ORIGINAL ARTICLE

The relationship between gender and life satisfaction: analysis across demographic groups and global regions

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Abstract

This study sought to examine gender differences in life satisfaction globally and across demographic groups. The grouping variables included age, global region, marital status, employment status, education, and income. A sample of 1,801,417 participants across 166 countries was drawn from the Gallup World Poll. Given the hierarchical nature of the data, multi-level modeling was used for data analysis. Gender differences in life satisfaction were found to be significant yet small. Women reported higher levels of life satisfaction than men across all income, education, and employment groups. The direction of gender differences in life satisfaction was inconsistent across age and regional groups. Men scored higher than women only over the age of about 63, and in sub-Saharan Africa. Despite the less favorable objective conditions for women globally, women were found to be more satisfied with their lives than men across most of the groups we studied. It is hoped that the present results can be used to inform research and practice aiming to identify vulnerable female groups and to optimize the well-being of women globally.

Keywords Gender · Life satisfaction · Age · Subjective well-being · Gallup World Poll

Introduction

Previous research has yielded mixed results concerning the relationship between gender and life satisfaction. Whereas some studies have found that women are more satisfied with their lives than men (e.g., Jovanović 2019; Stone et al. 2010; Tay et al. 2014), others have found that men are more satisfied (e.g., Goldbeck et al. 2007; Helliwell and Putnam 2004). Still, other studies show negligible gender differences in life satisfaction (e.g., Glaesmer et al. 2011; Kong et al. 2015). Inconsistent results for gender differences in life satisfaction have been found in single-country studies (e.g., Jovanović and Lazić 2019), large international studies (e.g., Meisenberg and Woodley 2015), and

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meta-analyses (for a review, see Batz and Tay 2018). It is also noteworthy that the majority of studies showing significant differences between men and women in life satisfaction have yielded small effect sizes (Geerling and Diener 2019).

Conflicting results in studies on gender differences in life satisfaction indicate that the relationship between gender and life satisfaction may be influenced by a number of moderators. Indeed, several studies have shown that the relationship between gender and life satisfaction depends on national contexts, socio-cultural conditions, and demographic variables (e.g., Meisenberg and Woodley 2015). For example, using Gallup World Poll (GWP) data, Graham and Chattopadhyay (2013) have shown that gender differences in life satisfaction depend on age, income, education, marriage status, and national levels of development. Graham and Chattopadhyay found that women generally reported higher levels of life satisfaction than men, and also that the gender gap in life satisfaction (in favor of women) was greater in rich countries, and with older, more educated, and married groups. Similar findings were reported by Fortin et al. (2015), who found that that women report higher life satisfaction than men in most regions, except in sub-Saharan Africa and Central and Eastern Europe, where men report greater life satisfaction than women, and in Western Europe and Latin America, where no gender differences are evident. Using a sample from 65 countries, Inglehart (2002) found that women reported higher life

satisfaction than men in younger age groups (18–24, 25–34, and 35–44), whereas men report higher life satisfaction in older groups (above 45 years of age). It is important to note that some studies show that the gender gap in life satisfaction is not consistently associated with country characteristics, such as global regions, economic development, and religion, nor with the status of women's rights (Zweig 2015). Thus, further research on the demographic and regional variables that might affect the relationship between gender and life satisfaction is warranted.

The present study sought to replicate and expand previous findings using the largest dataset ever used in this area of research, consisting of 1,801,417 individuals across 166 countries. This is the first study to use the full GWP dataset from 2005 to 2017, which includes more countries and more recent data than previous studies. Some of the previous studies have not accounted for the nesting of respondents within nations. We relied on multi-level modeling, a powerful statistical method, to account for the nested data structure. We examined the relationship between gender and life satisfaction both in the world sample and across the levels of six demographic variables: age, global region, marital status, employment status, educational level, and income.

Methods

Participants

The entire GWP dataset (collected during the period between 2005 and 2017) was used to maximize the sample size for multi-level analyses. GWP continually surveys residents in more than 160 countries, using randomly selected, nationally representative samples. Gallup typically annually surveys 1000 individuals aged over 15 years old in each country. In some countries, however, data have not been collected in all years, and/or data collection started after 2005. Furthermore, from the total sample of 1,833,709 across 166 countries, 17,688 (1%) of the participants chose the "Do not know" option or refused to answer the life satisfaction question, and for 14,604 participants (0.8%), the question was not included in the survey. These 32,292 participants were excluded, leaving a final sample of 1,801,417 for analysis. Within this final dataset, gender and age responses were missing for 22 and 9377 of the participants, respectively. Given the relatively small rates of missing values in the key variables of the study, we used listwise deletion across the analyses. Sample sizes used in each analysis are reported in Tables 1, 2, and 3. Descriptive information about the countries is reported in the supplementary material (Table S1). The average age for the whole sample was 40.89 (SD = 17.41, range = 15–99[1]).

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[1] People older than 99 are also coded as 99 in the GWP. In the whole GWP sample, 581 participants are coded as 99.

Measures

Life satisfaction The ladder of life scale (Cantril 1965) was used to measure life satisfaction. The scale asks participants to "Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" The top step (10) represents the best possible life and the bottom step (0) represents the worst possible life. Previous studies have shown that single-item measures of life satisfaction have adequate reliability and validity and that they perform similarly to multi-item life satisfaction measures (Cheung and Lucas 2014; Jovanović 2016; Jovanović and Lazić 2019).

Grouping variables Based on previous research (e.g., Graham and Chattopadhyay 2013; Meisenberg and Woodley 2015; Zweig 2015), six grouping variables were included in this study: age, global region, marital status, employment status, educational level, and income quintile. Categories of the variables are shown in Tables 2 and 3. The GWP regional categorization is shown in the supplementary material (Table S2).

Statistical analysis

Multi-level modeling was used to analyze the data, considering the hierarchical nature of the dataset (Hox 2010; Nezlek 2010). In all of the analyses of this study, the intercept, as well as the slope of gender, were treated as random effects. All of the models were estimated with restricted maximum likelihood (REML), which is the generally recommended estimation method in multi-level modeling (Brown and Prescott 2015). An unstructured covariance matrix of random effects was specified, which estimates all of the possible covariances between the random effects (Hox 2010; West et al. 2014). In the whole-sample analysis, random effects were used to calculate the effect sizes (i.e., the percentage of variance explained) and intra-class correlation, thus both fixed and random effects are reported (Table 1). However, random parameters are not of interest in the present group-based analyses; they are therefore not reported for the sake of brevity. For all of the analyses, unstandardized regression coefficients are reported. As in all analyses, gender was coded as 0, male and 1, female; the unstandardized coefficients represent the increase or decrease in the level of life satisfaction for females (vs males). For example, an unstandardized regression coefficient of 0.10 would mean that females have life satisfaction scores 0.10 points higher than males, and a coefficient of − 0.10 would suggest that being female is associated with a 0.10-point decrease in life satisfaction. The standard deviation for the distribution of life satisfaction scores in the whole sample is 2.291; therefore, a coefficient of 0.10 would be equivalent to 4.36% of a standard deviation in the whole-sample analyses.

Table 1 Random and fixed effects

	Unstandardized estimate	Z/t	p	95% CI	
				Low	Up
Random effects	Variance/covariance				
The null model					
Residual	4.168	949.013	.000	4.159	4.176
Intercept	1.122	9.078	.000	.904	1.393
Only gender					
Residual	4.161	948.965	.000	4.153	4.170
Intercept	1.078	9.073	.000	.868	1.337
Female	.022	8.326	.000	.018	.028
Intercept and female	.037	2.815	.005	.011	.062
Fixed effects	Regression coefficient				
Only gender (N = 1,801,395)					
Intercept	5.402	67.004	.000	5.243	5.561
Female	.049	4.006	.000	.025	.073
Gender and all of the covariates (N = 1,339,132)					
Intercept	4.805	52.521	.000	4.625	4.986
Female	.130	11.675	.000	.108	.152
Age	−.010	−12.333	.000	−.011	−.008
Income quintile	.238	35.991	.000	.225	.251
Employed full time for self	.007	.464	.643	−.024	.039
Employed part time do not want full time	.165	9.737	.000	.132	.199
Unemployed	−.461	−21.694	.000	−.503	−.419
Employed part time want full time	−.188	−11.591	.000	−.221	−.156
Out of workforce	.017	1.063	.289	−.015	.048
Secondary education	.336	21.853	.000	.305	.366
Tertiary education	.664	27.798	.000	.617	.711
Married	.053	3.229	.002	.021	.086
Widowed	−.209	−11.500	.000	−.245	−.173
Divorced/separated	−.354	−16.848	.000	−.395	−.312
Domestic partner	−.124	−4.740	.000	−.176	−.072
National age as moderator (N = 1,801,395)					
Intercept	5.470	84.753	.000	5.343	5.598
Female	.050	4.054	.000	.026	.074
National age	.100	9.817	.000	.080	.120
Female × national age	.001	.352	.725	−.003	.005

Results

Analyses in the whole sample

An intercept-only model (the null model) which excluded gender was first tested. The results of this analysis indicate the proportion of variability in life satisfaction that exists at the individual and country levels (Hox 2010). As reported in Table 1, there was statistically significant variability both at the individual and cultural levels. The intra-class correlation for life satisfaction was about .21, indicating that a substantial proportion of the variance in life satisfaction (about 21%) is attributable to country-level conditions.

In a separate model, gender was added to the model as a predictor. Parameter estimates for the fixed effects and variance/covariance components associated with the random effects are presented in Table 1. Comparing random effects from this model with those from the null model shows that adding gender to the model reduced the unexplained within-country variability in life satisfaction by about 0.16%. Being female was associated with a 0.05-point increase in life satisfaction in the global sample. Therefore, the effect size across

Table 2 Gender predicting life satisfaction across age and regional groups

	N	%	Regression coefficient	t	p	95% CI Low	High
Age							
15–20	217,364	12.1	.084	6.570	.000	.059	.109
21–26	236,594	13.1	.129	7.771	.000	.096	.161
27–32	240,528	13.4	.097	5.454	.000	.062	.132
33–38	207,724	11.5	.090	5.498	.000	.058	.122
39–44	188,304	10.5	.053	2.981	.003	.018	.088
45–50	185,532	10.3	.031	1.815	.072	− .003	.066
51–56	141,333	7.8	.011	.593	.554	− .026	.049
57–62	127,909	7.1	.002	.119	.905	− .037	.041
63–68	101,053	5.6	− .052	− 2.560	.012	− .093	− .012
69–74	73,743	4.1	− .087	− 3.423	.001	−.138	− .037
75–80	46,732	2.6	− .111	− 3.837	.000	− .169	− .054
81 and older	25,222	1.4	− .107	− 2.827	.006	− .183	− .032
Total	1,792,038	99.5					
Missing	9379	.5					
Global region							
European Union	356,038	19.8	− .007	− .352	.727	− .047	.033
Europe-Other	85,998	4.8	.085	4.017	.003	.037	.133
Commonwealth of Independent States	153,501	8.5	− .049	− 1.425	.180	− .123	.026
Southeast Asia	98,204	5.5	.092	2.718	.025	.014	.170
South Asia	117,338	6.5	.099	2.042	.087	− .020	.217
East Asia	113,651	6.3	.257	4.029	.010	.094	.420
Latin America and the Caribbean	221,759	12.3	.068	3.496	.002	.028	.108
Middle East and North Africa	253,477	14.1	.225	5.457	.000	.139	.312
Sub-Saharan Africa	350,644	19.5	− .047	− 2.430	.020	− .086	− .008
North America, Australia, & NZ[a]	50,807	2.8	.153	8.900	.000	.120	.187
Total	1,801,417	100.0					
Missing	0	0.0					

[a] This group has only four countries, which does not seem to be sufficient for multi-level analyses. Thus, the results related to this group of countries should be interpreted with caution. It is noteworthy that an ordinary regression analysis in this category yielded an unstandardized regression coefficient of .157 which is reassuringly similar to the multi-level estimate

the full sample is small. However, as shown in Table 1, the contribution of gender to life satisfaction varied significantly across countries (i.e., the random effect for gender was significant), suggesting that gender may play a more significant role in some countries (and subgroups). The contribution of gender was virtually unchanged when repeating the analysis with age as a covariate.

To examine whether the positive and significant effect of gender persists when holding demographic variables constant, a separate model was tested. In addition to gender, age and income quintiles along with the categories of marital status, employment status, and education were added as predictors. For model identification purposes, the variance component (or diagonal) structure was used

instead, in which all of the variances for random effects are estimated yet the covariances between the random effects are constrained to be zero (Hox 2010; West et al. 2014). The covariances between random effects are not generally of interest to researchers (Nezlek 2010), as is the case in the present analyses. The results are reported in Table 1. As shown, after controlling for the entire list of covariates, being female is a positive and significant predictor of life satisfaction.

Analyses across groups

A separate multi-level analysis was conducted for each of the groups (e.g., 12 separate analyses were conducted for the 12

Table 3 Gender predicting life satisfaction across marital status, employment, education, and income groups

	N	%	Regression coefficient	t	p	95% CI Low	High
Marital status							
Single	510,850	28.4	.131	9.342	.000	.103	.159
Married	953,315	52.9	.114	8.513	.000	.088	.141
Divorced/separated	101,597	5.6	.021	.914	.363	− .025	.067
Widowed	123,057	6.8	− .027	− 1.316	.191	− .068	.014
Domestic partner	79,837	4.4	.130	5.198	.000	.080	.180
Total	1,768,656	98.2					
Missing	32,761	1.8					
Employment							
Employed full time for an employer	372,593	20.7	.112	7.068	.000	.081	.143
Employed full time for self	184,400	10.2	.052	2.675	.008	.014	.091
Employed part time do not want full time	102,344	5.7	.055	2.489	.014	.011	.098
Unemployed	87,644	4.9	.267	9.747	.000	.213	.321
Employed part time want full time	97,587	5.4	.144	6.212	.000	.098	.190
Out of workforce	542,030	30.1	.032	2.294	.023	.005	.060
Total	1,386,598	77.0					
Missing	414,819	23.0					
Education							
Elementary	553,998	30.8	.058	3.437	.001	.025	.092
Secondary	882,666	49.0	.132	9.856	.000	.106	.159
Tertiary	277,835	15.4	.109	6.418	.000	.075	.142
Total	1,714,499	95.2					
Missing	86,918	4.8					
Income							
Poorest 20%	227,489	12.6	.094	4.624	.000	.054	.135
Second 20%	249,175	13.8	.101	6.066	.000	.068	.134
Middle 20%	271,879	15.1	.086	5.179	.000	.053	.119
Fourth 20%	300,904	16.7	.087	5.500	.000	.056	.118
Richest 20%	364,121	20.2	.104	7.859	.000	.078	.130
Total	1,413,568	78.5					
Missing	387,849	21.5					

age groups). The results are shown in Tables 2 and 3. Women reported higher levels of life satisfaction than men across all income, education, and employment groups. Gender differences were larger among unemployed and more educated individuals. Inconsistent gender differences in life satisfaction were found across age groups and global regions. Women reported higher life satisfaction than men between the ages 15 and 44, no significant gender differences were evident between the ages 45 and 62, and men reported higher life satisfaction in the oldest age groups (i.e., over about 63 years of age). The analysis across global regions demonstrated that in most regions, women reported either higher levels of life satisfaction than men or there was no gender difference: sub-Saharan Africa was the only region where men demonstrated higher levels of life satisfaction than women. Finally, women reported higher life satisfaction than men across all marital status groups, except in the divorced/separated and widowed groups, where no significant gender differences were found.

Post hoc analyses: controlling for age

Across the regional, marital, education, and income groups, the same analyses were repeated with age as a control variable. The analyses yielded highly similar results with regard to the direction, strength, and the statistical significance of the effects of gender. Nevertheless, for the group "Employed part-time want full-time," the effect of gender on life satisfaction was reduced from 0.055 ($p = .014$) to 0.038 (ns), after controlling for age. This indicates that, among this group of workers, gender did not predict life satisfaction over and above age.

However, in the other employment status groups, gender did contribute a significant amount of variance beyond age.

Countries have different national averages of age (as shown in Table S1). It could be that the differential relationships between gender and life satisfaction across age groups are due to the fact that countries with different age distributions are overrepresented or underrepresented in certain age groups. To rule out the possibility that national averages of age affect the relationship between gender and life satisfaction, a separate analysis was conducted in which gender, national age (grand-mean centered), and the interaction between gender and national age were included as predictors. The results (as shown in Table 1) revealed that the relationship between gender and life satisfaction was not moderated by national age. Notably, the results revealed that countries with older populations were more satisfied with life than countries with younger populations.

Discussion and conclusions

In the entire sample and across many of the groups, the contribution of gender to life satisfaction was found to be significant yet small. This is consistent with previous large-scale international studies (Fortin et al. 2015; Graham and Chattopadhyay 2013; Inglehart 1990) despite the fact that research has used different samples, measures of life satisfaction, and statistical methods. These results are in line with the gender similarity hypothesis proposed by Hyde (2005), which states that men and women are basically similar on many psychological variables. Inglehart (2002) explains the small gender difference in life satisfaction by stating that, "one's gender is a permanent characteristic, which means that when they are surveyed, most people have long since adapted to the advantages and disadvantages of being male or female" (p. 392). Some previous studies have suggested that after controlling for demographic variables, gender differences in life satisfaction may fade away (e.g., Inglehart 1990). However, the present study showed that controlling for a large set of demographic variables did not decrease the magnitude of the regression coefficient for gender.

In the present study, women reported slightly higher life satisfaction than men across many of the groups, although men scored higher in some age and regional groups. Our results regarding gender differences in life satisfaction across education groups are in line with Graham and Chattopadhyay (2013), who also found that gender differences are more pronounced among more educated individuals. The direction of gender differences in life satisfaction varied across age groups and global regions; and our results are largely consistent with Inglehart's (2002) findings showing that younger women report higher levels of life satisfaction than younger men, whereas older men report

higher levels of life satisfaction than older women. These results can be partially explained through findings that older women are at higher risks of health problems, being widowed, and having lower material resources (e.g., Pinquart and Sörensen 2001). The analysis across global regions demonstrated that in six regions, women reported higher levels of life satisfaction than men, in three regions, men and women had similar life satisfaction levels, and sub-Saharan Africa was the only region in which women reported lower levels of life satisfaction. Higher levels of life satisfaction among men in sub-Saharan Africa has been consistently found in previous studies (e.g., Graham and Chattopadhyay 2013; Fortin et al. 2015) and can partially be explained by the pervasive gender inequality in sub-Saharan Africa (Blackden et al. 2007).

We found mixed results concerning gender differences in life satisfaction among individuals who experienced adverse life events, i.e., divorce, widowhood, and unemployment. More specifically, unemployed men reported lower life satisfaction than unemployed women, whereas no gender differences were found across widowed and divorced groups. These results support previous findings showing that unemployment has more detrimental effects on men's well-being (Joshanloo 2018), probably because, in many world regions, work still plays a more central role in achieving social approval among men (van der Meer 2014). It is noteworthy that empirical evidence on gender differences in well-being following divorce and widowhood is inconclusive (e.g., Trivedi et al. 2009) and thus, more research is needed in this area.

Our findings clearly indicate that gender differences found in a single group cannot be generalized to other groups. Researchers are therefore encouraged to consider multiple moderator variables suitable in this research area. The present study used the ladder of life scale to measure life satisfaction. Future studies will need to compare and contrast the present results with results obtained using other life satisfaction measures. Although single-item measures of subjective well-being have been found to be fairly reliable and valid (Lucas and Donnellan 2012), using longer scales of life satisfaction (e.g., the satisfaction with life scale; Diener et al. 1985) may yield more reliable and accurate results. Using lengthier scales, however, is admittedly difficult and costly in global surveys. Another useful avenue for future research is to move beyond examining the factors that moderate the relationship between gender and life satisfaction and attempt to delineate mechanisms underlying gender differences in life satisfaction. For example, it would be useful to investigate specific cultural norms that might account for gender differences in life satisfaction and to examine whether men and women have different definitions of a good life and/or different comparison standards when evaluating their lives.

In sum, women were found to be more satisfied with their lives than men across most of the groups we studied, but these

differences were generally small. This is despite the less favorable objective conditions for women globally. For example, gender inequality is widespread and male-dominant norms are pervasive. There is still considerable gender inequality in labor market outcomes even in highly developed countries (Kleven and Landais 2017). Women have been found to have less access than men to power, decision-making positions, job opportunities, and leisure time (Eckermann 2012). Despite this, women are still able to be more subjectively satisfied with their lives than men. Eckermann (2012) suggests that resilience is a key factor accounting for women's higher scores on life satisfaction. However, our results indicate that in harsh socio-economic environments (such as sub-Saharan Africa) and over the age of about 63, this gender difference is reversed, which may signify a decline in female resilience. The decline in life satisfaction in older women may also be partially accounted for by gendered ageism and lookism in contemporary societies (Bouson 2016; Inglehart 2002). This downward trend could perhaps be reversed by changing gender-related attitudes. Given the cross-sectional nature of our data, we also observe that older women in our sample have been strongly influenced by cultural norms and socio-economic conditions of previous decades, and thus, the female disadvantage at old age may not hold as younger women in our sample get older.

Data availability For more information about the data file used in this study, see Gallup's official website: http://www.gallup.com/178667/gallup-world-poll-work.aspx.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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