

Article

Cross-Cultural Perspectives on the Role of Empathy during COVID-19's First Wave

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Abstract: The COVID-19 pandemic has spread throughout the world, and concerns about psychological, social, and economic consequences are growing rapidly. Individuals’ empathy-based reactions towards others may be an important resilience factor in the face of COVID-19. Self-report data from 15,375 participants across 23 countries were collected from May to August 2020 during the early phases of the COVID-19 pandemic. In particular, this study examined different facets of empathy—Perspective-Taking, Empathic Concern, and Personal Distress, and their association with cross-cultural ratings on Individualism, Power Distance, The Human Development Index, Social Support Ranking, and the Infectious Disease Vulnerability Index, as well as the currently confirmed number of cases of COVID-19 at the time of data collection. The highest ratings on Perspective-Taking were obtained for USA, Brazil, Italy, Croatia, and Armenia (from maximum to minimum); on Empathic Concern, for the USA, Brazil, Hungary, Italy, and Indonesia; and on Personal Distress, from Brazil, Turkey, Italy, Armenia, Indonesia. Results also present associations between demographic factors and empathy across countries. Limitations and future directions are presented.

Keywords: COVID-19; empathy; Interpersonal Reactivity Index; individualism; Power Distance; Human Development Index; Infectious Disease Vulnerability Index; cross-cultural

1. Introduction

Since the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic in March 2020, concerns about psychological, social, and economic consequences have grown rapidly. Indeed, news reports and social media postings have been abuzz with how things have changed for the entire world, including psychological, economic, social, and health consequences [1–7]. Empathy is a key component of social interactions as it promotes prosocial behavior and discourages aggressive behavior towards others [8,9].

Empathy is defined as the capacity to imagine, experience, and understand what the other person is feeling, and consists of affective and cognitive aspects (e.g., [10,11]). Given the importance of empathy in the time of global stress and insecurity feelings, the purpose of this study was to examine how the level of empathy during the first wave of COVID-19 varies cross-culturally, and how this relates to the infection rates and familiarity of people with pandemics.

Studies examining levels of Empathic Concern in crisis situations are not numerous and primarily deal with general philosophic discussions on global civilization crises [12–14], while those discussing the COVID-19 pandemic are scarce [15]. Past research conducted with adult and child samples has conclusively demonstrated the beneficial effects of both cognitive (accepting the point of view of others) and affective (caring and understanding for others) empathy on the well-being of others. In particular, cognitive empathy has been associated with a decrease in intergroup conflict and prejudice, and affective empathy has been shown to promote altruism and caring [3,16,17]. Currently, studies have demonstrated that social support has been one of the important predictors of resilience during a global pandemic [1,18]; however, the links between social support and empathy remain unclear.

Undoubtedly, the COVID-19 pandemic and its associated restrictions have impacted our interpersonal relationships [4,19]. The new demands on the organization of interpersonal relations, in turn, have affected the concept of empathy itself, producing new positive perspectives in the study of the phenomenon according to sociological and neurological point of view [2]. Reports of those helping others (relatives, friends, neighbors, etc.) are frequent in the media, wherein people are helping those who are more vulnerable by delivering food or medicine for people who cannot leave their home. In one such study, conducted in Western populations (Germany, UK, USA), empathy was found to be positively associated with the motivation to adhere to physical distancing and wearing face masks. Furthermore, the authors concluded that inducing empathy towards people most vulnerable to the virus promoted the motivation to adhere to these measures (whereas merely providing information about the importance of the measures did not) [3]. Conversely, some people are experiencing a feeling of “forced sympathy”, which can cause people to distance themselves from others, increasing social phobias [2]. Studies conducted before and during the pandemic have demonstrated that empathy also generates vulnerability for stress-related symptoms, such as compassion fatigue and burnout, especially in medical professionals under extreme conditions, such as the current COVID-19 pandemic [20–22].

Importantly, the associations between empathy and motivations depend on context and settings [23]. According to Davis [24], core components of empathy are perspective-taking and empathetic concern. Perspective-Taking consists of adopting the point of view of another person and attempting to understand things from their perspective. Empathic Concern is conceptually closer to sympathy and is the emotional reaction of an individual who is attentive to others’ experiences [25]. Perspective-taking and Empathic Concern have been associated with differential outcomes. For example, healthcare professionals in Argentina viewed Perspective-Taking as helpful in caring for patients; however, high levels of Empathic Concern interfered with objectivity in diagnosis and treatment due to its emotional component [21]. Importantly, a recent study on the role of empathy during the COVID-19 pandemic in China demonstrated empathetic concern, and Personal Distress may be risk factors for depression and anxiety in extreme conditions including COVID-19 [26–29].

Empathy is an important aspect to consider when examining individuals’ reactions to the pandemic; however, little is known about empathetic behavior of humans during the pandemic. For example, a diary study conducted with adolescents during the COVID-19 pandemic showed there was decreased empathic anxiety, opportunities for prosocial action, and tension and stable levels of social value orientation, altruism, and terrifying prosociality [30]. In the economic game, the dictator, in new conditions of pandemic, adolescents showed a higher level of commitment to a friend (familiar to another, about 51% of the total share), a doctor in a hospital (deserves a goal, 78%), and people with COVID-19

or weak immune systems (goals in need, 69% and 63%, respectively) compared with an unfamiliar peer (39%). This suggests that during the pandemic, need and deservedness have had a greater impact on a teen's performance than familiarity. Oosterhoff et al. (2020) reported that the greatest motivators for adolescents in the United States to follow social distancing rules were prosocial motivations, including social responsibility and not wanting others to get sick, being in a city/state of lockdown, and parental rules [31]. Another study conducted in the Canadian population during COVID-19 isolation showed that people with higher empathy scores, as measured with the Interpersonal Reactivity Index, reported higher scores on anxiety and depression [32]. While increased anxiety and trauma seem to be detrimental to emotional well-being, it is reasonable to assume that people who are more concerned about themselves and the well-being of others will also have more empathy for others. Currently, available data suggest that the dissemination of COVID-19 related information (i.e., number of infections and deaths), some of which can be incorrect, can cause an over-empathic response and worsen panic and depression among people [33].

Demographic factors associated with empathy (sex, age, and culture). Previous studies have highlighted sex differences in empathy, with females usually reporting higher scores compared to males [10,34–39]. However, how these sex differences manifest during isolation in response to the pandemic is still unclear. In a study of sleep quality, empathy, and mood during the isolation period of the COVID-19 pandemic in the Canadian population, females reported higher scores on the all IRI empathy scale [32]. Interestingly, there were no changes associated with increased length of the isolation period in the IRI subscales for males or females [32]. However, to date, no study has examined potential sex differences in empathy during the COVID-19 context.

Prior research has demonstrated associations between age and empathy. Results of previous research showed that scores on Perspective-Taking and Empathetic Concern were increased with age, whereas scores on the Personal Distress subscale were decreased with age [37,40–42]. Older adults have weaker cognitive empathy than younger adults, but their emotional empathy does not differ by age [43–45]. In a study of associations of aging, empathy, and prosociality, results demonstrated that older adults showed greater prosocial behavior than younger adults in response to an empathy induction [43]. Based on this research, it is hypothesized that age will be positively associated with empathy scores.

Cultural norms and institutions, specifically sizes of relative's networks and obligations between friends, can be an important factor in influencing the level of empathy during COVID-19, especially given its global impact. While no study to date has examined such associations, prior research conducted outside the COVID-19 context has found Spanish people (i.e., those living in Spain) to have the highest scores on Empathic Concern and Perspective-Taking and USA for Personal Distress; lower scores in empathy were demonstrated in East Asian (i.e., Chinese) samples [46].

Prior research conducted by the authors has shown the important role of the cultural dimension of Individualism–Collectivism in anxiety (see this issue [7]). For example, collectivistic values were associated with higher empathy. The study of the role of Individualism–Collectivism in empathy showed that collectivism was correlated positively with dispositional intellectual empathy and empathic emotion, collectivism predicted experienced empathic emotion, and individualism predicted intellectual empathy [47]. In another study, Asian students from another research study from collectivistic countries showed more empathy [48]. Recent work done during the pandemic on a diverse sample ($n = 967$ total from Canada, Sweden, the United Kingdom, and the United States) showed that levels of Empathic Concern and Perspective-Taking were positively correlated with social distancing, but not with Personal Distress [49]. Authors suggest that these results depend on cultural level analogs (i.e., Individualism–Collectivism), and this association influences social distancing. These results show that empathy plays an important role in motivating people to social distance (and other preventive measures) and should be emphasized in times of crisis.

Taken together, the goal of the current paper was three-fold: first, to examine the associations between the level of empathy during the first wave of the COVID-19 pandemic across 23 countries and quarantine restrictions in a global cross-cultural perspective; second, to test sex and age differences of empathy these countries; and third, to test for associations between the level of empathy and a number of global cultural indices to gain a better understanding of empathetic motivations during lockdown and social distancing.

2. Materials and Methods

2.1. Participants

Participants were recruited from various university listservs and social networking sites. Participants were of 18 years of age and older, with a mean age of 29 years (median 24 years). The majority of the sample was female (1:179 in favor of women). See Table 1, Figure 1. Individuals who reported having a chronic disease and/or predisposition for depression and received treatment were excluded from the current analysis.

Self-reported data from 15,375 respondents were collected (see Table 1 for details). The sample was comprised of people from 23 countries (seven from Europe: Belarus, Bulgaria, Croatia, Hungary, Italy, Romania, Russia; eleven from South, Southeast, and Western Asia: Armenia, India, Indonesia, Iran, Iraq, Jordan, Malaysia, Pakistan, Saudi Arabia, Thailand, Turkey; two African: Nigeria and Tanzania; and three from North, Central, and South America: Brazil, Canada, USA).

Local versions (Canada, USA) included a few additional demographic variables that were not included in our analyses.

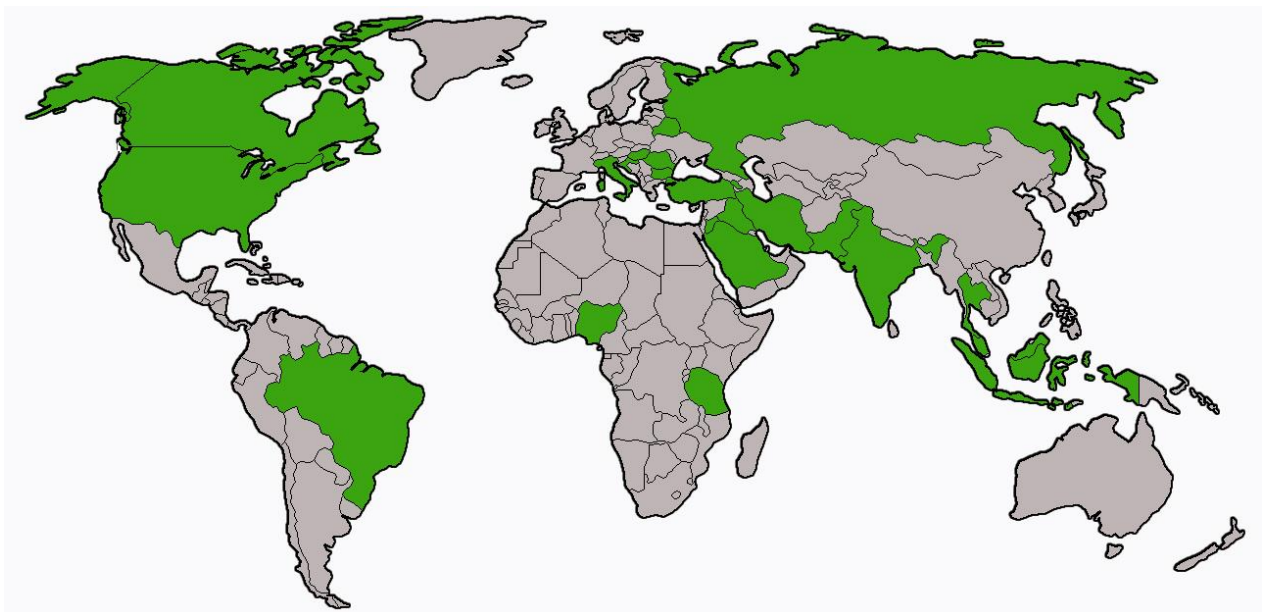


Figure 1. Countries represented in data collection.

Table 1. Distribution of sample by country, sex ¹, and age.

Country	Survey Language	Total N	Sex		Mean Age (±SD)
			Men (n)	Women (n)	
ARMENIA	Armenian	33	27	6	20.45 (±2.37)
BELARUS	Russian	338	143	195	19.20 (±2.85)
BRAZIL	Portuguese	515	82	430	38.80 (±13.78)
BULGARIA	Bulgarian	322	129	193	28.34 (±8.75)
CANADA	English	692	446	246	30.33 (±8.74)
CROATIA	English	275	71	204	24.10 (±8.40)
HUNGARY	Hungarian	235	35	198	31.95 (±11.84)
INDIA	English	383	213	170	29.95 (±9.85)
INDONESIA	Indonesian	930	504	424	32.05 (±12.09)
IRAN	Persian	306	88	217	33.68 (±7.34)
IRAQ	Arabic	173	88	85	35.03 (±10.63)
ITALY	Italian	253	44	208	23.50 (±4.15)
JORDAN	Arabic	449	121	328	33.68 (±10.52)
MALAYSIA	Malay	1087	478	609	33.19 (±11.12)
NIGERIA	English	316	214	102	34.09 (±11.24)
PAKISTAN	English	484	212	272	27.06 (±11.11)
ROMANIA	Romanian	269	42	226	36.22 (±10.94)
RUSSIA	Russian	1903	486	1417	20.99 (±4.72)
SAUDI ARABIA	Arabic	414	98	316	26.76 (±9.72)
TANZANIA	English	341	185	156	23.95 (±4.25)
TURKEY	Turkish	4717	1609	3093	27.57 (±10.84)
THAILAND	Thai	300	49	250	32.82 (±13.00)
USA	English	666	189	477	45.16 (±17.15)
TOTAL		15,375	5553	9822	29.15 (±11.80)

¹ Data on biological sex of respondents are presented based on respondent's answers.

2.2. Procedure

All coauthors collected data in their home countries for this study. The questionnaire was generated on the Google Forms service hosted by the principal investigator. The original questionnaire was developed in Russian and English. In all non-English speaking countries (except Russia), colleagues translated the measures into their native languages using a back-translation procedure [50,51].

The survey was conducted during the first wave, and slightly after the introduction of quarantine (lockdown), of the COVID-19 pandemic from May to August 2020 (Median 5 June 2020) (see more details in [7], this issue).

All participants provided informed consent. If eligible, participants were directed to complete the self-report survey on Google forms to provide informed consent and were asked to take the survey, described below, which took approximately 20 min to complete. Participants were not compensated for their participation.

2.3. Measures

Participants responded to standard demographic questions, and the measures listed below. Specifically, participants reported the country of living, age, sex (coded as 1 = male;

2 = female), marital status (coded as 1 = single; 2 = relationship 3 = married; 4 = divorced; 5 = widowed; 6 = other), religion (coded as 0 = agnostic; 1 = Hindu; 2 = Buddhist; 3 = Judaist; 4 = Christian; 5 = Islamic; 6 = follower of tradition local religion), educational level, etc.

Related to the COVID-19 pandemic, participants were asked about their personal experiences with COVID-19, attitudes towards the current situation, family income, living conditions (0 = live with others; 1 = live alone), situation with lockdown status (0 = no, 1 = yes), involvement in voluntary activity (0 = no; 1 = yes).

Empathy

To measure empathy, the Interpersonal Reactivity Index (IRI) [10] was utilized. The IRI contains 28 items using 5-point Likert scales, ranging from 1 = “Does not describe me well” to 5 = “Describes me very well”. It is represented by four subscales, each made up of seven different items. These subscales are 1. Perspective-Taking—the tendency to spontaneously adopt the psychological point of view of others; 2. Empathic Concern—“other-oriented” feelings of sympathy and concern for unfortunate others; 3. Personal Distress—“self-oriented” feelings of personal anxiety and unease in tense interpersonal setting; 4. *Fantasy*—respondents’ tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays. For the purpose of this study, we analyzed data from the first three subscales (Perspective-Taking, Empathic Concern, and Personal Distress) (Table 2). The Fantasy subscale was not used, due to the cross-cultural nature of our study, to avoid any subjectivity, which is highly probable in the case of the fantasy-taps subscale.

Demographic information across countries for the IRI is presented in Table 3. The IRI has been validated in different languages [10,52–69]. The ratings on each IRI subscale were tested for reliability, and Cronbach alphas were calculated for each country, as well as for the whole sample (Table 3).

2.4. Global Indices Used in This Study

Individualism and collectivism. To measure individualism and collectivism, we used two dimensions of national cultures from Hofstede model: (1) *Individualism versus Collectivism scale*, related to the integration of individuals into primary groups, and (2) the *Power Distance scale*, related to the different solutions to the basic problem of human inequality [69]. Each country has been positioned relative to other countries through a score on each dimension. “Individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after her/his immediate family only. Collectivism stands for a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty” [70] (p. 225). “Power Distance has been defined as the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society’s level of inequality is endorsed by the followers as much as by the leaders” [70] (p. 9). Each country’s information on these two dimensions was obtained from <https://www.hofstede-insights.com>. (accessed 5 June 2020). For more detailed information on these indices, please refer to [7].

Vulnerability to disease. To measure vulnerability to disease, the Infectious Disease Vulnerability Index (IDVI) was utilized. The IDVI is a country-level index of vulnerability that reflects a more comprehensive evidence base, a more robust set of factors potentially contributing to outbreak vulnerability and associated proxy measures, the use of adjustable weights for these parameters, and an examination of all countries world-wide. Information about this indicator in each country was obtained from https://www.rand.org/pubs/research_reports/RR1605.html (accessed on 5 June 2020). For more detailed information on these indices, please refer to [7].

Human development. Human Development Index (HDI; 2020) is a summary measure of average achievement in key dimensions of human development: (1) a long and healthy life, (2) being knowledgeable, and (3) having a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions and was taken from <http://hdr.undp.org/en/content/latest-human-development-index-ranking> (accessed on 5 June 2020).

Social support. Social support was measured using the 2016–2018 grouping from the Social Support Ranking Scale of World Happiness Rankings, where countries ranged from 0 to 10 scores (with the worst possible life as a 0 and the best possible life as a 10). Social support is the national average of the binary responses (either 0 or 1) to the Gallup World Poll (GWP) question “If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”. Information about this indicator in each country was obtained from <https://worldhappiness.report/ed/2019/changing-world-happiness/> (accessed on 5 June 2020).

Epidemic experience. Data on the epidemic experience of each country were obtained from World Health Organization (WHO; accessed 5 June 2020). We checked, according to the WHO, whether there were any epidemics recorded in each country and assigned a rank of 0, provided that the country did not have such an experience, and a rank of 1, if there was such an experience. For example, in Brazil, according to WHO, there was an epidemic of Zika virus in 2015–2016, Yellow fever 2019, and in Canada, there was an epidemic of Measles in 2015 and human infection with avian influenza A (H7N9) 2014–2015.

Confirmed cases of COVID-19. Data on confirmed cases of COVID-19 were obtained from the everyday situation report from WHO (Coronavirus disease (COVID-19) Weekly Epidemiological Update and Weekly Operational Update) <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/> (accessed on 10 February 2021).

2.5. Data Analysis

Descriptive statistics, including the mean, median, and standard deviations (SD) were calculated for continuous variables to describe the sample’s characteristics. A *t*-test was used to estimate the sex differences in ratings on each of the three subscales of IRI. Linear regression was used to test the effects of the global indexes on these subscales. GLM MANCOVAs were used for the analysis of IRI subscales as outcome variables to estimate the effects of social indices, sex, religion, living conditions, volunteering, country, and other variables. Tukey’s post hoc test was used for multiple comparisons. SPSS (Version 27.0) was employed for data evaluation.

2.6. Ethics Statement

The study was conducted according to the principles expressed in the Declaration of Helsinki. The Scientific Council of the Institute of Ethnology and Anthropology of the Russian Academy of Sciences (protocol No 01, dated 9 April 2020) approved the protocols used in recruiting participants and data collection. All participants provided informed consent via the Google form before completing the survey, as noted above.

3. Results

3.1. Variations on IRI Scores across Total Sample and within Countries

Data on descriptive statistics on the three IRI subscales are presented in Table 2.

Approximately 25% (3824 individuals) of the sample scored lower than 14 on Perspective-Taking (PT), which is reflective of low Perspective-Taking. Twenty-six percent (4028 individuals) of the total sample scored lower than 13 on Empathic Concern (EC) and were estimated to be low-empathy individuals. Thirty-two percent ($n = 4983$) of the total sample scored 11 and lower on Personal Distress (PD) and were estimated to be individuals with low PD. Twenty-five percent ($n = 3824$) of the total sample scored higher than 20 on

PT and higher than 21 on EC, respectively. Twenty-eight percent ($n = 6761$) of the total sample scored 17 and higher on PD and were estimated to be individuals with high PD.

Table 2. Descriptive statistics on IRI subscales for the total sample.

	Perspective-Taking	Empathic Concern	Personal Distress
N	15,294	15,294	15,289
Mean	16.87	17.26	13.69
Std. Deviation	4.75	5.27	4.83
Minimum	0.00	1.00	0.00
Maximum	28.00	28.00	28.00

As shown in Figure 2a–c, individual ratings on the subscales of empathy varied substantially across countries. In the case of each subscale, we selected five countries with the highest ratings. Countries that scored highest on Perspective-Taking were the USA, Brazil, Italy, Croatia, and Armenia (Figure 2a). The countries with the highest ratings on Empathetic Concern were the USA, Brazil, Hungary, Italy, and Indonesia (Figure 2b). The countries with the highest ratings on Personal Distress were Brazil, Turkey, Italy, Armenia, and Indonesia (Figure 2c). Although Armenia was among the countries with the highest ratings on Perspective-Taking and Personal Distress, this information should be interpreted with caution given the small sample size.

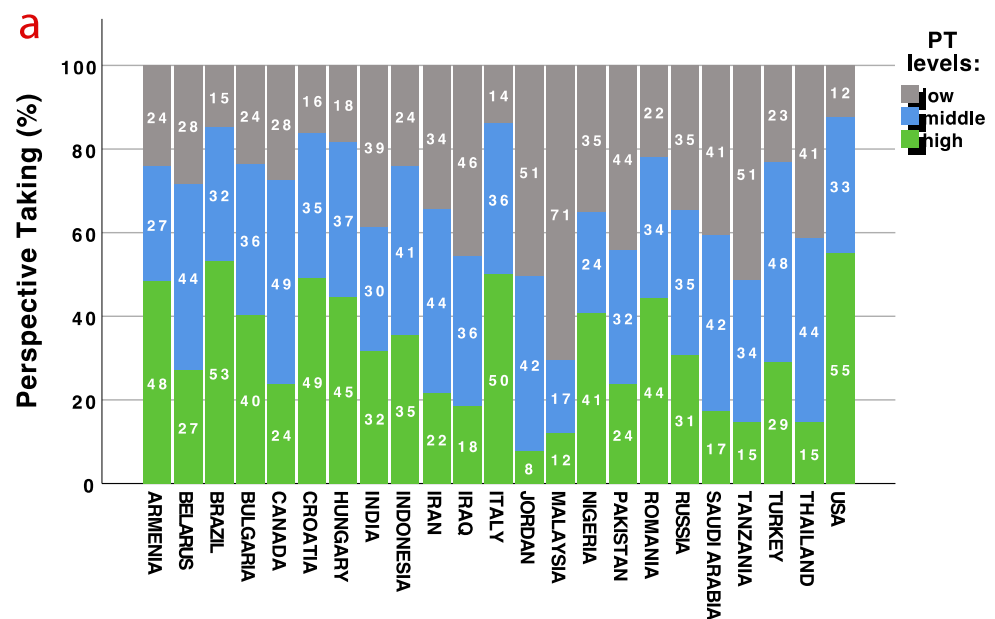


Figure 2. Cont.

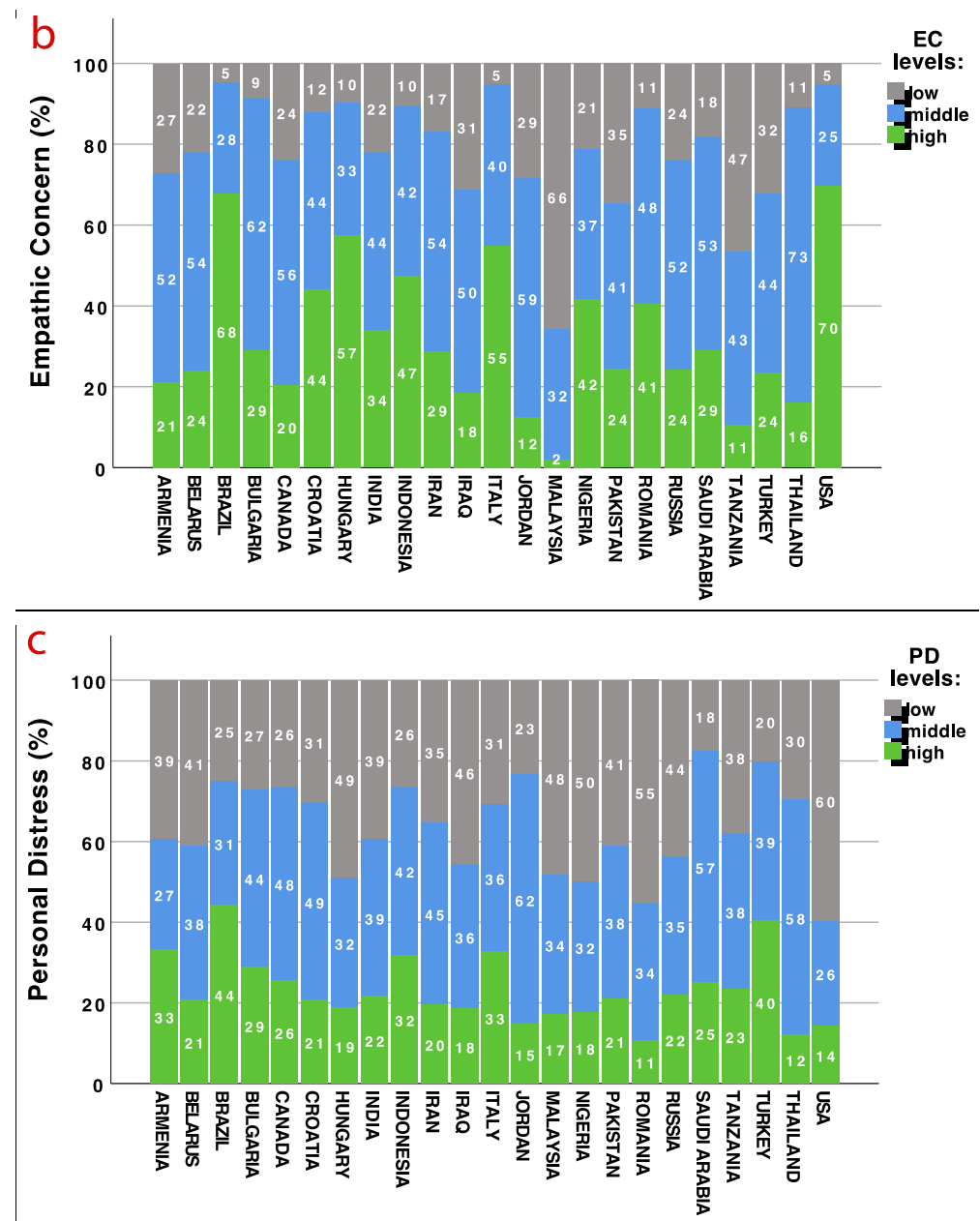


Figure 2. Distribution of individuals with low, middle, and high levels on IRI subscales (medians) across 23 countries: (a) Perspective-Taking, (b) Empathetic Concern, (c) Personal Distress.

3.2. Sex and Country Differences on Empathy Scores

Potential between-country sex differences in empathy were examined, and results are presented separately for each country (Table 3, Figure 2a–c). Cronbach’s alpha of empathy scales varied between countries (Table 3). Across the total sample, sex differences were demonstrated for all scales, although with small effect sizes. Generally, results showed that females reported higher empathy compared to males during the first wave of the pandemic (see Table 3).

Table 3. Sex differences on empathy scores, as measured by the IRI [12] across the countries and in the total sample.

Country	IRI Subscales.	N	Sex	Mean	SD	t	df	p	95% CI		Hedges' g *	Cronbach's Alpha
									Lower	Upper		
ARMENIA	Perspective-Taking	27 6	men women	19.26 13.50	4.97 5.05	2.563	31	0.015	1.176	10.343	1.128	0.577
	Empathic Concern	27 6	men women	17.74 15.33	4.40 2.80	1.275	31	0.212	−1.443	6.258	0.561	0.307
	Personal Distress	27 6	men women	13.07 12.33	6.36 3.50	0.274	31	0.786	−4.775	6.257	0.121	0.705
BELARUS	Perspective-Taking	143 195	men women	16.45 17.36	4.92 4.44	−1.790	336	0.074	−1.924	0.090	−0.197	0.661
	Empathic Concern	143 195	men women	15.74 18.02	4.46 4.54	−4.585	336	<0.001	−3.250	−1.299	−0.504	0.622
	Personal Distress	143 195	men women	10.37 14.01	4.73 4.62	−7.081	336	<0.001	−4.651	−2.629	−0.778	0.712
BRAZIL	Perspective-Taking	82 430	men women	19.40 19.41	4.66 4.71	−0.020	510	0.984	−1.125	1.102	−0.002	0.669
	Empathic Concern	82 430	men women	20.63 22.30	4.44 4.36	−3.167	510	0.002	−2.703	−0.633	−0.381	0.607
	Personal Distress	82 430	men women	12.76 15.92	5.63 5.62	−4.668	510	<0.001	−4.497	−1.833	−0.562	0.743
BULGARIA	Perspective-Taking	129 193	men women	16.91 18.63	4.80 4.16	−3.317	247	<0.001	−2.737	−0.698	−0.387	0.688
	Empathic Concern	129 193	men women	17.27 19.54	3.78 4.02	−5.079	320	<0.001	−3.146	−1.389	−0.576	0.621
	Personal Distress	129 193	men women	12.78 14.86	4.50 5.05	−3.791	320	<0.001	−3.167	−1.003	−0.430	0.753
CANADA	Perspective-Taking	383 227	men women	16.27 17.82	3.85 4.31	−4.491	433	<0.001	−2.239	−0.876	−0.387	0.629
	Empathic Concern	383 227	men women	15.95 17.67	3.93 5.21	−4.298	379	<0.001	−2.507	−0.933	−0.386	0.686
	Personal Distress	383 227	men women	13.28 14.41	4.11 4.46	−3.183	605	0.002	−1.831	−0.434	−0.267	0.639

Table 3. Cont.

Country	IRI Subscales.	N	Sex	Mean	SD	t	df	p	95% CI		Hedges' g *	Cronbach's Alpha
									Lower	Upper		
CROATIA	Perspective-Taking	71 204	men women	18.59 19.33	4.73 4.27	−1.227	273	0.221	−1.932	0.449	−0.169	0.737
	Empathic Concern	71 204	men women	16.82 20.77	4.28 4.36	−6.622	273	<0.001	−5.134	−2.781	−0.910	0.758
	Personal Distress	71 204	men women	11.21 13.97	4.11 3.75	−5.197	273	<0.001	−3.798	−1.711	−0.714	0.624
HUNGARY	Perspective-Taking	35 198	men women	15.86 18.98	5.30 4.59	−3.625	231	<0.001	−4.828	−1.428	−0.662	0.696
	Empathic Concern	35 198	men women	17.09 21.35	4.25 4.61	−5.097	231	<0.001	−5.911	−2.615	−0.932	0.714
	Personal Distress	35 198	men women	9.49 11.63	5.41 5.52	−2.126	231	<0.001	−4.134	−0.157	−0.389	0.771
INDIA	Perspective-Taking	213 170	men women	16.42 16.70	4.95 5.29	−0.537	381	<0.001	−1.315	0.750	−0.055	0.653
	Empathic Concern	213 170	men women	17.66 18.36	4.64 5.55	−1.323	329	0.187	−1.748	0.342	−0.139	0.679
	Personal Distress	213 170	men women	11.95 13.72	4.73 4.53	−3.705	381	<0.001	−2.708	−0.830	−0.380	0.574
INDONESIA	Perspective-Taking	504 424	men women	16.71 18.77	4.49 3.85	−7.540	926	<0.001	−2.602	−1.527	−0.490	0.540
	Empathic Concern	504 424	men women	18.96 20.99	4.65 4.40	−6.782	926	<0.001	−2.615	−1.441	−0.447	0.596
	Personal Distress	504 424	men women	12.76 16.24	4.09 4.62	−12.026	852	<0.001	−4.044	−2.909	−0.800	0.569
IRAN	Perspective-Taking	88 217	men women	15.81 16.43	4.32 4.74	−1.073	303	0.284	−1.775	0.523	−0.135	0.635
	Empathic Concern	88 217	men women	16.84 18.32	4.81 4.10	−2.539	141	0.012	−2.635	−0.328	−0.342	0.532
	Personal Distress	88 217	men women	13.01 13.47	3.69 4.24	−0.879	303	0.380	−1.471	0.563	−0.111	0.444

Table 3. Cont.

Country	IRI Subscales.	N	Sex	Mean	SD	t	df	p	95% CI		Hedges' g *	Cronbach's Alpha
									Lower	Upper		
IRAQ	Perspective-Taking	88	men	14.94	4.74	−0.226	171	0.821	−1.582	1.256	−0.034	0.497
		85	women	15.11	4.72							
	Empathic Concern	88	men	16.15	4.04	−1.489	171	0.138	−2.256	0.316	−0.225	0.331
	Personal Distress	88	men	12.02	3.92	−1.870	171	0.063	−2.372	0.064	−0.283	0.360
		85	women	13.18	4.19							
ITALY	Perspective-Taking	44	men	18.16	4.50	−1.898	250	0.059	−2.742	0.051	−0.314	0.676
		208	women	19.50	4.22							
	Empathic Concern	44	men	19.57	4.96	−2.288	250	0.023	−2.924	−0.219	−0.379	0.560
	Personal Distress	44	men	12.73	5.53	−1.726	250	0.086	−3.044	0.201	−0.286	0.722
		208	women	14.15	4.84							
JORDAN	Perspective-Taking	121	men	14.36	3.45	−0.508	447	0.612	−.932	0.549	−0.054	0.489
		328	women	14.55	3.57							
	Empathic Concern	121	men	15.41	4.22	−0.708	447	0.479	−1.145	0.539	−0.075	0.519
	Personal Distress	121	men	13.09	2.85	−1.806	447	0.072	−1.243	0.053	−0.192	0.456
		328	women	13.69	3.18							
MALAYSIA	Perspective-Taking	478	men	12.31	4.37	−2.823	1046	0.005	−1.308	−0.235	−0.171	0.441
		609	women	13.09	4.60							
	Empathic Concern	478	men	10.92	4.54	−4.477	1085	<0.001	−1.746	−0.682	−0.273	0.469
	Personal Distress	478	men	11.88	3.65	−4.113	1069	<0.001	−1.434	−0.508	−0.248	0.390
		609	women	12.86	4.11							
NIGERIA	Perspective-Taking	214	men	17.38	5.97	0.001	207	0.999	−1.372	1.374	0.000	0.674
		102	women	17.38	5.70							
	Empathic Concern	214	men	18.93	5.62	−1.490	314	0.137	−2.324	0.321	−0.179	0.663
	Personal Distress	214	men	11.80	4.33	−3.236	314	0.001	−2.798	−0.682	−0.388	0.468
		102	women	13.54	4.74							

Table 3. Cont.

Country	IRI Subscales.	N	Sex	Mean	SD	t	df	p	95% CI		Hedges' g *	Cronbach's Alpha
									Lower	Upper		
PAKISTAN	Perspective-Taking	212 272	men women	14.42 16.00	5.04 5.09	−3.402	482	0.001	−2.491	−0.667	−0.311	0.557
	Empathic Concern	212 272	men women	15.58 17.59	4.38 5.13	−4.659	478	<0.001	−2.867	−1.166	−0.418	0.510
	Personal Distress	212 272	men women	12.31 13.83	4.27 4.51	−3.763	482	<0.001	−2.313	−0.726	−0.344	0.406
ROMANIA	Perspective-Taking	42 226	men women	17.05 18.85	6.01 4.78	−1.843	51	0.071	−3.774	0.161	−0.361	0.764
	Empathic Concern	42 226	men women	17.57 19.58	4.48 4.29	−2.766	266	0.006	−3.438	−0.579	−0.463	0.622
	Personal Distress	42 226	men women	8.93 10.87	5.50 5.12	−2.231	266	0.027	−3.658	−0.229	−0.374	0.751
RUSSIA	Perspective-Taking	486 1417	men women	16.22 16.84	5.27 5.09	−2.286	1901	0.022	−1.147	−0.088	−0.120	0.651
	Empathic Concern	486 1417	men women	16.06 17.44	4.36 4.52	−5.874	1901	<0.001	−1.845	−0.921	−0.309	0.524
	Personal Distress	486 1417	men women	10.43 13.28	4.97 4.81	−11.162	1901	<0.001	−3.349	−2.348	−0.587	0.636
SAUDI ARABIA	Perspective-Taking	98 316	men women	15.18 15.79	3.63 3.97	−1.342	412	0.180	−1.489	0.281	−0.155	0.554
	Empathic Concern	98 316	men women	16.45 17.64	4.16 4.65	−2.403	178	0.017	−2.168	−0.213	−0.262	0.636
	Personal Distress	98 316	men women	13.97 14.81	3.51 3.45	−2.101	412	0.036	−1.627	−0.054	−0.243	0.418
TANZANIA	Perspective-Taking	185 156	men women	13.96 15.40	4.47 4.72	−2.880	339	0.004	−2.416	−0.455	−0.312	0.358
	Empathic Concern	185 156	men women	14.01 15.31	3.91 4.75	−2.731	300	0.007	−2.241	−0.364	−0.301	0.435
	Personal Distress	185 156	men women	12.62 14.27	3.91 4.20	−3.759	339	<0.001	−2.518	−0.788	−0.408	0.353

Table 3. Cont.

Country	IRI Subscales.	N	Sex	Mean	SD	t	df	p	95% CI		Hedges' g *	Cronbach's Alpha
									Lower	Upper		
TURKEY	Perspective-Taking	1609 3093	men women	16.79 17.65	4.06 3.96	−7.040	4700	<0.001	−1.105	−0.623	−0.216	0.546
	Empathic Concern	1609 3093	men women	15.10 17.24	4.52 5.18	−14.622	3669	<0.001	−2.423	−1.850	−0.430	0.627
	Personal Distress	1609 3093	men women	14.14 15.85	4.59 4.44	−12.231	3162	<0.001	−1.981	−1.433	−0.380	0.557
THAILAND	Perspective-Taking	49 250	men women	15.45 16.03	2.34 3.54	−1.441	97	0.153	−1.377	0.219	−0.171	0.524
	Empathic Concern	49 250	men women	16.45 17.20	2.72 3.55	−1.400	297	0.162	−1.807	0.304	−0.218	0.506
	Personal Distress	49 250	men women	12.71 13.27	2.75 3.14	−1.159	297	0.247	−1.505	0.389	−0.181	0.485
USA	Perspective-Taking	181 460	men women	19.28 20.04	4.94 4.52	−1.859	639	0.063	−1.557	0.043	−0.163	0.780
	Empathic Concern	181 460	men women	20.70 22.68	5.15 4.32	−4.576	285	<0.001	−2.833	−1.129	−0.433	0.795
	Personal Distress	181 460	men women	9.85 10.25	5.50 5.87	−0.801	637	0.423	−1.400	0.589	−0.070	0.830
TOTAL	Perspective-Taking	5482 9786	men women	16.14 17.28	4.78 4.69	−14.131	11168	<0.001	−1.289	−0.975	−0.240	0.603
	Empathic Concern	5482 9786	men women	15.99 17.97	5.02 5.27	−22.898	11824	<0.001	−2.143	−1.804	−0.381	0.661
	Personal Distress	5479 9784	men women	12.62 14.29	4.63 4.85	−21.020	11788	<0.001	−1.825	−1.514	−0.350	0.584

N—number of cases, t—t-test criteria, df—degrees of freedom, p—statistical significance, NS—not significant, CI—Confidence Interval of the Difference. * Hedges' g, which provides a measure of effect size weighted according to the relative size of each sample, is an alternative where there is a different sample size.

Interesting sex differences between countries emerged. Specifically, sex differences on Perspective-Taking were obtained for Armenia, Bulgaria, Canada, Hungary, India, Indonesia, Malaysia, Pakistan, Russia, Tanzania, and Turkey (Table 3, Figure 3a); on Empathetic Concern for Belarus, Brazil, Bulgaria, Canada, Croatia, Hungary, Indonesia, Iran, Italy, Malaysia, Pakistan, Romania, Russia, Saudi Arabia, Tanzania, Turkey, and USA (Table 3, Figure 3b); and on Personal Distress for Belarus, Brazil, Bulgaria, Canada, Croatia, Hungary, India, Indonesia, Malaysia, Nigeria, Pakistan, Romania, Russia, Saudi Arabia, Tanzania, and Turkey (Table 3, Figure 3c). Effect sizes for these subscales within countries vary substantially, ranging from small to high. In most cases, female ratings on all scales were higher or equal to those of men (e.g., in Jordan), with the exception of those who participated from Armenia, which may be attributed to the small sample size.

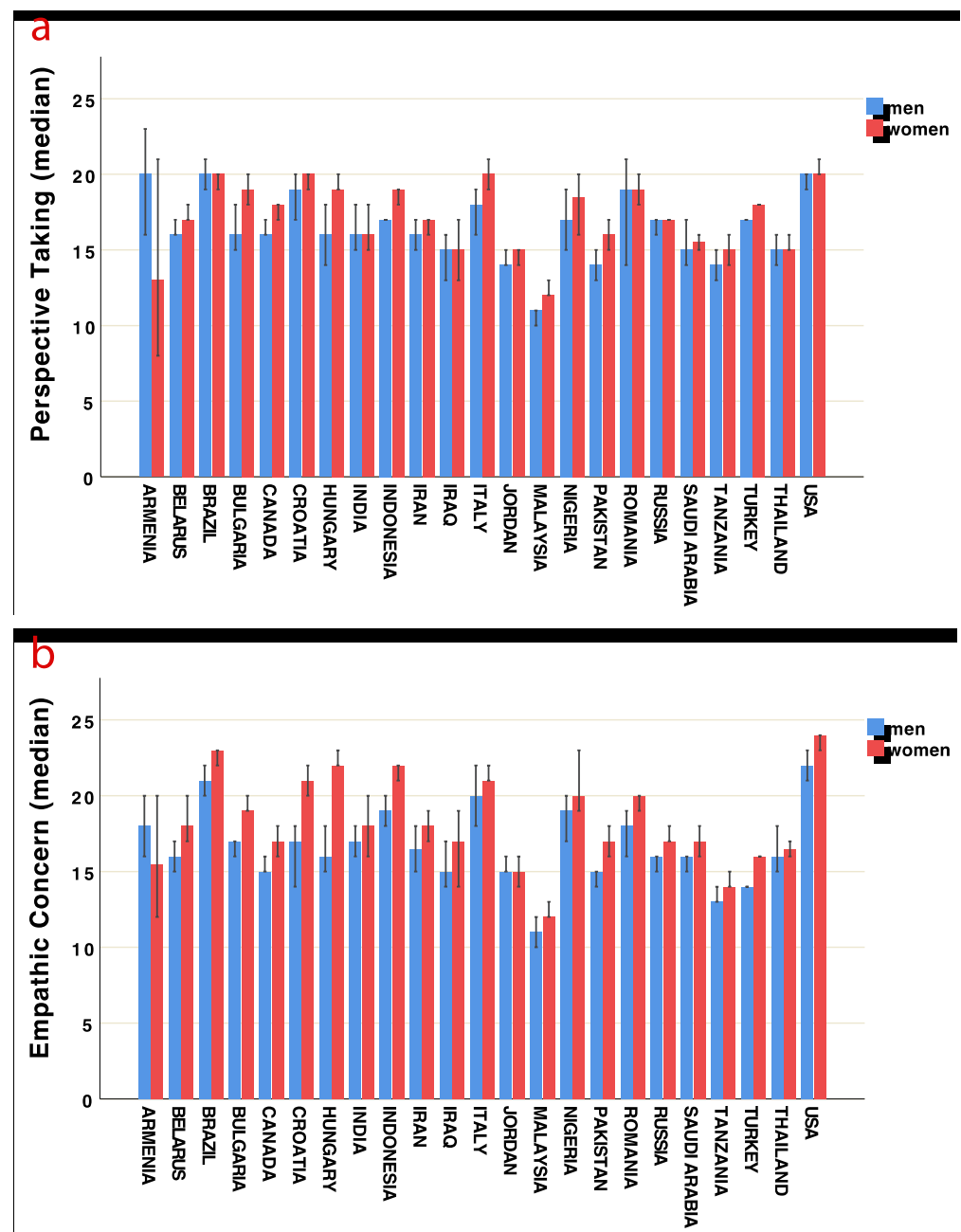


Figure 3. Cont.

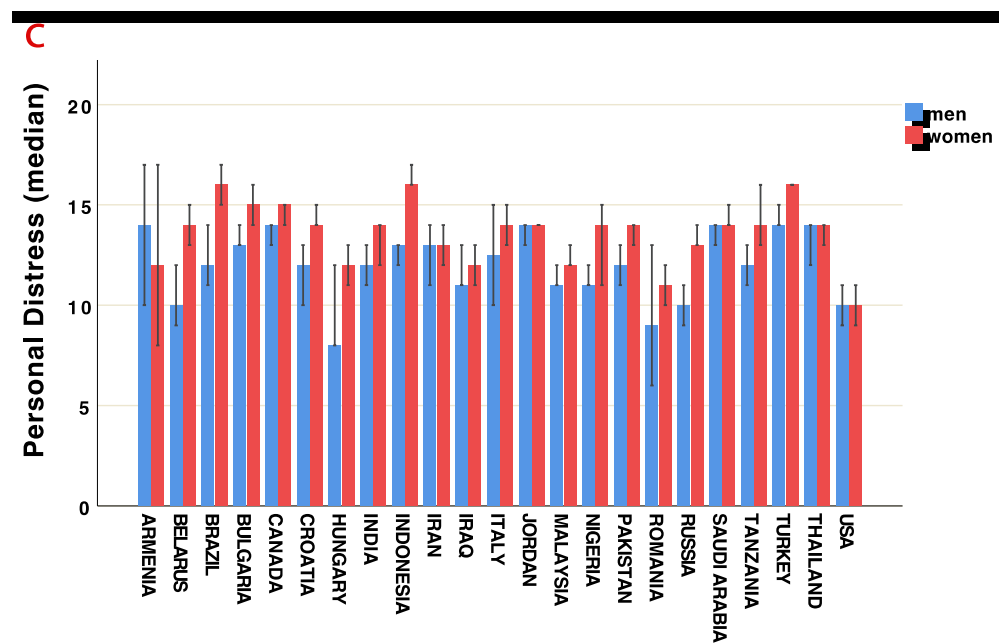


Figure 3. Sex differences on median IRI subscales scores across 23 countries: (a) Perspective-Taking, (b) Empathetic Concern, and (c) Personal Distress.

3.2.1. Empathy Ratings Depending on Culture, Religion, Living Conditions, Involvement in Voluntary Activity, and Fear of COVID-19

To examine possible associations between demographic factors and empathy, we conducted a GLM MANCOVA. The following variables were included in the model as independent variables: sex, country, religion, living conditions (0 = live with others; 1 = live alone), involvement in voluntary activity lockdown presence, and belief that “COVID-19 is a threat to relatives” (0 = no, 1 = yes); see Table 4.

Out of the 14,766 people included in these analyses, 91.34% reported living in households with other people (relatives, partners, or friends) and 8.66% reported living alone. Of our respondents, 83.4% believed that COVID-19 caused a real threat for their relatives and were worried about them. These independent variables explained 13.5% of the variance in Perspective-Taking scores, 23.6% in Empathetic Concern, and 12.3% in Personal Distress scores. The effect sizes for country were medium for PT and PD and large for EC (Table 4).

Tukey’s Post Hoc tests indicated significant differences in ratings on IRI subscales in pairs of some countries and similarities between other pairs of countries (Supplementary Table S1). For example, Bulgaria was different on Perspective-Taking, compared to Brazil, India, Iran, Iraq, Jordan, Malaysia, Pakistan, Russia, Saudi Arabia, Tanzania, Thailand, and the USA. The remaining variables showed either small effect sizes (religion and sex) or no effects (living alone, voluntary activity, COVID-19 is a threat to relatives). However, Post Hoc Tests on religion suggested significant differences in IRI subscales, related to religious background of individuals (Supplementary Table S2). For example, agnostic individuals were different on Perspective-Taking ratings compared to Hindu, Buddhist, and Islamic individuals, along with adherents of traditional local religions.

Table 4. GLM MANCOVA analysis with IRI subscales as outcome variables, and country, religion, sex, living condition, lockdown presence, and voluntary activity as independent variables (total sample).

Independent Variables	Dependent Variables	df	F	p	η^2
Sex	Perspective-Taking	1	150.027	<0.001	0.010
	Empathic Concern	1	449.535	<0.001	0.030
	Personal Distress	1	471.898	<0.001	0.031
COUNTRY	Perspective-Taking	22	72.617	<0.001	0.098
	Empathic Concern	22	143.856	<0.001	0.177
	Personal Distress	22	50.210	<0.001	0.070
Religion	Perspective-Taking	6	2.383	0.027	0.001
	Empathic Concern	6	6.156	<0.001	0.003
	Personal Distress	6	3.416	0.002	0.001
COVID-19 is a threat to relatives	Perspective-Taking	1	25.593	<0.001	0.002
	Empathic Concern	1	21.440	<0.001	0.001
	Personal Distress	1	14.447	<0.001	0.001
Living conditions	Perspective-Taking	1	7.221	0.007	0.000
	Empathic Concern	1	9.383	0.002	0.001
	Personal Distress	1	14.234	<0.001	0.001
Involvement in voluntary activity	Perspective-Taking	1	5.149	0.023	0.000
	Empathic Concern	1	.334	0.563	0.000
	Personal Distress	1	8.796	0.003	0.001

R^2 (Perspective-Taking) = 0.135; R^2 (Empathic Concern) = 0.236. R^2 (Personal Distress) = 0.122. R^2 —R Squared, df—degrees of freedom, F—F test statistics, p—statistical significance, η^2 —Partial Eta Squared effect size.

A *t*-test was conducted to estimate the differences in ratings on IRI scales between people living alone and those who share a home with others. Our data did not indicate any differences in ratings on the first two subscales—Perspective-Taking ($t = 1.740$, $df = 15,292$, $p = 0.082$) and Empathic Concern ($t = 1.670$, $df = 15,292$, $p = 0.095$)—but co-habiting respondents demonstrated significantly higher scores on Personal Distress ($t = 7.183$, $df = 15,287$, $p = 7.14 \times 10^{-13}$).

3.2.2. Association between Age, Sex, and Empathy

The associations between age, sex, and empathy showed small effects (Table 5, Figure 4a–c). Self-ratings for both Perspective-Taking and Empathetic Concern subscales were significantly higher for older individuals for both men and women. Ratings for the Personal Distress subscale were higher in younger age for both men and women (Figure 4c).

Table 5. GLM MANCOVA analysis with IRI subscales as outcome variables, and age and sex as independent variables (total sample).

Independent Variables	Dependent Variables	df	F	p	η^2
Sex	Perspective-Taking	1	219.083	<0.001	0.014
	Empathic Concern	1	545.523	<0.001	0.035
	Personal Distress	1	376.272	<0.001	0.024
Age	Perspective-Taking	1	43.536	<0.001	0.003
	Empathic Concern	1	81.672	<0.001	0.005
	Personal Distress	1	167.227	<0.001	0.011

R^2 (Perspective-Taking) = 0.016; R^2 (Empathic Concern) = 0.037. R^2 (Personal Distress) = 0.038. R^2 —R Squared, df—degrees of freedom, F—F test statistics, p—statistical significance, η^2 —Partial Eta Squared effect size.

3.2.3. Association between Global Indices and Empathy

A GLM MANCOVA was conducted to examine the association between empathy and global indices (Table 6). These variables explained 69.1% of the variance in the case of Perspective-Taking, 60.5% for Empathic Concern, and 45.6% for Personal Distress. Previous epidemic experience in the country was negatively associated with median ratings on Perspective-Taking and Empathic Concern subscales with high effect sizes. Power Distance country index was a negative predictor of ratings on Empathic Concern, with a high effect size (Table 6). Total cases confirmed was a negative predictor of Personal Distress.

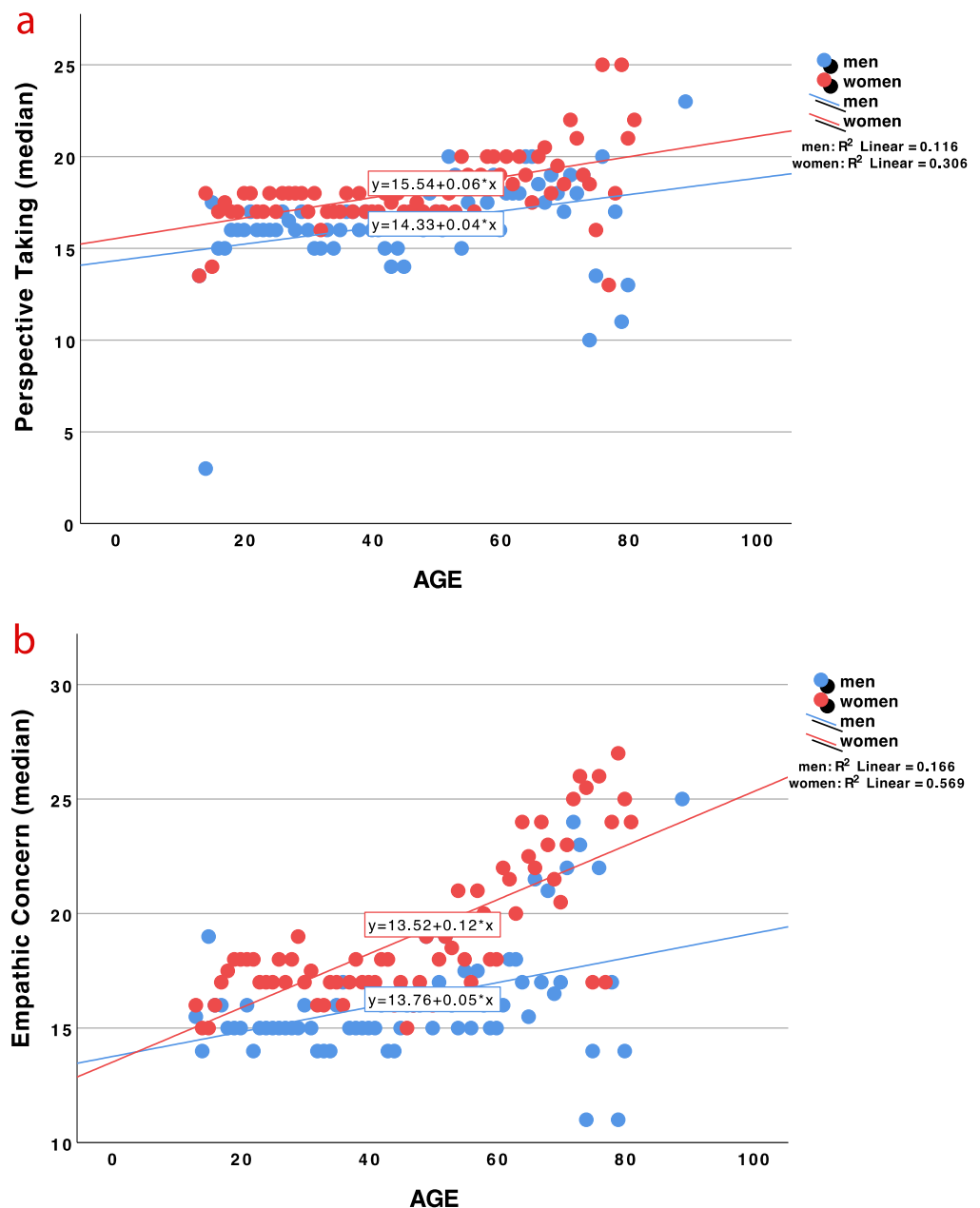


Figure 4. Cont.

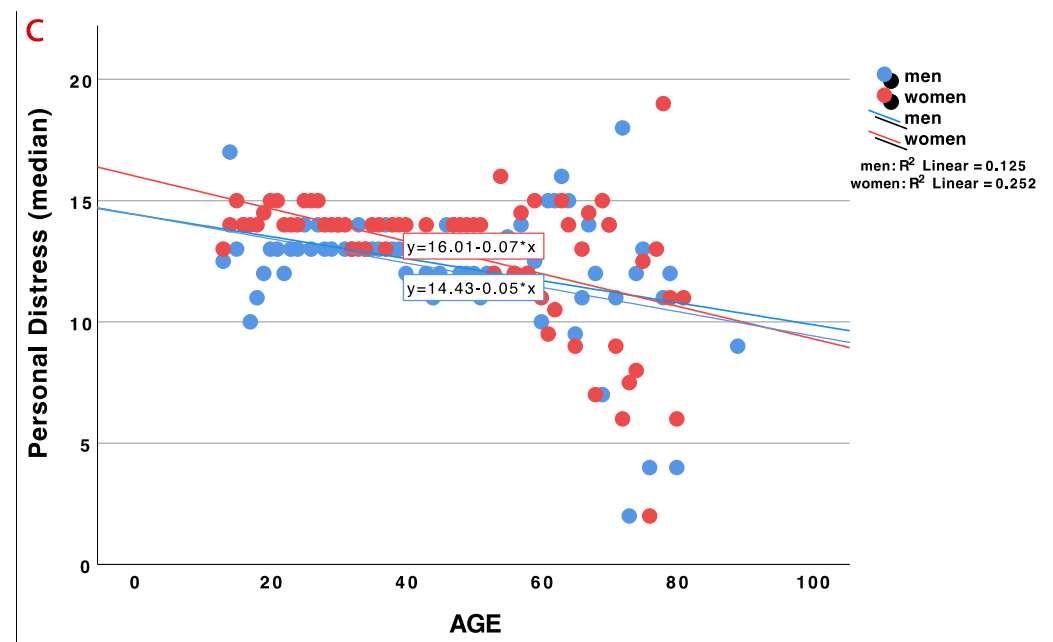


Figure 4. Association between age and IRI subscales in the total sample: (a) Perspective-Taking, (b) Empathic Concern, and (c) Personal Distress.

Table 6. The GLM MANCOVA with empathy subscales (Perspective-Taking, Empathic Concern, Personal Distress (median for each country)) as outcome variables, and epidemic experience, IDVI, HDI, total confirmed cases of COVID-19 per country, Individualism, Power Distance, and Social support scale as independent variables.

Independent Variables	Dependent Variables	Df	F	p	η^2
Epidemic experience	Perspective-Taking	1	14.889	0.002	0.498
	Empathic Concern	1	9.928	0.007	0.398
	Personal Distress	1	1.580	0.228	0.095
IDVI	Perspective-Taking	1	0.783	0.390	0.050
	Empathic Concern	1	1.740	0.207	0.104
	Personal Distress	1	0.115	0.740	0.008
HDI	Perspective-Taking	1	0.245	0.628	0.016
	Empathic Concern	1	1.493	0.241	0.091
	Personal Distress	1	0.003	0.955	0.000
Social Support	Perspective-Taking	1	0.140	0.714	0.009
	Empathic Concern	1	0.507	0.487	0.033
	Personal Distress	1	0.382	0.546	0.025
Power Distance	Perspective-Taking	1	3.287	0.090	0.180
	Empathic Concern	1	5.601	0.032	0.272
	Personal Distress	1	0.192	0.668	0.013
Individualism	Perspective-Taking	1	0.328	0.575	0.021
	Empathic Concern	1	0.384	0.545	0.025
	Personal Distress	1	0.491	0.494	0.032

Table 6. Cont.

Independent Variables	Dependent Variables	Df	F	p	η^2
Total confirmed cases of COVID-19 per country	Perspective-Taking	1	0.022	0.884	0.001
	Empathic Concern	1	0.333	0.573	0.022
	Personal Distress	1	9.721	0.007	0.393

R^2 (Perspective-Taking) = 0.691; R^2 (Empathic Concern) = 0.605. R^2 (Personal Distress) = 0.456. R^2 —R Squared, df—degrees of freedom, F—F test statistics, p—statistical significance, η^2 —Partial Eta Squared effect size. IDVI—Infectious Disease Vulnerability Index, HDI—Human Development Index, Social Support—Social Support Ranking Scale of World Happiness Ranking.

3.2.4. Association between Individualism/Collectivism and Empathy

Three linear regression analyses were used to estimate the association between individualism and collectivism and three empathy scores (Table 7). Countries with high scores on Individualism (Italy, USA, and Hungary, from maximum to minimum) rated higher on Perspective-Taking and Empathic Concern compared to less individualistic countries (Iraq, Malaysia, Tanzania, Jordan, and Brazil) (Figure 5a,b). Notably, Turkey was rated highest on Personal Distress (Figure 5c).

Table 7. Regression analysis with individualism as the predictor and each of the three IRI subscales as the dependent variable.

Predictor	Dependent Variable	R^2	B	SE	Beta	t	p
Individualism	Perspective-Taking	0.025	0.041	0.002	0.158	19.826	<0.001
	Empathic Concern	0.029	0.049	0.002	0.169	21.206	<0.001
	Personal Distress	0.009	−0.026	0.002	−0.097	−12.045	<0.001

R^2 —R Squared, SE—standard error, p—statistical significance.

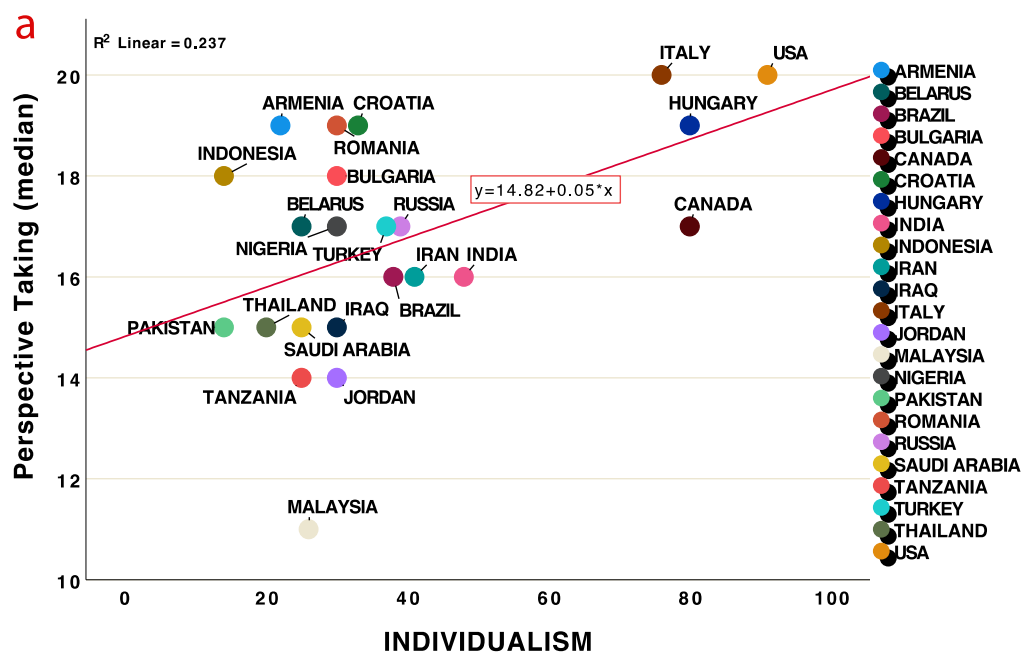


Figure 5. Cont.

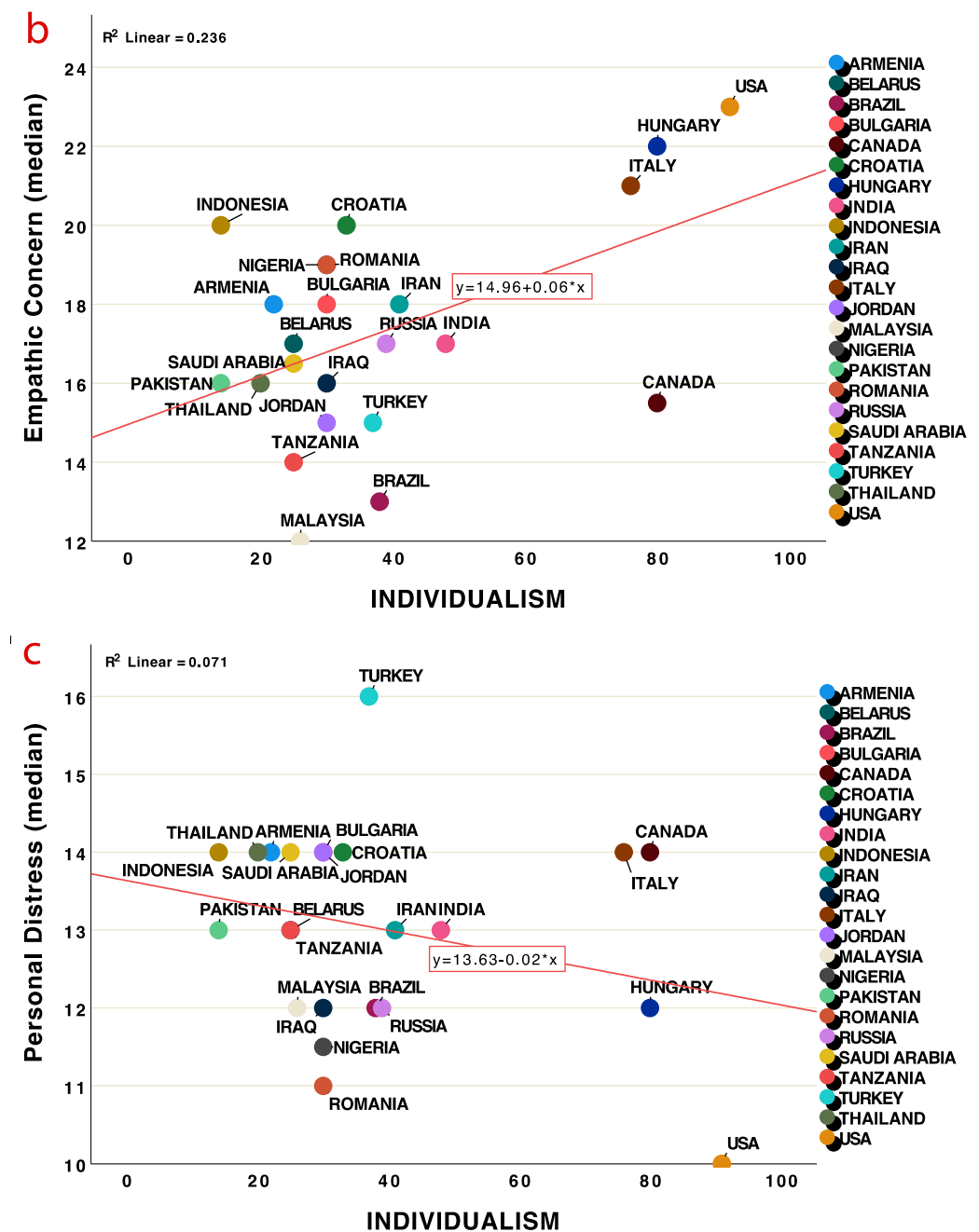


Figure 5. Association between Individualism and IRI subscales in total sample: (a) Perspective-Taking, (b) Empathetic Concern, and (c) Personal Distress.

3.2.5. Association between Power Distance and Empathy

Three linear regression analyses were conducted to estimate the associations between Power Distance and each of the empathy subscales. As shown in Table 8, no significant associations were found. However, some interesting patterns emerged. Specifically, countries with high ratings on Power Distance (Saudi Arabia, Iraq, Russia, Belarus) rated lower on Perspective-Taking and Empathetic Concern compared to less Power Distance countries (Canada, USA, Hungary, Italy) (Figure 6a,b). Turkey was rated highest on Personal Distress (Figure 6c).

Table 8. Regression analyses with Power Distance as predictor and each of the three IRI subscales as dependent variables.

Predictor	Dependent Variable	R ²	B	SE	Beta	t	p
Power Distance	Perspective-Taking	0.141	−0.045	0.024	−0.375	−1.853	0.078
	Empathic Concern	0.135	−0.056	0.031	−0.388	−1.811	0.084
	Personal Distress	0.005	−0.005	0.016	−0.070	−0.322	0.751

R²—R Squared, SE—standard error, p—statistical significance.

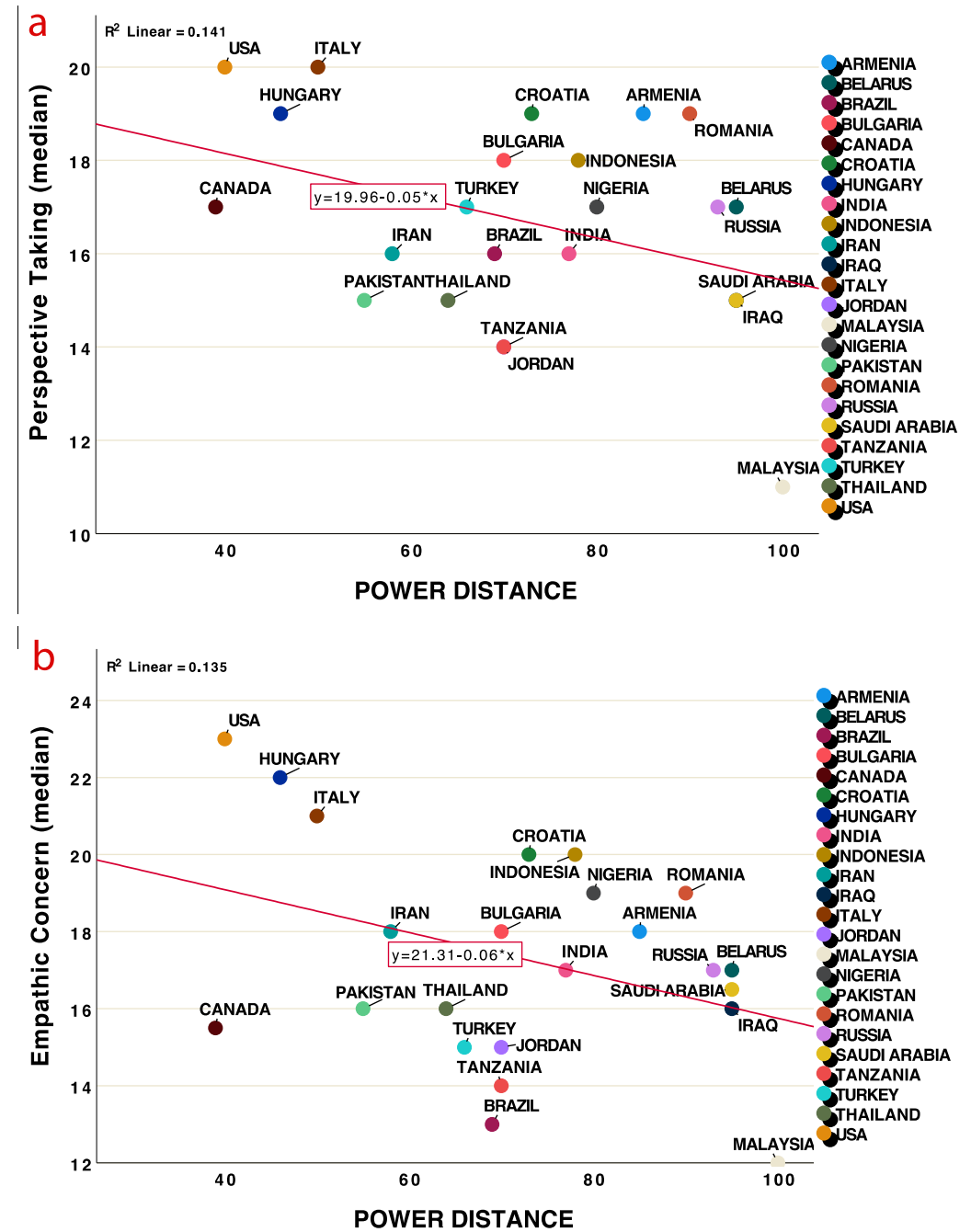


Figure 6. Cont.

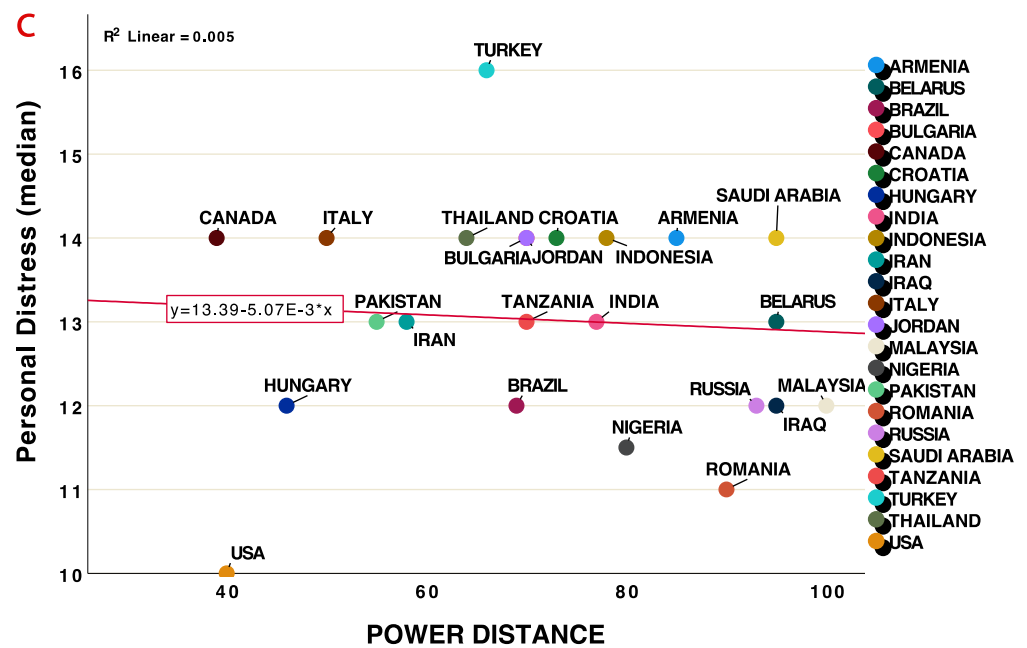


Figure 6. Association between Power Distance and IRI subscales in total sample: (a) Perspective-Taking, (b) Empathetic Concern, and (c) Personal Distress.

3.2.6. Association between COVID-19 Cases and Empathy

Next, we conducted three linear regression analyses to estimate the effect of total confirmed cases on 01 July 2020 on Perspective-Taking, Empathetic Concern, and Personal Distress subscales (Table 9, Figure 7a–c). The effect of the number of COVID-19 cases in the country was significantly positive in the case of Empathetic Concern and negative in the case of Personal Distress subscale. Perspective-Taking was not influenced by the degree of distribution of pandemics on the cross-cultural level.

Table 9. Regression analyses with Total confirmed cases as predictor and each of the three IRI subscales as dependent variables.

Predictor	Dependent Variable	R ²	B	SE	Beta	t	p
Total confirmed cases on 1 July 2020	Perspective-Taking	0.069	9.844×10^{-7}	0.000	0.263	1.247	0.226
	Empathetic Concern	0.057	1.119×10^{-6}	0.000	0.238	1.125	0.023
	Personal Distress	0.267	-1.158×10^{-6}	0.000	-0.517	-2.765	0.012

R²—R Squared, SE—standard error, p—statistical significance.

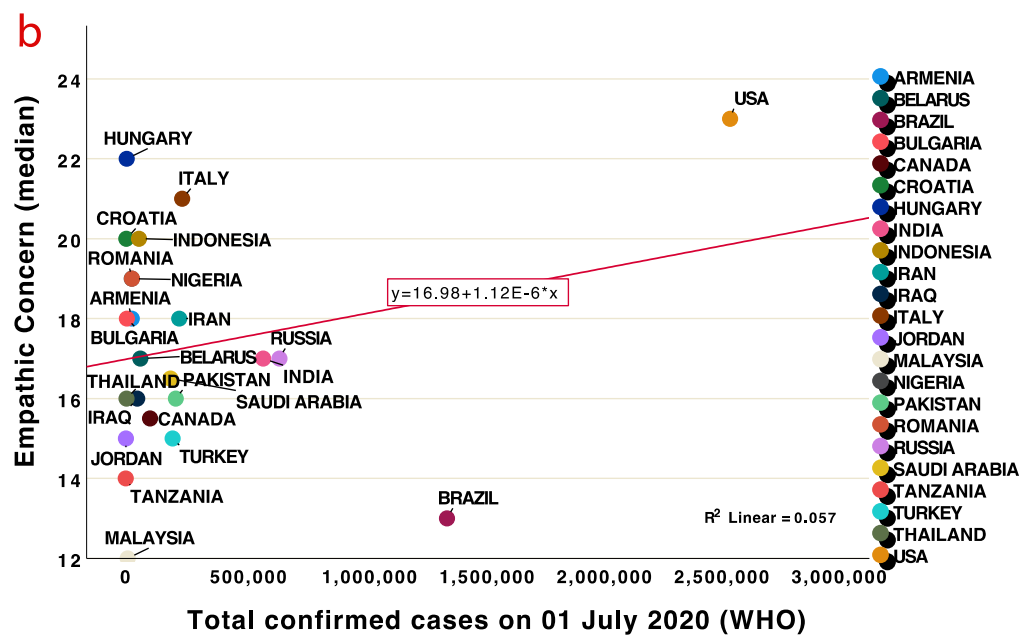
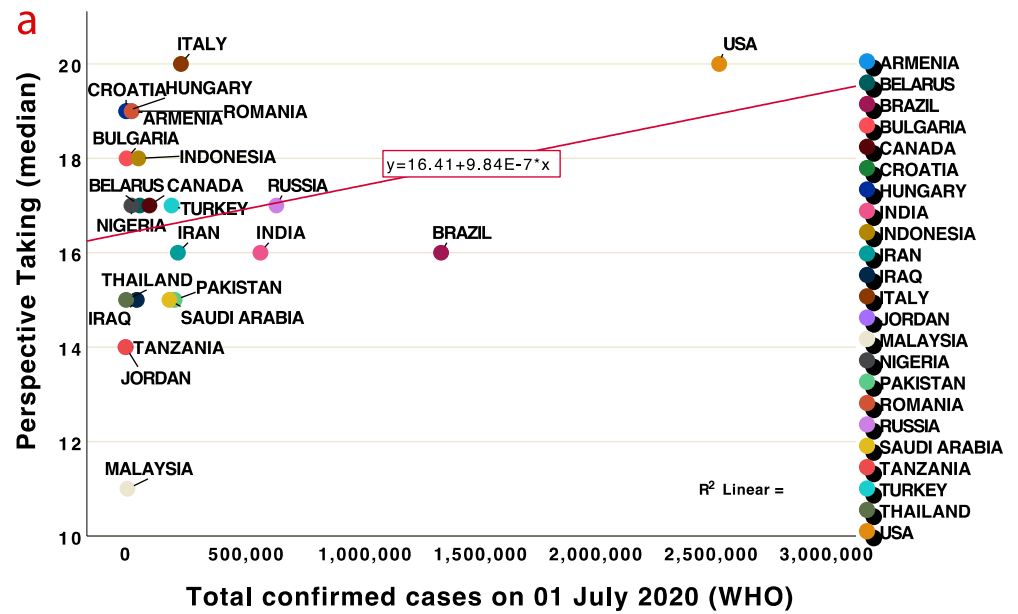


Figure 7. Cont.

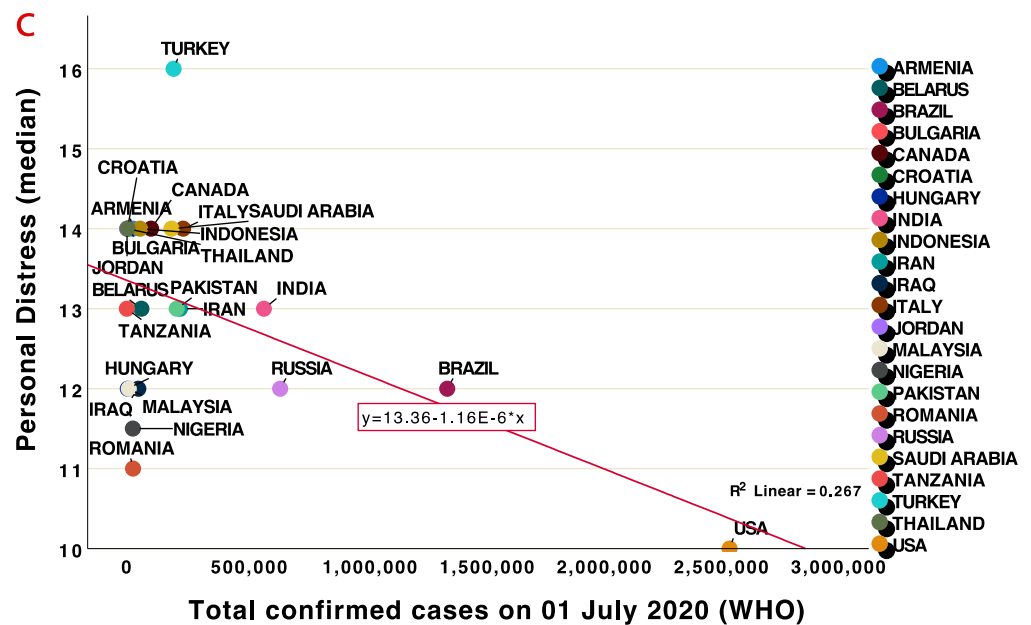


Figure 7. Association between total confirmed cases on 01 July 2020 and IRI subscales in total sample: (a) Perspective-Taking, (b) Empathetic Concern, and (c) Personal Distress.

3.2.7. Association between Epidemic Experience and Empathy

Linear regression analyses demonstrated a significant association between epidemic experience, as defined by the World Health Organization, and Perspective-Taking and Empathic Concern subscales (see Table 10). Countries with epidemic experience had lower scores of Perspective-Taking and Empathic Concern (Figure 8a,b). No associations between Personal Distress and epidemic experience and empathy were found (Table 10, Figure 8c). In countries previously familiar with infections and epidemics, ratings on Perspective-Taking and Empathic Concern were significantly lower in the current COVID-19 pandemic than in countries with no previous epidemic experience.

Table 10. Regression analyses with epidemic experience as predictor and each of the three IRI subscales as dependent variables.

Predictor	Dependent Variable	R ²	B	SE	Beta	t	p
Epidemic experience	Perspective-Taking	0.537	−3.238	0.655	−0.733	−4.940	00006
	Empathic Concern	0.405	−3.516	0.931	−0.636	−3.778	0.001
	Personal Distress	0.049	0.583	0.562	0.221	1.037	0.311

R²—R Squared, SE—standard error, p—statistical significance.

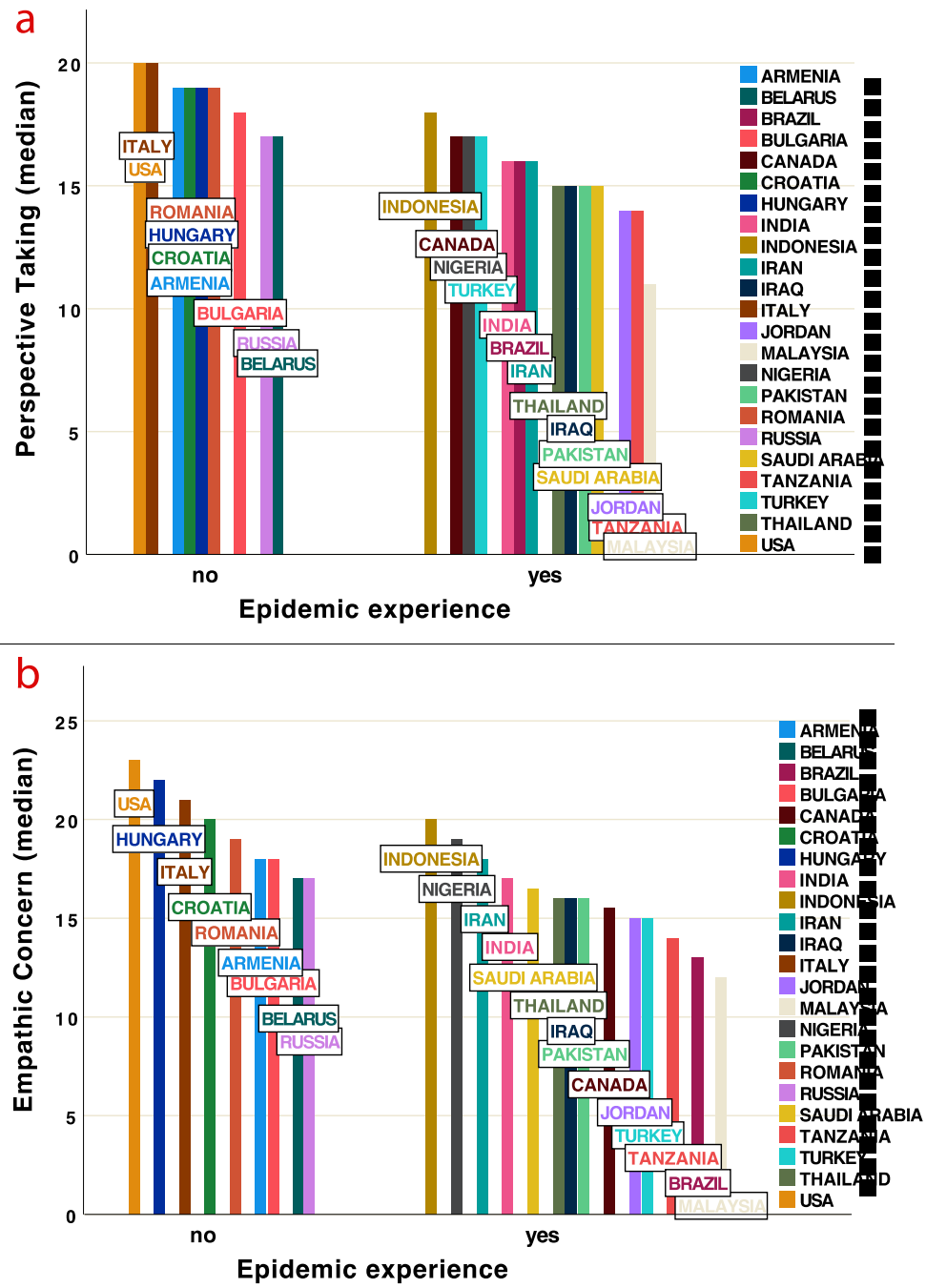


Figure 8. Cont.

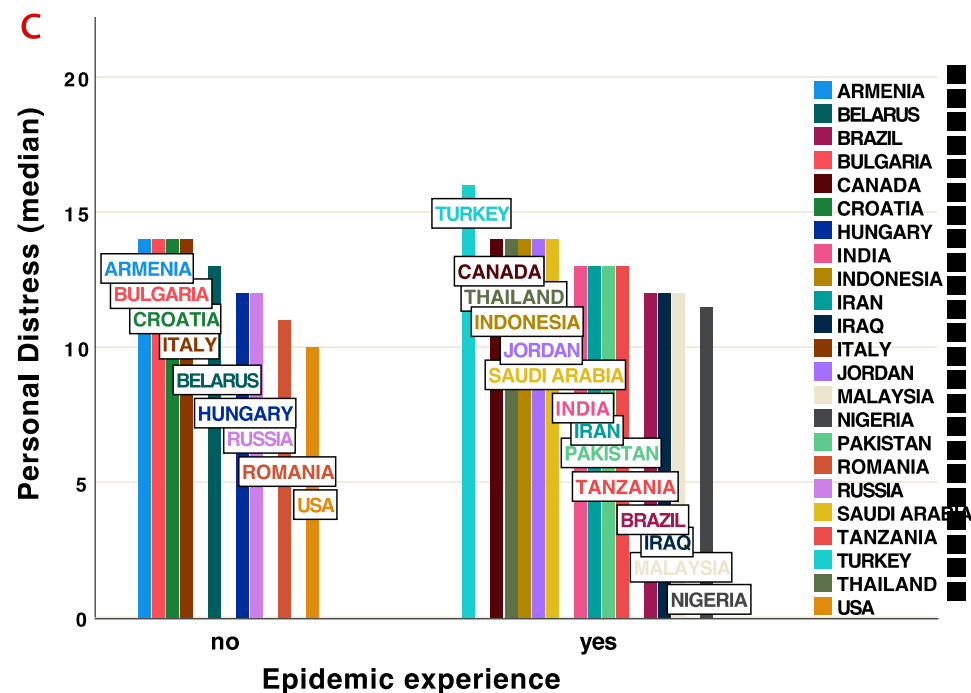


Figure 8. Association between epidemic experience and IRI subscales in total sample: (a) Perspective-Taking, (b) Empathetic Concern and (c) Personal Distress.

4. Discussion

Given the uncertainty that has accompanied the COVID-19 pandemic, it is important that researchers work to identify aspects of resilience. Results from this multi-nation data collected from over 15,000 participants during the early phases of the COVID-19 pandemic revealed substantial variations in empathy ratings, as measured by the IRI [10], on the culture-specific level. Interestingly, our results showed that individuals from Malaysia had the highest percentage of low scores on Perspective-Taking and Empathetic Concern compared to individuals from the USA who had the highest percentage of low scores on Personal Distress.

While we do not have data on empathy ratings prior to the start of COVID-19, we compared the data on IRI ratings, obtained earlier for other respondents from countries for which similar data were available [10,15,32,46,55,56,61,67,68,71–73] (see Table 11). Accordingly, these comparisons suggest that scores on Perspective-Taking and Empathetic Concern were higher than those reported in the general populations in Bulgaria, Romania, Russia, and the USA before the pandemic, but lower in Belarus, Brazil, Pakistan, and Turkey. Scores on Personal Distress were higher in Bulgaria, remained unchanged in Russia and USA, and were lower in Belarus, Brazil, Pakistan, and Turkey. Notably, these results should be interpreted with caution, given that many respondents in previous samples were medical or psychological students, compared to the general public (see Table 11).

In order to demonstrate the effect of the COVID-19 pandemic and social distancing restrictions on empathy, we compared our data with other studies conducted in 2020, particularly data from Canada, Iran, Italy, and Malaysia on empathy ratings. Based on prior research, respondents from Iran were more empathetic and less distressed than clinical students from Iran [71]. Possible explanations for these differences may be due to burnout of medical students [74,75]. Scores of empathy scales from another study in Italy [15] did not differ from our data; whereas the scores from Malaysia in our sample were lower than for medical students [56]. It is worth noting that respondents from the Malaysian sample in our study had the lowest scores for empathy compared to other countries (see Figure 3a,b); however, the reasons for this remain unclear. Data from a

Canadian population collected during the isolation period of COVID-19 show slightly lower scores compared with the present study [32]. This could be because our data were collected later and the level of empathy could have increased even more; however, given that this study does not indicate the dates of the study, we cannot test this assumption.

Table 11. The data of studies of empathy ratings before and during the first wave of the pandemic of COVID-19.

Country	Year	Sample	N *	PT	EC	PD	Present Study			References
							PT	EC	PD	
BELARUS	2011	19–22 yy. helper students	116m	21.69	21.72	19.38	16.45	15.74	10.37	[72]
			92w	23.74	24.59	22.20	17.36	18.02	14.01	
BRAZIL	2011	SD = 20.8 yy.	250	26.15	26.14	20.69	19.40	20.63	12.76	[55]
BULGARIA	2015	19–25 yy. teacher students	54	14.75	14.25	7.75	16.91	17.27	12.78	[61]
							18.63	19.54	14.86	
CANADA	2020	25.9 ± 10.5 yy.	112m	14.6	17.3	11.0	16.27	15.95	13.28	[31]
			459w	16.1	20.8	8.8	17.82	17.67	14.41	
IRAN	2020	clinical students	85	13.52	15.86	14.68	15.81	16.84	13.01	[71]
ITALY	2020	SD = 42 yy.	326m	18.23	20.39	-	18.16	19.57	12.73	[15]
			827w				19.50	21.14	14.15	
MALAYSIA	2020	medical students	117	27	28.5	22.4	12.31	10.92	11.88	[56]
							13.09	12.13	12.86	
PAKISTAN	2013	medical students	132m	15.3	19.2	13.5	14.42	15.58	12.31	[69]
			299w	16.2	20.2	15.4	16.00	17.59	13.83	
ROMANIA	2017	Students	43m	15.86	16.84	-	17.05	17.57	8.93	[67]
			173w	17.38	20.71	-	18.85	19.58	10.87	
RUSSIA	2013	17–25 yy. psystudents	101m	15.41	15.77	10.48	16.22	16.06	10.43	[53]
			217w	16.44	17.48	13.28	16.84	17.44	13.28	
TURKEY	2010	17–21 yy. tranee students	132	24.17	23.40	18.67	16.79	15.10	14.14	[73]
							17.65	17.24	15.85	
USA	1980	psystudents	579m	16.78	19.04	9.46	19.28	20.70	9.85	[10]
			582w	17.96	21.67	12.28				
	2016	students 19.58 yy.	92	17.46	19.11	12.74	20.04	22.68	10.25	[46]

According to recent research conducted by other authors during the current COVID-19 pandemic, the rates of Perspective-Taking, a key element in empathy, have increased, compared to the rates of Empathic Concerns, which have decreased compared to pre-pandemic levels [30]. Van de Groep and colleagues (2020) attributed the latter reduction to a possible increase in emotional self-focusing [30]. Unfortunately, our data do not allow us to draw any conclusions on this point. This is a notable area for future research.

While beyond the scope of the current study to examine associations between empathy and interpersonal behavior, research on empathy during the pandemic is also important because of its association with aggression. Each country's COVID-19 restrictions and lockdowns have forced many people to stay in unavoidable long-time proximity with family members, which has been associated with increased reports of domestic violence [4,76]. Prior research suggests that those with a high score of empathy may use hostile behavior as a dysfunctional coping strategy to break out of this unpleasant state and/or self-regulate emotions [77].

Sex differences. Our data revealed significant sex differences in empathy, which is generally in line with initial data measured by IRI [10]. Additionally, these are not specific for pandemic conditions, as they were reported earlier by other authors [10,34–38]. Across all three subscales, females rated higher compared to males, which supports prior research [10,34]. However, it is important to note that the effect sizes for the empathy subscales were small, which limits the generalizability of these results. Interestingly, effect sizes for IRI subscales were highly variable cross-culturally, especially evident for Empathic Concern (with high effect sizes for Croatia, Hungary, and medium effect sizes for Belarus), and Personal Distress (high effect size for Indonesia, and medium effect sizes for Belarus, Brazil, Croatia and Russia).

Age. Self-ratings on Perspective-Taking and Empathic Concern were positively associated with age, whereas scores on the Personal Distress subscale were negatively associated with age, consistent with previous research [38,40–42]. We are unable to say whether some age cohorts reacted disproportionately more empathetically under lockdown and social distancing conditions than others, given that we did not collect longitudinal data.

Relation to other people. In our study most respondents (91.34%) were living with others during the COVID-19 pandemic, limiting generalizability to those who were living alone. However, even with this limitation in mind, our data did not show any differences in Perspective-Taking and Empathic Concern ratings between those who lived with others versus those who lived alone; however, those living with others did report high scores on Personal Distress. We suggest that single respondents were less stressed by the constant presence of other people and lack of privacy, as well as constant wariness about the health of their co-habitants.

In the context of the COVID-19 pandemic, the positive and negative effects and consequences have been discussed in a vast number of studies (e.g., [5,6,43]). Certain positive consequences of pandemics, such as strengthening family and friend relationships, have been mentioned as well [5,6]. Of our respondents, 83.4% believed that COVID-19 caused a real threat for their relatives, and they were worried about them. Moreover, in another study, based on Russian data [78], we have demonstrated that married men expressed their responsibility for the safety of their families during pandemics and preferred to take the greatest risks with respect to coming out of the home in cases of emergency. Early COVID-19 restrictions, such as shelter-in-place orders, created a unique opportunity for many families to spend more time together, enhancing emotional closeness and warmth, as well as leading to an awareness of the value of family ties [79,80].

Country-level differences. Our results showed that a person's country of residence was the only reliable predictor (according to the effect size data) of self-ratings on IRI subscales, with a large effect size for Empathic Concern and medium effect sizes for the other two subscales. Although not measured in the current study, we suggest that cultural beliefs about empathy and support towards others shape individual attitudes (both emotional and rational) and prescriptions, approved or disapproved by the social network of each and other individuals. These beliefs may become important in stressful situations, such as COVID-19 lockdowns and social distancing mandates. Specifically, countries with previous epidemic experience scored significantly lower on Perspective-Taking and Empathic Concern (Malaysia, Tanzania, Jordan, Saudi Arabia, etc.). These findings may suggest that this is either due to mechanisms similar to burnout, which is often experienced by medical specialists [74,75], or that people are less stressed because the pandemic situation is not novel to them, and they already know how to functionally cope with it. Over time, growing accustomed to the pandemic, its associated restrictions, and developments related to immunity may produce less uncertainty and thus lower levels of empathy and concern for the wellbeing of others. In general, countries that have previously experienced similar epidemics have developed certain schemes for eliminating and preventing the spread of viral respiratory infections, and the authorities are taking much stricter forms of control over social distancing of the population. Thus, people are better informed about preventive measures and better cope with stress [7,81]. In our study, the same countries that were most vulnerable in terms of infectious diseases (e.g., Nigeria, Tanzania, Pakistan) who were also were experienced with such diseases reported lower levels of anxiety compared to countries less experienced with severe infections ([7] this issue). Uncertainty and poor understanding of the general situation in turn can lead to multiple detrimental consequences for well-being [82]; however, given that people are unable to reliably predict the effect of the ongoing pandemic [83], they may react to restriction less seriously [82].

It is worth noting that all countries with previous epidemic experience (were more likely to be categorized as collectivistic (with the exception of Canada). Our results showed that countries with low ratings on Individualism (i.e., Iraq, Malaysia, Tanzania, Jordan, and

Brazil) also rated lower on Perspective-Taking and Empathic Concern compared to more individualistic countries (Italy, USA, Hungary). Specifically, countries with high ratings on Power Distance (i.e., Saudi Arabia, Iraq, Russia, Belarus) rated lower on Perspective-Taking and Empathic Concern compared to lower Power Distance countries (Canada, USA, Hungary, Italy). Using the same sample, it was previously shown that more collectivistic countries scored lower on anxiety than individualistic countries ([7], this issue). Participants from countries with the highest ratings of anxiety (Canada and Italy) were also highest on individualism, whereas the least anxious countries were those with the lowest levels of individualism (Thailand, Indonesia, Malaysia, Nigeria). Higher anxiety ratings were registered for nations with low Power Distance (Canada, Italy) [7].

No associations between the Human Development Index, Infectious Disease Vulnerability Index, and Social Support Ranking Scale of World Happiness Ranking were demonstrated.

Religion. Individual's religious backgrounds were differentially associated with empathy scores. For example, agnostic individuals were different on Perspective-Taking ratings compared to Hindu, Buddhist, and Islamic individuals, along with adherents of traditional local religions. However, it is difficult to interpret these results within the framework of this article, given that previous research findings of the association between religion and empathy were mixed [84]. Studies based on self-report data usually find that religious people tend to be prosocial and helpful [85,86]. More recent studies that investigated this association within the context of intergroup relations concluded that intrinsically religious people (i.e., religious fundamentalists and even people high in quest religiosity) are not willing to act prosocially and help outgroup members; rather, they are the target of discrimination [86]. The mixed findings related to religion and empathy call for additional research on this topic.

5. Limitations and Future Directions

As with any study, our study has a number of limitations. First, with respect to measurement, the IRI has been previously mainly applied to the study of medical personnel, which limits the reliability for use with a general population. Second, a majority of participants in the present study were female, which is consistent with other sample demographics [30,87–89]. Relatedly, it is important to acknowledge that participants were asked their sex and not their gender identity, which limits the generalizability of the study's findings to individuals who may identify with anything apart from their sex assigned at birth. Additionally, this study included a majority of participants who were living with others at the time of data collection, which limits the generalizability to those who are currently living in isolation. Additionally, it is important to mention that while the overall sample included over 15,000 participants, the representation in some countries (i.e., Armenia, Iraq) was quite low, and data collection was limited to those with a stable internet connection (to complete the questionnaire), which precluded participation from those without this access. A special concern is the lack of participation of people of lower socioeconomic status in some of the countries, given the internet accessibility challenges.

While the study's measures were translated and back-translated using appropriate procedures, some of the measures reflect low alpha levels. For example, in the case of Iraq, the identical Arabic version has been used in other Arabic countries, and the Cronbach alphas obtained there were much higher. Low values of alpha may be due to small sample sizes, as for example in the case of Armenia. While the sample size in the case of Armenia was small, it was quite representative in the case of Iraq. Hence, the possible explanation may be that these discrepancies may be associated with chronic stress associated with war and civil insecurity in both countries. In the cases of Malaysia and Tanzania, the low alphas may be due to specific cultural norms, along with high variations in individuals' reactions towards the pandemic situation in their countries. In sum, more representative samples that reflect within-country variability should be collected.

Importantly, we need to be cautious with cross-cultural data, as numerous factors were not included in the present study that could have affected the results. These include but are not limited to cultural differences in social and personal distance and variations in topography and intensity of tactile behavior. At the moment, this pandemic is far from over; therefore, more data are needed on the next-coming waves of COVID-19.

6. Conclusions

The COVID-19 pandemic continues to be a great threat to the world, yet at the same time it presents a unique test for humanness, prosociality, and empathy towards others who are living in a similar situation. Data from this multi-nation study collected during the early phases of the COVID-19 pandemic contribute to the understanding of how empathy, especially that towards close others, may be a factor of resilience during these uncertain times. Social distancing and associated measures have been associated with increased reports of distress, given the “sense of community and the ties that bind us together as human beings” [22]. Presently, the international community has begun mass vaccinations against COVID-19, which have not been without its challenges, including dealing with differing personal attitudes about being vaccinated. According to Pfattheicher and colleagues [3], the motivation to get vaccinated was promoted by information about needs for group immunity, as well as by general empathy feelings. Cross-cultural differences in these respects may be of special interest to researchers and policy makers alike.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/su13137431/s1>, Table S1: Results of Tukey’s post hoc tests analyses with IRI subscales as outcome variables, and country. Table S2: Results of Tukey’s post hoc tests analyses with IRI subscales as outcome variables, and religion.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Institute of Ethnology and Anthropology of the Russian Academy of Sciences (protocol No 01, dated 9 April 2020).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data produced and processed in this study are included in the published article. The datasets can be acquired from the corresponding author for appropriate purposes.

Conflicts of Interest: The authors declare no conflict of interest.

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