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Adam Murry  
*University of Calgary*

Mazna Patka  
*Zayed University, mazna.patka@zu.ac.ae*

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# Critical Consciousness is an Individual Difference: A Test of Measurement Equivalence in American, Ukrainian, and Iranian Universities

ADAM T. MURRY

University of Calgary, Canada

MAZNA PATKA

Zayed University, UAE

**ABSTRACT** *We live in a world in which we are socially, politically, economically, and environmentally connected with other people. Online communication has facilitated people coming together from different parts of the world. In terms of social justice movements, people have come together to share ideas about how they perceive social inequality and how to address it, which is what academics call critical consciousness. While scholars have explored critical consciousness in the American context, whether it operates on a global scale is under-explored. To address this question, we administered the Critical Consciousness Scale (a validated survey) with students from the United States, Iran, and Ukraine. Our findings demonstrate that critical consciousness maintains its factor structure across the entire sample, meaning that students from these three countries share some notions of critical consciousness. However, when comparing national groups, we find that critical consciousness is defined differently by students in different countries. In a practical sense, these findings mean that some aspects of critical consciousness are shared, but there are important differences in how it is perceived and how its components relate to one another. By attempting to understand critical consciousness internationally, this study serves as a cautionary narrative for international solidarity movements organized around the goal of social justice.*

**KEYWORDS** critical consciousness; university students; sense of community; USA; Iran; Ukraine

*Correspondence Address:* Mazna Patka, College of Interdisciplinary Studies, Zayed University, Dubai, UAE; email: mazna.patka@zu.ac.ae

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## **Introduction**

An increasingly interconnected global society offers benefits and challenges for social justice. On the one hand, working in solidarity with others and fighting similar fights in different contexts can help to bring awareness of social inequalities and mobilize public pressure on social institutions (e.g., governments) to implement changes that achieve greater social equity (Moghadam, 2020). On the other hand, international collaboration often entails translating what social justice means across different contexts. Universalizing social justice meanings and associated agendas may obscure nuanced differences across social context in how inequality is perceived, what values support equality, and what actions are needed to address social injustices. It is possible, therefore, that a global alliance against oppression and social inequity obscures differences in critical consciousness (CC), the ways people perceive inequality and feel empowered to act to address it (Freire, 2000). To date, empirical research has not investigated this possibility. The purpose of this study is to determine whether the US-based construct of CC is consistent across samples of students from the US, Ukraine and Iran.

Critical consciousness is conceptualized as an influential prerequisite to social justice (Jemal, 2017; Mosley et al., 2021; Pillen et al., 2020; Watts et al., 2011). Born from the dilemma of education serving to produce political passivity rather than liberation, Paulo Freire (2000) coined the term in the late 1960s to represent the impact of pedagogies that help marginalized students understand the societal structures that contribute to their marginalization, while empowering their ability to devise strategies that act upon those structures (Magee & Pherali, 2019). Since then, critical pedagogies and CC have been implemented by researchers and practitioners in the fields of education, race relations, counselling, vocational training, and civic engagement. As we detail below, evidence supports the utility of CC for promoting social justice outcomes and the value of assessing its presence among international collaborators. However, the assessment of CC presents challenges.

Validated instruments that measure CC only date back a decade and vary considerably depending on project purposes and field of study (Diemer et al., 2015). There are scales for CC for different populations (e.g., McWhirter & McWhirter, 2016; Thomas et al., 2014; Yoo et al., 2021), targets of prejudice (e.g., Shin et al., 2016, 2018), and conceptual components of CC (e.g., Diemer et al., 2017, 2022). If international social justice movements depend at all on shared conceptualizations of CC, then assessment decisions play a role in establishing whether shared notions of and perspectives on social justice exist. Few studies that use a validated scale have explored CC outside of the United States (Patka et al., 2018; Wallin-Ruschman et al., 2018), and none have made international comparisons. This gap is important because we may erroneously conclude that CC, as it is understood in the United States, translates the same way into other national contexts. The purpose of this study is to address this gap in CC research by assessing whether a measure of CC – a survey called

the Critical Consciousness Scale (CCS) – behaves as expected across different countries. Our findings help researchers understand the complexities of instituting a global social justice agenda at the intersection of place and CC.

Before comparisons can be made between international samples, the assumption that the scale used to measure CC functions similarly across samples must be tested, for example, through measurement equivalence (Davidov et al., 2014). In this study we assess whether the CC scale devised by Diemer et al. (2017) – the CCS – demonstrates measurement equivalence across samples from the US, Ukraine, and Iran using the method outlined by Hirschfeld and von Brachel (2014). Following the assessment, we explore how the scale performed differently in each sample. We interpret our findings in relation to international solidarity for social justice movements (e.g., BlackLivesMatter). Our findings indicate that the US-based definition of CC works when country is ignored and individuals are analyzed together. However, when CC is considered by country, important differences emerge in its definition (i.e., factor loadings) and level of endorsement (i.e., intercepts).

Our argument unfolds in four main sections. In the first, we detail why CC is an important precursor to international solidarity. The second section entails conceptualizing CC, the ways in which it has been measured, and its correlates. We then delineate our methodology, followed by sections that present our findings and discussion of them. We conclude by reflecting on the limitations of our study and future research agendas.

### **Critical Consciousness in the Context of International Solidarity**

Transnational social justice movements have occurred for centuries, although they have been increasingly common with successive waves of globalization (Almeida & Chase-Dunn, 2018). A world interconnected by economic markets (Kali & Reyes, 2007), political interdependence (Berger, 2000), geographically dispersed ecological struggles (Figge et al., 2017), and new means of electronic communication is also characterized by various global networks of concerned citizens (Zhu, 2017). Amid many powerful examples of international solidarity in recent times (e.g., Arab Spring, #MeToo Movement, Occupy Wallstreet), the Black Lives Matter (BLM) movement stands out in its global reach.

BLM was spearheaded in 2013 following the acquittal of Trayvon Martin’s killer, when Alicia Garza, Patrisse Cullors, and Opal Tometi created the hashtag ‘#Blacklivesmatter’ and the Black Lives Matter Global Network Foundation (<https://blacklivesmatter.com>). The movement sought to raise awareness of and motivate changes related to the disproportionate number of Black citizens dying at the hands of vigilantes and the police (Edwards et al., 2019; see Males, 2014 for an Indigenous comparison). After the murder of George Floyd by police officer Derek Chauvin, the BLM platform helped connect hundreds of protests comprised of hundreds of thousands of people in

and outside the US, including countries in the Middle East and Eastern Europe (List of George Floyd protests outside the United States, 2022). In terms of the number of people showing up to protest, BLM is among the largest movements in US history (Buchanan et al., 2020), likely benefiting from a COVID-related sense of shared destiny (Schachter, 2020) and the increased amount of time people spent online due to quarantine and in-person work restrictions (Arora, 2020). The grassroots movement now claims over 40 chapters worldwide, has gained visible support in dozens of countries (e.g., Nigeria, Japan, Philippines, Ireland, Sweden, Austria, Mexico, the Caribbean, and the United Kingdom), and the hashtag and phrase have become global symbols of association with, and endorsement of, anti-racist ideologies (Kirby, 2020; Langford & Speight, 2015; Li, 2021).

Behind the hash-tagging, protests, petitions, donations, and public appeals to leadership, international solidarity movements directly and indirectly appeal to abstract principles like universal human rights, moral responsibility, and global citizenship (Lynch, 1998). Scholars of transnational social movements argue that critical consciousness is essential for perceiving and acting upon contradictions between inequitable social systems and those valued principles (Davis, 2017; McLaren & Farahmandpur, 2001; Olesen, 2005; Torres & Bosio, 2020). Following Freire's (2000) idea that CC can be taught, local (e.g., McLaren & Farahmandpur, 2001) and global education efforts, such as Global Citizenship Education (Torres & Bosio, 2020), are underway to facilitate the need for people everywhere to understand how economic systems and global enterprise impact their lives so that social organization can respond to popular needs. For example, programs like Global Citizenship Education contend that there are universal challenges (e.g., human rights violations, poverty) that require global attention, and thus aim to teach values, attitudes, and behaviors that promote a more socially just global society (UNESCO, 2021). However, we argue that it is important to examine culturally anchored values, attitudes, and behaviors rather than assuming all people will or should espouse the agendas deemed necessary for social justice change by programs such as Global Citizen Education.

### **Critical Consciousness**

As described above, CC, or "conscientization" (*conscientização* in Portuguese), was coined as an aspect of Freire's (2000) critical pedagogical work with impoverished citizens in Brazil. Because Freire did not offer a conceptual model of CC (Jemal, 2017), researchers have had to extrapolate definitions of CC that suit local contexts (Mosley et al., 2021; Yoo et al., 2021) and theoretical developments (Diemer et al., 2017).

Researchers have framed CC as both a process and a construct. As a process, Pillen et al.'s (2020) review of the empirical literature identifies six stages of CC development. They include: (1) priming of critical reflection; (2)

information creating disequilibrium; (3) introspection; (4) revising frames of reference; (5) developing agency for change; and (6) acting against oppression. In a systematic review of CC in children and adolescents, Heberle et al. (2020) show that a sizable proportion of studies identify contexts and social influences that facilitate CC development, including parent and peer socialization, school climate, and youths' experiences with marginalization (see also Hope et al., 2020). In these depictions, CC is not a state or trait of the individual, but rather an iterative calibration between their perceptions and their surroundings.

As a construct, one of the earliest and most influential definitions of CC is put forth by Watts and colleagues (2011), who postulate that CC is comprised of critical reflection, political efficacy, and critical action (Diemer et al., 2022). However, Jemal's (2017) review shows that researchers have described CC as having one (i.e., awareness-induced action), two (i.e., reflection and action), or three components (i.e., reflection, efficacy, and action). After reviewing the literature, Jemal (2017) suggests that CC is the highest end of a continuum of transformative potential, where both transformative consciousness and transformative action are in their most enlightened and constructive forms. Still others question its overlap with similar constructs (e.g., empowerment) (Christens et al., 2016).

Despite differences in conceptualization and measurement, there is consensus that CC involves an awareness that leads to action. Although the relationship between a population's CC and societal-level or systemic change is not clear, the evidence does support more individually located outcomes (see Godfrey et al., 2019, as an exception). Heberle et al.'s (2020) review of 67 studies on child and youth CC finds that CC is related to curiosity and knowledge seeking, social-emotional and academic outcomes, career choices and aspirations, and civic participation. Similarly, Diemer's (2020) review finds collective action is associated with several positive developmental outcomes. In terms of primary studies, CC has been shown to predict better academic achievement for undocumented Latinx youth (Cadenas & Kiehne, 2021), to buffer effects of racial marginalization on career adaptability for adult minorities (Autin et al., 2022), to increase voting behavior (Diemer & Li, 2011), and to be associated with higher career decision self-efficacy and outcome expectation (Cadenas et al., 2020). Perhaps not surprisingly, practitioners have argued for the use of CC in anti-racism parenting (Tsong et al., 2022), supporting ethnic identity (Mathews et al., 2020), and employing its components in social work (Suárez et al., 2018) and vocational psychology (Cadenas & McWhirter, 2022).

Instruments designed to empirically measure CC vary depending on project purposes and field of study (Diemer et al., 2015). There are scales of CC for different populations, including youth and young adults (Thomas et al., 2014), Latina/os (McWhirter & McWhirter, 2016), and Asian Americans (Yoo et al., 2021), and there are scales measuring different targets of prejudice. For example, Shin et al. (2016) validated a CC scale specific to classism, racism, and heterosexism, later validating a second part focusing on cis-sexism,

ableism, and sexism (Shin et al., 2018). Of the available scales, only Diemer et al.'s (2017, 2022) contains sub-scales for both critical reflection and critical action without also pertaining to a particular (e.g., ethnic) group and are, therefore, most appropriate for assessing CC internationally. Unfortunately, Diemer et al.'s (2022) revised scale was published after our data was collected, so our focus is on their earlier scale.

CC is the awareness that there are problems of social asymmetry and inequity with a strategic action component to resolve those asymmetries and inequalities. CC is related to social justice movements as a necessary prerequisite of perception and willingness to act. As CC has been identified as a crucial component of international social movements, research is needed to confirm that CC holds across national contexts. Before comparisons can be made, our measurements of CC need to be inspected for equivalence in international samples (Davidov et al., 2014). To advance research in this area, the current study investigates the measurement equivalence of Diemer et al.'s (2017) CC scale across American, Ukrainian, and Iranian university samples.

## Method

Our sample is comprised of 488 students from four universities. Two universities are located in the southeastern US ( $N = 197$ ; i.e., one public university,  $N = 98$ , and one predominantly Black college,  $N = 99$ ) and one each in Ukraine (in Odessa,  $N = 106$ ) and Iran (in Isfahan,  $N = 185$ ). Few demographics were available across all three samples to assess comparability, partly due to cultural restrictions (see Patka et al., 2018; Wallin-Ruschman et al., 2018). Across the whole sample, about 62% are women (4 missing); 82% are college aged (17-22), 14% are 23-30, and 4% are 31 or older (18 missing). Samples by country significantly differ by gender ( $\chi^2(2) = 7.24, p = .03$ , Cramer's  $V = .12$ ) and age ( $F(2, 469) = 64.01, p < .001, \eta^2 = .22$ ). Differences in gender are due to Ukraine having a near equal split of men (49%) and women (51%), while women are the majority in the US (66%) and Iran (64%) samples. All three country samples differ significantly from each other in terms of age: Ukrainian students are youngest ( $M = 17.99$ ), US students are in the middle ( $M = 19.41$ ), and Iranian student are oldest ( $M = 22.89$ ), on average.

The questionnaire was distributed in introductory college courses in institutions at each location. The survey was translated and back-translated at locations where English was not the primary language to ensure face validity. Ethical approval was acquired from institutional review boards at each location prior to data collection.<sup>1</sup>

We used Diemer et al.'s (2017) Critical Consciousness Scale to assess CC among our sample. CCS has 22 items representing three components of CC:

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<sup>1</sup> For more details on the procedures used for each sample, see Patka et al., 2018; Patka et al., 2023; Wallin-Ruschman et al., 2018.

*perceived inequality* ( $i = 8$ ), *egalitarianism* ( $i = 5$ ), and *socio-political participation* ( $i = 9$ ). Perceived inequality measures perceived lack of opportunity due to race/ethnicity, gender, and socioeconomic status on a scale from 1 (strongly disagree) to 6 (strongly agree). Egalitarianism measures endorsement of societal equality on a scale from 1 (strongly disagree) to 6 (strongly agree). Sociopolitical participation measures participation rates of various activities (e.g., participated in a discussion on a social or political issue, participated in a political club, signed a petition, worked on a campaign, or joined in a march) on a scale from 1 (never did this) to 5 (at least once a week).

We analyzed the measurement equivalence of CCS using the lavaan package (Yves, 2012) in R (R Core Team, 2013) to calculate multi-group confirmatory factor analyses. We followed the steps outlined by Hirschfeld and von Brachel (2014) to evaluate levels of equivalence (configural, weak, strong, strict) based on country (i.e., US, Ukraine, and Iran). Configural equivalence means all items loading patterns on their latent constructs should be similar across countries; weak equivalence translates into equal item loadings on latent factors across countries, strong equivalence to equal loadings and intercepts, and strict equivalence to equal loadings, intercepts, and residuals. Confirmatory factor analyses (CFA) were run on polychoric correlations, which are more appropriate for ordinal data (O'Connor, 2000).

## **Results**

### *Preliminary Statistics*

Prior to testing equivalence between groups, it is necessary to evaluate overall model fit (Hirschfeld & von Brachel, 2014). This step is important to test the assumption that we are working with a scale that functions across individuals before making group comparisons. A MAP test (Velicer, 1974) confirmed the presence of three subscales and internal consistencies (i.e., Cronbach's alpha) for each subscale were above the conventional cut-off [i.e.,  $\alpha > .70$  (John & Benet-Martinez, 2000); perceived inequality,  $\alpha = .91$ ; egalitarianism,  $\alpha = .86$ , socio-political action,  $\alpha = .87$ ]. A CFA running the prescribed 3-factor structure showed good fit on all metrics except for chi-square:  $\chi^2(206) = 436$ ,  $p < .001$ ; robust CFI = .96; robust TLI = .96; robust RMSEA = .05 (CI [90%] = .04 - .06,  $p < .62$ ); SRMR = .06 (from here on robust estimates of CFI, TLI, and RMSEA are provided that take into account the effect of ordinal data). Ideally, RMSEA and SRMR are equal to or below .08, chi-square should be non-significant, and both CFI and TLI should be no less than .90 (Kenny et al., 2015; Sun, 2005). Although chi-square did not meet conventional fit expectations, CFI, TLI, RMSEA, and SRMR were adequate to move forward with analyses.

As a baseline for comparison, correlations between perceived inequality, egalitarianism, and socio-political action were significant across latent



variables ( $p < .05$ ) among the combined sample, except for the relationship between egalitarianism and socio-political action (see Table 1). The relationship between egalitarianism and socio-political action was marginally significant at  $p = .05$ .

Table 1. Correlations between latent variables in combined international sample and separated by country.

	Perceived inequality	Egalitarianism	Socio-political action
<b>Combined sample</b>			
Perceived inequality	1		
Egalitarianism	.08 (.005**)	1	
Socio-political action	.17 (<.001***)	-.04 (.050†)	1
<b>US</b>			
Perceived inequality	1		
Egalitarianism	.12 (.052†)	1	
Socio-political action	.07 (.22)	-.02 (.43)	1
<b>Ukraine</b>			
Perceived inequality	1		
Egalitarianism	-.12 (.11)	1	
Socio-political action	.005 (.91)	-.04 (.10)	1
<b>Iran</b>			
Perceived inequality	1		
Egalitarianism	.05 (.03*)	1	
Socio-political action	.05 (.29)	-.04 (.10)	1
<i>Note: Statistical significance interpreted with a p-value of &lt; .05*, &lt; .01**, &lt; .001***; p-values in parentheses; marginal significance listed with an †</i>			

### Tests of Measurement Equivalence

Tests of measurement equivalence show a significantly worse fit for each level of possible invariance. As shown in Table 2, the configural model that allowed estimates to vary by country fit adequately:  $\chi^2(618) = 866$ ,  $p < .001$ ; CFI = .91; TLI = .90; RMSEA = .07 (CI [90%] = .059 - .08,  $p < .003$ ); SRMR = .09. With each level of constraint (i.e., weak, strong, strict), CFIs less than .01 are acceptable to conclude equivalence/invariance (Hirschfeld & von Brachel, 2014). Each successive level of constraint violated this standard. Decreases in CFI were .03, .05, and .04 as weak (i.e., loadings), strong (loadings and intercepts), and strict (loadings, intercepts, and residuals) constraints were added, with each step being significantly worse according to chi-square ( $p < .001$ ).

Table 2. Assessment of comparative model fit with configural, weak, strong, and strict assumptions tested: US v. Iran v. Ukraine.

N = 470	DF	CFI (Δ CFI)	RMSEA	χ <sup>2</sup>	ANOVA p – value
Configural	618	.91	.07	866	
Weak (loadings)	656	.88 (.03)	.08	935	<.001
Strong (loading, intercepts)	694	.83 (.05)	.09	1078	<.001
Strict (loadings, intercepts, and residuals)	738	.79 (.04)	.10	1207	<.001

*Supplementary Analysis*

After our test of measurement equivalence failed to show adequate fit of Diemer et al.’s (2017) CCS across countries, we sought to uncover where differences occurred. First, using the output from our configural CFA, we recorded the standardized coefficients for CC items per subscale of CC per country. Standardized coefficients are essentially correlations of each item with its latent variable. Standardized coefficients were compared with Fisher’s z-tests for independent samples using the R Package “diffcor” (Blötner, 2022). Second, using the output from our configural CFA, we recorded the intercepts and standard errors for each CC item by country and converted the standard errors into standard deviations to calculate independent-sample t-tests. Both Fisher’s z-tests and t-tests contrasted countries in a pairwise fashion (i.e., the US to Ukraine, the US to Iran, and Ukraine to Iran). Given that there were 22 CC items, contrasted by correlation coefficients and intercepts (22x2), mean of intercepts by construct (+3), by three countries (22x2x3+3 =135), the critical alpha ( $p < .05$ ) was divided by 135 to control for Type 1 error stemming from multiple tests. Therefore, statistical significance was considered whenever the p-value was <.00037. Country-based difference in factor loadings is presented in Appendix 1 while differences in intercepts are presented in Appendix 2.

*CC item factor loadings by subscale by country.* All items significantly loaded on their prescribed subscale’s latent construct in each country, with the exception of three egalitarian items (CC10, 11, and 13) and two socio-political participation items (CC19, CC20) in Ukraine and one item of perceived inequality (CC1) in Iran (see Table 3). In Ukraine, “group equality should be our ideal,” “we would have fewer problems if we treated people more equally,” and “it would be good if groups could be equal” did not define egalitarian as it did in the US and Iran. Instead, only one item, “all groups should be given an equal chance in life” loaded on or above the acceptable standard of .40 (Kline, 2016) on egalitarianism. Also in Ukraine, working on a political campaign and participating in socio-political discussions did not load on socio-political participation. In Iran, “certain racial or ethnic groups have fewer chances to get

a good high school education” was negative and non-significantly related to perceived inequality.

Fisher’s Z tests on the standardized factor loadings, using our Bonferroni-corrected critical alpha, showed a clear pattern on perceived inequality and egalitarianism subscales. Of the 11 significant differences in perceived inequality and six significant differences in egalitarianism, 10 of the perceived inequality differences (91%) and five of the egalitarianism differences (83%) were the US differing from Ukraine and Iran. In both cases, the CC items loaded stronger on their subscales in the US, and different items loaded highest on the latent construct compared to other countries. Inequality for racial or ethnic groups was significantly more associated with perceived inequality in the US than the other countries. In egalitarianism, “group equality should be our ideal,” “it would be good if groups could be equal” and “we would have fewer problems if we treated people more equally” loaded stronger in the US than the other countries. For the socio-political participation subscale, no clear pattern emerged. Two items significantly differed for each country with only one item being associated with a particular country (i.e., the item “wrote a letter to a school or community newspaper or publication about a social or political issue” (CC16) was associated with socio-political participation in Ukraine more than in the US or Iran).

*CC item intercepts by country.* Independent sample t-tests, using a Bonferroni-corrected critical alpha, identified two patterns of intercept differences (see Table 4). Of the 17 significant country-based differences on perceived inequality, 15 (88%) differentiated Ukraine. Similarly, of the 14 significant country-based differences on socio-political participation, 88% differentiated Iran. In Ukraine, participants were significantly less likely to perceive inequality than in the US or Iran, where US and Iran perceptions were comparable. In Iran participants rated items for socio-political participation higher than the US or Ukraine. Intercepts did not differ by country on egalitarianism.

## Discussion

Our exploration of CC’s measurement equivalence across countries from different regions (i.e., North America, Middle East, and Eastern Europe) produced perplexing results. On the one hand, Diemer et al.’s (2017) CCS scale held when US, Iranian, and Ukrainian samples were combined. This finding indicates that perceived inequality, egalitarianism (or the desire for equality), and socio-political action to address inequality are an observable multinational and multiregional phenomenon. In other words, solidarity with social justice movements like BLM likely tap into an internationally shared CC. When samples were combined, perceived inequality correlated with socio-political action, confirming Freire’s (2000) framework that critical reflection leads to

critical action. However, like other studies (Diemer et al., 2015), we did not find a relationship between egalitarianism and perceived inequality or socio-political action.

On the other hand, CC was not equivalent across countries, even by liberal statistical standards of equivalence (see Table 2). By the most conservative standards, statistical equivalence for scales requires similar factor loadings, intercepts, and residuals. The CCS was not equivalent by any of these standards across countries, although a proportion of individuals across regions shared a similar CC, when country served as the parameter regional differences in the construct appeared. Statistically speaking, this finding suggests that we should not run inferential tests using country as the independent variable, because our dependent variable (CC) has a different meaning per country (Hirschfeld & von Brachel, 2014). In terms of Diemer et al.'s (2017) measure of CC, factor loadings and intercepts differ by country in both haphazard and patterned ways. For example, while there are a lot of similarities, many items differ in priority defining latent constructs based on factor loadings. Endorsements of items by participants (i.e., intercepts) differed by nation. Items were more correlated with the latent variable of perceived inequality in the US than in Ukraine or Iran, while Ukraine differed more from the US or Iran in terms of its perceived inequality intercepts. Another example is the sociopolitical participation subscale. Despite items loading similarly (i.e., factor loadings) for all three countries, Iran is much more likely to be involved in sociopolitical action (i.e., intercept). In other words, there are complex patterns in the data that make it not equivalent. We interpret these results to be an example of internal diversity within groups, where CC is better thought of as an individual difference, similar to personality or mental ability (Motowildo et al., 1997), and that international solidarity may be a product of these individuals connecting and supporting each other.

## **Applications**

It is possible that members of societies everywhere vary in terms of their own individual levels of CC, and that, as our emerging global culture faces issues of racial and class-based injustice, those individuals high in CC will act in solidarity with victims of injustice. At the same time, when individuals are grouped into categories that do not select for or emphasize CC, the construct no longer retains its structure. If our results extend to other internally diverse constituencies, then we can expect CC to be conceived of differently at the group level, even if a percentage are critically conscious by our formal definition (Diemer et al., 2015, 2017). Social justice advocates and allies should be careful not to assume the communities they work with share a common form of CC. Similarly, if CC is an individual difference, then we should not be surprised or disillusioned if not all members of a marginalized

community perceive problems, the end goals of community work, or the types of solutions in the same way.

This phenomenon is visible locally. For example, in the US, BIPOC individuals are often lumped together due to their shared experiences with racism and marginalization. Similarly, in Ukraine, people of Asian and African descent are also grouped together. However, groups within the acronym and individuals within each group are different from one another in important ways. For example, while Black scholars have recently articulated anti-racism as a means for racial reckoning in policy and interpersonal behaviors (Kendi, 2019; DiAngelo, 2018), Indigenous communities continue their centuries-long fight for self-determination, economic growth, cultural preservation and language revitalization (Murry & James, 2021; Murry et al., 2022; National Congress of American Indians, 2017; U.S. Department of Education, 2011; U.S. Department of Interior, 1975). Furthermore, there is diversity in perspective and experience within the 'I' in BIPOC. A commonly uncomfortable classroom experience for Native American students is to be asked to speak on behalf of all Native Americans (Jackson et al., 2003), despite there being over 576 Tribes in the US and individuals at all ends of the ethnic identity spectrum (Moran et al., 1999; Walters, 1999; Weaver, 2001). Future research should investigate whether CC is equivalent between BIPOC members, as Diemer and Rapa (2016) did with Black and Latino adolescents.

### **Limitations and Future Research**

This study is noteworthy because it is the first to our knowledge to evaluate a validated measure of CC (Diemer et al., 2017) with a multinational, regionally diverse sample. The data collection required collaboration and measurement work (i.e., translation/back-translation) beyond the typical North American study, and the findings offer insights into our current zeitgeist of social movements. That said, there are limitations that reduce confidence in our results. First, our data collection occurred within university settings with participation limited to students. CC was originally conceptualized as an awareness achieved by marginalized peoples that helped them interpret their plight in the context of history and larger societal structures (Freire, 2000). Although some scholars have argued that studying CC in more privileged members of society is crucial to widespread social change (Jemal, 2017), had samples from these locations included the poor or racially stigmatized perhaps our results may have been different.

Second, we relied solely on Diemer et al.'s (2017) scale, despite there being other scales available with construct coverage more in line with CC's theoretical framework (Diemer et al., 2022). Unfortunately, Diemer et al.'s (2022) revised scale was published after we collected our data. It is possible that our results are a product of this particular scale's performance rather than

true reflections of the construct. Future research should utilize multiple scales to triangulate and observe the overlap between different scale formulations.

Third, our data was cross-sectional. While this 2017 data is important for assessing the vessel that would house the coming responses to COVID-19 and social solidarity movements for BLM and Russia's invasion of Ukraine, ideally follow-up data would give us a snapshot of the aftermath. Future research should continue to collect data on CC in these locations to see if the national consciousness has become more equivalent between countries as a consequence of these solidarity-shaping experiences. Finally, it is important to recognize that our measurement invariance tests relied on trait definition that may be too inflexible. As described by McCrae (2015), the expectation that useful group comparisons can only be made if there is strict equivalence may actually obscure interesting and relevant differences between groups. Future research should employ different definitions of trait manifestation to ensure important differences are not overlooked.

## **Conclusion**

In our increasingly connected global community, there is an on-going need to temper "progress" with concerns for human welfare. Our ability to push back against inequities caused by economic and technological innovation requires populations that are aware of systemic disparities and willing to act to dismantle them. As the causes of inequity transcend national borders, so too will our need to participate in international solidarity for social justice. To the extent that solidarity depends on shared perspectives and plans for action, research on CC will be necessary to help resolve differences and identify points of disconnection. This study was a step in that direction. Our objective was to assess whether the US-based construct of CC held across international samples. To do that, we had to test a scale of CC's measurement equivalence. We provided evidence to support both the idea that CC is a shared phenomenon and that it differs in three international locations. Social justice movements that help create international solidarity would do well to connect likeminded individuals across international contexts, but also understand that CC is perceived differently depending on place. International partners may be aligned on some aspects of CC, such as engagement with social and political action, while differing on values for equality or perceptions of inequity.

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Appendix 1. Standardized factor loadings for critical consciousness items by country noting significant differences in standardized coefficients.

Standardized factor loadings by country	US	Ukraine	Iran
Latent construct item	$\beta$ ( <i>p</i> -value)	$\beta$ ( <i>p</i> -value)	$\beta$ ( <i>p</i> -value)
<b>Perceived inequality</b> =~			
CC2 Poor children have fewer chances to get a good high school education	0.77 <sup>b</sup>	0.60	0.49 <sup>b</sup>
CC3 Certain racial or ethnic groups have fewer chances to get good jobs	0.86 (<.001) <sup>a,b</sup>	0.62 (<.001) <sup>a</sup>	0.62 (<.001) <sup>b</sup>
CC4 Women have fewer chances to get good jobs	0.77 (<.001) <sup>b</sup>	0.59 (<.001)	0.56 (<.001) <sup>b</sup>
CC5 Poor people have fewer chances to get good jobs	0.82 (<.001)	0.73 (<.001)	0.71 (<.001)
CC6 Certain racial or ethnic groups have fewer chances to get ahead	0.90 (<.001) <sup>a,b</sup>	0.74 (<.001) <sup>a</sup>	0.67 (<.001) <sup>b</sup>
CC7 Women have fewer chances to get ahead	0.80 (<.001) <sup>a,b</sup>	0.54 (<.001) <sup>a</sup>	0.51(<.001) <sup>b</sup>
CC8 Poor people have fewer chances to get ahead	0.80 (<.001) <sup>b</sup>	0.78 (<.001)	0.63 (<.001) <sup>b</sup>
CC1 <sup>†</sup> Certain racial or ethnic groups have fewer chances to get a good high school education	0.78(<.001) <sup>a,b</sup>	0.44 (<.001) <sup>a,c</sup>	-0.06 (.450) <sup>b,c</sup>
<b>Egalitarianism</b> =~			
CC9 It is a good thing that certain groups are at the top and other groups are at the bottom <sup>±</sup>	0.37	0.29	0.32
CC10 It would be good if groups could be equal	0.94 (<.001) <sup>a,b</sup>	0.78 (0.055) <sup>a,c</sup>	0.46 (<.001) <sup>b,c</sup>
CC11 Group equality should be our ideal	0.96 (<.001) <sup>a,b</sup>	0.71 (0.081) <sup>a</sup>	0.82 (<.001) <sup>b</sup>
CC12 All groups should be given an equal chance in life	0.72 (<.001)	0.57 (0.025)	0.76 (<.001)
CC13 We would have fewer problems if we treated people more equally	0.80 (<.001) <sup>a</sup>	0.46 (0.056) <sup>a</sup>	0.72 (<.001)

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## Appendix I. (cont.)

Standardized factor loadings by country	US	Ukraine	Iran
Latent construct Item	$\beta$ ( <i>p</i> -value)	$\beta$ ( <i>p</i> -value)	$\beta$ ( <i>p</i> -value)
<b>Socio-political participation</b> = ~			
CC14 Participated in a civil rights group or organization	0.61	0.74 <sup>c</sup>	0.46 <sup>c</sup>
CC15 Participated in a political party, club, or organization	0.56 (<.001) <sup>a</sup>	0.83 (<.001) <sup>a</sup>	0.74 (<.001)
CC16 Wrote a letter to a school or community newspaper or publication about a social or political issue	0.51 (0.005) <sup>a</sup>	0.82 (0.001) <sup>a,c</sup>	0.53 (<.001) <sup>c</sup>
CC17 Contacted a public official by phone, mail, or email to tell him/her how you felt about a particular social or political issue	0.54 (<.001)	0.55 (0.022)	0.34 (<.001)
CC18 Joined in a protest march, political demonstration, or political meeting	0.47 (0.007)	0.59 (<.001)	0.33 (0.002)
CC19 Worked on a political campaign	0.40 (0.038)	0.49 (0.074)	0.40 (0.001)
CC20 Participated in a discussion about a social or political issue	0.49 (0.001)	0.21 (0.123)	0.38 (<.001)
CC21 Signed an email or written petition about a social or political issue	0.78 (<.001) <sup>b</sup>	0.57 (0.002)	0.50 (<.001) <sup>b</sup>
CC22 Participated in a human rights, gay rights, or women's rights organization or group	0.69 (<.001) <sup>b</sup>	0.46 (<.001)	0.35 (0.002) <sup>b</sup>
<p><i>Note.</i> Statistical significance interpreted using a <i>p</i>-value of &lt; .0004. Country's significantly different intercepts are referenced with superscripts, <sup>a</sup> = US ≠ Ukraine, <sup>b</sup> = US ≠ Iran, <sup>c</sup> = Ukraine ≠ Iran</p> <p><i>Note 2.</i> <sup>†</sup>CC1 was moved as the referent item in this confirmatory factor analysis due to its negative relation to the latent factor in Iran, which caused all of the other perceived inequality items to load negatively for Iran.</p> <p><i>Note 3.</i> Reverse-coded item marked with an <sup>±</sup></p>			

Appendix 2. Intercepts for critical consciousness items by country noting significant differences in intercepts.

Intercepts by Country Latent construct Item	US		Ukraine		Iran	
	M	SD	M	SD	M	SD
<b>Perceived inequality</b> =~						
CC2 Poor children have fewer chances to get a good high school education	3.54 <sup>a</sup>	1.68	2.57 <sup>a,c</sup>	1.35	4.00 <sup>c</sup>	1.33
CC3 Certain racial or ethnic groups have fewer chances to get good jobs	3.54	1.52	2.73 <sup>c</sup>	1.17	3.50 <sup>c</sup>	1.34
CC4 Women have fewer chances to get good jobs	2.95 <sup>a,b</sup>	1.59	2.08 <sup>a,c</sup>	1.16	3.29 <sup>b,c</sup>	1.46
CC5 Poor people have fewer chances to get good jobs	3.48 <sup>a</sup>	1.50	2.65 <sup>a,c</sup>	1.25	3.89 <sup>c</sup>	1.34
CC6 Certain racial or ethnic groups have fewer chances to get ahead	3.32 <sup>a</sup>	1.63	2.30 <sup>a,c</sup>	1.14	3.51 <sup>c</sup>	1.33
CC7 Women have fewer chances to get ahead	2.85 <sup>a</sup>	1.57	1.92 <sup>a,c</sup>	1.15	3.08 <sup>c</sup>	1.37
CC8 Poor people have fewer chances to get ahead	3.41 <sup>a</sup>	1.59	2.59 <sup>a,c</sup>	1.27	3.70 <sup>c</sup>	1.33
CC1 <sup>†</sup> Certain racial or ethnic groups have fewer chances to get a good high school education	3.34 <sup>a,b</sup>	1.60	2.28 <sup>a,c</sup>	1.25	4.78 <sup>b,c</sup>	1.45
Mean of perceive inequality items	<b>3.30<sup>a</sup></b>	<b>1.58</b>	<b>2.39<sup>a,c</sup></b>	<b>1.22</b>	<b>3.72<sup>c</sup></b>	<b>1.37</b>
<b>Egalitarianism</b> =~	M	SD	M	SD	M	SD
CC9_R It is a good thing that certain groups are at the top and other groups are at the bottom	4.77	1.53	4.64	1.50	4.47	1.23
CC10 It would be good if groups could be equal	4.73	1.67	4.02	1.47	4.11	1.49
CC11 Group equality should be our ideal	4.80	1.56	3.91 <sup>c</sup>	1.47	4.88 <sup>c</sup>	1.23
CC12 All groups should be given an equal chance in life	5.24	1.25	4.65	1.42	4.84	1.19
CC13 We would have fewer problems if we treated people more equally	4.93	1.49	4.32	1.48	4.92	1.23
Mean of egalitarianism items	<b>4.89</b>	<b>1.50</b>	<b>4.31</b>	<b>1.47</b>	<b>4.64</b>	<b>1.28</b>

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## Appendix 2. (cont.)

Intercepts by Country	US		Ukraine		Iran	
Latent construct Item	M	SD	M	SD	M	SD
<b>Socio-political participation</b> =	M	SD	M	SD	M	SD
CC14 Participated in a civil rights group or organization	1.31 <sup>b</sup>	0.77	1.20 <sup>c</sup>	0.63	2.11 <sup>b,c</sup>	1.40
CC15 Participated in a political party, club, or organization	1.75	1.24	1.34 <sup>c</sup>	0.81	1.92 <sup>c</sup>	1.19
CC16 Wrote a letter to a school or community newspaper or publication about a social or political issue	1.34 <sup>b</sup>	0.84	1.52	0.89	1.81 <sup>b</sup>	1.21
CC17 Contacted a public official by phone, mail, or email to tell him/her how you felt about a particular social or political issue	1.31 <sup>b</sup>	0.80	1.19 <sup>c</sup>	0.60	2.06 <sup>b,c</sup>	1.11
CC18 Joined in a protest march, political demonstration, or political meeting	1.24 <sup>b</sup>	0.55	1.21 <sup>c</sup>	0.54	1.84 <sup>b,c</sup>	0.91
CC19 Worked on a political campaign	1.15 <sup>b</sup>	0.47	1.2 <sup>c</sup>	0.49	1.88 <sup>b,c</sup>	1.19
CC20 Participated in a discussion about a social or political issue	2.05	1.34	1.99	1.21	2.21	1.22
CC21 Signed an email or written petition about a social or political issue	1.70 <sup>a</sup>	1.06	1.12 <sup>a,c</sup>	0.35	1.6 <sup>c</sup>	0.94
CC22 Participated in a human rights, gay rights, or women's rights organization or group	1.48 <sup>b</sup>	0.99	1.18 <sup>c</sup>	0.71	1.95 <sup>b,c</sup>	1.00
Mean of socio-political participation items	<b>1.48<sup>b</sup></b>	<b>0.90</b>	<b>1.33<sup>c</sup></b>	<b>0.69</b>	<b>1.93<sup>b,c</sup></b>	<b>1.13</b>
<p><i>Note. Statistical significance interpreted using a p-value of &lt; .0004; statistical significance is marked with an *. Country's significantly different intercepts are referenced with superscripts, <sup>a</sup> = US ≠ Ukraine, <sup>b</sup> = US ≠ Iran, <sup>c</sup> = Ukraine ≠ Iran</i></p> <p><i>Note 2. <sup>3</sup>CCI was moved as the referent item in this confirmatory factor analysis due to its negative relation to the latent factor in Iran, which caused the other perceived inequality items to load negatively.</i></p>						