness as a factor separate from critical reflection. The CCES has the largest number of respondents of any CC instrument reviewed and parallels the majority educator population in the United States (majority White). Lastly, in the CC measures reviewed, measurement invariance was not tested. The CCES is the first CC measure to provide further validation of the factor structure of CC in multiple groups within the test population.

Contribution to education. As indicated in the problem statement for this study, an educator population representative of the dominant culture underserves CLD learners (Di Angelo, 2017; Delpit, 2006; Moore, 2015; Salazar, 2013). CRP theory and qualitative studies link culturally relevant teachers to positive academic experiences for CLD students (Ladson-Billings, 2009; Salazar & Lerner, 2018). CRP theory emphasizes a domain of sociopolitical consciousness in effective culturally relevant teachers, a domain in alignment to Freire's CC (Ladson-Billings, 1995; 2014). As such, the CCES permits the examination of new information about the CC of educators, contributing to greater understanding about the impact of this domain on culturally relevant pedagogy. This is a significant contribution to informing the problem of academic disparities experienced by CLD learners. Additionally, the respondents to the CCES reflect the majority educator population in the United States, with a representative sample of School District X educators whose majority are White. This is a significant contribution to the generalizability of this study.

Implications

Results of this study suggest continued research in CC measurement development and CC development in educators.

Implications for CC measurement development. Implications for CC measurement include further examination of CC in adult populations coming from the dominant culture who do not identify with a historically marginalized group. CC is scarcely measured in dominant culture populations, only one of the five existing instruments, the CCCM, has done so (Shin et al., 2016; Jemal, 2014). Even so, the CCCM did not test the same factors as the CCES, leaving the findings about critical awareness, critical reflection, and critical action in dominant culture populations limited to the present study. It is important that members of the dominant culture can identify their position in society (Case, 2013; Freire, 1970) and recognize privilege (DiAngelo, 2018) so inequalities and be perceived and acted upon (Diemer et al., 2014; Jemal, 2014). Freire (1970, 1974) asserts that liberation through humanizing actions does not only come from the oppressed, but the oppressor as well. Therefore, it is important to measure CC in populations that would be representative of Freire's "oppressors," or more privileged positions, as well as those who would be considered members of "oppressed" positions.

The field of CC measurement in dominant culture populations has much room for growth, including profession-specific CC measurement. Measuring CC's impact in other professional contexts (e.g., medical, law enforcement) would be of great value as a future research agenda and a way to examine other areas of societal oppression Conversely, CC

measurement in historically marginalized populations, especially that of adults, has room for growth as well. All of the measures reviewed that were given to historically marginalized populations were given to youth.

Implications for further validation. There is a need for quantitative research to supply evidence of predictive validity for the CCES, as well as other CC measures. Future research should include a study of educator evaluation ratings related to CC levels of educators. Salazar and Schneider (2019) theorize the relationship between CC-based dispositions of teachers and teaching performance as measured by the Framework for Effective and Equitable Teaching (Salazar & Lerner, 2018), but quantitative evidence has not yet been presented in support of this relationship.

It is important to examine student outcomes linked with educator CC, as this focuses keenly on the research problem of academic disparities of CLD students. Some scholars have shown qualitative evidence of the relationship between CC of teachers and positive educational experiences for CLD students (Delpit, 2006; Ladson-Billings, 2009; Moore, 2015; Salazar & Lerner, 2018), but quantitative evidence has not yet been presented in support of this relationship. The complexity of determining proper evidence for student outcomes and attribution of those outcomes to specific educators makes research in this area challenging.

This measure should be validated for its usefulness and impact in educator populations as well. This measure had a tendency to disrupt the educators of School District X, as many staff meetings were held to talk about the results of the measure and what specific items were measuring. This measure was shown to be useful for opening

conversation that discussed racial identity of White teachers and the identification of marginalization in society. This measure may also be useful to establish CC levels in pre-service teachers so that program curriculum can be adjusted accordingly to develop adequate levels of CC in teachers by the time they get to the field.

More research is also needed on the scoring for this instrument and what certain scores actually indicate. While some of the items and scales were adapted from the CCS (Diemer et al., 2014), the CCES is the only measure of its kind and has been given once to a population of mostly White teachers. Further validation of scoring and interpretation of scores could be achieved if the measure was given to content experts and a progression of the latent trait was proposed.

Implications for measurement invariance. The population of elementary and secondary teachers used for this study was largely invariant at the scalar level, consisting mostly of White educators. The homogeneity of the population, along with findings of invariance at the scalar level, are important to consider when making a claim for the CCES's behavior. Further research should investigate the relationship between the population's lack of variation and invariance of the measure. The homogeneity of experiences by White educators (Bonilla-Silva, 2018; DiAngelo, 2018; Moore, 2015) may pose a limitation on learning about the CC of all educators. White teachers account for approximately 80% of educators in the U.S., and 94% of the teacher population in School District X. As such, obtaining results from the CCES in a population of educators who identify with historically marginalized groups would be important for two reasons. Firstly, it may help to examine CC in a population which represents approximately 20%

of the educators in the United States, and secondly, it may show if the measure, its factors, or if items behaved differently in another group of educators. Further research should include tests for measurement invariance in previous CC measures for demographic factors collected (e.g., age, income, race) to determine if homogenous test populations artificially inflate CC measurement invariance across groups.

The finding of more breakdown in invariance at the scalar level for the licensed versus classified groups has implications as well. The CCES was specifically designed for use with educators. While all respondents in the test population were referred to as educators, not all were prepared for their roles in the same way, nor did each role require the same level of preparation. As mentioned, classified educators in School District X are not required to have a teaching license nor college coursework in education. Classroom teachers must have a minimum of a bachelor's degree and a teaching license, and administrators must have a master's degree and an administrator license. Results from this finding may indicate the importance of educator preparation programs, including professional development for classified staff. A further investigation of the breakdown for scalar invariance between licensed and classified educators to determine potential areas of bias would be worthwhile future research.

Implications for Development of CC of Educators. The results of the CCES imply a need for educators to increase CC so that CRP can be more complete and effective for CLD learners (Ladson-Billings, 2014). As Ladson-Billings expressed, when the domain of CC is overlooked, the effectiveness and completeness of CRP is diminished (2014).

Implications for critical awareness. The findings imply that professional development should promote the study of one's own cultural identity and increased awareness of CLD learner challenges, resources, and needs (DiAngelo, 2018; Ladson-Billings, 2009; Landsman, 2018; Moore, 2018; Salazar, 2014). The literature supports the awareness of one's own consciousness as a key component of critical awareness (DiAngelo, 2018; Diemer et al, 2014; Freire, 1974; Watts et al., 2011). Professional development classes for educators that identify systems of oppression and privilege within society and the educational system have shown to increase cultural awareness of educators (Goodman, 2011). The need to develop critical awareness was apparent in the results of the CCES with School District X educators. Since the time of this study, School District X has planned professional development classes to increase critical awareness using the results from this study.

Implications for critical reflection. A key finding from the results of the CCES was the detection of racial neutrality through differences item responses that assessed perceived inequality and recognition of White privilege. As many as 25% of the respondents reported "no opinion," for items pertaining specifically to race, which was significantly higher than the reflection of perceived inequalities of other student groups (disability, gender, LGBTQ, and low-socioeconomic statuses). As supported in theory, White teachers have greater levels of cultural neutrality and colorblindness (DiAngelo, 2018, Moore, 2015). Cochran-Smith, Shakman, Terreel, Barnatt, & McQuillan (2009) assert the recognition of academic disparities of students from historically marginalized groups as a prerequisite for effective and equitable teachers. The results of the CCES

imply that further training needs to be dedicated to race awareness including the dangers of neutrality and colorblindness (Bonilla-Silva, 2018; DiAngelo, 2018; Singleton, 2015). Additionally, the results of the CCES imply that further training is needed to address the recognition of dominant culture privilege among educators in areas such as grading practices, curriculum design, literacy instruction, and school-family interactions (Case, 2013; Gutierrez, 2012; Kumashiro, 2015; Vasquez, 2014).

Implications for critical action. In the conceptual model CC of educators, critical action is the sociopolitical activity and advocacy taken by educators to eliminate academic disparities experienced by CLD learners. It is also emphasized in the literature as the ultimate outcome of CC that will impact liberation of the oppressed (Freire, 1970, 1974; Jemal, 2014). The CCES demonstrates significant correlations between all three CC factors, which imply that critical action cannot be isolated from critical awareness or critical reflection. This finding is supported in the literature: Freire (2005) strongly opposed those who thought it was possible to demand teachers to exercise critical praxis in a systematized way without attending to the conscientization of teachers. Barolome (1994) cautioned against humanizing pedagogy as a way of teaching that can be scripted into superficial instructional strategies. Ladson-Billings (1995), in her study of successful White teachers of African-American children, reports that no common themes of specific classroom routines, practices, or management styles overtly characterized the successful teachers, but rather, personal "philosophical and ideological underpinnings of their practice" (p. 162-163).

Limitations

The development and initial validation of the CCES represents an important contribution to the limited, but increasing scholarship in CC measurement. The development and validation of the CCES faced some of the same limitations of past CC measures: conceptual models of CC are wide in variety and dependent on the context and population targeted for measurement. As such, the results of the CC models and measures reviewed in this study are not very useful in informing CCES revision because of the vast differences in factors, contexts, and populations. Because of the scarcity and differences of existing measures of CC, it is difficult to draw conclusions about how well the CCES functions as a measure in comparison to the others. Revisions to the measure will be made based on the results in the present study and theory presented in the literature. Additionally, the two items on the CCES that were designed to measure the sub factor of critical awareness: awareness of one's own consciousness did not load as expected and were not retained for the final version of the instrument. This was unfortunate as the literature emphasizes the need for awareness of one's own consciousness (Houser & Overton, 2001). Therefore, information was not obtained about this sub factor in this population. Lastly, it has yet to be seen if this measure would inform longitudinal growth of the development of CC in educators. Because of its tendency to disrupt thinking in educators and spark conversation, respondents may know how they "should" respond to certain items if taken another time.

The population for this study was limited to one school district, whose educator population was primarily White, middle class. CC in this population represents the

majority educator population in the United States, but more needs to be learned about educators who identify with historically marginalized groups. The CCES captured a meaningful, yet limited understanding of CC of educators.

Conclusion: Call to Action

This study addresses academic disparities experienced by CLD learners in the United States. CRP has a positive impact on the academic success of CLD students (Gay, 2007; Gonzalez, 2005; Ladson-Billings, 1995; 2009; 2014). CC is an essential component of CRP (Ladson-Billings, 1995; 2014). Further shaping this research problem, the literature indicates a lack of cultural awareness in White educators as contributing to the academic disparities in CLD learners (DiAngelo, 2018; Moore, 2015; Salazar, 2013). The CCES is a three-factor model of CC of educators that demonstrates the relationships between critical awareness, critical reflection, and critical action. The higher order latent trait of CC of educators is in alignment with the sociopolitical domain of culturally relevant teaching, as described by Ladson-Billings (1995; 2014).

Results indicated that critical action cannot be isolated from critical awareness and critical reflection. The impact on overall CC was shared more by the factors of critical reflection and critical action than the factor of critical awareness. As discussed, educator respondents for the CCES were low in critical awareness. This correlated to their lower levels of critical reflection and action as demonstrated by, among other indicators, higher racial neutrality and high frequencies of responses that indicated actions were seldom or never taken. The end goal of Freire's CC (1970) is liberation for the oppressed, and critical awareness and reflection are not enough to achieve this goal

(Jemal, 2014; Watts et al., 1998). Critical action is needed for liberation and the humanization of both the oppressed and the oppressor (Freire, 1970, 1974, 1994).

Developing CC in educators is critical if liberation of students from historically marginalized groups is to occur. It is imperative to provide professional development and teacher preparation that increases the CC of educators. Educators must be able to identify oppression, perceive inequalities, recognize privilege, and see themselves as sociopolitical beings who advocate on behalf of and with their students. Failing to address these foundational components of CC in educators will result in a diminished instructional product for CLD learners.

REFERENCES

Adams, M., Blumenfeld, W.J., Castaneda, C., Hackman, H., Peters, M., & Zuniga, X. (2013). *Readings for diversity and social justice* (2nd ed.). New York, NY: Routledge.

Anzaldua, G. (1999). Allies. *Sinister Wisdom, 52,* 47-52.

Arbuckle, J. L. (2014). Amos (Version 23.0) [Computer Program]. Chicago: IBM SPSS.

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, 1015-1032.

Bartolomé, L. (1994). Beyond the methods fetish: Toward a humanizing pedagogy. *Harvard Educational Review*, *64*(2), 173-195.

Blankstein, A., Noguera, P., & Kelly, L. (2015). *Excellence through equity: Five principles of courageous leadership to guide achievement for every student*. Alexandria, VA: ACSD.

Bobko, P. (1995). *Correlation and regression*. Thousand Oaks, CA: Sage.

Bonilla-Silva, E. (2018). *Racism without racists: Colorblind racism and the persistence of racial inequality in America.* Lanham, MA: Rowman & Littlefield.

Bovaird, J. A., & Koziol, N., A. (2012). Measurement models for ordered-categorical indicators. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling*. New York, NY: Guilford Press. 495–511.

Brown, T.A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford Press.

Carbado, D.W. (2005). Privilege. In Adams, M., Blumenfeld, W.J., Castaneda, C., Hackman, H., Peters, M., & Zuniga, X. (Eds.), *Readings for Diversity and Social Justice* (3rd ed.), 391-392.

Case, K. (2013). *Deconstructing privilege: Teaching and learning as allies in the classroom*. New York, NY: Routledge.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504.

Cochran-Smith, M., Shakman, C.J., Terreel, D.G., Barnatt, J., & McQuillan, P. (2009). Good and just teaching: The case for social justice in teacher education. *American Journal of Education, 115*(3), 347-377.

Diemer, M.A., & Bluestein, D.L. (2006). Critical consciousness and career development among urban youth. *Journal of Vocational Behavior*, *68*, 220-232.

Diemer, M.A. & Li, C. (2011). Critical consciousness and pollical engagement among marginalized youth. *Child Development, 82*, 1815-1833.

Diemer, M.A., Rapa, L.J., Park, C.J., & Perry, J.C. (2017) Development and validation of the Critical Consciousness Scale. *Youth and Society, 49*(4) 461-483..

Diemer, M.A., Rapa, L.J., Voight, A.M., & McWhirter, E.H. (2016). Critical consciousness: A developmental approach to addressing marginalization and oppression. *Child Development Perspectives, 10*(4), 216-221.

Delpit, L. (2006). *Other people's children: Cultural conflict in the classroom*. New York, NY: New Press.

DeVellis, R. (2003). *Scale development: Theory and applications*. New York, NY: Sage.

Duncan-Andrade, J., & Morrell, E. (2008). *The art of critical pedagogy: Possibilities for moving from theory to practice in urban schools*. New York, NY: Peter Lang.

Edwards, K.E. (2006). Aspiring social justice ally identity development: A conceptual model, *NASPA Journal (43)*4, 39-60.

Fabrigar, L.R., MacCullum, R.C., Wegener, D.T., and Stahan, E.J. (1999). Evaluating the use of factor analysis in psychological research. *Psychological Methods, (4)*3, 272-299.

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Bloomsbury.

Freire, P. (1974). *Education for Critical Consciousness*. New York, NY: Continuum.

Freire, P. (1994). *Pedagogy of hope: Reliving pedagogy of the oppressed.* New York, NY: Continuum.

Friere, P. (2005). *Teachers as cultural workers: Letters to those who dare to teach*. Boulder, CO: Westview Press.

Gay, G. (2000). *Culturally responsive teaching: Theory, research, and practice.* New York, NY: Teachers College Press.

Gay, G., & Kirkland, K. Developing cultural critical consciousness and self-reflection in preservice teacher education. *Theory into Practice (42)*3, 181-187.

Gonzalez, N., Moll, L.C., & Amanti, C. (2005). *Funds of knowledge.* New York, NY: Routledge.

Goodman, D.J. (2001). *Promoting diversity and social justice: Educating people from privileged groups*. Thousand Oaks, CA: Sage.

Gutiérrez, R., & Gutiérrez, R. (2012) *Issues of identity and power in teaching Latin@*

students mathematics. Beyond good teaching: Strategies that are imperative for ELLs in mathematics classrooms. National Council of Teachers of Mathematics: Reston, N.J

Hatcher, A., de Wet, J., Bonnell, C.P., Strange, V., Phelta, G., Pronyk, P.M., et al. (2010. Promoting critical consciousness and social mobilization in HIV/AIDS programs: Lessons and curriculum tools from a South African intervention, *Health Education Research, 26*(3), 542-555.

Held, D. (1980). *Introduction to critical theory: Horkheimer to Habermas*. Berkeley, CA: University of California Press.

Hemphill, F. C., and Vanneman, A. (2010). *Achievement Gaps: How Hispanic and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress* (NCES 2011-459). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Horkheimer, M. (2002). *Critical theory: Selected essays*. New York, NY: The Continuum Publishing Company.

Houser, N.O., & Overton, S. (2001). Reconciling freedom and control in the early grades: Toward a critical consciousness for a freedom of choice. *Theory & Research in Social Education* 29(4), 582-616.

IBM Corp. (2016). IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp

Jemal, A. (2017). Critical consciousness: A critique and critical analysis of the literature.

Urban Review, *49*, 602-606.

Kline, R.B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: Guilford Press.

Kumashiro, K. (2015). *Against common sense: Teaching and learning toward social justice* (3rd ed.). New York, NY: Routledge.

Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory into Practice, 34*(3) 159-165.

Ladson-Billings, G. (1992). Reading between the lines and beyond the pages: A culturally relevant approach to literacy teaching. *Theory into Practice, 31*, 312-320.

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. American *Educational Research Journal*, 32, 465-491.

Ladson-Billings, G. (2009). *The Dreamkeepers: Successful teachers of African American children*. (2nd ed.). San Francisco: Jossey-Bass.

Ladson-Billings, G. (2014). Culturally relevant pedagogy 2.0: aka the remix. *Harvard Educational Review*, *84*(1), 74-84.

Muthén, L. K., & Muthén, B. O. (1998–2017). Mplus User's guide. Eighth Edition. Los Angeles,CA: Muthén & Muthén.

McIntosh, P. (2012). Reflections and future directions for privilege studies. *Journal of Social Issues*, 68(1), 194-206.

McKenzie, K. B., & Phillips, G. A. (2016). Equity traps then and now: Deficit thinking, racial erasure and naïve acceptance of meritocracy. *Whiteness and Education, 1*(1), 26-38.

McWhirter, E.H., & McWhirter, B.T. (2015). Critical consciousness and vocational development among Latina/o high school youth: Initial development and testing of a measure. *Journal of Career Assessment (24)*3.

Merriam-Webster.com. 2018. "marginalized." https://www.merriam-webster.com (8 August 2018).

Mirra, N., Garcia, A., Morrell, E. (2016). *Doing youth participatory action research: Transforming inquiry with researchers, educators, and students*. New York, NY: Routledge.

Mustakova-Possard, E. (1998). Critical consciousness: An alternative pathway for positive personal and social development. *Journal of Adult Development*, 5, 13-30.

Muthen, L.K., & Muthen, B.O. (2010). *Mplus user's guide* (6th ed). Los Angelos, CA: Author.

Nieto, S. (2013). *Finding joy in teaching students of diverse backgrounds: Culturally responsive and socially just practices in U.S. classrooms*. Portsmouth, NH: Heinemann Publishers.

Salazar, M. (2013). A humanizing pedagogy: Reinventing the principles and practice of education as a journey toward liberation. *Review of Research in Education*, 37, 121-148.

Salazar, M., & Lerner, J. (2018). *Teacher evaluation as culture: A framework for equitable and excellent teaching*. New York, NY: Routledge Press.

Salazar, M., & Schneider, M.P. (2019). 'Walk it like I talk it': A model for developing and assessing humanizing dispositions. A paper presentation at the 2019 American Association of Educational Researchers annual conference.

Sass, D. A., Schmitt, T. A., & Marsh, H. W. (2014). Evaluating model fit with ordered categorical data within a measurement invariance framework: A comparison of estimators. *Structural Equation Modeling*, 21, 167–180.

School District X (2017). *A resolution to reaffirm the School District X Board of Education inclusive practices and beliefs that 'all means all*.'

Seider, S., Tamerat, J., Clark, S., Soutter, M. (2017). Investigating adolescents' critical consciousness development through a character framework. *Journal of Youth and Adolescence, 46*, 1162-1178.

Sensoy, O. & DiAngelo, R. (2017). *Is everyone really equal? An introduction to key concepts in social justice education* (2nd ed.) New York, NY: Teachers College Press.

Shin, R.Q., Ezeofor, I., Smith, L., Weltch, J.C., & Goodrich, K.M. (2016). Development and validation of the Contemporary Critical Consciousness Measure. *Journal of Counseling Psychology*, *63*(2), 210-223.

Singleton, G. (2015). *Courageous conversations about race: A field guide for achieving equity in schools* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Tabachnick, B.G. & Fidell, L.S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson.

Thomas, A.J., Barrie, R., Clawson, A., Jeremie-Brink, G., Brunner, J., Hewitt, A., Rowe-Johnson, M. (2014). Assessing critical consciousness in youth and young adults. *Journal of Research on Adolescence*, (24)30, 485-496.

U.S. Department of Education, National Center for Education Statistics (2014). Enrollment and percentage distribution of enrollment in public elementary and secondary schools, by race/ ethnicity and region: Selected years, fall 1995 through fall 2024. *Digest of Education Statistics*.

U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service (2016). *The State of Racial Diversity in the Educator Workforce.* Washington, D.C.

Watts, J.W., & Abdul-Adil, J.K. (1998). Promoting critical consciousness in young, African-American men. *Journal of Prevention and Intervention*, *16*(1-2), 63-86.

Warren, C. A. (2018). Empathy, Teacher Dispositions, and Preparation for Culturally Responsive Pedagogy. *Journal of Teacher Education, 69*(2), 169–183.

Watts, R.J., Diemer, M.A., & Voight, A.M. (2011). Critical consciousness: Current status and future directions. *New Directions for Child and Adolescent Development, 2011*, 43-57.

Wernick, L.J. (2012). Leveraging privilege: Organizing young people with wealth to support social justice. *Social Service Review*, 323-345.

APPENDICES

Appendix A: CCES Measure, called "Equity Observations and Experiences Inventory", as given to School District X Employees

1. Please select your work location and position rank from drop-down menu

FOR ITEMS 2-9, THE WORD "MARGINALIZE" GENERALLY REFERS TO BEING VALUED TO A LESSER EXTENT, AND/OR DISREPECTED, STEROTYPED, DISREGARDED, IGNORED, DISMISSED, UNDERVALUED, OR NOT GIVEN A CHANCE.

2. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender?

   YES NO

3. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to race, culture, or native language?

   YES NO

4. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to sexual orientation?

   YES NO

5. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to seen or unseen disability?

   YES NO

6. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to religious affiliation?

   YES NO

7. Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low socioeconomic status?

   YES NO

8. I feel that some of my life experiences or the experiences of people close to me have allowed me a deeper perspective towards certain student groups.

YES NO

9. Without having had a specific experience myself, I have been influenced by media (e.g., book, movie, documentary, or speaker), to change the way I think about a certain group(s) of people who had a marginalizing experience.

   YES NO

In the section below, please answer using the following scale:

1= Disagree strongly 2= Disagree 3= Disagree somewhat 4 =No opinion 5= Agree somewhat 6 =Agree 7= Agree strongly

10. Certain racial or ethnic groups of students have fewer chances to get a quality education.
    1 2 3 4 5 6 7
11. Students who come from poverty have fewer chances to get a quality education.
    1 2 3 4 5 6 7
12. Students with disabilities have fewer chances to get a quality education.
    1 2 3 4 5 6 7
13. Girls have fewer career opportunities than boys.
    1 2 3 4 5 6 7
14. Students who come from poverty have fewer career opportunities than middle class children.
    1 2 3 4 5 6 7
15. Students from certain racial or ethnic groups have fewer career opportunities than White students.
    1 2 3 4 5 6 7
16. Students with disabilities have fewer career opportunities than those without disabilities.
    1 2 3 4 5 6 7
17. Every student who perseveres and works hard has an equal chance at success.
    1 2 3 4 5 6 7
18. Students from certain racial or ethnic groups are more accepted in educational settings when they act White.
    1 2 3 4 5 6 7
19. Societal privilege is evidenced in the disproportionately greater number of White, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes.
    1 2 3 4 5 6 7
20. Curriculum materials in core content areas (e.g., reading, writing, math, science, social studies) are designed to reach all students.

1 2 3 4 5 6 7

For this next item only, please respond to how well the statements describe you with the following scale:

1= seldom or never 2= occasionally 3= about half the time 4= often but not every time 5= Consistently, almost every time

21. I have confronted someone who talked to or about a student(s) in a way that I felt was degrading.
    1 2 3 4 5

For items 22-26, please respond to how well the statements describe you with the following scale:

1= Never did this 2= Once or twice last year 3= Every few months 4= At least once a month 5= At least once a week

22. I have participated in sociopolitical action (e.g., march, demonstration, petition, writing a letter to or calling an official, membership in a social justice organization) in order to advocate for the rights of a marginalized group (e.g., women, LGBTQ, disabilities, mental health, immigration, people of color, religious freedom).
    1 2 3 4 5
23. I have enhanced (or encouraged a teacher to enhance) curriculum material to include non-dominant culture perspectives and/or learning styles.
    1 2 3 4 5
24. I have raised questions about the validity and/or reliability of assessments and data analyses for certain groups of students.
    1 2 3 4 5
25. I have raised questions about policies and/or procedures that intentionally or unintentionally discriminate students and/or their families (e.g., school-parent communication, homework policies, family events, access to activities or classes, fees, fair ADA accommodations, discipline procedures, adequate social/emotional/behavioral supports)
    1 2 3 4 5
26. I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them.
    1 2 3 4 5

<u>ITEMS ADDED AT SCHOOL DISTRICT X REQUEST:</u>

For this next question, please respond using the following scale:

1= Very uncomfortable 2= Somewhat uncomfortable 3= Neither 4= Somewhat comfortable 5= Very comfortable

27. I feel comfortable amongst my education colleagues to openly raise questions about the system and/or advocate on behalf of students belonging to marginalized groups.

Appendix B: Message from Organization to Respondents

Hello School District X Employee,

Below you will find a link to our Equity Observations and Experiences Inventory, which will take approximately 5-7 minutes to respond. You will need to respond to every question for the survey results to be valid. Please know the following about the Equity Observations and Experiences Inventory:

--It is completely anonymous. No individual identifying information is being collected about any respondents. As such, individual results will not be possible to obtain or create.

--The link sent through email is strictly used to be sure only one response per participant is recorded. It is not possible to associate any email to any set of responses, guaranteeing anonymous responses.

--This an organizational survey. It is being given to all School District X employees and Board of Education Members: licensed, administration, and classified.

--The information gleaned from this survey will help School District X in the following ways:

1. It will allow for awareness of collective observations and experiences of the organization, including schools and departments.

2. It will allow for awareness of ways in which we can build our understanding and educational service to all students.

3. The combined information of #1 & 2 will allow us to build our capacity to reach our 100% Goal, as set forth by the School District X Board of Education's *A Resolution to Reaffirm the School District X Board of Education Inclusive Practices and Beliefs that 'All means All'*. This document can be viewed on the Board Docs section of the School District X website.

Thank you for your participation,

Name Withheld
Administrator
School District X

Name Withheld
Teacher Union President
School District X

Appendix C: CCES Final Factor- Item Framework

Factor	Sub-factors	Item #	
Critical Awareness	Awareness of oppression	2	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender?
		3	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to race, culture, or native language?
		4	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to seen or unseen disability?
		5	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to religious affiliation?
		6	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low socioeconomic status?
		7	Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low sexual orientation?
Critical Refection	Perceived inequality and recognition of privilege	10	Certain racial or ethnic groups of students have fewer chances to get a quality education
		11	Students who come from poverty have fewer chances to get a quality education.
		12	Students with disabilities have fewer chances to get a quality education.
		13	Girls have fewer career opportunities than boys.
		14	Students who come from poverty have fewer career opportunities than middle class children.
		15	Students from certain racial or ethnic groups have fewer career opportunities than White students.
		16	Students with disabilities have fewer career opportunities than those without disabilities.
		18	Students from certain racial or ethnic groups are more accepted in educational settings when they act White.
		19	Societal privilege is evidenced in the disproportionately greater number of White, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes.
Critical Action	Sociopolitical activity & advocacy	23	I have enhanced (or encouraged a teacher to enhance) curriculum material to include non-dominant culture perspectives and/or learning styles
		24	I have raised questions about the validity and/or reliability of assessment sand data analyses for certain groups of students
		25	I have raised questions about policies and/procedures that intentionally or unintentionally discriminate students and/or their families
		26	I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them.

Appendix D: State-Reported Demographics of Teachers in School District X

Race Identification	Female	% of Total	Male	% of Total	Total	% of Total
American Indian	0	0%	1	< 1%	1	< 1%
Asian	3	< 1%	0	0%	3	< 1%
Black or African-American	2	< 1%	2	< 1%	4	< 1%
Hispanic or Latino	32	3.7%	7	< 1%	39	4.5%
Hawaiian/ Pacific Islander	0	0%	0	0%	0	0%
Two or more races	2	< 1%	1	< 1%	3	< 1%
White	629	73%	184	21%	813	94%
Total	668	77%	195	23%	863	100%

Appendix E: CCES EFA Results for 3-Factor Model

Factor name and items	Loadings 1	2	3
F1: *Critical Awareness* (α = .80)			
Q2 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender	0.679*	.00	.00
Q3 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to race, culture, or native language	0.767*	.00	.00
Q4 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to seen or unseen disability	0.771*	.00	.00
Q5 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to religious affiliation	0.652*	.00	.00
Q6 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low socioeconomic status	0.852*	.00	.00
Q7 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to sexual orientation	0.843*	.00	.00
Factor 2: *Critical Reflection* (α = .92)			
Q10 Certain racial or ethnic groups of students have fewer chances to get a quality education	.00	.889*	.00
Q11 Students who come from poverty have fewer chances to get a quality education	.00	.924*	.00

Q12 Students with disabilities have fewer chances to get a quality education	.00	.677*	.00
Q13 Girls have fewer career opportunities than boys	.00	.722*	.00
Q14 Students who come from poverty have fewer career opportunities than students who come from middle class	.00	.951*	.00
Q15 Students from certain racial or ethnic groups have fewer career opportunities than White students	.00	.916*	.00
Q16 Students with disabilities have fewer career opportunities than those without disabilities	.00	.643*	.00
Q18 Students from certain racial or ethnic groups are more accepted in educational settings when they act White	.00	.734*	.00
Q19 Evidence of societal privilege is found in the disproportionately greater number of white, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes	.00	.771*	.00
Factor 3: *Critical Action* ($\alpha = .81$)			
Q23 I have enhanced (or encouraged a teacher to enhance) curriculum material to include non-dominant culture perspectives and/or learning styles	.00	.00	.632*
Q24 I have raised questions about the validity and/or reliability of assessments and data analyses for certain groups of students	.00	.00	.694*
Q25 I have raised questions about policies and/or procedures that intentionally or unintentionally exclude students and/or their families	.00	.00	.831*

Q26 I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them	.00	.00	.749*

$p < .01$

Appendix F: Confirmatory Factor Analysis of CCES

n = 494, α = .85

Factor name and items	Estimate	S.E.	R-square	Standardized Estimates
Factor 1: Critical Awareness (α = .84)				
Q2 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender	--	--	0.687	.789
Q3 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to race, culture, or native language	1.072*	0.056	0.789	.846
Q4 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to seen or unseen disability	1.045*	0.058	0.750	.825
Q5 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to religious affiliation	0.836*	0.065	0.481	.660
Q6 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to low socioeconomic status	1.004*	0.055	0.693	.793
Q7 Have you or a person with whom you share a close personal relationship ever experienced marginalization due to sexual orientation	1.064*	0.054	0.772	.837
Factor 2: Critical Reflection (α = .93)				
Q10 Certain racial or ethnic groups of students have fewer chances to get a quality education	---	---	0.905	.224
Q11 Students who come from poverty have fewer chances to get a quality education	1.924*	0.562	0.650	.431
Q12 Students with disabilities have fewer chances to get a quality education	-2.86*	0.863	.225	-.640
Q13 Girls have fewer career opportunities than boys	-2.882*	0.869	.213	-.645
Q14 Students who come from poverty have fewer career opportunities than students who come from middle class	-2.517*	0.758	.400	-.564
Q15 Students from certain racial or ethnic groups have fewer career opportunities than White students	-2.428*	0.734	.442	-.544
Q16 Students with disabilities have fewer career opportunities than those without disabilities	-2.845*	0.858	0.234	-.637

Q18 Students from certain racial or ethnic groups are more accepted in educational settings when they act White.	-2.976*	0.897	.162	-.666
Q19 Evidence of societal privilege is found in the disproportionately greater number of white, middle-class students comprising the rosters of honors, high-0ability, gifted, and/or AP classes	-2.243*	0.731	.444	-.542
Factor 3: Critical Action (α = .77)				
Q23 I have enhanced (or encouraged a teacher to enhance) curriculum material to include non-dominant culture perspectives and/or learning styles.	---	---	0.498	.699
Q24 I have raised questions about the validity and/or reliability of assessments and data analyses for certain groups of students	-1.126*	0.051	0.364	-.787
Q25 I have raised questions about policies and/or procedures that intentionally or unintentionally exclude students and/or their families	-1.162*	0.05	.321	-.812
Q26 I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them	0.607*	0.054	0.815	.424

*$p < .01$

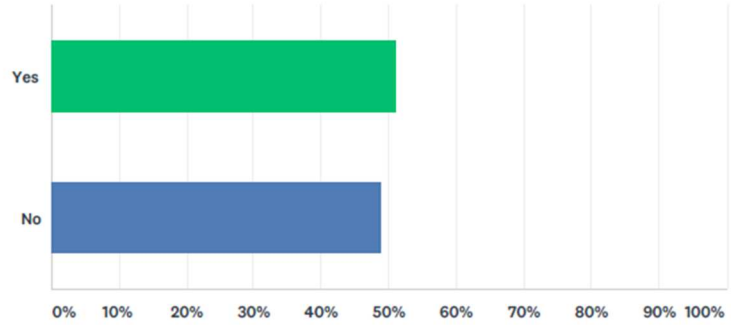
Appendix G: Descriptive Statistics

F1: Critical Awareness	**Mean**	**SD**	**Variance**	**Skewness**
Item Scale: binary 1 = Yes; 2 =No				
Q2	1.49	.50	.25	.04
Q3	1.62	.48	.24	-.50
Q4	1.62	.48	.24	-.51
Q5	1.67	.47	.22	-.73
Q6	1.60	.49	.24	-.45
Q7	1.68	.47	.22	-.76
Mean score of all items on F1	1.61			
F2: Critical Reflection				
Item Scale: 7 point 1= strongly disagree 2= disagree 3= somewhat disagree 4= no opinion 5= somewhat agree 6= agree 7= strongly agree				
Q10	4.74	1.78	3.17	-.71
Q11	5.06	1.67	2.78	-.94
Q12	4.34	1.70	2.88	-.33
Q13	3.70	1.77	3.15	-.02
Q14	4.87	1.62	2.64	-.75
Q15	4.48	1.78	3.15	-.44
Q16	5.39	1.29	1.67	-1.16
Q18	4.16	1.69	2.85	-.235
Q19	4.89	1.53	2.37	-.591
Mean score of all items on F2	4.62			
F3: Critical Action				
Scale: 5 point 1 = Seldom or never 2= once or twice last year 3= every few months 4= at least 1x month 5= At least 1x week				
Q23	2.20	1.31	1.73	.704
Q24	1.95	1.11	1.24	.989
Q25	2.05	1.13	1.29	.843
Q26	2.11	1.23	1.52	.920
Mean score of all items on F3	2.08			

Appendix H: Frequency Tables for All Items from Survey Monkey Platform

Q2 FOR ITEMS 2-9, THE WORD "MARGINALIZE" generally refers to being valued to a lesser extent, and/or disrespected, stereotyped, disregarded, ignored, dismissed, undervalued, or not given a chance. These and all survey questions are about your own life experiences and observations, which may include experiences or observations at LPS.Have you or a person with whom you share a close personal relationship ever experienced marginalization due to gender?

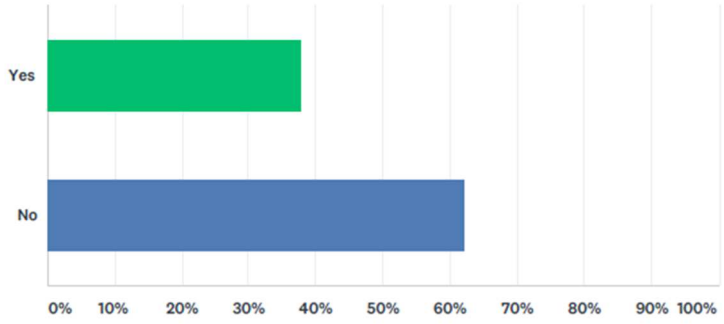
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	51.01%	504
No	48.99%	484
TOTAL		988

Q3 Have you or a person with whom you have a close personal relationship ever experienced marginalization due to race, culture, or native language?

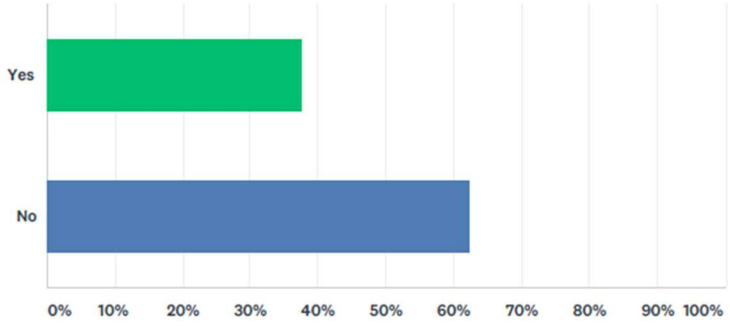
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	37.96%	375
No	62.04%	613
TOTAL		988

Q4 Have you or a person with whom you have a close personal relationship ever experienced marginalization due to seen or unseen disability?

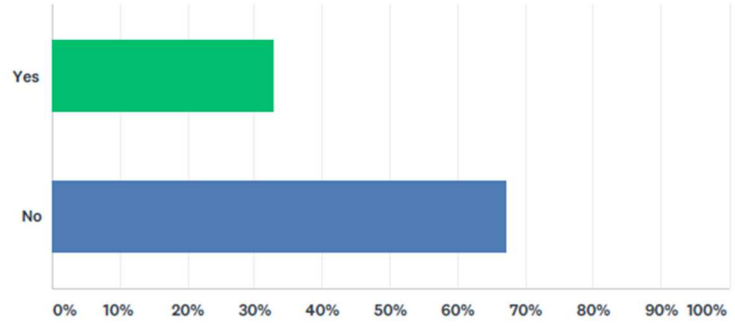
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	37.65%	372
No	62.35%	616
TOTAL		988

Q5 Have you or a person with whom you have a close personal relationship ever experienced marginalization due to religious affiliation?

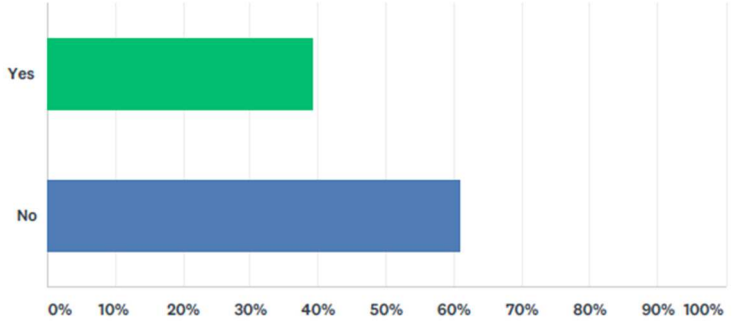
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	32.89%	325
No	67.11%	663
TOTAL		988

Q6 Have you or a person with whom you have a close personal relationship ever experienced marginalization due to low socioeconomic status?

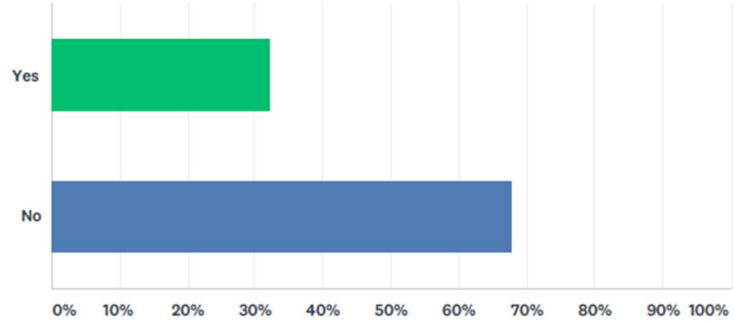
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	39.07%	386
No	60.93%	602
TOTAL		988

Q7 Have you or a person with whom you have a close personal relationship ever experienced marginalization due to sexual orientation?

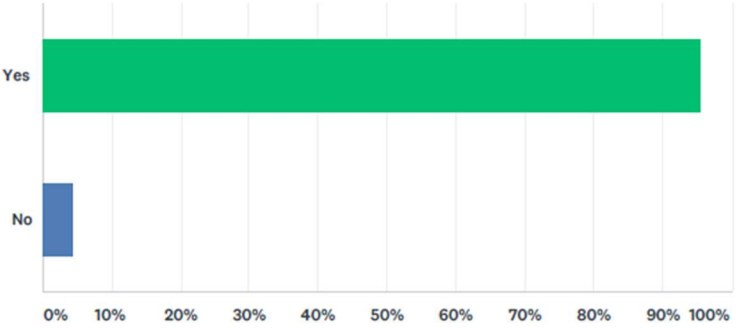
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	32.29%	319
No	67.71%	669
TOTAL		988

Q8 I feel that some of my life experiences or the experiences of people close to me have provided me with a deeper understanding towards certain groups of students.

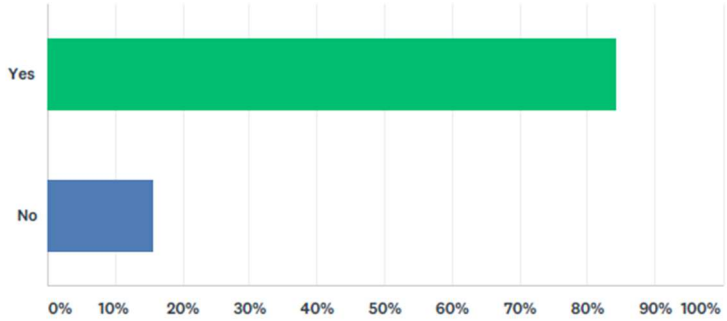
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	95.55%	944
No	4.45%	44
TOTAL		988

Q9 Even if I haven't had a specific marginalizing experience myself, I have been influenced by media (e.g. book, movie, documentary, or speaker), to change the way I think about a certain group(s) of people or students who have had a specific marginalizing experience.

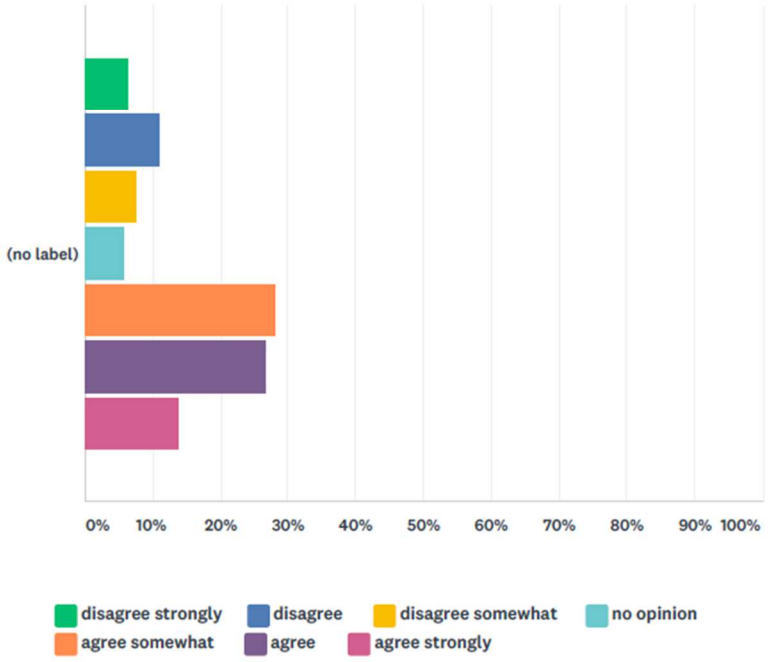
Answered: 988 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	84.31%	833
No	15.69%	155
TOTAL		988

Q10 PLEASE NOTE: FOR THE REMAINING ITEMS, YOU MUST CLICK "OK" BEFORE PROCEEDING TO THE NEXT ITEM, OTHERWISE YOUR ANSWER WILL NOT BE SAVED. Certain racial or ethnic groups of students have fewer chances to get a quality education.

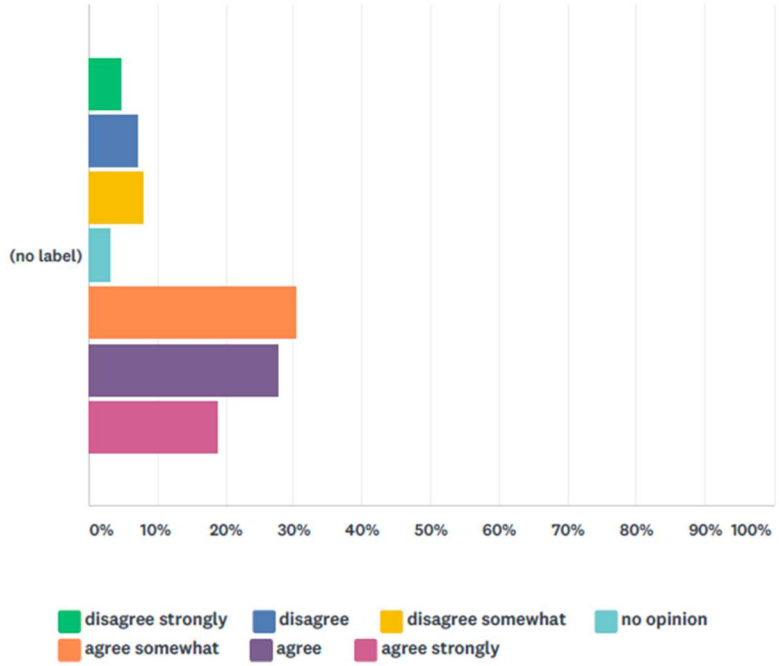
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	6.58% 65	11.13% 110	7.59% 75	5.87% 58	28.14% 278	26.82% 265	13.87% 137	988	4.74

Q11 Students who come from poverty have fewer chances to get a quality education.

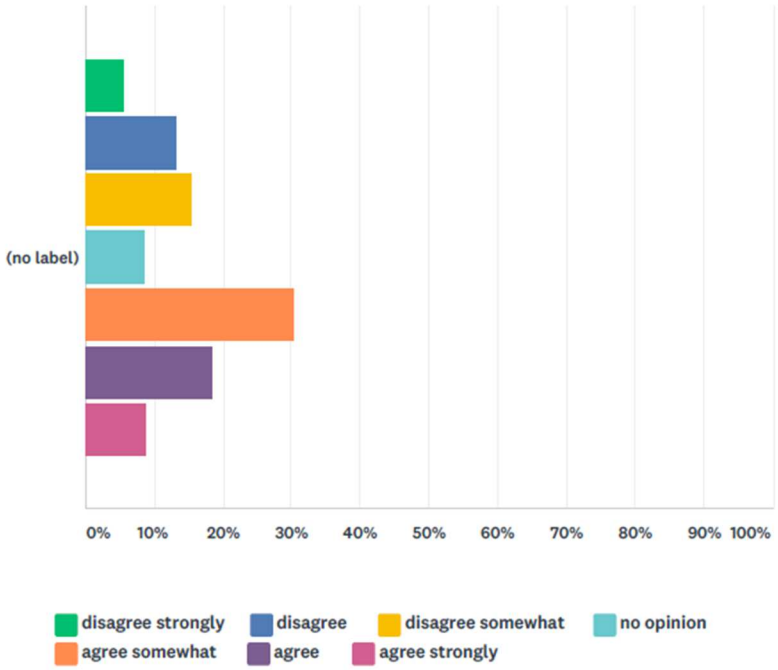
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
no abel)	4.76% 47	7.09% 70	8.00% 79	3.24% 32	30.26% 299	27.83% 275	18.83% 186	988	5.06

Q12 Students with disabilities have fewer chances to get a quality education.

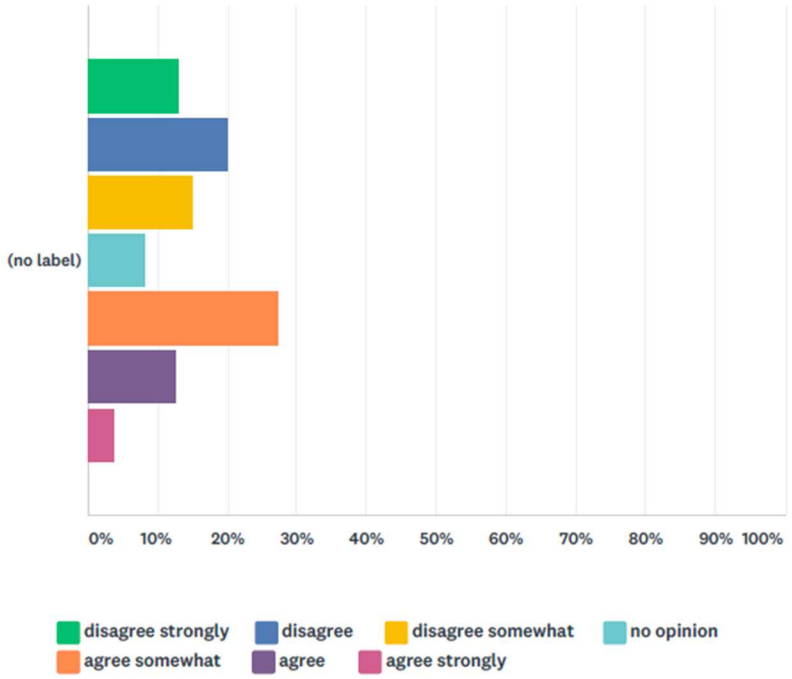
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	5.57% 55	13.16% 130	15.38% 152	8.50% 84	30.36% 300	18.32% 181	8.70% 86	988	4.35

Q13 Girls have fewer career opportunities than boys.

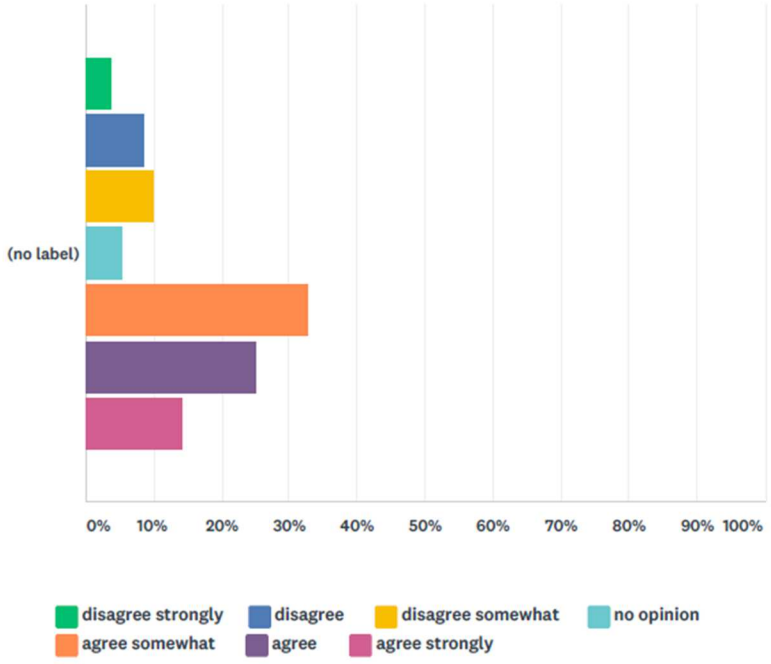
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
o bel)	13.06% 129	20.04% 198	14.98% 148	8.20% 81	27.43% 271	12.55% 124	3.74% 37	988	3.70

Q14 Students who come from poverty have fewer career opportunities than students who come from middle class.

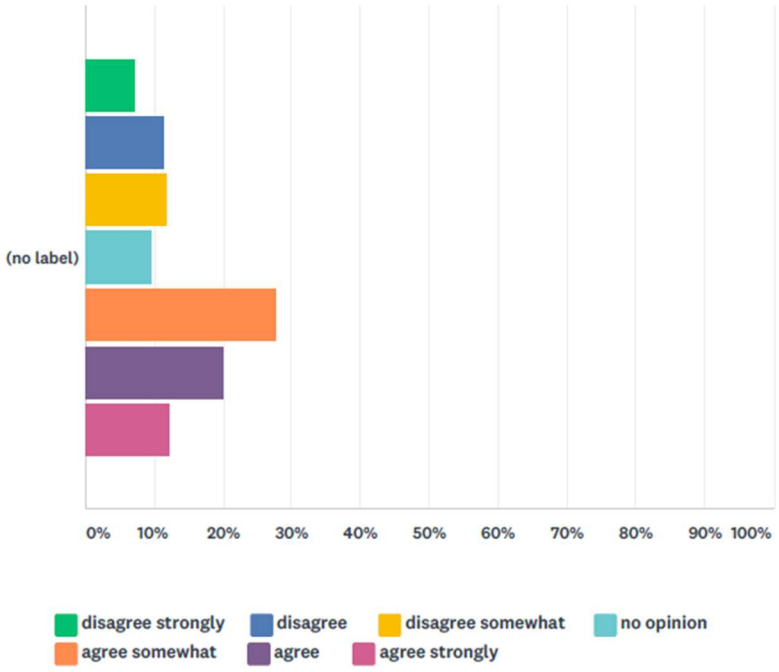
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	3.74% 37	8.60% 85	10.02% 99	5.47% 54	32.79% 324	25.10% 248	14.27% 141	988	4.87

Q15 Students from certain racial or ethnic groups have fewer career opportunities than white students.

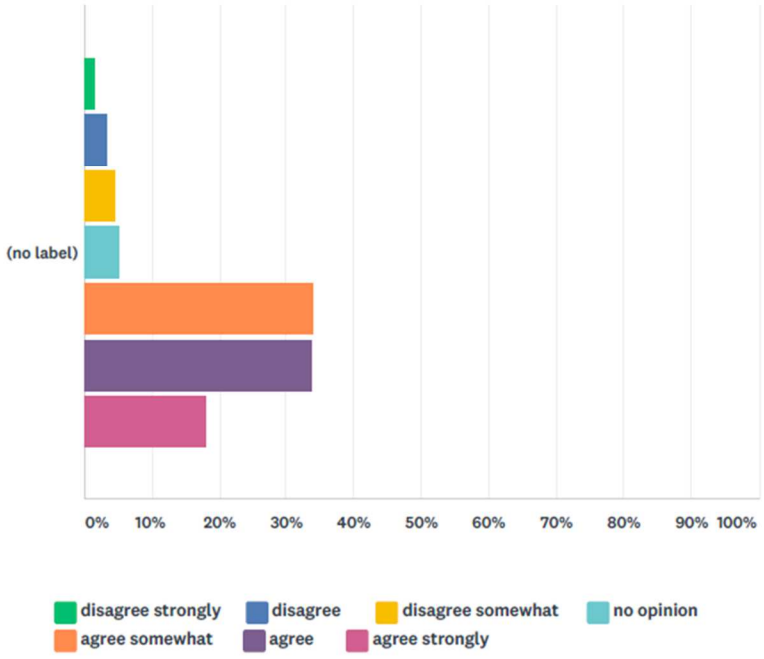
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	7.09% 70	11.44% 113	11.94% 118	9.62% 95	27.83% 275	20.04% 198	12.04% 119	988	4.48

Q16 Students with disabilities have fewer career opportunities than those without disabilities.

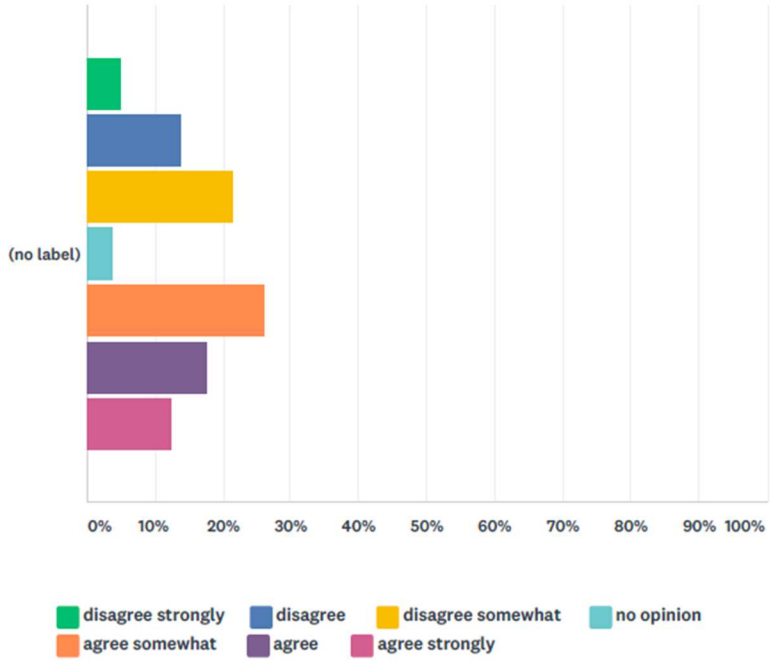
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	1.42% 14	3.34% 33	4.66% 46	5.16% 51	33.81% 334	33.70% 333	17.91% 177	988	5.39

Q17 Every student who perseveres and works hard has an equal chance at success.

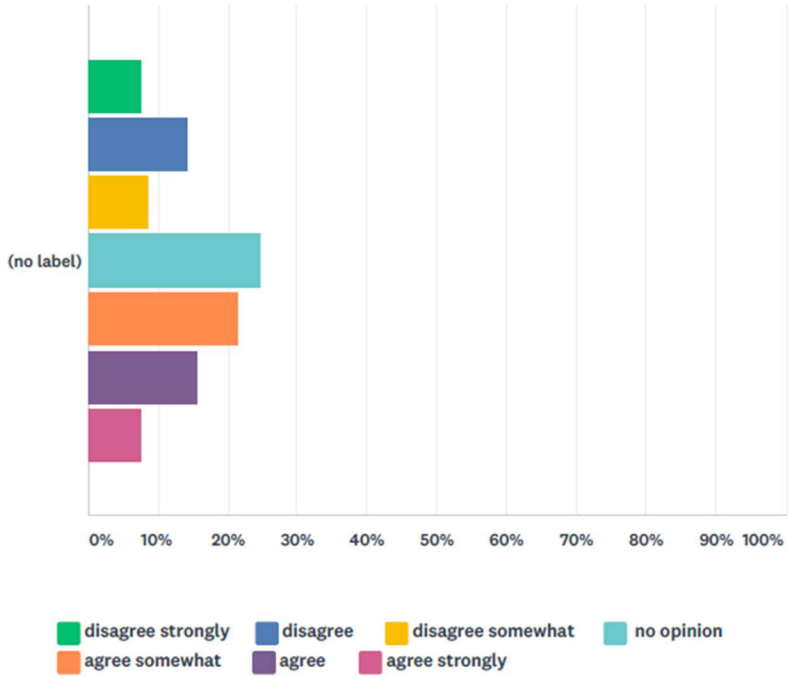
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	4.96% 49	13.87% 137	21.46% 212	3.74% 37	26.11% 258	17.61% 174	12.25% 121	988	4.34

Q18 Students from certain racial or ethnic groups are more accepted in educational settings when they act white.

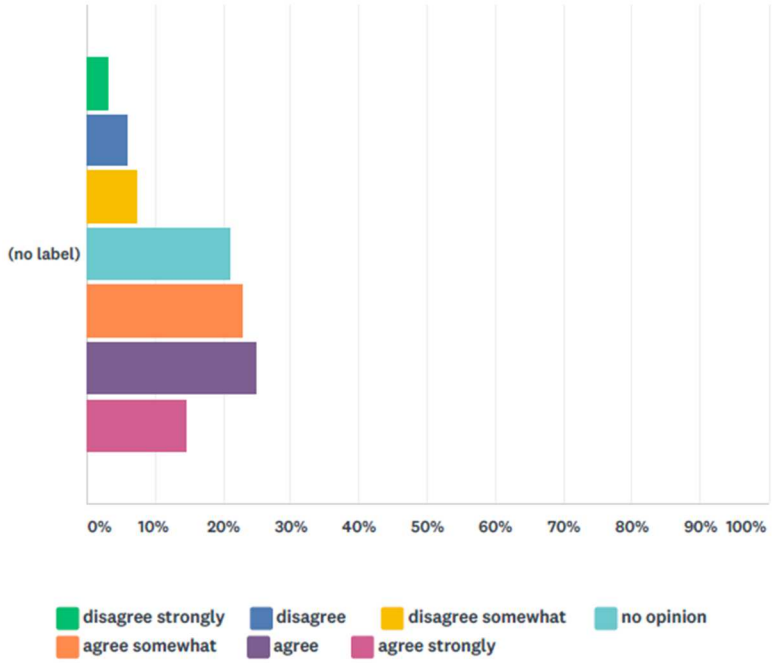
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
ıo	7.59%	14.27%	8.50%	24.70%	21.56%	15.79%	7.59%		
bel)	75	141	84	244	213	156	75	988	4.16

Q19 Evidence of societal privilege is found in the disproportionately greater number of white, middle-class students comprising the rosters of honors, high-ability, gifted, and/or AP classes.

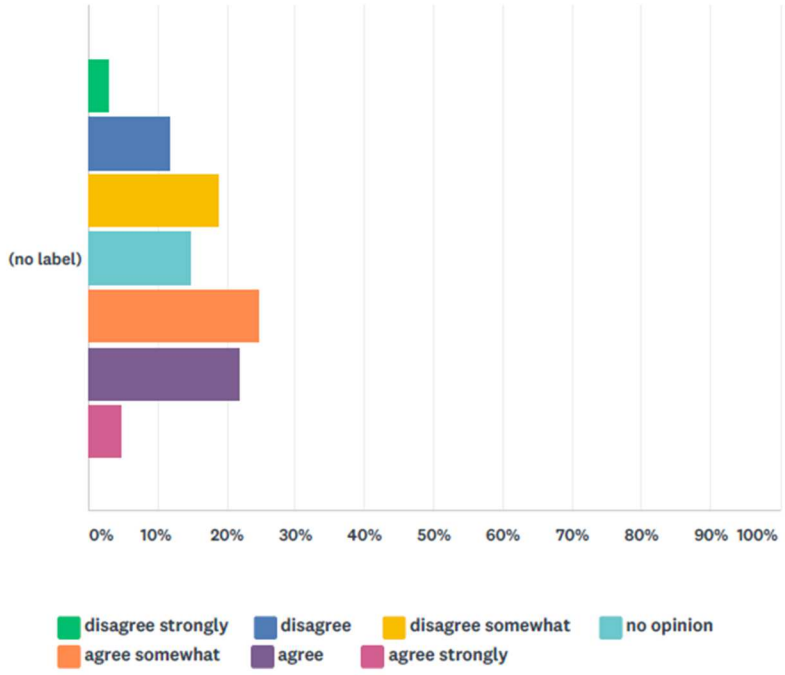
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	3.14% 31	5.97% 59	7.39% 73	21.05% 208	22.87% 226	25.00% 247	14.57% 144	988	4.88

Q20 Curriculum materials in the core academic subject areas (reading, writing, math, science, social studies) are designed to reach all students.

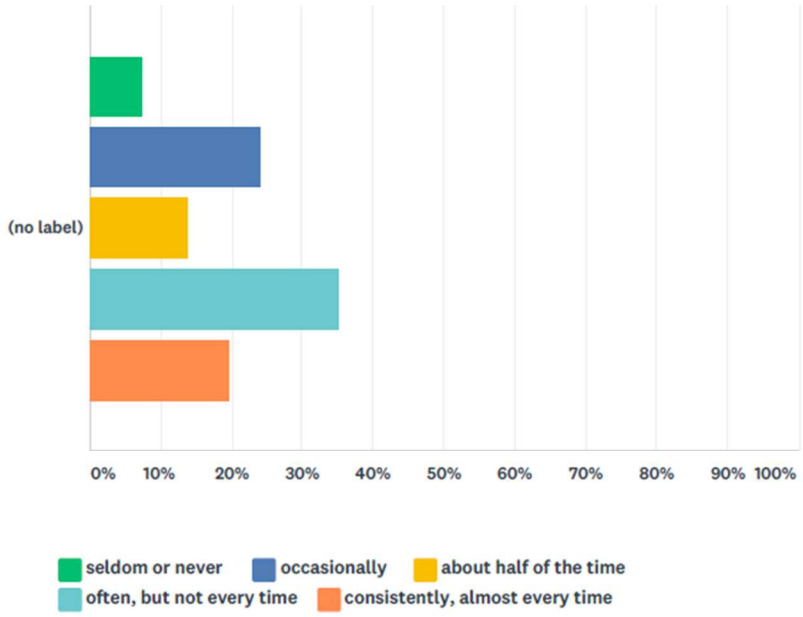
Answered: 988 Skipped: 0



	DISAGREE STRONGLY	DISAGREE	DISAGREE SOMEWHAT	NO OPINION	AGREE SOMEWHAT	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
ıo ıbel)	2.83% 28	11.94% 118	18.93% 187	14.88% 147	24.70% 244	21.86% 216	4.86% 48	988	4.32

Q21 When I have heard someone talk about a student(s) in a marginalizing way, I confront the person's thinking:

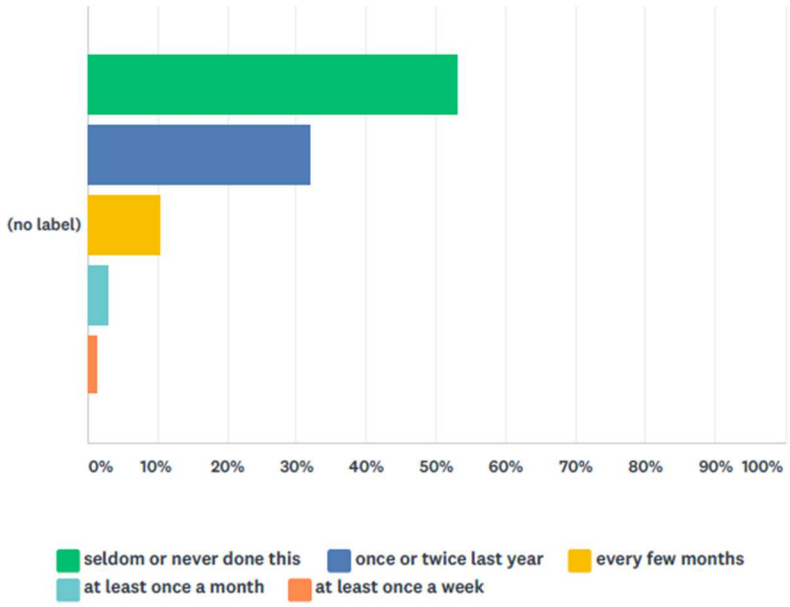
Answered: 988 Skipped: 0



	SELDOM OR NEVER	OCCASIONALLY	ABOUT HALF OF THE TIME	OFTEN, BUT NOT EVERY TIME	CONSISTENTLY, ALMOST EVERY TIME	TOTAL	WEIGHTED AVERAGE
	7.39%	23.99%	13.77%	35.12%	19.74%		
ıl)	73	237	136	347	195	988	3.36

Q22 I have participated in sociopolitical action (e.g. march, demonstration, petition, writing a letter to or calling a public official, membership in a social justice organization) in order to advocate for the rights or awareness of a marginalized group (e.g. women, LGBTQ, disabilities, mental health, immigration, people of color, religious freedom).

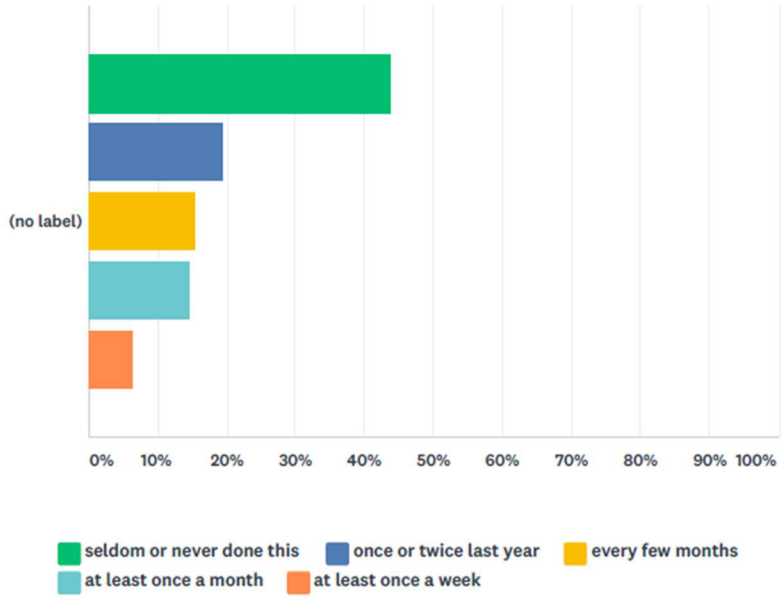
Answered: 988 Skipped: 0



	SELDOM OR NEVER DONE THIS	ONCE OR TWICE LAST YEAR	EVERY FEW MONTHS	AT LEAST ONCE A MONTH	AT LEAST ONCE A WEEK	TOTAL	WEIGHTED AVERAGE
ıo	53.24%	31.98%	10.53%	2.94%	1.32%		
ıbel)	526	316	104	29	13	988	1.67

Q23 I have enhanced (or encouraged a teacher to enhance) curriculum material to include non-dominant culture perspectives and/or learning styles.

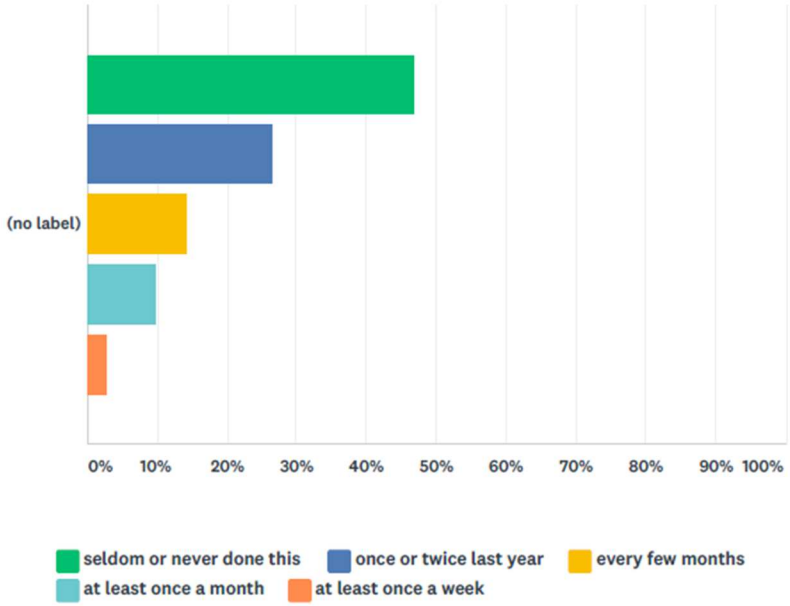
Answered: 988 Skipped: 0



	SELDOM OR NEVER DONE THIS	ONCE OR TWICE LAST YEAR	EVERY FEW MONTHS	AT LEAST ONCE A MONTH	AT LEAST ONCE A WEEK	TOTAL	WEIGHTED AVERAGE
(no label)	43.93% 434	19.53% 193	15.38% 152	14.57% 144	6.58% 65	988	2.20

Q24 I have raised questions about the validity and/or reliability of assessments and data analyses for certain groups of students.

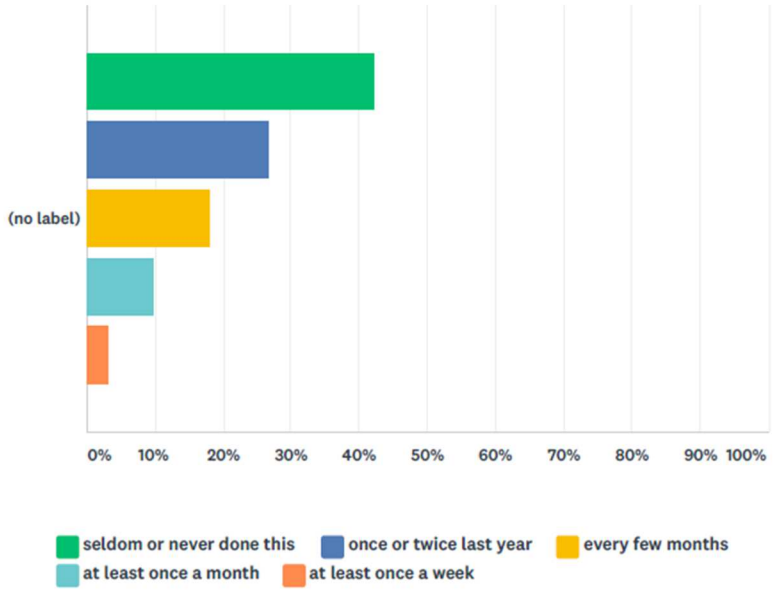
Answered: 988 Skipped: 0



	SELDOM OR NEVER DONE THIS	ONCE OR TWICE LAST YEAR	EVERY FEW MONTHS	AT LEAST ONCE A MONTH	AT LEAST ONCE A WEEK	TOTAL	WEIGHTED AVERAGE
ɔ	46.76%	26.62%	14.17%	9.82%	2.63%		
ɔel)	462	263	140	97	26	988	1.95

Q25 I have raised questions about policies and/or procedures that intentionally or unintentionally exclude students and/or their families (e.g. school-parent communication, homework policies, family events, access to activities or classes, fees, fair ADA accommodations, discipline procedures, adequate social/emotional/behavioral supports).

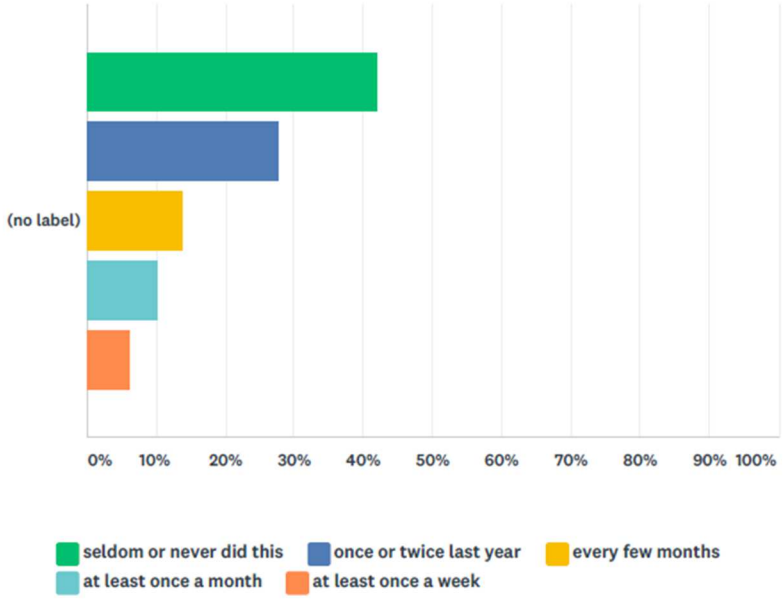
Answered: 988 Skipped: 0



	SELDOM OR NEVER DONE THIS	ONCE OR TWICE LAST YEAR	EVERY FEW MONTHS	AT LEAST ONCE A MONTH	AT LEAST ONCE A WEEK	TOTAL	WEIGHTED AVERAGE
(no label)	42.31% 418	26.72% 264	17.91% 177	9.82% 97	3.24% 32	988	2.05

Q26 I have advocated for the educational accommodation or advancement of student(s) from a marginalized group when the educational system would have otherwise not accommodated/advanced them.

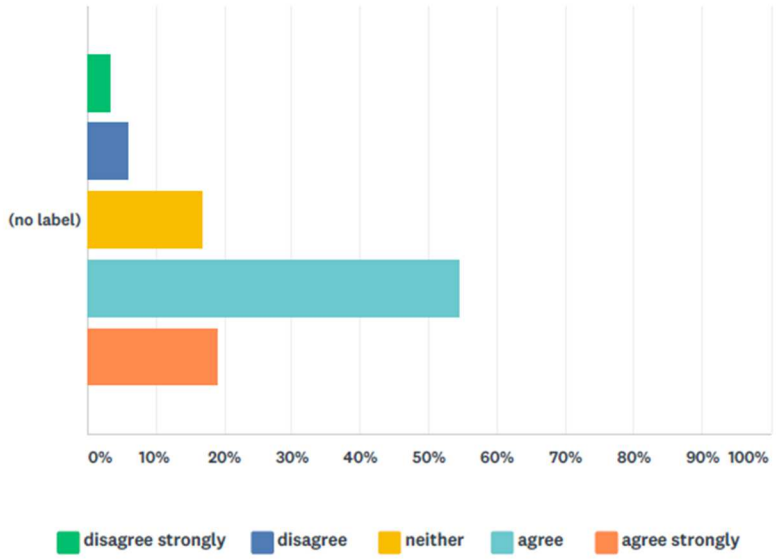
Answered: 988 Skipped: 0



	SELDOM OR NEVER DID THIS	ONCE OR TWICE LAST YEAR	EVERY FEW MONTHS	AT LEAST ONCE A MONTH	AT LEAST ONCE A WEEK	TOTAL	WEIGHTED AVERAGE
ɔ	42.00%	27.73%	13.77%	10.32%	6.17%		
ɔel)	415	274	136	102	61	988	2.11

Q27 I feel comfortable among my colleagues to openly raise questions about or advocate for the education system's ability to equitably serve students belonging to marginalized groups.

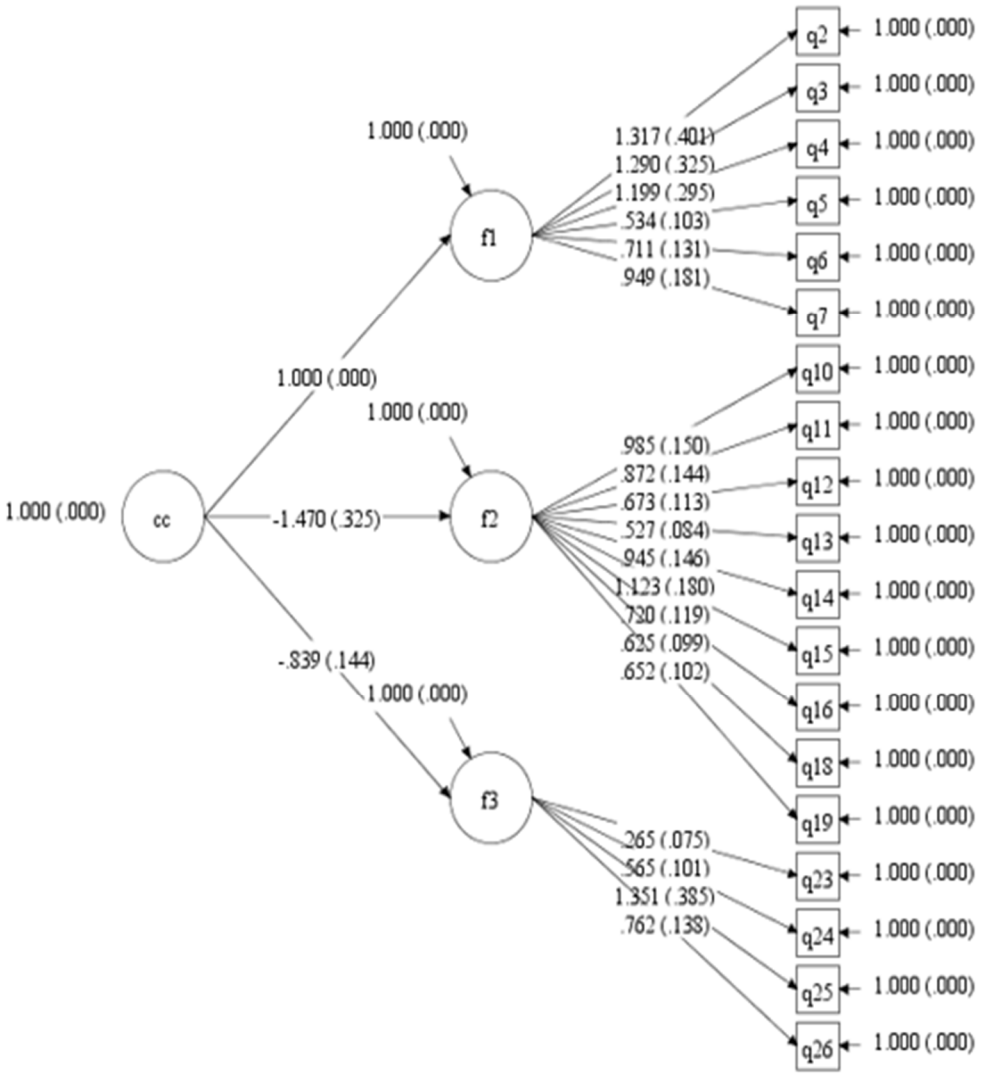
Answered: 988 Skipped: 0



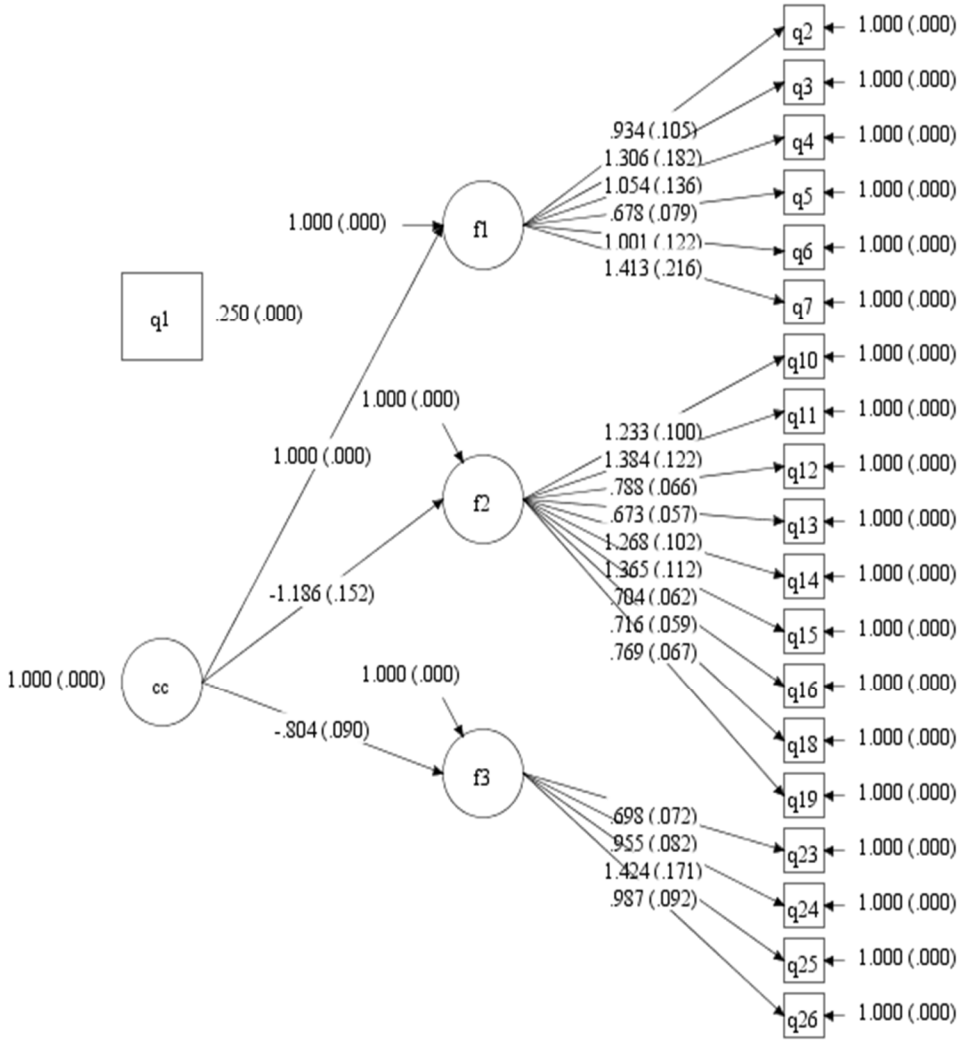
	DISAGREE STRONGLY	DISAGREE	NEITHER	AGREE	AGREE STRONGLY	TOTAL	WEIGHTED AVERAGE
(no label)	3.34% 33	5.97% 59	17.00% 168	54.55% 539	19.13% 189	988	3.80

Appendix I: Measurement Invariance Diagrams with Unstandardized Estimates

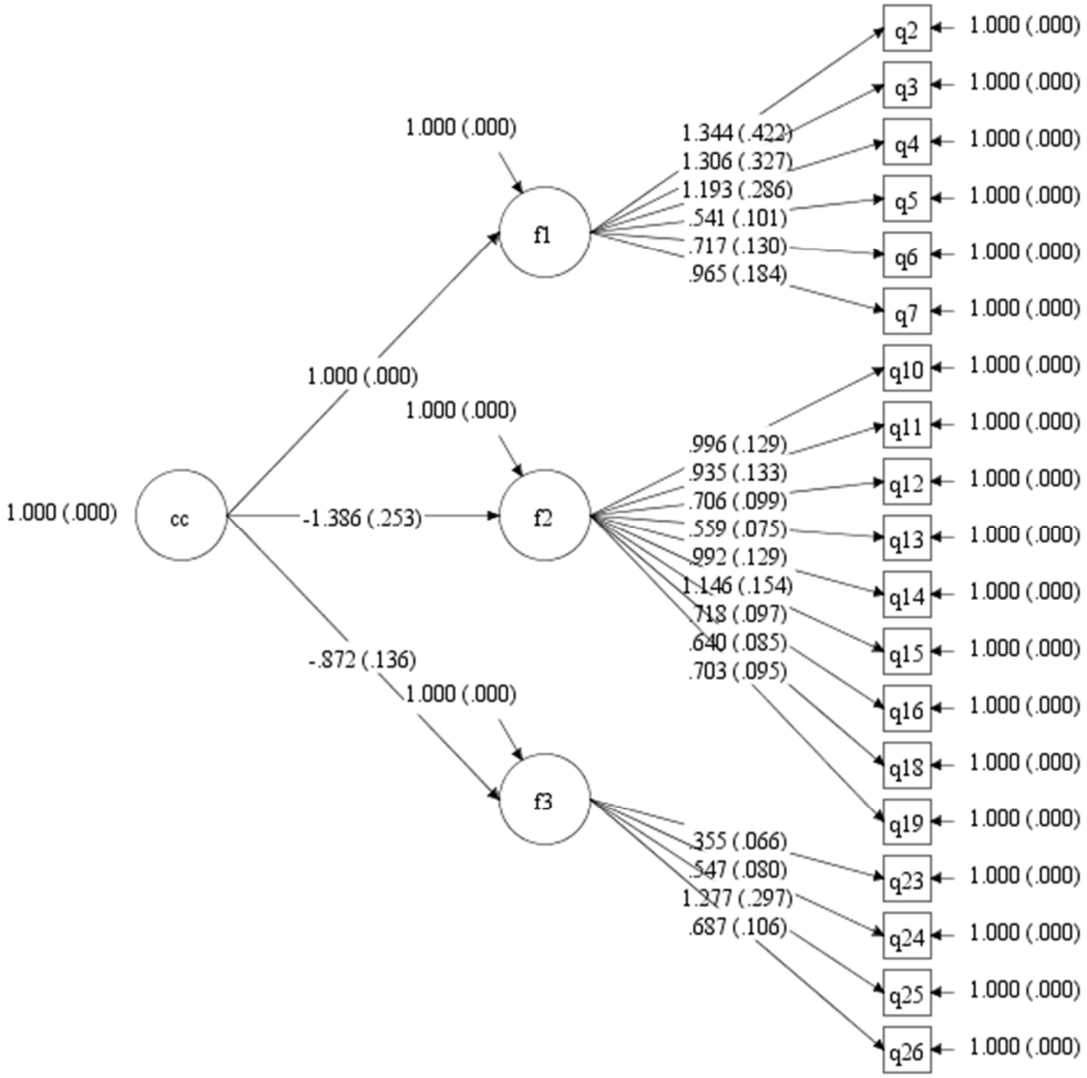
Configural Invariance: Elementary Teachers Group



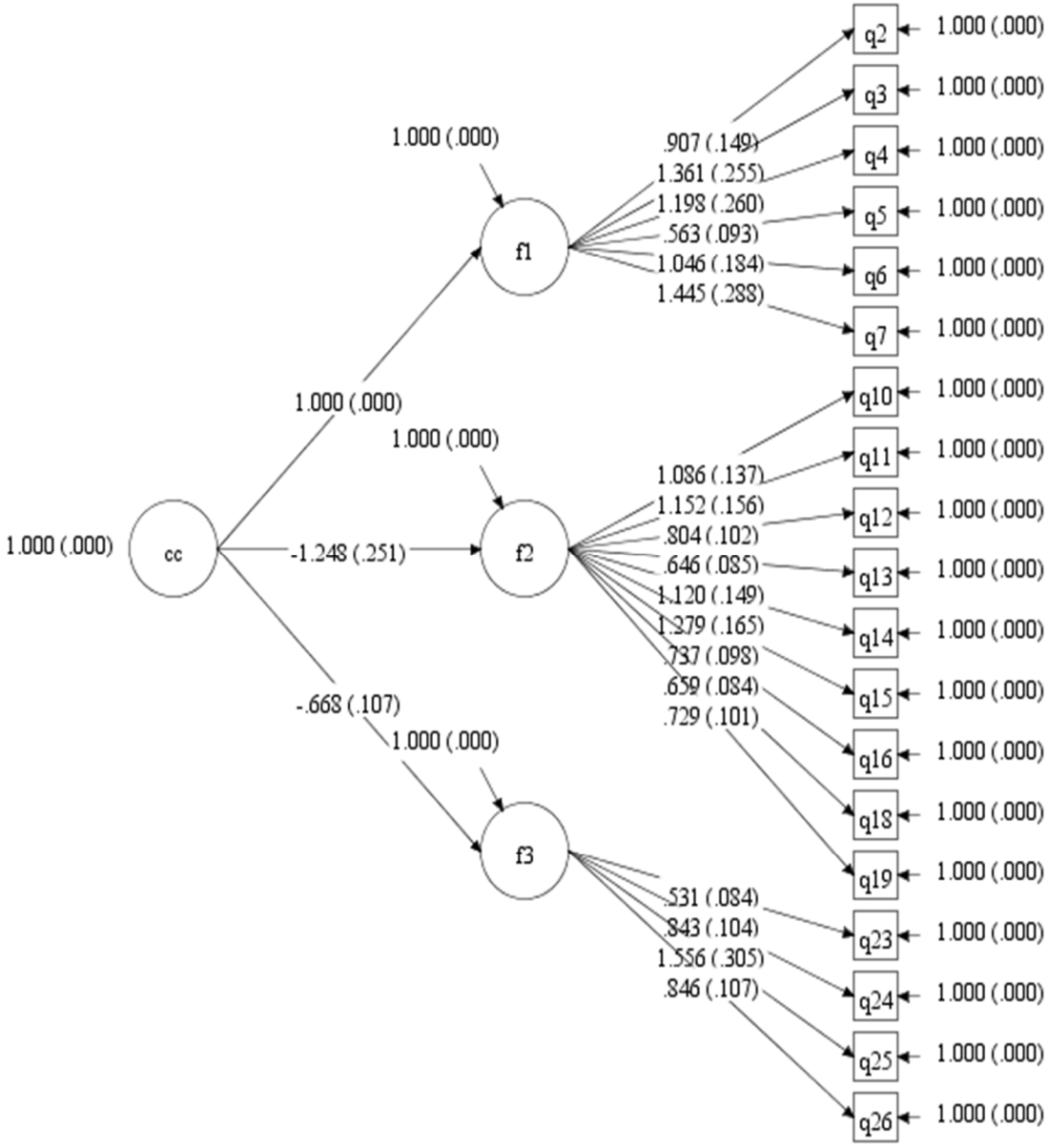
Configural Invariance: Secondary Teachers Group



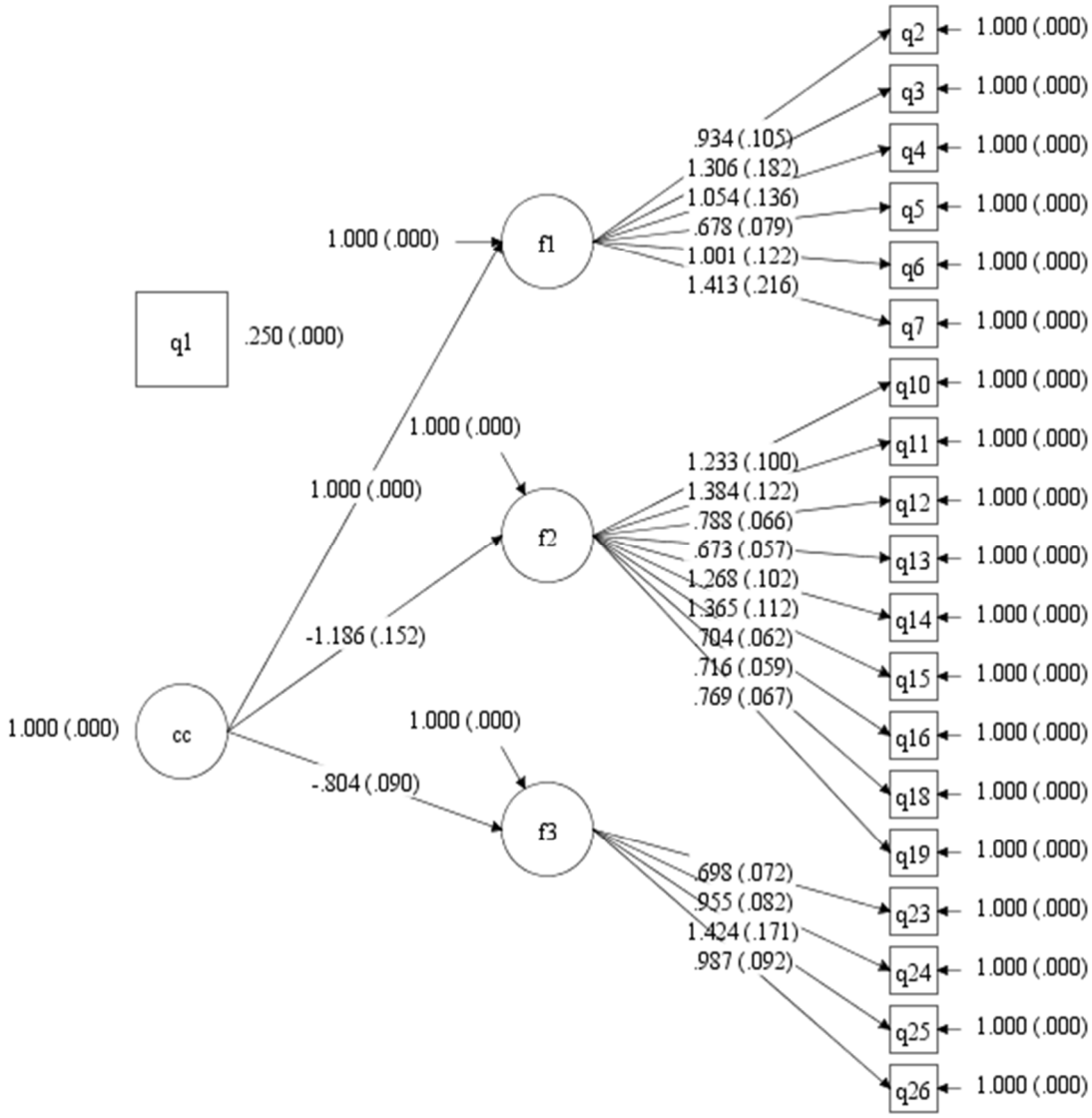
Scalar Invariance: Elementary Teachers Group



Configural Invariance: Licensed Educators Group



Configural Invariance: Classified Educators Group



Scalar Invariance: Licensed Group