Age and Gender Differences in Self-Esteem—A Cross-Cultural Window

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Research and theorizing on gender and age differences in self-esteem have played a prominent role in psychology over the past 20 years. However, virtually all empirical research has been undertaken in the United States or other Western industrialized countries, providing a narrow empirical base from which to draw conclusions and develop theory. To broaden the empirical base, the present research uses a large Internet sample (N = 985,937) to provide the first large-scale systematic cross-cultural examination of gender and age differences in self-esteem. Across 48 nations, and consistent with previous research, we found age-related increases in self-esteem from late adolescence to middle adulthood and significant gender gaps, with males consistently reporting higher self-esteem than females. Despite these broad cross-cultural similarities, the cultures differed significantly in the magnitude of gender, age, and Gender × Age effects on self-esteem. These differences were associated with cultural differences in socioeconomic, sociodemographic, gender-equality, and cultural value indicators. Discussion focuses on the theoretical implications of cross-cultural research on self-esteem.

Keywords: self-esteem, gender, culture, WEIRD samples

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Self-esteem—"an individual's subjective evaluation of his or her worth as a person" (Orth & Robins, 2014, p. 381)—is arguably one of the most widely studied constructs in the modern social sciences. More than 35,000 publications have been published on this construct. This large body of literature has been characterized by contentious theoretical debates about the origins, causes, and consequences of self-esteem (e.g., Baumeister, Campbell, Krueger, & Vohs, 2003; Gebauer et al., 2015; Leary, 2004), but the field has recently come to a more unified view of the life span development of global self-esteem in men and women.

Specifically, a large number of cross-sectional, longitudinal, and cohort-sequential studies have provided evidence that across cohorts, samples, and measures, (a) men tend to have higher self-esteem than women and (b) that both men and women show age-related increases in self-esteem from late adolescence to middle adulthood. In fact, these two effects are now considered some of the most well-established findings in the self-esteem literature (for reviews, see Huang, 2010; Kling, Hyde, Showers, & Buswell, 1999; Orth & Robins, 2014; Robins, & Trzesniewski, 2005; Trzesniewski, Donnellan, & Robins, 2013).

These robust findings would appear to provide a solid empirical foundation on which theorists and researchers can develop their understanding of the mechanisms driving gender and age differences in self-esteem. However, there is one issue that potentially undermines this broad conclusion: Virtually all previous studies on

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gender and age differences in self-esteem have examined samples from the United States or other Western, educated, industrialized, rich, and democratic (WEIRD; Henrich, Heine, & Norenzayan, 2010) countries. Less than a handful of studies have explored cultural differences in gender and age effects on self-esteem (Kling et al., 1999; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). And even these studies have typically compared U.S. samples with a very small number of non-U.S. samples or with samples that merge the participants from other cultures into a single group. A systematic examination of gender and age differences in self-esteem across a large and diverse set of cultures has yet to be undertaken. Such an analysis is needed to test whether the widely reported gender and age differences in self-esteem are cross-cultural universals or culture-specific phenomena (Henrich et al., 2010). Moreover, a cross-cultural examination can provide important information about the universal and culture-specific mechanisms that might drive the gender and age differences in self-esteem (Bleidorn et al., 2013; Costa et al., 2001; Schmitt, Realo, Voracek, & Allik, 2008).

The present article aims to fill this void by providing the first systematic cross-cultural examination of gender, age, and Age × Gender differences in self-esteem. Using data from a large Internet sample of men and women from 48 nations, we addressed three questions. First, does the typical Western pattern of gender and age differences in self-esteem generalize across a diverse set of cultures with different societal norms, political systems, and historical backgrounds? Second, do cultures differ in the magnitude of gender, age, and Age × Gender effects on self-esteem? Third, are there culture-specific variables that predict cross-cultural differences in gender, age, and Age × Gender effects on self-esteem?

Gender and Age Differences in Self-Esteem

During the past 2 decades, a large number of studies have examined gender and age differences in self-esteem (Feingold, 1994; Kling et al., 1999; Orth, Robins, & Widaman, 2012; Orth, Trzesniewski, & Robins, 2010; Robins et al., 2002; Shaw, Liang, & Krause, 2010; Trzesniewski, Donnellan, & Robins, 2003; Twenge & Campbell, 2001). A robust finding to emerge from this literature is a significant gender gap such that males tend to report higher levels of self-esteem than females do. This gender gap emerges in adolescence and persists throughout early and middle adulthood before it narrows and perhaps even disappears in old age (Kling et al., 1999; Robins et al., 2002; Zeigler-Hill & Myers, 2012). The reported effect sizes typically range within the limits of small to medium effects. In a meta-analysis of 216 effect sizes, Kling et al. (1999) found an overall effect size of $d = 0.21$ across age groups, with the largest effect emerging in late adolescence ($d = 0.33$).

This absolute gender gap notwithstanding, both males and females seem to follow essentially the same life span trajectories: For both genders, self-esteem is relatively high in childhood, drops during adolescence, rises gradually throughout adulthood before it tends to decline in old age (Orth & Robins, 2014; Robins & Trzesniewski, 2005; Wagner, Gerstorf, Hoppmann, & Luszcz, 2013). Only a few studies have covered the entire life span, but numerous studies have charted the development of self-esteem during specific life stages, particularly during the periods of late adolescence and early adulthood (Chung et al., 2014; Erol & Orth, 2011; Hutteman, Nestler, Wagner, Egloff, & Back, 2015; Lehnart, Neyer, & Eccles, 2010; Wagner, Lüdtke, Jonkmann, & Trautwein, 2013). These studies have provided further evidence for a gradual increase in self-esteem during the transition from adolescence to adulthood in both males and females. Like the gender difference, the effect size for the age-graded increase in self-esteem during early adulthood also falls within the range of small to medium effects (for reviews, see Huang, 2010; Orth & Robins, 2014).

The persistent gender gap and the pronounced age differences have led to a great deal of speculation about the underlying reasons for these patterns. Why is it that men have higher self-esteem than women do? What are the forces that drive the age-graded increases in self-esteem? Several explanations have been offered, but there is still no generally accepted integrative theoretical account to explain these differences (Orth & Robins, 2014; Zeigler-Hill & Myers, 2012). Cross-cultural studies open a window to the potential mechanisms and conditions that might underlie these effects and can thus help build overarching theories of gender and age differences in self-esteem.

A Cross-Cultural Window

A person's cultural background represents a powerful and pervasive set of environmental influences that may shape the expression, sources, and perhaps also the development of self-esteem (Bleidorn et al., 2013; Bleidorn, Klimstra, et al. 2014; Costa et al., 2001; McCrae et al., 1999). Knowledge about cultural differences versus similarities can therefore help identify the underlying conditions and mechanisms responsible for the normative gender and age differences in self-esteem. Specifically, a cross-cultural perspective would extend the existing literature on gender and age differences in self-esteem in at least two important ways.

First, at a descriptive level a cross-cultural perspective is needed to examine the generalizability of the observed gender and age differences in self-esteem. Virtually all the studies reviewed above have examined self-esteem in samples from the United States or other Western industrialized countries. Accordingly, it is not known whether the widely reported gender gap in self-esteem is a cross-cultural universal or a culture-specific phenomenon. Nor is it known whether men and women show similar increases in self-esteem across cultures, or whether there are cultural differences in the gender-specific self-esteem trajectories.

Second, cross-cultural studies can provide crucial evidence about the relative importance of biological versus sociocultural factors in gender and age differences in self-esteem. Strong biological perspectives emphasize the universal nature of age and gender differences that arise from sources that are inherent in the human species such as biologically based evolved psychological dispositions (Wood & Eagly, 2002). In contrast, sociocultural perspectives posit that gender and age differences in self-esteem are largely governed by social influences, which can vary across contexts and cultures (for reviews, see Kling et al., 1999; Orth & Robins, 2014).

When adjudicating between biological and sociocultural perspectives, cross-cultural invariance is less informative than cross-cultural differences. This imbalance is because invariance could be driven either by universal biological factors or by universal sociocultural influences that transcend cultures and contexts. For example, pancultural gender differences in self-esteem might reflect

universal biological influences or universal gender roles (cf. Costa et al., 2001). Likewise, similar age trends across cultures might be due to either universal biological influences or universal life tasks, which most people in most cultures master at approximately the same ages (Bleidorn et al., 2013).

Cross-cultural studies would be more revealing if they showed cultural differences in gender and age differences in self-esteem because strong biological explanations would essentially be ruled out by such findings. In contrast, sociocultural perspectives would not only be supported but could be also meaningfully informed by cross-cultural differences (Costa et al., 2001). Specifically, cross-cultural variation in gender, age, and Age × Gender differences in self-esteem could be related to potentially relevant culture-specific moderator variables that might explain this variation. But which cultural moderators should be included? To address this question, we adopted an exploratory approach and examined a broad set of culture-specific moderator variables that have been examined in previous cross-cultural studies on personality differences, including socioeconomic indicators, gender-equality indicators, sociodemographic indicators, and cultural value indicators (e.g., Costa et al., 2001; Schmitt et al., 2008).

For example, socioeconomic indicators (e.g., gross domestic product [GDP]) and gender-equality indicators (e.g., gender gaps in economic participation) have been linked to gender differences in personality, such that men and women displayed larger differences in the Big Five personality traits in individualistic, wealthy, and gender egalitarian cultures compared with people in more traditional and developing cultures (Costa et al., 2001; Schmitt et al., 2008). One potential explanation for this seemingly counterintuitive pattern was that different innate dispositional differences between men and women may have more space to develop in more egalitarian, prosperous societies (Schmitt et al., 2008). With regard to age differences, recent research on personality-trait development indicated that sociodemographic indicators (e.g., the mean age at first marriage) moderate cultural differences in age effects on the Big Five (Bleidorn et al., 2013). Those results suggest that cultural differences in personality-trait development are related to cultural differences in the timing of social-role responsibilities that mark the transition to adulthood. Finally, several cross-cultural studies have found that cultural values (e.g., individualism-collectivism or power distance) moderate gender differences in personality traits, values, and emotions (Guimond et al., 2007; Schmitt et al., 2008) and age differences in romantic attachment orientations (Chopik & Edelstein, 2014).

Given that past research has shown that socioeconomic, gender-equality, sociodemographic, and cultural value indicators moderate cross-cultural variation in gender and age differences in broad personality characteristics, it is conceivable that they might play a role in gender and age differences in self-esteem too. Indeed, the degree to which these cultural markers also play a role in men's and women's self-esteem development remains an empirical question, which the present research sought to investigate.

Summary

The present research adopted a cross-cultural perspective to examine the shape and cultural moderators of gender, age, and Age × Gender interaction effects on self-esteem across 48 nations. Our aims were threefold: First, we examined the degree to which the age and gender differences that have been chiefly derived from Western samples generalize across cultures. Second, we provided a first test of the degree to which cultures differed in the magnitude of the effects of gender, age, and the interaction between age and gender on self-esteem. Finally, we tested for the first time whether the cross-cultural differences in these effects were related to culture-specific variables. With regard to the last aim, we adopted an exploratory approach and examined a broad set of culture-specific moderator variables, including socioeconomic indicators, sociodemographic indicators, gender-equality indicators, and cultural value indicators.

Method

Participants

To examine cross-cultural differences in gender, age, and Age × Gender effects on self-esteem, we made use of a large sample of 985,937 men and women who provided personality and demographic information over the World Wide Web. The data were collected from July 1999 to December 2009, as part of the Gosling–Potter Internet Personality Project (Gosling, Vazire, Srivastava, & John, 2004; see online supplemental materials for a complete list of previously published articles that have used this data set). Potential respondents could find out about this noncommercial, advertisement-free website through several channels, including search engines or unsolicited links on other websites. After submitting their responses, participants were presented with a customized personality evaluation.

To capture the period of late adolescence throughout early adulthood, we focused on an age range of 16–45 years. Previous studies indicated that at least 100 participants per age group and gender are necessary to estimate reliable age-, gender-, and Age × Gender effects within and across cultures (Bleidorn et al., 2013; Gebauer et al., 2014). To ensure sufficiently large samples in a large number of countries, we pooled participants within each country into five age groups (16–20; 21–25; 26–30; 31–35; 36–45) and selected cases only from those nations with at least 100 male and 100 female cases per age group (please note, however, that the analyses used age as a continuous variable). To increase the diversity of cultures in our analyses, we relaxed the criterion slightly for Bolivia, the Dominican Republic, Egypt, Guatemala, Korea, Indonesia, Portugal, Romania, Thailand, and Turkey, which came very close to meeting the inclusion threshold (see Table 1). Finally, because of a tremendous overrepresentation of participants from the United States, we selected a random subsample of cases from the United States (10%). As a result of the selection criteria, the initial pool of 3,264,424 participants who provided self-esteem data was reduced to 985,937 participants (mean age = 25 years; $SD = 7.2$; 60% females) from 48 different nations. The list of nations including nation-specific sample characteristics is shown in Table 1.

Measures

Self-esteem. Self-esteem was measured through self-report using the Single-Item Self-Esteem scale (SISE; Robins, Hendin, & Trzesniewski, 2001). Participants rated the item "I see myself as someone who has high self-esteem" on a 5-point Likert scale

Table 1
Sample Characteristics

Nation	*N*	♀(%)	SISE (*M*)	Cultural moderators											
				GDP	HDI	GINI	MAR_f	MAR_m	AFR	GGI	SUF	POW	IND	MAS	UNC
Argentina	53,353	72	47.05	14,838	.77	48.26	24.60	26.60	58	.68	59	49	46	56	86
Australia	58,315	55	48.40	32,127	.92	34.01	29.70	31.60	16	.72	104	36	90	61	51
Austria	6,709	59	49.43	34,803	.87	30.04	26.60	29.50	12	.70	88	11	55	79	70
Belgium	10,497	56	47.06	32,500	.88	28.00	28.40	30.90	11	.71	87	65	75	54	94
Bolivia	2,945	64	49.24	2,791	.65	56.90	23.30	25.80	79	.63	68	n/a	n/a	n/a	n/a
Brazil	4,317	38	49.33	8,917	.70	55.93	23.10	26.20	78	.65	72	69	38	49	76
Canada	110,735	58	48.94	35,779	.90	33.90	26.60	28.80	14	.72	89	39	80	52	48
Chile	23,953	71	48.99	12,737	.78	51.79	24.60	27.70	59	.65	75	63	23	28	86
China	6,332	62	51.43	8,004	.64	42.48	23.30	25.10	8	.66	57	80	20	66	30
Colombia	15,710	70	51.16	7,646	.68	58.66	23.10	26.50	79	.71	52	67	13	64	80
Costa Rica	2,798	67	50.48	10,747	.73	49.31	22.20	26.00	68	.69	57	35	15	21	86
Denmark	5,917	42	49.77	36,074	.89	25.98	30.80	32.80	6	.75	91	18	74	16	23
Dominican Rep.	3,165	75	50.96	8,018	.67	51.90	21.90	26.10	109	.66	64	65	30	65	45
Ecuador	2,925	67	50.56	4,466	.70	53.20	21.50	24.60	84	.64	77	78	8	63	67
Egypt	2,384	68	50.45	4,535	.62	32.14	22.00	26.90	49	.58	50	70	25	45	80
Finland	9,801	55	48.79	32,822	.88	28.20	30.30	32.40	10	.80	100	33	63	26	59
France	5,205	52	47.67	30,150	.87	31.69	31.00	33.00	10	.65	62	68	71	43	86
Germany	57,768	57	48.95	31,571	.90	31.80	31.00	33.70	10	.75	88	35	67	66	65
Great Britain	130,383	49	47.22	30,470	.85	38.07	31.80	33.20	26	.74	88	35	89	66	35
Greece	3,375	61	48.61	23,519	.86	33.96	26.90	31.30	11	.65	57	60	35	57	100
Guatemala	2,639	67	50.48	4,266	.56	54.89	21.60	23.60	108	.61	60	95	6	37	99
Hong Kong	4,595	68	50.04	35,396	.86	53.30	30.30	32.80	3	n/a	57	68	25	57	29
India	21,093	48	53.16	3,550	.51	33.40	20.20	24.80	55	.60	56	77	48	56	40
Indonesia	2,794	58	51.08	4,753	.58	34.01	22.50	25.90	51	.65	61	78	14	46	48
Ireland	12,017	57	47.49	42,859	.90	31.73	31.40	32.40	17	.73	88	28	70	68	35
Israel	2,451	56	48.82	24,357	.88	41.86	25.80	28.70	14	.69	58	13	54	47	81
Italy	4,110	55	49.12	29,406	.87	37.27	28.90	32.00	7	.65	61	50	76	70	75
Japan	3,854	54	49.36	31,866	.89	32.10	29.40	31.10	5	.65	61	54	46	95	92
South Korea	2,227	42	50.94	21,877	.87	35.80	28.80	32.00	2	.62	58	60	18	39	85
Malaysia	9,444	65	50.23	11,915	.74	46.20	25.10	28.60	13	.65	49	100	26	50	36
Mexico	65,378	65	49.91	10,604	.75	48.30	22.70	25.00	70	.65	59	81	30	69	82
Netherlands	52,716	61	48.03	32,062	.90	30.31	30.50	33.00	6	.73	87	38	80	14	53
New Zealand	13,835	60	48.58	25,655	.90	43.83	25.60	27.00	29	.75	113	22	79	58	49
Norway	11,898	56	48.50	44,342	.94	26.50	31.80	33.90	9	.80	99	31	69	8	50
Peru	10,098	67	50.03	6,289	.68	49.07	23.50	26.60	56	.66	51	64	16	42	87
Philippines	18,236	74	50.02	5,160	.62	44.04	24.40	27.00	54	.75	71	94	32	64	44
Portugal	2,090	48	47.02	19,949	.79	38.50	25.60	28.30	17	.69	75	63	27	31	99
Romania	3,031	64	49.54	9,446	.76	30.60	25.20	28.60	31	.68	77	90	30	42	90
Singapore	11,776	63	49.01	29,743	.84	47.80	26.50	30.00	6	.66	61	74	20	48	8
South Africa	6,123	59	49.20	12,760	.60	63.10	28.00	30.60	61	.71	76	49	65	63	49
Spain	82,771	69	47.18	27,542	.86	32.00	29.30	31.60	12	.73	75	57	51	42	86
Sweden	13,693	51	49.48	31,264	.90	26.08	32.40	34.50	6	.81	144	31	71	5	29
Switzerland	7,907	57	49.69	33,794	.89	28.70	29.50	32.40	5	.70	35	34	68	70	58
Thailand	2,018	62	50.37	8,877	.66	42.35	24.10	27.40	41	.68	74	64	20	34	64
Turkey	1,706	53	51.51	8,385	.68	43.60	23.10	26.10	40	.59	76	66	37	45	85
UAE	3,325	57	51.58	27,610	.82	n/a	25.30	26.80	29	.59	0	90	25	50	80
USA	87,714	63	49.67	43,236	.90	41.64	26.90	28.80	40	.70	86	40	91	62	46
Venezuela	9,811	73	51.74	6,467	.71	44.80	22.70	26.00	90	.67	60	81	12	73	76

Note. ♀ = % of female respondents; GDP = Gross domestic product per capita; HDI = Human Development Index; GINI = Gini index; AFR = Adolescent fertility rate; GGI = Global Gender Gap Index; SUF = Women's suffrage (years); MAR_f = Mean age at marriage females; MAR_m = Mean age at marriage males; POW = power distance; IND = individualism vs. collectivism; MAS = masculinity vs. femininity; UNC = uncertainty avoidance; UAE = United Arab Emirates; USA = United States of America.

ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Robins et al. (2001) reported extensive evidence for the reliability and validity of the SISE. Using longitudinal data, they reported the reliability of the SISE to be .75 and found substantial correlations between the SISE and the Rosenberg (1965) Self-Esteem scale ranging from .74 to .80 across three studies (disattenuated correlations were near unity, range = .91–.99). The Rosenberg Self-Esteem Scale is widely considered to be the gold standard for self-esteem assessment (Blascovich & Tomaka, 1991), so the SISE constitutes a valid measure of self-esteem.

SISE raw scores were transformed to the *T*-score metric (standard scores with $M = 50$, $SD = 10$). To ensure unbiased estimates, we weighted the age, gender, and nation samples equally when converting to *T*-scores. That is, we computed the SISE grand mean by first computing its mean in each of the 480 age-, gender-, and nation-specific samples (5 age groups × 2 genders × 48 nations) and then

averaging these 480 group means. Similarly, we computed the overall standard deviation as the square root of the pooled within-group variance term from a three-way analysis of variance.

T-scores can be used to index effect sizes. In terms of Cohen's (1988) now conventional guidelines for interpreting effect sizes, a difference of 2 *T*-score points represents a small effect, a difference of 5 points represents a medium effect, and a difference of 8 points represents a large effect.

Cultural moderators. We drew on publicly available culture-level data to derive socioeconomic, sociodemographic, gender-equality, and cultural value indicators. For indicators that are published annually, we used the data published for the year 2006 (or closest to 2006 if the data were not available for that year). Table 1 shows the scores for all cultural indicators for each of the 48 nations.

Socioeconomic indicators. The following are the socioeconomic indicators we used in this study.

Gross domestic product per capita. To measure economic wealth, we used the log-transformed gross domestic product (GDP) per capita for the year 2006 converted to current international dollars using purchasing power parity rates as reported by the International Monetary Fund (http://www.imf.org/external/pubs/ft/weo/2006/02/data/index.aspx). In the present sample, GDP per capita ranged between 2,791 (Bolivia) and 44,342 (Norway); M = 20,749, SD = 12,880.

Human Development index. The Human Development index (HDI; United Nations Development Programme) is a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living (measured by GDP per capita). National HDI levels vary between 0 and 1 with higher values indicating higher human development. The national HDI levels for 2006 were retrieved from the corresponding United Nations' database (http://hdr.undp.org/en/content/human-development-index-hdi-table). In the present sample, HDI scores ranged between .51 (India) and .94 (Norway); M = 0.78, SD = 0.12.

Gini index. The Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, and an index of 100 implies perfect inequality. The 2006 Gini indexes were retrieved from the World Bank, Development Research Group (http://data.worldbank.org/indicator/SI.POV.GINI/countries?display=default). In the present sample, Gini scores ranged between 25.98 (Denmark) and 63.10 (South Africa); M = 40.38, SD = 10.04.

Sociodemographic indicators. The following are the sociodemographic indicators used in this study.

Mean age at marriage (for males [MAM_m] and females [MAM_f]). The mean age at marriage describes the average length of unmarried life expressed in years among those who marry before age 50. We retrieved the 2005 national values for both men and women from the World Marriage Data, 2012, published by the United Nations, Department of Economic and Social Affairs, Population Division (http://www.un.org/esa/population/publications/WMD2012/MainFrame.html). In the present sample, MAM_m ranged between 23.60 (Guatemala) and 34.50 (Sweden); M = 29.05, SD = 3.05; MAM_f ranged between 20.20 (India) and 32.40 (Sweden); M = 26.33, SD = 3.42.

Adolescent fertility rate. Adolescent fertility rate (AFR) is the number of births per 1,000 women ages 15–19. The 2006 AFR for the 48 nations included in our study were retrieved from the World Bank, Development Research Group (*http://data.worldbank.org/indicator/SP.ADO.TFRT*). In the present sample, AFR ranged between 2.11 (South Korea) and 108.88 (Dominican Republic); M = 34.95, SD = 30.59.

Gender-equality indicators. The following are the gender-equality indicators used in this study.

Gender gap index. The gender gap index (GGI) is designed to measure the size of gender gaps in access to resources and opportunities; it is comprised of four subindices, which measure gender gaps in (a) economic participation and opportunity, (b) educational attainment, (c) political empowerment, and (d) health and survival. The scores range from 0 (*inequality*) to 1 (*equality*). We retrieved the 2006 GGI scores from the website of the Word Economic Forum (http://www3.weforum.org/docs/WEF_GenderGap_Report_2006.pdf). In the present sample, GGI scores ranged between .58 (Egypt) and .81 (Sweden); M = 0.68, SD = 0.05.

Women's suffrage. Women's suffrage (SUF) describes the number of years that women have had the right to vote (2006 – year women received right to vote). The year women received right to vote was retrieved from the Global Gender Gap report 2006 published by the World Economic Forum (http://www3.weforum.org/docs/WEF_GenderGap_Report_2006.pdf). In the present sample, SUF ranged between 0 (United Arab Emirates) and 108.88 (Dominican Republic); M = 34.95, SD = 30.59.

Hofstede's Cultural Value indicators. We used the four primary cultural value dimensions identified by Hofstede (1980, 2001). Cultural value scores range between 0 and 100 (retrieved from http://geert-hofstede.com/cultural-tools.html).

Power distance. This dimension expresses the degree to which less powerful members of a society accept and expect that power is distributed unequally. In the present sample, power distance (POW) scores ranged between 11 (Austria) and 100 (Malaysia); M = 56.77, SD = 22.98.

Individualism versus collectivism (IND). Individualism describes a preference for a loosely knit social framework in which individuals are expected to take care of only themselves and their immediate families. Its opposite, collectivism, describes a preference for a tightly knit framework in society in which individuals are integrated into strong, cohesive in-groups. In the present sample, IND scores ranged between 6 (Guatemala) and 91 (United States); M = 45.17, SD = 25.81.

Masculinity versus femininity (MAS). Masculinity describes a preference in society for achievement, heroism, assertiveness, and material rewards for success. Its opposite, femininity, refers to a preference for cooperation, modesty, caring for the weak, and quality of life. In the present sample, MAS scores ranged between 5 (Sweden) and 95 (Japan); M = 50.26, SD = 18.93.

Uncertainty avoidance (UNC). This dimension describes the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. People from countries high in UNC are supposed to be more emotional; they try to minimize the occurrence of unknown and are less open to change. In the present sample, UNC scores ranged between 8 (Singapore) and 100 (Greece); M = 64.30, SD = 23.70.

Analyses

We used multilevel modeling techniques (using Mplus version 7; Muthén & Muthén, 2012) to account for the nested structure of the data. Level 1 represented variation among individuals within nations, and Level 2 represented the variation among the 48 nations.

Random coefficient regression models. In a first step, we ran a random coefficient regression (RCR) model (Hox, 2002) to examine the average gender, age, and Age × Gender interaction associations with self-esteem across all nations. Age was entered as a continuous variable (centered at age 16 and divided by 10, i.e., one unit refers to 1 decade); gender was coded 0 = male and 1 = female. In this model, the intercept and slope coefficients were allowed to vary on Level 2 to capture the cross-cultural variation in self-esteem levels as well as in gender, age, and Age × Gender interaction effects. By estimating the variance in these coefficients, we were able to quantify the degree to which the gender, age, and Age × Gender differences in self-esteem vary across the 48 nations studied. The model was specified as

$$Y_{ij} = \gamma_{00} + \gamma_{10}(\text{gender}_{ij}) + \gamma_{20}(\text{age}_{ij}) + \gamma_{30}(\text{Age} \times \text{Gender}_{ij}) + \mu_{0j} + \mu_{1j}(\text{gender}_{ij}) + \mu_{2j}(\text{age}_{ij}) + \mu_{3j}(\text{Age} \times \text{Gender}_{ij}) + r_{ij} \quad (1.1)$$

where Y_{ij} represents T-standardized self-esteem score for individual i in nation j, γ_{00} is the average T-standardized SISE score across the population of j nations (i.e., the grand mean), γ_{10}, γ_{20}, and γ_{30} are the average regression slopes for gender, age, and Age × Gender effects across nations, μ_{0j} is the deviation from the intercept associated with nation j, and μ_{1j}, μ_{2j}, and μ_{3j} are the deviations from the regression slopes for age, gender, and Age × Gender associated with nation j. These residual terms μ_j are assumed to have a mean of zero and a specific variance (σ_j).

Intercept- and Slope-as-Outcome Models. In a second step, we extended the RCR model to intercept- and slope-as-outcome models (Hox, 2002). That is, we included each cultural indicator (grand-mean centered) as explanatory variable at Level 2 to test whether it explained cultural differences in the gender, age, and Age × Gender effects on self-esteem:

$$\begin{aligned} Y_{ij} = {} & \gamma_{00} + \gamma_{01}(\text{MODERATOR}_j) + \gamma_{10}(\text{gender}_{ij}) + \gamma_{20}(\text{age}_{ij}) \\ & + \gamma_{30}(\text{Age} \times \text{Gender}_{ij}) + \gamma_{11}(\text{MODERATOR}_j)(\text{gender}_{ij}) \\ & + \gamma_{21}(\text{MODERATOR}_j)(\text{age}_{ij}) \\ & + \gamma_{31}(\text{MODERATOR}_j)(\text{Age} \times \text{Gender}_{ij}) + \mu_{0j} \\ & + \mu_{1j}(\text{gender}_{ij}) + \mu_{2j}(\text{age}_{ij}) \\ & + \mu_{3j}(\text{Age} \times \text{Gender}_{ij}) + r_{ij} \end{aligned} \quad (1.2)$$

which illustrates that an individual's SISE score is considered as a function of the overall intercept (γ_{00}), the main effects of the cultural MODERATOR (γ_{01}), the main effects of gender (γ_{10}) and age (γ_{20}), the interaction of Age × Gender (γ_{30}), and the cross-level interactions of the cultural MODERATOR with gender (γ_{11}), age (γ_{21}), and Age × Gender (γ_{31}), plus a random variance component $\mu_{0j} + \mu_{1j}(\text{gender}_{ij}) + \mu_{2j}(\text{age}_{ij}) + \mu_{3j}(\text{Age} \times \text{Gender}_{ij}) + r_{ij}$.

Multilevel effect-size measure. An important effect-size measure in ordinary multiple regression analysis is the R^2 statistic, which represents the proportion of outcome variance explained by the explanatory variables. In multilevel regression analyses, an analogue index can be computed by comparing the variance components from a baseline model (without explanatory variables) with the residual variances in the full model including the significant predictor variables (Aguinis, Gottfredson, & Culpepper, 2013). More than one R^2 index can be computed in multilevel regression models. First, there is unexplained variance at different levels of the model, and second, variance in both the levels and the slopes can be explained at the next higher level of the model (Hox, 2002).

In the models reported here, the Level-2 variance components of the gender slopes, the age slopes, and the Age × Gender slopes were of particular interest. Specifically, we looked at the proportional reduction of culture-level variance in the slopes indicating associations with gender, age, and Age × Gender after including each cultural indicator as explanatory variable at Level 2 (i.e., the cross-level interactions), as illustrated in the following example:

$$R^2_{(\mu 1)} = \left[\frac{\sigma^2(\mu 1|\text{base}) - \sigma^2(\mu 1|\text{full})}{\sigma^2(\mu 1|\text{base})} \right] \quad (1.3)$$

where $\sigma^2_{(\mu 1|\text{base})}$ is the culture-level residual variance in the gender effects from the baseline model (i.e., the model that only includes a random intercept and slope) and $\sigma^2_{(\mu 1|\text{full})}$ is the culture-level residual variance from the full model (i.e., the model that additionally includes a culture-level variable on Level 2 to predict variance in the intercept and slope parameters).

Results

RCR Model: Gender and Age Effects Across Cultures

Table 2 shows the results of the RCR model. Effects are shown as unstandardized B coefficients, which are partial regression

Table 2
Random Coefficient Regression Model: Gender, Age, and Age × Gender Effects on Self-Esteem (SISE) Within and Between 48 Nations

Parameter	SISE	
	B	95% CI
Fixed parameters		
γ_{00} (intercept)	49.96	[49.62, 50.24]
Level 1		
γ_{10} (gender_{ij})	−1.85***	[−2.08, −1.63]
γ_{20} (age_{ij})	0.80***	[0.64, 0.96]
γ_{30} (Age × Gender_{ij})	−0.03	[−0.14, 0.09]
Random parameters		
Level 1		
r_{ij} (intercept)	71.93***	[69.54, 74.32]
Level 2		
σ^2_{0j} (intercept)	1.32***	[0.88, 1.77]
σ^2_{1j} (gender)	0.47***	[0.30, 0.65]
σ^2_{2j} (age)	0.23***	[0.13, 0.32]
σ^2_{3j} (Age × Gender)	0.07***	[0.03, 0.11]

Note. Level 1: $N_{individuals}$ = 985,937; Level 2 = $N_{nations}$ = 48; γ_{00} intercept; γ_{10}, γ_{20}, and γ_{30} = average regression effects for gender, age, and Age × Gender effects across nations; r_{ij}, σ^2_{0j}, σ^2_{1j}, σ^2_{2j}, σ^2_{3j} = Level-1 and Level-2 variance components for mean SISE level, gender, age effects, and Age × Gender effects (see equation 1.1). CI = confidence interval.
*** $p < .001$.

coefficients that quantify the magnitude and direction of association in changes in the dependent variable with changes in the independent variable. Age was centered at age 16, and gender was coded 0 for males and 1 for females so the estimated intercept can be interpreted as referring to the expected self-esteem score for 16-year-old males. The expected self-esteem score for females can be derived by adding the gender effect.

In line with prior research, we found a small but significant gender difference suggesting that across all nations, males scored on average 1.85 *T*-score points higher on self-esteem than did females (average Cohen's $d = 0.25$).[1] Also in line with previous findings, we found a positive age effect and no significant Age × Gender interaction. That is, across all nations both males' and females' self-esteem levels were about 2.3 *T*-score points higher when comparing 45-year-old adults to 16-year-old teenagers. Figure 1 shows the estimated average age trajectories for males and females across the 48 nations.[2]

The bottom part of Table 2 shows the random parameters of the model. All random parameters were significant suggesting that the magnitude of the gender, age, and Age × Gender effects varied significantly among nations. To illustrate this pattern, Figure 2 shows the estimated age trajectories for males and females for each of the 48 nations grouped according to 11 macrogeographical regions (cf. http://unstats.un.org/unsd/methods/m49/m49.htm): North America (United States, Canada), Western Asia (Israel, Turkey, United Arab Emirates), Oceania (Australia, New Zealand), Central America (Costa Rica, Dominican Republic, Guatemala, Mexico), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Venezuela), Northern Europe (Denmark, Finland, Ireland, Norway, Sweden, United Kingdom), Western Europe (Austria, Belgium, France, Germany, Netherlands, Switzerland), Southern and Eastern Europe (Greece, Italy, Portugal, Romania, Spain), Africa (Egypt, South Africa), South and South East Asia (India, Indonesia, Malaysia, Philippines, Singapore, Thailand), and East Asia (China, Hong Kong, Japan, Korea).[3] Despite the overall similarity in the direction of gender and age effects, there were noteworthy cross-cultural differences in the magnitude of these effects, which seemed to be roughly clustered into macrogeographical regions. For example, compared to the North American subsamples, the absolute gender gap was smaller for many East Asian subsamples but larger in many South and Central American samples.

Moreover, although many nations were marked by relatively similar age trajectories for men and women, some nations showed gender-specific age effects on self-esteem. For example, in many South American nations, age effects on self-esteem were stronger in males than in females. In these nations, the absolute gender gap in self-esteem increased with age and was larger in middle adulthood than in adolescence and early adulthood. An interactive map showing the standardized mean differences in self-esteem between men and women (Cohen's *d*) for different age groups in each of the 48 nations can be found at https://selfesteem.shinyapps.io/maps/.

In summary, although the overall direction of gender, age, and Age × Gender differences in self-esteem were in line with previous findings based on data from Western samples, there were significant cross-cultural differences in the magnitude of these effects. This finding justified further analyses to examine whether these cultural differences could be related to cultural moderator variables.

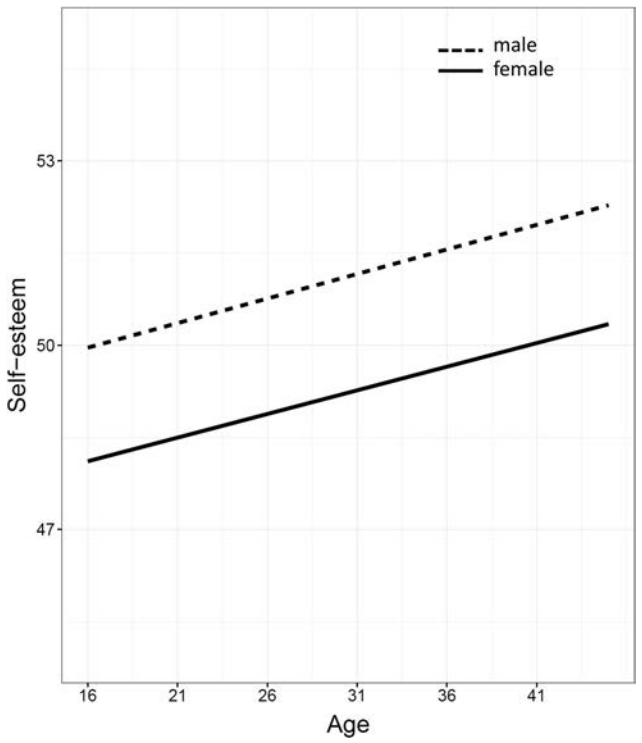

Figure 1. Average gender, age, and Gender × Age effects on self-esteem across 48 nations.

Intercept- and Slope-as-Outcome Models: Culture-Level Correlates

We extended the RCR model by including the *z*-standardized cultural indicators as explanatory variables at Level 2. We focused on the cross-level interactions between the cultural indicators and the gender, age, and Age × Gender effects on self-esteem because we were interested in explaining the observed cross-cultural variation in the gender, age, and Age × Gender effects on self-esteem; that is, we were not interested in explaining cross-cultural mean-level differences in self-esteem. Each cultural indicator was entered separately as an explanatory variable in the intercept- and slope-as-outcome models. The standardized coefficients as well as the multilevel R^2 estimates are presented in Tables 3–6. These parameters can inform the question as to what degree socioeconomic, sociodemographic, gender-equality, and cultural value indicators correlate with the nation-level gender, age, and Age × Gender associations with self-esteem.

[1] Average Cohen's *d* for the mean-level gender difference in the total sample ($N = 985{,}937$).

[2] We also tested for nonlinear age trends by including a quadratic age term in the multilevel regression model. This parameter was not significant, and the other effects did not change when including this term.

[3] The assignment of the 48 nations to these regions is only for illustrative purposes. It does not imply any assumption regarding the political, religious, or other affiliations of these nations (http://unstats.un.org/unsd/methods/m49/m49.htm).

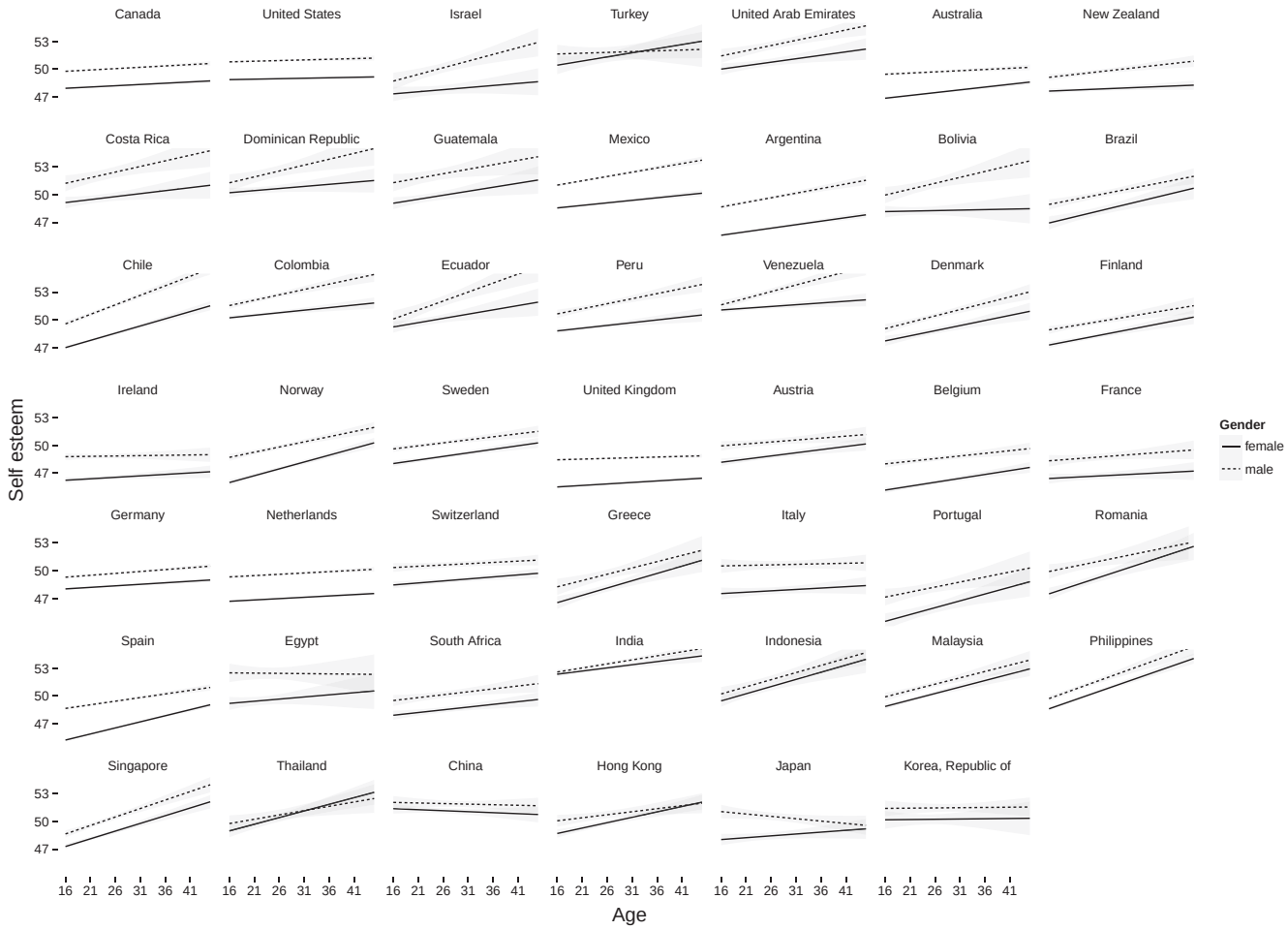

Figure 2. Gender, age, and Gender × Age differences in self-esteem in 48 nations. Nations were grouped into 11 macrogeographical regions: North America (United States, Canada), Western Asia (Israel, Turkey, United Arab Emirates), Oceania (Australia, New Zealand), Central America (Costa Rica, Dominican Republic, Guatemala, Mexico), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Venezuela), Northern Europe (Denmark, Finland, Ireland, Norway, Sweden, United Kingdom), Western Europe (Austria, Belgium, Germany, Switzerland, France, the Netherlands), Southern and Eastern Europe (Italy, Spain, Portugal, Greece, Romania), Africa (Egypt, South Africa), South and South-East Asia (Indonesia, Thailand, Malaysia, Philippines, Singapore, India), East Asia (China, Japan, South Korea, Hong Kong). Note that because of the large sample sizes for some of the countries included in our sample, the confidence intervals are so narrow that they approximate the slopes and are therefore difficult to see in the graphs.

Socioeconomic indicators. Nations with higher GDP per capita and higher HDI scores were marked by significantly larger gender differences. As outlined above, we computed multilevel R^2s by estimating the proportional reduction of cross-cultural variance in gender effects in comparison to the RCR models as a baseline (Hox, 2002). Accordingly, GDP and HDI scores explained 11% and 16% of the cross-cultural variance in gender effects on self-esteem, respectively.

All three socioeconomic indicators were related to culture-level age and Age × Gender effects on self-esteem. In particular, the results suggested that nations with lower GDP per capita, lower HDI, and higher Gini scores were marked by more pronounced age effects on self-esteem in men but not in women. Including these indicators as explanatory variables accounted for between 9% and 17% of the cross-cultural variance in age effects and between 24% and 46% of the cross-cultural variance in Age × Gender effects.

The cross-level three-way interaction between gender, age, and GDP per capita is shown in Figure 3. The figure illustrates that in nations with lower GDP per capita, the gender gap in self-esteem increases with age. This is because in these nations, the age effect on self-esteem tended to be more pronounced for men than for women (an interactive plot showing the actual and predicted gender-specific age trajectories for each of the 12 cultural indicator variables can be found at https://selfesteem.shinyapps.io/self_esteem).

Sociodemographic indicators. Table 4 shows the cross-level interactions between the sociodemographic indicators and gender, age, and Age × Gender effects on self-esteem. Nations with a

Table 3
Intercept- and Slope-As-Outcome Models I: Cross-Level Interactions Between Socioeconomic Cultural Indicators and Gender, Age, and Age × Gender Effects on Self-Esteem

	Socioeconomic indicators								
	GDP per capita			Human Development Index			GINI index		
Variable	*B*	95% CI	R^2	*B*	95% CI	R^2	*B*	95% CI	R^2
γ_{11} (MODERATOR$_j$) (gender$_{ij}$)	$-.31^{**}$	[−0.51, −0.11]	11	$-.34^{***}$	[−0.53, −0.16]	16	.17	[−0.01, 0.34]	<5
γ_{21} (MODERATOR$_j$) (age$_{ij}$)	$-.26^{***}$	[−0.40, −0.12]	17	$-.22^{**}$	[−0.37, −0.07]	13	$.22^{**}$	[0.08, 0.36]	9
γ_{31} (MODERATOR$_j$) (Age × Gender$_{ij}$)	$.20^{***}$	[0.11, 0.30]	43	$.16^{**}$	[0.06, 0.25]	24	$-.21^{***}$	[−0.31, −0.11]	46

Note. *B* = Cross-level interactions effects between cultural indicators and gender, age, and Age × Gender effects (*B* coefficients from intercept- and slope-as-outcome models, see also equation 1.2); CI = confidence interval; R^2 = explained cross-cultural variance in percent.
** $p < .01$. *** $p < .001$.

higher mean age at first marriage for both men and women were marked by relatively larger gender gaps; these two cultural indicators explained 7% and 8% of the cross-cultural variance in gender effects, respectively.

All three sociodemographic indicators were related to nation-level age effects and Age × Gender effects on self-esteem. Specifically, the results suggested that nations with a lower mean age at first marriage and a higher adolescent fertility rate were marked by stronger age effects in men but not in women. These sociodemographic indicators explained between 10% and 13% of the cross-cultural variance in age effects and between 44% and 53% of the cross-cultural variance in Age × Gender effects on self-esteem.

Gender-equality indicators. Table 5 shows the cross-level interactions between the two gender-equality indicators and gender, age, and Age × Gender effects on self-esteem. There were no cross-level interactions between the two gender-equality indicators and gender and age effects on self-esteem. However, both indicators were significantly related to the Age × Gender interaction effects on self-esteem. Specifically, the results suggested that age effects on women's self-esteem were more pronounced in countries with higher GGI scores and a longer history of women's suffrage. Both indicators explained 18% of the cross-cultural variance in Age × Gender effects on self-esteem.

Hofstede's cultural value indicators. Table 6 shows the cross-level interactions between the four Hofstede dimensions and gender, age, and Age × Gender effects on self-esteem. Higher scores on power distance were associated with a smaller gender gap and more pronounced age effects on self-esteem in both men and women. Both effects were relatively small as indicated by the multilevel R^2 estimates; power distance accounted for 8% and 17% of the cross-cultural variance in gender and age differences, respectively.

Higher scores on individualism were related to larger gender differences (R^2 = 12%) and less pronounced age effects on self-esteem (R^2 = 30%). The significant three-level interaction between individualism, age, and gender suggested that men and women showed more similar age trajectories in nations with higher scores of individualism (R^2 = 18%).

Masculinity was related only to age effects on self-esteem (R^2 = 7%). Specifically, age effects were less pronounced in nations with relatively higher scores on masculinity.

Uncertainty avoidance was related to the gender effects on self-esteem in adolescence: Nations with relatively higher scores on uncertainty avoidance were marked by a lager gender gap in adolescence (R^2 = 13%).

Discussion

Two highly influential lines of past research have established that self-esteem is higher in men than in women (Kling et al., 1999) and that self-esteem increases from adolescence to middle adulthood (Orth & Robins, 2014). Yet, that prior research was overwhelmingly confined to Western cultures; this bias throws doubt on the generality of the patterns and potentially undermines attempts to understand the mechanisms driving gender and age differences in self-esteem. To begin to address this concern, we

Table 4
Intercept- and Slope-As-Outcome Models II: Cross-Level Interactions Between Sociodemographic Indicators and Gender, Age, and Age × Gender Effects on Self-Esteem

	Sociodemographic indicators								
	M age at marriage male			*M* age at marriage female			Adolescent fertility rate		
Variable	*B*	95% CI	R^2	*B*	95% CI	R^2	*B*	95% CI	R^2
γ_{11} (MODERATOR$_j$) (gender$_{ij}$)	$-.26^{*}$	[−0.48, −0.04]	7	$-.28^{**}$	[−0.49, −0.06]	8	.10	[−0.11, 0.31]	<5
γ_{21} (MODERATOR$_j$) (age$_{ij}$)	$-.22^{**}$	[−0.34, −0.09]	10	$-.21^{**}$	[−0.37, −0.05]	10	$.24^{**}$	[0.10, 0.38]	13
γ_{31} (MODERATOR$_j$) (Age × Gender$_{ij}$)	$.21^{***}$	[0.12, 0.29]	50	$.22^{***}$	[0.13, 0.31]	53	$-.21^{***}$	[−0.31, −0.12]	44

Note. *B* = Cross-level interactions effects between cultural indicators and gender, age, and Age × Gender effects (*B* coefficients from intercept- and slope-as-outcome models, see also equation 1.2); CI = confidence interval; R^2 = explained cross-cultural variance in percent.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5
Intercept- and Slope-As-Outcome Models III: Cross-Level Interactions Between Gender Equality Indicators and Gender, Age, and Age × Gender Effects on Self-Esteem

	Gender equality indicators					
	Gender gap index			Women's suffrage		
Variable	*B*	95% CI	R^2	*B*	95% CI	R^2
γ_{11} (MODERATOR$_j$) (gender$_{ij}$)	−.18	[−0.40, 0.05]	<5	−.14	[−0.32, 0.04]	<5
γ_{21} (MODERATOR$_j$) (age$_{ij}$)	−.06	[−0.20, 0.09]	<5	−.10	[−0.21, 0.01]	<5
γ_{31} (MODERATOR$_j$) (Age × Gender$_{ij}$)	.12**	[0.03, 0.21]	18	.12*	[0.02, 0.21]	18

Note. *B* = Cross-level interactions effects between cultural indicators and gender, age, and Age × Gender effects (*B* coefficients from intercept- and slope-as-outcome models, see also equation 1.2); CI = confidence interval; R^2 = explained cross-cultural variance in percent.
* $p < .05$. ** $p < .01$.

examined the cross-cultural generalizability of the gender and age trends in self-esteem across 48 nations. Specifically, we examined three questions concerning the cultural generalizability, cultural variability, and cultural correlates of gender, age, and Age × Gender effects on self-esteem.

Consistent with previous research on Western samples, we found significant gender and age differences in self-esteem: Across all nations, men had higher levels of self-esteem than women did and both genders showed age-graded increases from late adolescence to middle adulthood. Both the shape and the average effect sizes for gender and age effects resembled previous findings and ranged between small to medium-sized effects (cf. Kling et al., 1999; Huang, 2010).

The considerable degree of cross-cultural similarity has two major implications. First, it suggests that prior conclusions on gender and age differences in self-esteem are not some peculiarity of Western societies. Second, it might indicate that the normative gender and age differences in self-esteem are at least partly driven by universal mechanisms (Costa et al., 2001; Wood & Eagly, 2002). One such mechanism might be genetically based biological processes that transcend cultures and contexts. To date, only a few studies have examined biological sources, such as hormonal influences, of gender differences in self-esteem (Williams & Currie, 2000). Even fewer studies have examined potential biological explanations for age differences in self-esteem. This lack of research on the biological background of gender and age differences in self-esteem is surprising because global self-esteem shares many attributes with other broad personality characteristics for which biological explanations for gender and age differences, such as age-graded genetic influences, have been tested (e.g., Bleidorn, Kandler, Riemann, Angleitner, & Spinath, 2009; Kandler et al., 2010; for reviews see Bleidorn, Kandler, & Caspi, 2014; Briley & Tucker-Drob, 2014). The findings of the present research suggest that genetically based mechanisms might also play a role in the normative development of men's and women's self-esteem. Genetically informative studies and research on the biological pathways would be needed to shed light on the biological underpinnings of gender and age differences in self-esteem.

An alternative explanation for the cross-cultural similarity would be that gender and age differences are largely influenced by universal sociocultural factors. For example, pancultural gender differences might result from universals in socially learned gender roles and stereotypes (Williams & Best, 1990; Wood & Eagly, 2002). In fact, several studies have shown that male attributes are positively correlated with self-esteem for both men and women, whereas the link between female attributes and self-esteem has been much weaker and less consistent (e.g., Gebauer, Wagner, Sedikides, & Neberich, 2013; Whitley, 1983; Wojciszke, Baryla, Parzuchowski, Szymkow, & Abele, 2011).

In a similar vein, the majority of individuals in most cultures master relatively similar life tasks at roughly the same ages (e.g., graduation from school, one's first job, parenthood). Such devel-

Table 6
Intercept- and Slope-As-Outcome Models IV: Cross-Level Interactions Between Hofstede's Cultural Value Indicators and Gender, Age, and Age × Gender Effects on Self-Esteem

	Hofstede dimensions											
	Power distance			Individualism-collectivism			Masculinity			Uncertainty avoidance		
Variable	*B*	95% CI	R^2	*B*	95% CI	R^2	*B*	95% CI	R^2	*B*	95% CI	R^2
γ_{11} (MODERATOR$_j$) (gender$_{ij}$)	.24*	[0.05, 0.42]	8	−.31***	[−0.47, −0.15]	12	.09	[−0.10, 0.28]	<5	−.27*	[−0.48, −0.06]	13
γ_{21} (MODERATOR$_j$) (age$_{ij}$)	.23**	[0.09, 0.38]	17	−.32***	[−0.44, −0.20]	30	−.17*	[−0.32, −0.01]	7	.03	[−0.17, 0.22]	<5
γ_{31} (MODERATOR$_j$) (Age × Gender$_{ij}$)	−.06	[−0.16, 0.03]	<5	.14***	[0.05, 0.23]	18	−.03	[−0.13, 0.07]	<5	−.02	[−0.14, 0.10]	<5

Note. *B* = Cross-level interactions effects between cultural indicators and gender, age, and Age × Gender effects (*B* coefficients from intercept- and slope-as-outcome models, see also equation 1.2); CI = confidence interval; R^2 = explained cross-cultural variance in percent.
* $p < .05$. ** $p < .01$. *** $p < .001$.

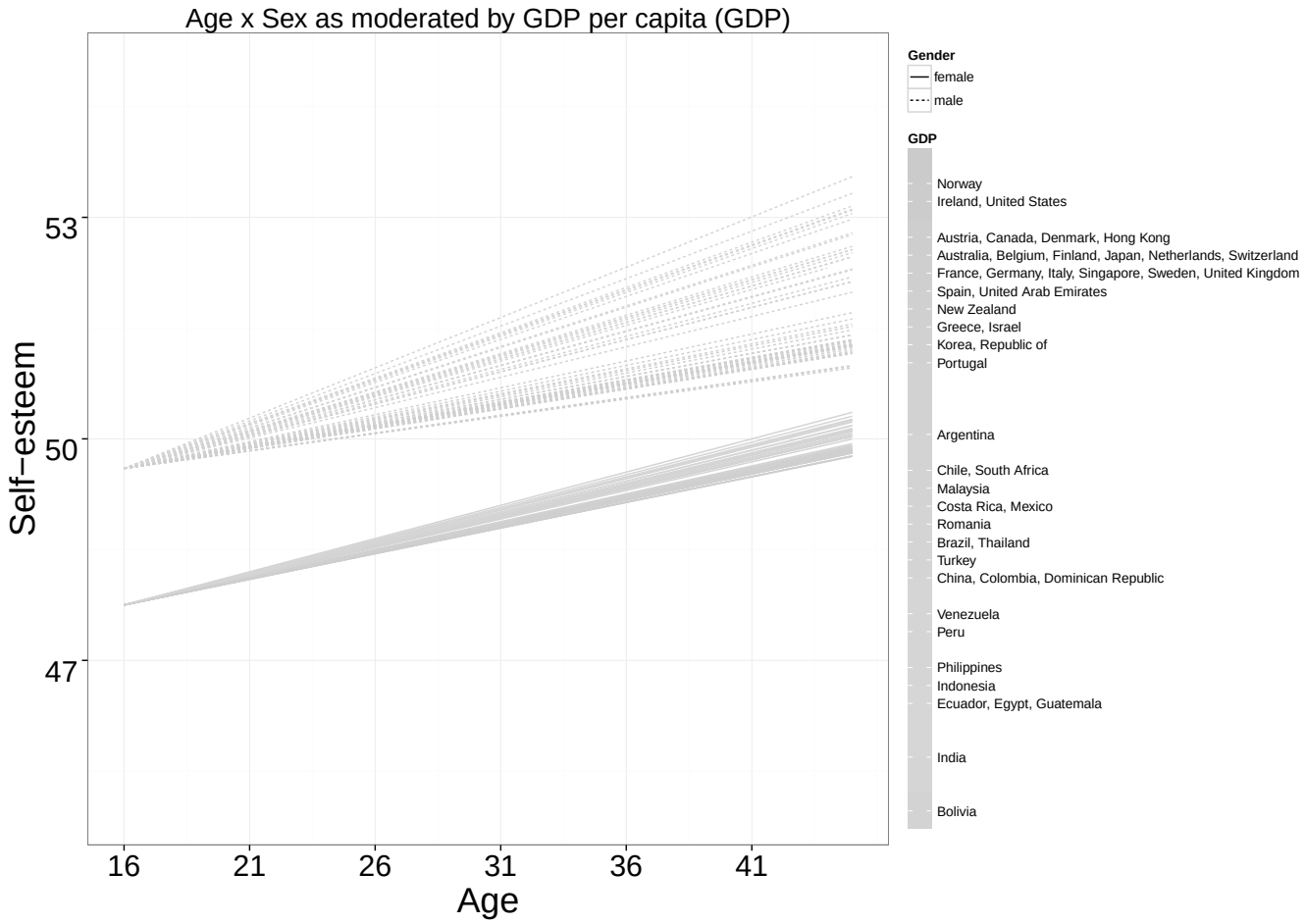

Figure 3. Age, gender, and Age × Gender interaction effects on self-esteem moderated by gross domestic product (GDP) per capita (an interactive plot showing the actual and predicted gender-specific age trajectories for each of the 12 cultural indicator variables can be found at https://selfesteem.shinyapps.io/self_esteem).

opmental turning points (Pickles & Rutter, 1991) can modify or redirect life trajectories by altering behavior, affect, cognition, or context and might be also relevant with regard to an individual's self-esteem development (Orth & Robins, 2014). When these age-graded turning points are universal, they can produce the observed cross-cultural similarity in age differences in self-esteem. For example, during early and middle adulthood, individuals in many cultures increasingly engage in instrumental and social roles, such as professional, spouse, parent, or political party member. A successful mastery of new role demands and the socioemotional feedback associated with these social roles might convey a sense of self-worth and also lead to increases in self-esteem (e.g., Hogan & Roberts, 2004; Robins et al., 2002). For instance, a successful mastery of the challenges associated with the first job may boost young adults' sense of mastery and consequently also lead to increased levels of self-esteem (Chung et al., 2014; Erol & Orth, 2011). Likewise, several studies have found that the transition to the first long-term romantic relationship is related to self-esteem development in young adults (Lehnart et al., 2010; Wagner, Becker, Lüdtke, & Trautwein, 2015).

Despite the cross-cultural similarity in the overall pattern of gender and age differences, the 48 nations still differed significantly in the magnitude of the gender-specific trajectories. These cross-cultural differences in gender, age, and Age × Gender effects are inconsistent with strong universal explanations and suggest the relevance of culture-specific influences. In the present study, we adopted an exploratory perspective and examined the potential influences of a diverse set of 12 socioeconomic, sociodemographic, gender-equality, and cultural-value indicators. Overall, many of these cultural moderators did matter, albeit to a moderate degree (https://selfesteem.shinyapps.io/self_esteem).

Specifically, gender differentiation was related to a nation's GDP per capita, HDI, and mean age at marriage. Gender differentiation was also related to all Hofstede dimensions, except, perhaps surprisingly, masculinity. Overall, wealthy, developed, egalitarian, and individualistic nations were characterized by relatively larger gender differences in self-esteem.

The above-described pattern is in line with previous cross-cultural research on gender differences in Big Five personality traits. One potential explanation for the finding that the personality profiles of men and women tend to be less similar in more developed, prosperous, and egalitarian cultures was that different innate dispositional differences between men and women

may have more space to develop in such cultures (Schmitt et al., 2008).

An alternative explanation for this seemingly counterintuitive finding has been offered by Guimond et al. (2007). They proposed that cultural differences in the magnitude of gender differences in personality traits and other psychological constructs are partly the result of social comparison processes. Specifically, Guimond et al. (2007) predicted larger gender differences for cultures in which people are more likely to engage in between-gender social comparisons, because comparisons with other-gender individuals presumably induce self-stereotyping processes. In contrast, gender differences were supposed to be smaller in cultures in which people are more likely to engage in within-gender social comparisons because comparisons with same-gender individuals would reduce self-stereotyping processes. Guimond et al. compared samples from five different cultures with regard to their social-comparison orientation and found that individuals from Western countries are more likely to engage in in between-gender social comparisons and, as a result, show larger gender differences than individuals from non-Western cultures. In the present study, we found particularly small gender differences in many Asian countries, such as Thailand or China, whereas gender differences tended to be generally larger in many Central and South American countries, such as Mexico or Chile (cf. Figure 2). Research on social comparison processes in these countries might help to further understand the role of within-gender versus between-gender social comparisons for the magnitude of gender differences in self-esteem.

Another explanation of the larger gender differences in many Western societies concerns the cultural emphasis of girls' and women's physical appearance. Both males and females who feel physically attractive tend to have higher self-esteem (e.g., Feingold, 1994); yet numerous studies have shown that girls' attitudes about their appearance become more negative during adolescence (Harter, 1993). This decline in girl's perceived physical attractiveness is supposed to have particularly negative effects on self-esteem when cultural pressures regarding women's physical appearance are high (Brumberg, 1997; Kling et al., 1999). Future research on cultural-beauty ideals and self-esteem would be needed to test this hypothesis in a cross-cultural research design.

There were also significant cross-level interactions involving the age and Age × Gender effects on self-esteem. Specifically, for individualistic, prosperous, egalitarian, and developed nations with a lower adolescent birthrate and a later age at marriage, we found relatively smaller age effects on self-esteem for men but not for women (e.g., Norway). Moreover, we found more pronounced age effects on self-esteem for women from nations with greater gender equality and a longer history of women's suffrage (e.g., Sweden or Finland). This finding implies that, in these nations, gender differences in self-esteem tend to become smaller with age. In contrast, even though the absolute gender gap is smaller in developing and less wealthy nations, the gender differences tend to become larger with age in these cultures. For example, in Australia—a nation with relatively high HDI and GDP scores—the absolute gender difference decreases from $d = 0.30$ in adolescence to $d = 0.21$ in middle adulthood. For Mexico—a nation with comparatively lower HDI and GDP scores—the absolute gender difference in self-esteem increases from $d = 0.24$ in adolescence to $d = 0.35$ (https://selfesteem.shinyapps.io/maps/).

This pattern suggests that the gender-specific age trajectories of self-esteem are likely the result of distinct culture-specific, age-graded mechanisms, which are not necessarily related to the mechanisms that lead to the absolute gender differences in self-esteem. Consider, for example, the mechanisms that might underlie the effects of cultural differences in gender equality. Gender equality was unrelated to the absolute gender gap in self-esteem but positively correlated with steeper age effects on women's self-esteem. In countries with less traditional gender roles and smaller gender-based gaps in economic participation, education, political empowerment, and health (e.g., Sweden, Norway, or Finland; cf. Table 1 and Figure 2), women are more likely to have access to status positions and instrumental roles, to experience a sense of mastery, and to receive appreciation and social support. As a consequence, women from countries with greater gender equality might show relatively stronger age-graded increases in self-esteem as they traverse early and middle adulthood.

In summary, cultural differences in gender, age, and Age × Gender effects on self-esteem are systematically related to a broad set of socioeconomic, sociodemographic, gender-equality, and cultural value indicators. Specifically, individualistic, prosperous, egalitarian, developed nations with greater gender equality, lower adolescent birth rates and a later age at marriage are marked by larger gender gaps, which tend to decrease throughout early and middle adulthood. In contrast, collectivistic, poorer, developing nations with greater gender inequality, higher adolescent birth rates, and an earlier age at marriage are marked by smaller gender gaps, which tend to increase throughout early and middle adulthood.

This pattern is likely the result of multiple macropsychological mechanisms that guide culture-specific self-esteem development in men and women. To shed more light on the nature and operation of these macropsychological mechanisms, longitudinal studies are needed that track self-esteem development over time in non-Western societies.

Limitations and Future Directions

The present study used a large sample and advanced analytic methods, but the findings must still be considered in light of some important limitations. First, our Internet-based samples are not representative of the populations of the nations examined. Internet-based samples are more diverse and more representative than are the convenience samples commonly used in social-science research (Gosling et al., 2004) but it is likely that the representativeness of the samples varied across the nations examined here. Of course, such concerns must be balanced against the lack of viable alternative sampling methods in many nations (Gosling, Sandy, John, & Potter, 2010). Somewhat reassuringly, the use of Internet (vs. non-Internet) samples typically does not bias research conclusions (Crump, McDonnell, & Gureckis, 2013; Gosling & Mason, 2015; Srivastava, John, Gosling, & Potter, 2003), at least in Western samples. Also, the representativeness is likely to be poorest in developing countries where Internet penetration is lowest. As a result, the samples obtained in developing countries are likely to be the least representative with regard to the socioeconomic or sociodemographic indicators associated with that country. This restriction would tend to diminish the effects reported

here making our findings conservative estimates of the underlying effects.

Second, the cross-sectional nature of the design raises the possibility that some of the observed age trends might reflect birth-cohort effects. However, the data were collected over a 10-year period (1999–2009). Therefore, each specific age group included members of several different birth years [e.g., the youngest age group (16–20) included individuals born between 1979 and 1993] providing a degree of generalizability across cohorts. Moreover, the observed age trends agree well with findings from longitudinal and cohort-sequential studies, which are not susceptible to cohort effects (Orth & Robins, 2014).

Third, we assessed global self-esteem with a single-item measure. A large body of evidence suggests that the SISE measure has good psychometric properties, is highly correlated with other multiitem self-esteem measures (Robins et al., 2001), and, when applied to Western samples, shows similar age and gender trends than those reported for multiitem measures (Robins et al., 2002). However, we cannot rule out the possibility that other self-esteem measures might show different age and gender trends when applied to non-Western samples (Pullmann, Allik, & Realo, 2009). Future research needs to test whether the present cross-cultural findings hold when using multiitem self-esteem measures, such as Rosenberg's (1965) Self-Esteem Scale.

A further limitation can be seen in the selection of the culture-level moderators and the use of secondary data. Our selection of a diverse set of socioeconomic, sociodemographic, gender-equality, and cultural-value indicators was meant to be broad; however, it was not meant to be exhaustive. We adopted an exploratory approach to examine whether and to what degree cultural differences in gender, age, and Age × Gender effects on self-esteem are systematically related to a broader set of cultural markers. Obviously, these markers are not independent, but are moderately to strongly correlated (mean $r = .48$; median $r = .55$; see Table S1 in the online supplemental materials for the correlations among the 12 cultural markers). That is, many cultures that score high on GDP per capita also have higher scores on human development and gender equality. The current sample of 48 nations was too small (at the culture level) to test these predictors against each other in a hierarchical multilevel regression model. In fact, a full model including all 12 moderators simultaneously would need to estimate 60 parameters, a number that exceeds the number of subjects (i.e., countries) in the present sample. Future cross-cultural research on a larger and more diverse set of cultures would be needed to distinguish among the unique influences of these predictors.

Concluding Remarks

Our results suggest that gender and age differences in self-esteem are not a Western idiosyncrasy, but can be observed in different cultures across the world. Overall, men tend to have higher self-esteem than women do, and both genders show age-graded increases in self-esteem from late adolescence to middle adulthood. Yet, cultures differ in the magnitude of gender, age, and Age × Gender effects, and these differences are systematically related to socioeconomic, sociodemographic, gender-equality, and cultural value indicators. The considerable degree of cross-cultural similarity suggests that normative gender and age differences in self-esteem are partly driven by universal mechanisms. These might reflect both universal biological processes and universal sociocultural influences. Yet, universal influences do not tell the whole story. The systematic cultural differences in the magnitude and shape of gender and age differences in self-esteem provide evidence for contextual influences on the self-esteem development in men and women.

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