Gender Equality Collective Action Intention Scale: Psychometric Isomorphism and Measurement Invariance across Cultures

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Abstract

Collective action (CA) could be understood as intentional and conscious civic behaviors that are focused on systemic causes of social and societal problems and the promotion of solutions for these challenges through collective efforts. Recently, more studies on CA have been conducted, with attention paid to cross-cultural variations in people's intention to pursue collective goals with others. Various instruments to measure collective action intentions have been developed; some are related to the general tendency to collectively act with members of one's social group, and some are more context specific. In the presented paper, we examined the psychometric isomorphism and measurement invariance of a gender equality collective action intention scale (GECAI scale) using data from university samples in 61 countries across 13 world regions ($N = 32,901$). The findings indicate that scalar measurement invariance for the GECAI scale allows for comparison of the countries' GECAI mean scores. Moreover, metric psychometric isomorphism allows for interpretation of the GECAI mean scores at a country-level as a group attribute (and not solely as an individual attribute).

Keywords: collective action, isomorphism, measurement invariance, cross-cultural psychology

Gender Equality Collective Action Intention Scale: Isomorphism and Measurement
Invariance Across Cultures

"Political action is the highest responsibility of a citizen"
J.F. Kennedy

"Both men and women should feel free to be sensitive.
Both men and women should feel free to be strong"
Emma Watson

The many years of struggle for women's rights has resulted in the recognition of

equality between human beings in the Human Rights Convention of 1945, the International

Bill of Human Rights for women of 1979, as well as multiple conventions and legislation that

have tried to address the inequality between men and women over the last 75 years. However,

persistent discrimination on the basis of gender is easily identifiable in many parts of the

world. Present-day feminism, an extensive, diverse, globalized, transnational and

intersectional social movement with a long history, is difficult to define from a single

approach, since different ideological factions coexist in this social movement and are very

different socio-structural realities (e.g. Pellicer & Asin, 2018). In line with other research,

this study starts from the premise that feminism should be understood as a social movement

based on the belief that women and men are equal and should have the same rights and whose

ultimate goal is to end the subordination of women (Basow, 1992; Pellicer & Asin, 2018). To

accomplish that goal different forms of civic engagement and collective actions to support

gender equality need to be undertaken.

Providing conceptual clarity regarding the term collective action is challenging.

Collective action might be defined as any action which provides a collective good (Oliver,

1993). According to the rational-choice theory, even if there are widely shared group

interests, cooperation and voluntary contribution to realize these interests does not

necessarily result in collective engagement (Hardin, 1982). Of course, there are many different types of collective action models. Those regarding aggregation of individual choices have shown the greatest recent growth. As defined by Van Zomeren et al. (2018), "collective action refers to any action that individuals undertake as group members to pursue group goals such as social change" (p. 122). On the other hand, collective action may be understood as a public and collective exposition of the opposition or the discontent of a group with the policies and practices of institutions and governments; therefore, a common and relevant tactic in any social movement (Tarrow, 2011). Previous research on activism and collective action has shown that collective participation is an essential source of well-being (Boffi et al., 2016; Hopkins & Reicher, 2016), providing a feeling of connection and sense of community, and increases the perception of social support, which, in turn, has been shown to have a substantial impact on psychological well-being (e.g. Townley et al., 2011), especially for disadvantaged groups (e.g. Finch & Vega, 2003; Noh & Kaspar, 2003).

Currently, little empirical knowledge is available about nation-level factors that correspond to people's intention to support collective actions to support gender equality movements (Kenis & Mathijs, 2012; van Zomeren, 2016, 2019). One barrier to this empirical investigation may be the lack of a psychometrically sound and cross-culturally validated measurement scale for assessing engagement in collective action towards gender equality. Therefore, this paper describes the psychometric evaluation of a scale developed to measure collective action intentions within the gender equality domain, which is based on six items from the previously developed pro-environmental behaviors scale (Alisat & Riemer, 2015) in 61 countries.

Based on the definition proposed by Alisat and Riemer (2015), we define collective action as intentional and conscious civic behaviors that are focused on systemic causes of

gender problems and the promotion of gender equality through collective efforts. As in the original scale, we included items linked to low-level participatory civic action (informing oneself about gender equality issues, participating in community events, etc.) and to highly engaging actions, such as consciously using one's time to be able to work on gender issues/support gender equality (e.g. working part time for an organization, contributing to raise awareness about gender issues, choosing activities focused on gender issues over other leisure activities) or involvement with a group (or political party) focused on gender issues/gender equality. Our goal is to establish cross-culturally validated measure allowing for multi-nation and multi-level analysis of predictors of collective action intentions to support gender equality.

Cross-cultural differences in collective action intentions

Most social psychological models of collective action imply that experiencing illegitimate group-based negative treatment, along with the resulting feelings of injustice, as well as strong group identification and group efficacy, are key triggers for collective action (Becker & Tausch, 2015). Research on the models of collective actions were conducted mostly in "WEIRD" (Western, Educated, Industrialized, Rich, Democratic) samples. Although, in recent years, more studies in different regions of the world have been conducted to explore predictors of CA in various cultural settings (e.g. Fischer et al., 2017; Kosakowska-Berezecka et al., 2020; Thomas et al., 2018), there have not been many published attempts to validate measures across many nations and cultures.

People in various cultures differ in their tendency to act collectively, as well as in important determinants of such actions. For example, Fischer et al. (2017) show that when faced with hostile sexism, German and Turkish female students choose collective action over indirect conflict management styles (e.g. avoiding confrontation), whereas Japanese female students prefer indirect conflict management over collective action. These results also

suggest that cultural dimensions (i.e. independent self-concept, face concerns) are important in understanding the motivation to be involved in collective action for gender equality.

Additionally, Hu et al. (2014) employed agent-based modeling to determine predictors of collective action based on the individualism-collectivism cultural dimension. They found that in individualistic cultures, collective action propagates in a more effective way when people have a strong motivation to participate, and/or the connectivity of the social system is low. In collectivistic cultures, collective action spreads when motivation is not strong, and the connectivity of the social system is high. They call for inclusion of cultural factors in research on collective action and more detailed examination of their role in shaping the willingness to join such actions.

Recently, van Zomeren (2016, 2019) outlined the need to include a cross-cultural view on collective action and to think about culture as a guiding force that determine when collective action is more likely to occur and revealed which psychological processes facilitate these actions. Van Zomeren stressed that to understand collective action, one must consider various layers of determinants, including macro-social factors. Activist actions occur in each social system within a nation-specific cultural norms, laws and institutions, i.e. "within systems of cultural meaning and praxis" (van Zomeren, 2016, p. 104). Based on this theory, we could assume that it is crucial to include data from numerous nations and various cultures to developed a more in-depth understanding of willingness to engage in collective actions around the globe.

To achieve the above-mentioned goal and be able to include the culture and nation-level predictors more fully into the research on collective action, we need measurement tools validated across cultures and nations. The current study is an attempt to fill this gap and present a short questionnaire that could be used for cross-cultural and multi-nation comparisons.

Measurement Invariance

In order to be eligible to test GECAI differences between countries, it is necessary to demonstrate the measurement invariance of the scale used to measure this variable in various cultures. Without demonstrating the measurement invariance of the GECAI scale across countries, we cannot know with certainty whether the countries being compared are actually different on a collective action intention or maybe observed score differences result from measurement bias that is related to a person's membership in a country (see Millsap, 2011). Measurement invariance expresses the idea that the psychometric properties of the scale in relation to the measured latent variable are the same across groups. In other words, demonstrating the measurement invariance of the scale in the context of cross-culture research means that this scale measures the same construct in all countries under study (Millsap, 2011; Milfont & Fisher, 2010; van de Vijver & Leung, 1997).

In the vast majority of cases, cross-cultural psychologists report results on three levels of measurement invariance, which are defined by parameters that are constrained to be equal across countries or culture regions (e.g. Kosakowska-Berezecka et al., 2020; Rudnev et al. 2020; Różycka-Tran et al., 2019; Emerson, Guhn & Gadermann, 2017). The first level, named configural invariance, requires the same overall factor structure stipulated by the scale for all national/cultural groups; the second level, named metric invariance, requires that factor loadings are equal across the nations/culture regions; and finally, the third level, named scalar invariance, requires that factor loadings and all intercepts are equal across the nations/culture regions. Demonstrating scalar measurement invariance allows researchers to compare average scores across countries (see Milfont & Fisher, 2010).

Psychometric Isomorphism

Collective action intention can be considered not only as an individual-level variable, but also as a characteristic of a group or culture (i.e. country-level variable). According to the multi-level cross-cultural approach, an individual's experiences resulting from belonging to a given culture have an impact on shaping his or her opinions, beliefs and behaviors (Kozlowski & Klein, 2000). The attitude towards gender equality collective action shared by group members, regardless of individual differences, determines the existence of this construct at a higher level. We can infer the value of the GECAI at the country level based on aggregated individual scores of countries' citizens. This method is correct, but only if the measure of the given variable demonstrates a psychometric isomorphism that describes the similarity of the construct properties across levels (Tay et al., 2014). Cross-level isomorphism in the context of cross-cultural research implies that a construct at the country level has the same meaning and properties as the same construct at the individual level (Fontaine, 2008; Van de Vijver et al., 2008; Van de Vijver & Watkins, 2006). By establishing the GECAI's isomorphism, it can be assumed that scores collected at the individual level indicate a property attributable to the country as a whole. Demonstrating the isomorphism of the GECAI is essential for development of a multi-level theory that employs an individual's beliefs and behavioral intentions about gender equality.

Following the proposed simultaneous estimation in testing of psychometric isomorphism by Tay et al. (2014), both the configural and metric isomorphism of the GECAI were tested. Configural isomorphism means that the same number of factors (weak configural) and the pattern of factor loadings (strong configural) are expected to be similar across levels, while metric isomorphism means that factor loadings are similar at the individual and county level. As Tay et al. (2004) argue, "the presence of metric isomorphism would suggest that the interpretation of the common factors is similar across levels" (p. 94).

The Present Research

In the current study, we aimed to develop and validate a cross-culturally sound measure of collective action intention on behalf of gender equality. We examined whether the six item Gender Equality Collective Action Intention (GECAI) scale was equivalent across the 61 cultures. Our first research question (RQ1) relates to cross-cultural reliability of this measure and aims to verify whether measurement invariance could be established for the GECAI scale.

The second research question (RQ2) relates to psychometric isomorphism. Here we explore if the isomorphism of GECAI scale could be determined and if the GECAI mean scores might be interpreted at a country-level as a group attribute.

For the third research question, we investigated whether GECAI mean scores are related to three nation-level variables. First, we analyze the relation between GECAI scores and the Democracy Index (RQ3a), and secondly, its link to the Global Gender Gap Index (GGGI) (RQ3b). The Democracy Index is based on numerous indicators measuring civil liberties, pluralism and political culture. In 2019, the highest score was obtained by Norway, and the lowest by North Korea. The Global Gender Gap Index presents the extent of gender-based gaps among four key dimensions (economic participation and opportunity, educational attainment, health and survival and political empowerment). In 2020, the highest score was obtained by Iceland, and the lowest by Yemen.

The previous results are mixed when it comes to understanding the above-mentioned relations. On the one hand, most research on collective action concerning gender equality was conducted in the WEIRD countries (Henrich et al., 2010), which are more democratic and gender egalitarian than non-WEIRD countries. The higher gender parity in these countries is related to past collective actions (e.g. suffragette activism) directed at changing the previous status-quo, and higher human development levels are linked to lower gender inequality (Ingelhart & Norris, 2003) and weaker discriminatory beliefs (Napier et al., 2010). Thus, one could assume that

people in more democratic and gender egalitarian countries might be paying more attention to gender issues and are more willing to act against gender discrimination.

On the other hand, in more gender egalitarian countries, gender discrimination could be less salient, and the necessity for collective action might be less mobilizing. People in more gender egalitarian countries could believe that after advances in women's struggle for equality, they now live in a society where sexism and gender discrimination are no longer a problem (Radke et al., 2016; Swim et al., 1995). For example, for women migrating to more gender egalitarian countries, migration itself could be viewed as a form of emancipation, and merely living in these countries could be a greater (as compared to the country of origin) possibility to achieve empowerment (Herzberg, 2015). Citizens of these countries might be less focused on gender discrimination, as some level of parity has already been obtained. Moreover, some men may perceive women's empowerment and antidiscrimination as a threat to men (Ruthig et al., 2017) and are not willing to engage in more actions on behalf of gender equality (Kosakowska-Berezecka et al., 2020.

Because of mixed data and lack of previous large cross-cultural research on the relationship between willingness to engage in collective action and indexes of democratization of the country and gender equality, we listed RQ1 and RQ2 as explanatory questions.

Additionally, we analyzed correlations between GECAI mean scores and the World Giving Index (RQ3c). The aim of this index is to better understand the scope and nature of giving around the world. The survey, used to construct this index, looks at three different aspects of giving behavior (helping a stranger, donating money to a charity and volunteering time to an organization). Thus, we analyzed the link between scores on a context-specific scale, measuring willingness to engage in actions on behalf of gender equality, and macro-level scores on more general questions about helping and donating money. It would help to understand if collective action in this specific domain is related to the declared tendency to engage in individual helping

behaviors. Previous research shows that we could differentiate between collective actions aimed at changing social norms, laws and public perception of minority groups and charity activities aimed at helping people in need (but not necessary addressing social conditions related to a group's discrimination). For example, research in Hungary reveled that identification with a similar-minded people (i.e. pro-migrants) and moral convictions are important predictors of both volunteerism and collective action (e.g. demonstration, social media activism) on behalf of refugees. However, efficacy beliefs and anger only predicted a willingness to join collective action (Kende et al., 2017). The research conducted by Thomas and McGarty supports this distinction (2018). They used data obtained through anti-poverty non-governmental organizations and demonstrated that two qualitatively different faces of support could be distinguished. The first is linked to moderate levels of charitable support ("a benevolent supporter" profile), and the second could be defined by engagement in socio-political actions ("activist supporter" profile).

Taking this together, we predicted that there will not be a strong relationship between collective action intention measures by the GECAI scale and scores on the country-level World Giving Index.

Method

Participants and Procedure

Data were collected between January 2018 and February 2020 as part of a large cross-national project (see OSF blinded for review). All participants were undergraduate students in social sciences who volunteered their time and (in most countries) received no compensation. IRB approval for each sample was obtained from the researchers' respective institutions. Informed consent was obtained from all participants, and participants were assured that their data would remain anonymous and confidential. We included data from 61 countries across 13 world regions (N = 32,901). Sample composition and descriptive statistics for the GECAI factor score and CFA model fit for each country are included in Table 1.

[Table 1 around here]

Measures

Gender Equality Collective Action Intentions (GECAI) scale. We modeled our items on chosen items from the scale by Alisat and Riemer (2015) on environmental actions. The GECAI scale contains descriptions of six actions undertaken to support gender equality, such as participating in a community event which focused on gender issues or using online tools (e.g. Instagram, YouTube, Facebook, Wikipedia, blogs) to raise awareness about gender issues/gender equality. Participants rated their intention to engage in this type of activity on a seven-point scale ranging from 1 (not likely at all) to 7 (very likely). Responses for all six items were averaged to create a composite measure, in which higher scores reflect a greater intention to engage in solidarity-based CA for gender equality.

The Democracy Index. This country-level measure is based on numerous indicators measuring civil liberties, pluralism and political culture. The Index is compiled by the

Economist Intelligence Unit. It intends to measure the state of democracy in over 160 countries (the Economist Intelligence Unit, 2019).

Global Gender Gap Index (GGGI). As a macro-level indicator of gender equality, we used GGGI scores. This index reflects a country's progress towards gender equality on a scale from 0 (disparity) to 1 (parity). GGGI describes gender-gaps in a given country and is based on data from four domains: economic participation and opportunity, educational attainment, health and survival and political empowerment) (World Economic Forum, 2020).

World Giving Index (WGI). WGI is an annual report published by the Charities Aid Foundation, based on data gathered by Gallup. The aim of this index is to provide information on the scope and nature of giving in countries around the World. WGI is based on a cross-cultural survey that asks questions about three helping actions (i.e. 'Have you done any of the following in the past month?' (1) helped a stranger, (2) donated money to a charity, (3) volunteered time to an organization) (Charities Aid Foundation, 2018).

Results

The following sections present the results of examining the psychometric properties of the GECAI scale by country, measurement invariance testing, psychometric isomorphism testing and the results of the relationship between GECAI and objective country-level indicators. All calculations and figures were prepared using the R environment (R Core Team, 2020) with the appropriate packages: lavaan (Rosseel, 2012) and nlme (Finch, Bolin & Kelley, 2014).

Item Analyses, Confirmatory Factor Analyses and Reliability of the GECAI Scores across 61 Countries

Before proceeding to primary analyses, we tested the one-factor structure and reliability of the GECAI scale in each national sample. The one-factor GECAI model, tested with confirmatory factor analyzes (CFA), was fitted using maximum likelihood estimation. We then estimated the internal consistency reliability of the GECAI measurement using the coefficient omega (McDonald, 1999). As shown in Table 1, the GECAI scale demonstrated an excellent model fit (comparative fit index ranges from 0.95 to 0.99 and SRMR < 0.050 in all countries) and very good internal consistency reliability in all countries (omega range from 0.86 in Nepal to 0.95 in Ukraine, the USA and Wales).

Table 2 presents descriptive statistics for GECAI scale items using total sample, as well as ICCs (intraclass correlation coefficients) and factor loadings. The inspection of skewness and kurtosis for scores of individual items did not reveal any significant deviations from the normal distribution. The results of the confirmatory factor analysis showed that all items strongly explain the GECAI latent variable – the lowest factor loading was .72 for item 4 'use online tools (e.g. Instagram, YouTube, Facebook, Wikipedia, blogs) to raise awareness about gender issues/gender equality'. Average items' ICC of 0.10 justifies the use of a multi-level approach in explaining the GECAI variance (see Dyer et al. 2005).

[Table 2 around here]

Measurement Invariance of the GECAI Scale across 61 Countries

The GECAI scale's cross-country equivalence (measurement invariance) was tested using multigroup confirmatory factor analysis (MGCFA). First, a configural invariance model was fitted to the data with the commonly used models' goodness of fit criteria, i.e. CFI > 0.95 and RMSEA < 0.08 (Brown, 2015). Second, a metric invariance model, in which the factor loadings are constrained to be equal across countries, was fitted. To identify the metric

measurement invariance, it was necessary to show that the model was not substantially worse fitted to the data than the configural model. For this purpose, the cut-off criteria for large numbers of samples suggested by Rutkowski and Svetina (2014) were used, i.e. ΔCFI not greater than 0.02 and ΔRMSEA not greater than 0.03. Lastly, a scalar measurement invariance model was fitted, which constrains both equal factor loadings and equal item intercepts across all countries. The same cut-off criteria as in the metric invariance testing were used to identify the scalar measurement invariance.

Global fit measures in measurement invariance tests for the GECAI scale are presented in Table 3. As can be seen, CFI for all three types of measurement invariance (configural invariance, metric invariance, scalar invariance) were above 0.96. Moreover, the results showed that each of the successively tested models was not substantially worse fitted to the data than the previous model. Thus, the hypothesis of the scalar measurement invariance of the GECAI scale across countries has been supported.

[Table 3 around here]

Psychometric Isomorphism of the GECAI Scale

To test whether the GECAI demonstrates metric isomorphism across individual and country levels, we followed the steps outlined by Tay et al. (2014). A series of models was fitted to the data using confirmatory factor analyses (CFA) and multi-level confirmatory factor analyses (MCFA). First, the one-factor single-level GECAI model (Model 1) was tested. Second, the strong configural psychometric isomorphism of the one-factor GECAI model (Model 2: one-factor structure at both individual and country levels with the same pattern of factor loadings) was fitted. Third, the strong metric isomorphism of the one-factor GECAI model (Model 3: all loadings constrained to be equal across levels) was tested. Next,

the strong metric isomorphism of the one-factor GECAI model controlling basic demographic variables at an individual level, i.e. gender and age (Model 4), was tested.

As with the measurement invariance testing, to demonstrate the configural and metric psychometric isomorphism, it was necessary to show that the subsequent models were not substantially less fitted to the data than the previous models. However, no commonly acceptable cut-off criteria have been established in psychometric isomorphism testing. To assess relative model fit, the BIC (with lower values indicating a better fit) was used, while CFI, RMSEA and SRMR (both within-group $SRMR_W$ and between-group $SRMR_B$) were used to determine absolute model fit. Table 4 presents fit statistics for the previously mentioned models. As can be seen, all the first four models had exceptionally good fit measures, indicating that the GECAI demonstrates metric psychometric isomorphism (it has the same factor structure across levels), even if accounted for gender and age. Thus, interpretation of the GECAI as a country-level variable (not only individual) is reasonable. Figure 1 presents a world map showing mean country-level GECAI factor scores. The countries with the highest level of gender equality collective action intention were Kosovo, India, Nigeria and Portugal, while the lowest level was observed in Kazakhstan, Denmark, Slovakia and Czechia.

[Table 4 around here]
[Figure 1 around here]

Correlations of GECAI with Country-Level Indexes

The last research question concerned whether GECAI as a country-level variable is related to a country's gender equality, democracy and helping actions. To answer this question, another three multi-level models were defined and tested. Model 5 is a replication

of Model 4, except that it additionally includes the Global Gender Gap Index (GGGI) as a country-level GECAI covariate. Model 6 includes the Democracy Index (DI) as a covariate, and Model 7 includes the World Giving Index (WGI) instead of the GGGI[1]. As can be seen in Table 4, Models 5, 6 and 7 had very good fit measures. Correlations between country-level GECAI and both GGGI and DI were significant ($p < 0.01$) and negative (-0.25 and -0.27, respectively). However, there was no significant relation between GECAI scores on country a level and the World Giving Index (-0.14, $p = 0.29$). The MCFA results of Model 6, as the final one, taking into account the stronger country-level predictor, are presented in Figure 1. As depicted in Figures 3 and 4, countries higher in GGGI and DI are lower in GECAI. The results support the claim that in more gender egalitarian and more democratic countries, the necessity for gender equality collective action might be less visible. Moreover, the lack of an association between GECAI and giving (helping actions) at the country-level indicates that gender equality collective actions may be more driven by a protest against inequality rather than supporting a particular group.

[Figures 2, 3 & 4 around here]

Discussion

In this study, we investigated the measurement invariance and psychometric isomorphism of gender equality collective action intention scale across over 60 countries. The scale turned out to work equivalently in various nations, i.e. comparison of the mean scores on the GECAI scale between these nations could be drawn. In the assessment of behavioral intensions directed at working toward societal gender equality, there is a growing

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[1] A model that simultaneously included GGGI and DI was also fitted. However, due to the high correlation between these indicators, their presence in the model weakens the significance of each of them.

awareness of the necessity to consider cultural factors. More and more attention is directed at examining these factors and exploring cross-cultural differences in the willingness to join collective actions and on behalf of gender equality, as well as in the various predictors that could be related to collective action intention in specific cultures (for discussion, see e.g. van Zomeren, 2016; 2019). Our study is in line with this reasoning and is aimed at establishing a valid tool for such cross-cultural comparisons.

Moreover, the GECAI scale demonstrates configural and metric isomorphism across individual and country levels. Thus, the willingness to act collectively toward gender equality, as measured by the GECAI scale, means similar things at the individual and national level. This is an important result for assessment of collective action intention, as well as for cross-cultural research on the predictors and correlates of collective action in general. The established isomorphism allows for analyses of correlates between country-level GECAI scores and other country-level variables.

Our results suggest that country-level scores on people's tendency to act collectively on behalf of equality are correlated negatively with the democracy index and gender gap index.

Considering the question of whether the declared willingness to join actions to support gender equality is stronger in countries ranking high vs low in gender equality indices our study provides an answer that the former is more likely to be true – overall our results indicate that the higher gender equality of the country the lower is the intention to support gender equality. It must be noted that we conducted a correlational study, and no casual relation could be established here. Moreover, other macro-level variables – such as GPD, or norm tightness – could play a role (as moderators or mediators) in these relations. However, zero-order correlations are interesting, as they confirm the existence of some barriers for future engagement in actions for gender equality in societies where gender

equality has already been achieved to some extent. Radke and colleges (2016) argued that one of the important barriers for women's engagement on behalf of women's equality is the postfeminist perception of gender equality, i.e. the success of the women's movements for social changes and equality in some countries (mostly in the global North) might influence the perception of the differences of status between genders. Many people may believe that sexism and gender-based discrimination is no longer a problem in their country, and thus the fight for gender equality does not mobilize as many people as it used to. Our cross-cultural research seems to strengthen this assumption by showing a lower readiness to fight for gender equality in more gender equal countries.

The present research has been one of the first attempts to thoroughly examine a cross-culturally valid measure of collective action intension. When it comes to using the GECAI scale for cross-cultural research, the results are promising, with the scale working equivalently in the various regions and with psychometric isomorphism established. Nevertheless, some limitations should be highlighted. First, it is important to note that the current sample consisted of a relatively small subgroup of the general population. We based our analyses on university undergraduate students, mostly from psychology and social sciences. Second, although our analyses included data from over 60 nations, there are parts of the world that are underrepresented in the presented study; namely, relatively less participants from all parts of Africa, the Middle East and East Asia. Moreover, when it comes to large nations, we did not always have multiple investigators, and in some cases, we based our analyses on one sample from one region. Third, we only presented a correlation between the GECAI scale and chosen macro-level indicators. As our main goal of this paper is to present and validate the measurement tool, we did not concentrate on exploring various links between the GECAI scale and cultural- and national-level variables.

Limitations notwithstanding, the presented findings provide an important addition to the growing body of literature on collective action. Examination of the large dataset from over 60 nations allowed us to present a measure of behavioral intention to join the struggle on behalf of gender equality that works equivalently in various cultures.

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Table 1. Sample composition, descriptive statistics for the GECAI factor score and CFA model fit for each country.

Country	N	% women	% men	Age		GECAI (CFA scores)			CFA model fit	
				M	SD	M	SD	Omega	CFI	SRMR
Albania	241	59	37	23.00	4.89	0.72	1.76	0.94	0.99	0.015
Argentina	428	50	47	32.28	12.28	0.17	1.86	0.94	0.99	0.016
Armenia	280	32	45	20.03	1.91	-0.83	1.63	0.93	0.99	0.020
Australia	666	64	34	29.91	11.22	-0.31	1.65	0.94	0.98	0.028
Belgium	1,958	49	46	21.49	5.64	-0.12	1.46	0.92	0.99	0.019
Bosnia	224	44	41	23.04	5.96	-0.19	1.58	0.93	0.99	0.024
Brazil	1,158	62	30	23.99	7.67	0.86	1.70	0.94	0.99	0.019
Canada	912	68	31	19.81	2.57	-0.56	1.57	0.93	0.99	0.026
Chile	186	58	36	21.74	5.11	0.32	1.68	0.91	0.98	0.039
China	189	59	40	19.34	1.24	-0.09	1.26	0.94	0.99	0.029
Colombia	620	55	36	21.49	4.94	0.50	1.66	0.93	0.99	0.020
Croatia	362	68	20	23.16	5.81	-0.09	1.59	0.94	0.98	0.026
Czechia	425	24	69	27.84	7.99	-0.97	1.41	0.92	0.97	0.029
Denmark	253	59	39	25.43	4.78	-1.02	1.54	0.94	0.99	0.019
England	743	58	39	22.15	7.02	-0.15	1.53	0.94	0.99	0.013
Finland	320	80	11	26.06	6.24	0.22	1.64	0.93	0.99	0.028
France	431	79	17	22.36	6.81	0.38	1.52	0.91	0.99	0.021
Georgia	205	44	48	21.68	3.45	0.17	1.59	0.93	0.99	0.021
Germany	1,906	61	37	28.11	9.75	-0.47	1.50	0.91	0.97	0.032
Ghana	324	58	37	20.23	2.59	0.84	1.60	0.90	0.99	0.015
Greece	291	69	27	26.43	9.12	0.44	1.65	0.93	0.98	0.027
Hungary	765	73	17	22.35	4.29	-0.41	1.54	0.93	0.99	0.021
India	383	57	36	22.17	5.04	1.07	1.22	0.89	0.99	0.032
Indonesia	255	45	42	21.11	4.09	0.66	1.17	0.91	0.95	0.049
Ireland	571	53	45	19.83	3.70	-0.61	1.47	0.93	0.99	0.019
Italy	2,441	64	33	22.80	5.27	0.34	1.59	0.93	0.99	0.016
Japan	396	54	39	21.23	2.21	-0.72	1.49	0.94	0.99	0.017
Kazakhstan	344	55	43	20.22	3.82	-1.05	1.47	0.92	0.98	0.039
Kosovo	435	56	37	20.27	3.85	1.21	1.58	0.93	0.99	0.013
Lebanon	134	66	28	19.98	1.81	0.85	1.63	0.94	0.99	0.023
Lithuania	357	59	29	23.77	6.72	-0.49	1.58	0.93	0.99	0.028
Luxembourg	181	62	34	24.61	5.43	-0.01	1.53	0.92	0.99	0.026
Malta	260	64	35	26.91	10.17	-0.05	1.65	0.94	0.99	0.024
Mexico	341	52	45	23.69	8.93	0.22	1.57	0.92	0.99	0.022
Morocco	289	51	46	28.99	9.34	0.35	1.74	0.94	0.98	0.033
Nepal	219	59	37	22.45	5.96	0.89	1.30	0.86	0.99	0.037
Netherlands	882	66	32	20.66	3.42	-0.80	1.32	0.92	0.99	0.015
New Zealand	215	70	29	19.00	2.34	-0.05	1.47	0.93	0.97	0.033

Nigeria	451	54	41	21.15	3.16	1.01	1.54	0.85	0.99	0.028
Northern Ireland	303	61	38	22.14	5.59	-0.28	1.67	0.95	0.99	0.011
Norway	217	52	41	23.08	4.09	-0.58	1.48	0.93	0.98	0.030
Pakistan	576	48	42	22.05	3.75	0.31	1.42	0.90	0.99	0.018
Philippines	472	48	47	19.79	2.00	0.42	1.45	0.93	0.99	0.022
Poland	843	43	31	23.22	5.49	-0.59	1.58	0.93	0.99	0.021
Portugal	174	80	18	22.13	4.90	1.00	1.41	0.92	0.97	0.039
Romania	252	58	41	22.85	4.64	-0.32	1.59	0.93	0.96	0.042
Russia	703	63	31	21.77	6.66	-0.75	1.65	0.93	0.99	0.020
Serbia	727	72	22	22.20	5.31	0.18	1.71	0.93	0.99	0.016
Slovakia	630	47	44	21.93	4.56	-0.98	1.45	0.93	0.99	0.014
South Africa	405	24	14	20.57	2.50	0.53	1.68	0.94	0.99	0.017
Spain	1,238	58	34	25.69	8.73	0.62	1.58	0.94	0.99	0.016
Suriname	181	54	44	22.95	5.74	0.43	1.60	0.94	0.99	0.020
Sweden	673	50	48	26.11	7.11	-0.33	1.67	0.94	0.99	0.023
Switzerland	582	64	35	23.52	5.47	-0.35	1.54	0.92	0.98	0.029
Turkey	1,506	64	31	22.19	3.70	0.43	1.68	0.94	0.99	0.016
UAE	511	65	34	20.02	1.47	-0.20	1.63	0.94	0.99	0.019
Ukraine	282	62	35	19.16	1.44	-0.46	1.62	0.95	0.99	0.020
Uruguay	189	60	39	22.66	6.55	0.11	1.64	0.93	0.99	0.027
USA	782	67	30	20.38	4.44	-0.10	1.68	0.95	0.99	0.016
Vietnam	407	69	24	22.08	5.04	0.82	1.35	0.89	0.99	0.026
Wales	207	63	34	30.47	10.27	-0.24	1.74	0.95	0.98	0.030
Total sample	**32,901**	**59**	**35**	**23.05**	**6.75**	**0.00**	**1.66**	**0.99**	**0.99**	**0.016**

CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 2. Descriptive statistics, ICCs, factor loadings and variances for GECAI scale items using total sample.

Item	M	SD	Skew.	Kurt.	ICC	λ_S	θ_S
1. become involved with a group (or political party) focused on gender issues/gender equality (e.g. volunteer, summer job, etc.)	3.52	2.03	0.28	-1.19	0.09	0.84	0.29
2. consciously make time to work on gender issues/gender equality (e.g. working part-time for an organization, contributing to raise awareness about gender issues, choosing activities focused on gender issues over other leisure activities)	3.58	1.97	0.26	-1.12	0.11	0.88	0.23
3. participate in a community event which focused on gender issues	3.94	2.02	0.00	-1.23	0.09	0.88	0.23
4. use online tools (e.g. Instagram, YouTube, Facebook, Wikipedia, blogs) to raise awareness about gender issues/gender equality	4.03	2.15	-0.04	-1.38	0.10	0.72	0.48
5. participate in an educational event (e.g. workshop) related to gender issues/gender equality	4.17	2.05	-0.14	-1.25	0.09	0.84	0.29
6. spend time working with a group/organization that deals with the connection of gender issues/gender equality to other societal issues, such as justice or inequality	3.81	2.00	0.09	-1.21	0.10	0.88	0.22

Note. $N = 32,901$; ICC = Intraclass Correlation Coefficient; λ_S - standardized loading estimate; θ_S - standardized residual estimate.

Table 3. Global fit measures in measurement invariance tests for the GECAI scale.

Level of invariance	χ^2	df	CFI	RMSEA	ΔCFI	ΔRMSEA
Configural invariance (equal form)	2,093.14	549	0.989	0.072	-	-
Metric invariance (equal factor loadings)	3,078.39	849	0.984	0.070	0.005	0.001
Scalar invariance (equal intercepts)	5,797.85	1,149	0.967	0.087	0.017	0.017

Notes. 61 countries; χ2 = chi square; d*f* = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 4. Comparison of multilevel factor analysis models for GECAI.

Model	Fit statistics				
	BIC	CFI	RMSEA	SRMR$_W$	SRMR$_B$
Single-level structure (Model 1)	683,419	0.993	0.063	0.016	–
Strong configural isomorphism (Model 2)	677,817	0.986	0.060	0.016	0.010
Strong metric isomorphism: all loadings constrained to be equal (Model 3)	67,7816	0.985	0.053	0.016	0.024
With covariate at individual level: Age and Gender (Model 4)	855,904	0.983	0.053	0.019	0.009
With covariate at individual level and at county level: GGGI (Model 5)	855,728	0.983	0.049	0.019	0.017
With covariate at individual level and at county level: DI (Model 6)	856,157	0.983	0.049	0.019	0.025
With covariate at individual level and at county level: WGI (Model 7)	840,296	0.983	0.050	0.019	0.017

Note. N = 33,417; BIC = sample-size adjusted Bayesian information criterion; CFI = comparative fit index;

RMSEA = root mean square error of approximation; SRMR$_W$ = standardized root mean square residual within

covariance matrix; SRMR$_B$ = standardized root mean square residual between covariance matrix.

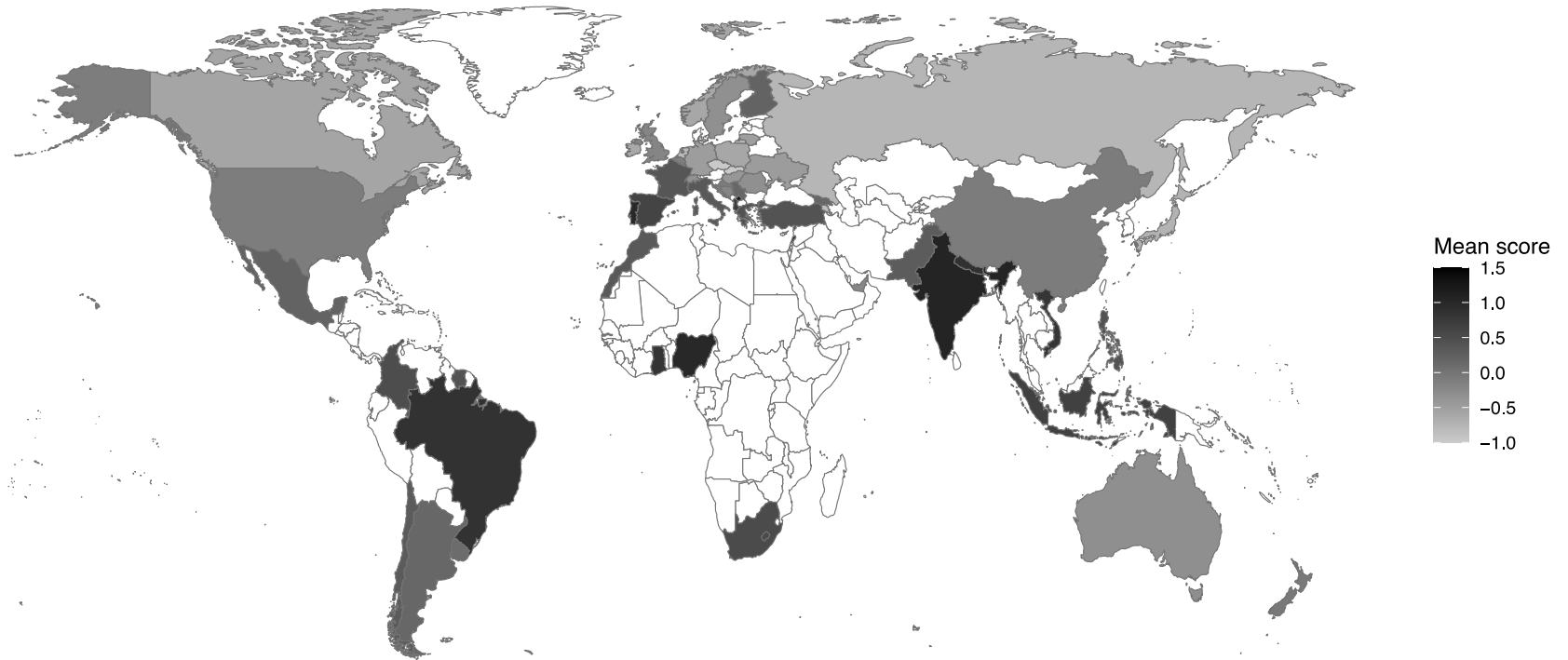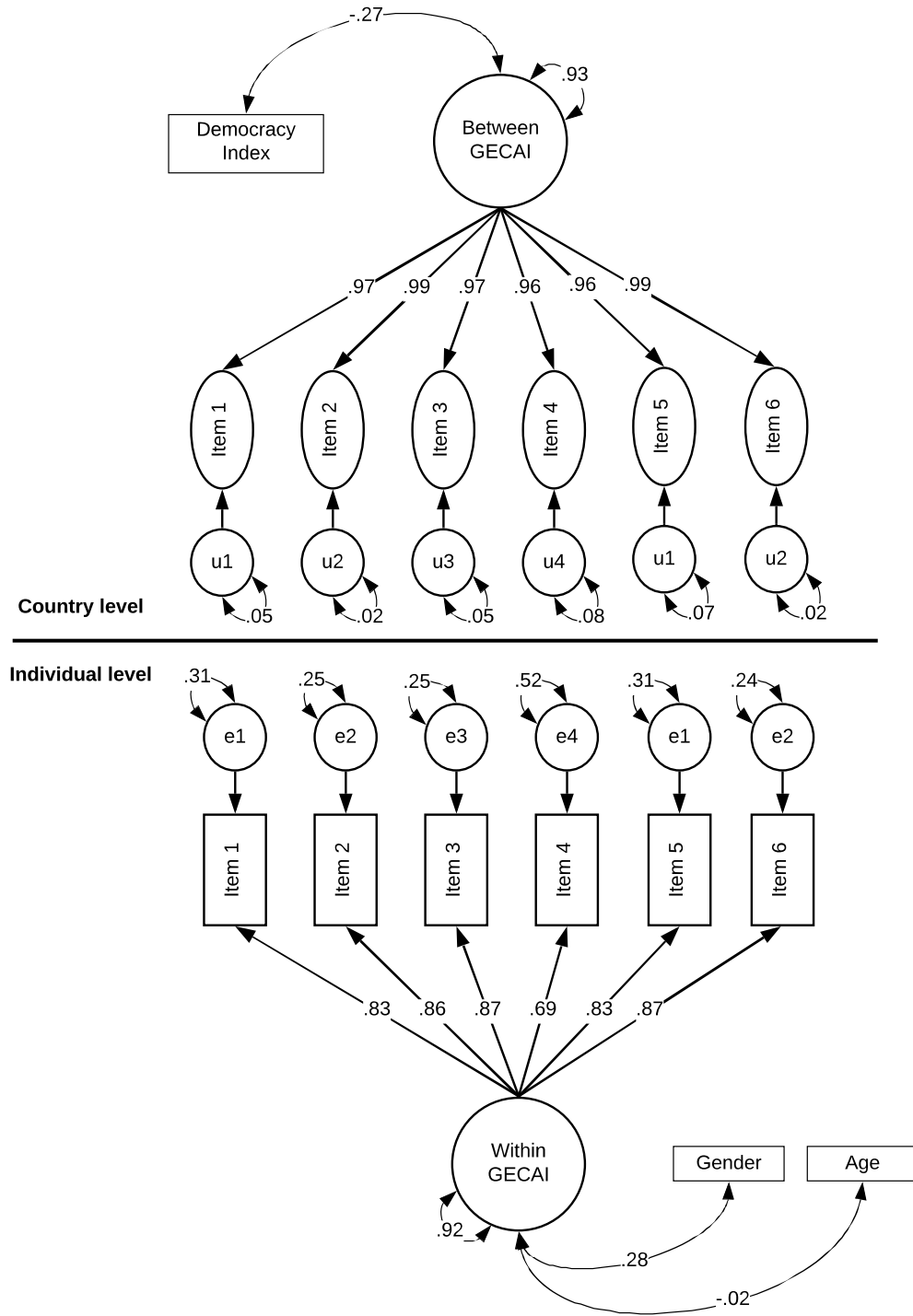Figure 1. World map showing mean country-level GECAI factor scores.

Figure 2. Two-level CFA results of the GECAI with covariate at individual level (Age and Gender) and at county level (Democracy Index).

Notes. Gender: 1 = Female

Figure 3. Relationship between the country's gender equality (GGGI) and GECAI at the country level.
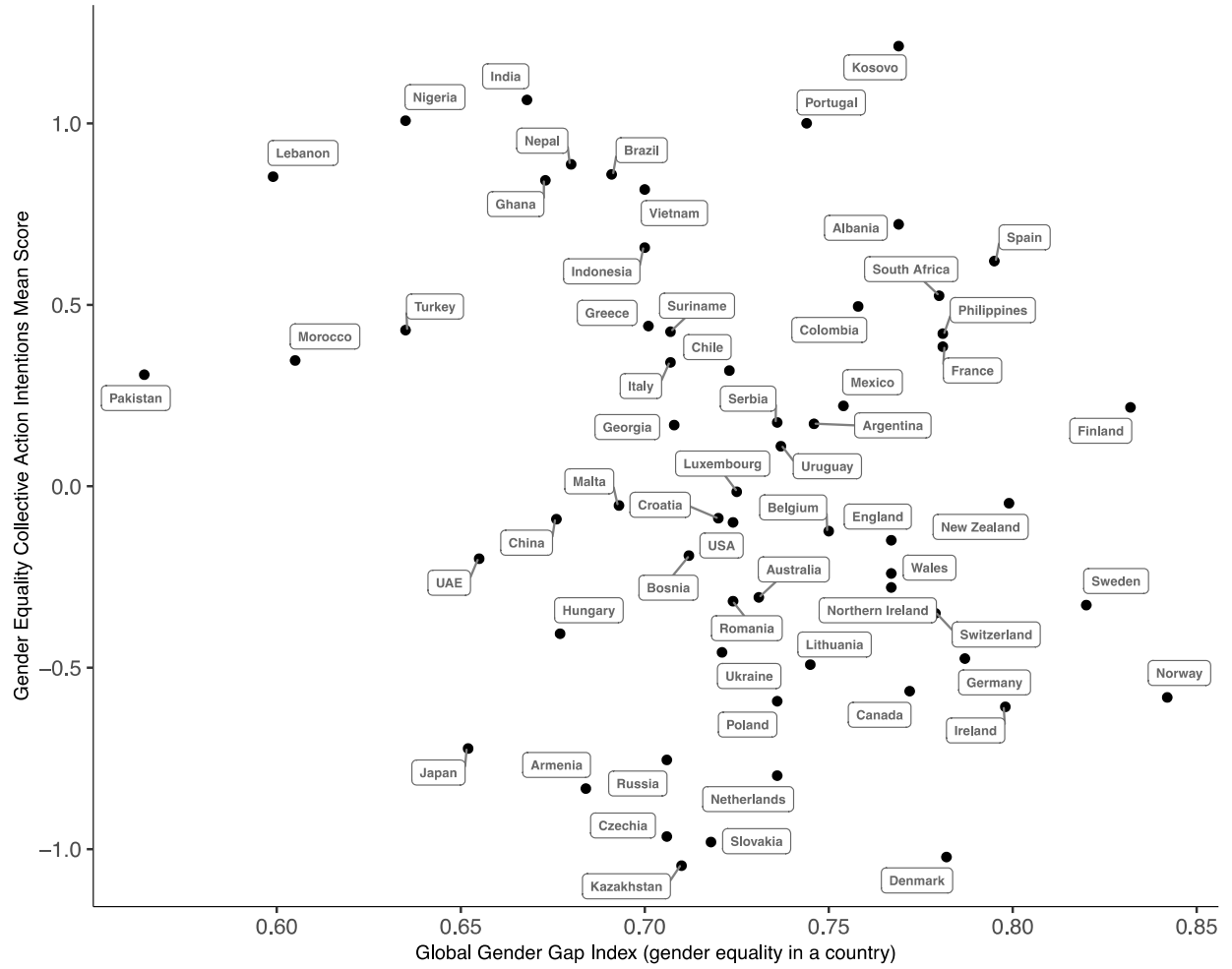
Figure 4. Relationship between the country's Democracy Index and GECAI at the country level.