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A meta-analysis of gender differences in character strengths and age, nation, and type of measure as moderators

Abstract

The present meta-analysis investigates gender differences in the 24 VIA character strengths. Based on a literature search on quantitative studies that assessed character strengths, 65 samples consisting of both published and unpublished data were included (total N = 1,189,924). A random-effects model yielded significant gender differences for 17 of the 24 character strengths, although only four of these differences showed at least small effects: Females scored higher than males in appreciation of beauty and excellence, kindness, love, and gratitude. Thus, males and females were mostly similar in their character strengths. The size of the gender differences did not vary with nationality (i.e., the U.S., Switzerland, Germany, and Israel), while age and type of measure were significant moderators for 13–14 character strengths. The most pronounced differences emerged between children/adolescents and the VIA-Youth in comparison to adults and the VIA-IS as well as the short measures.

Keywords: character strengths; VIA-IS (Values in Action Inventory); meta-analysis; gender differences

Introduction

Since their introduction in 2004, the 24 character strengths proposed in the handbook and classification by Peterson and Seligman have become a hallmark of both research and application of positive psychology, with almost 6,000 citations in Google Scholar (as of June 2017). Given this large impact, it is surprising that gender differences[1] in character strengths have not yet been systematically explored. The present paper fills this gap by conducting a meta-analysis of gender differences in character strengths, and

[1] We employ the term "gender differences" to denote differences between females and males, independent of their causes.

by exploring three moderators of these differences (i.e., age, nation, and type of measure).

Character strengths and gender differences

Peterson and Seligman (2004) introduced 24 rationally derived character strengths. They are positive traits that define six moral virtues, namely wisdom and knowledge, courage, humanity, justice, temperance, and transcendence (see Table S1 in the supplementary material for an overview of the 24 character strengths and their assignment to the six virtues). Character strengths relate to a wide range of positive outcomes, such as life satisfaction, positive emotions, and orientations to happiness (e.g., Brdar, Anić, & Rijavec, 2011; Gradisek, 2012; Güsewell, & Ruch, 2012; Lee, Foo, Adams, Morgan, & Frewen, 2015; Peterson, Ruch, Beermann, Park, & Seligman, 2007; Ruch et al., 2010; Weber & Ruch, 2012a). Additionally, strength-based positive psychology interventions were shown to enhance life satisfaction and happiness and to reduce depressive symptoms (e.g., Gander, Proyer, Ruch, & Wyss, 2013; Proctor et al., 2011; Proyer, Gander, Wellenzohn, & Ruch, 2015; Proyer, Ruch, & Buschor, 2013b; Seligman, Steen, Park, & Peterson, 2005). Thus, the relevance of character strengths for well-being has received firm support.

By contrast, the role of gender in character strengths was only rarely the focus of research. Establishing gender differences or similarities in character strengths is important for several reasons. First, if gender differences exist in character strengths, future research can elucidate their causes, development, changes, and consequences. For example, it should then be tested to which extent they are substantial or due to method factors (such as measurement invariance). Second, it would help researchers to evaluate whether gender should be controlled in statistical analyses to avoid biases and whether a sample is “typical” in terms of its gender differences. Third, knowing about specific

strengths in which males or females score higher could help to tailor strength-based positive interventions to the individual's needs.

Theoretical approaches to gender differences either focus on gender similarities (the gender similarity hypothesis; Hyde, 2005) or gender differences (e.g., evolutionary or sociocultural theories; for an overview, see Hyde, 2014). Empirical findings rather supported the gender similarity hypothesis, especially in areas similar to character strengths. For example, personality traits and subjective well-being showed mostly small to moderate gender differences (Hyde, 2014).

Two sources currently inform on gender differences in character strengths. First, each chapter in the handbook and classification (Peterson & Seligman, 2004) discusses gender differences, partly supported with empirical data, partly with theoretical notions. For 18 of the 24 strengths, no gender differences were reported, while males should more strongly endorse bravery and humour, and females should more strongly endorse social intelligence, citizenship, appreciation of beauty/excellence, and spirituality. Second, a literature search conducted in spring 2016 revealed 36 publications that empirically investigated gender differences in one or more character strengths. For example, Ovejero-Bruna and Cardenal-Hernáez (2015) investigated gender differences in the VIA Inventory of Strengths (VIA-IS; Peterson, Park, & Seligman, 2005) in a sample of 122 Spanish adults (68 females and 54 males). They found that females scored significantly higher than males in love of learning, creativity, love, kindness, social intelligence, fairness, leadership, forgiveness/mercy, appreciation of beauty/excellence, gratitude, and spirituality (small to medium effects). In general, these findings were partly inconsistent across studies, and often only little information on the exact effect size of the gender differences in the strengths was available. Thus, the present meta-analysis serves to unite these findings and to explore potential sources of

variability across studies.

Moderators of gender differences

Gender differences in character strengths might systematically differ depending on specific characteristics of a study, specifically age, nation, and type of measure. For example, in UK adults some character strengths showed small positive correlations with age (e.g., curiosity, love of learning, zest, fairness, forgiveness/mercy, and self-regulation; Linley et al., 2007). Additionally, McGrath (2015) investigated character strengths in 75 nations, mostly supporting the cross-cultural consistency between the means and the rank profiles of the strengths (in comparison to the U.S. sample).

Finally, different types of self-report measures of character strengths are available, which assess either all 24 strengths or a subset thereof. These measures might differ in their assessment of gender differences for example due to different item contents, wordings, or formats, a different number of items, and different reliabilities. The standard measure for adults is the 240-item VIA-IS (Peterson et al., 2005), and the standard measure for children and adolescents (aged 10–17 years) is the 198-item VIA-Youth (Park, & Peterson, 2006). Additionally, several short versions of the VIA-IS were developed, for example with 120 items (e.g., Littman-Ovadia, 2015). Also short measures were developed independent from the VIA-IS to assess the 24 character strengths described in the handbook and classification, for example the 24-item Self-Rated Character Strengths (Furnham, & Lester, 2012) or the 24-item Character Strengths Rating Form (Ruch, Martínez-Martí, Proyer, & Harzer, 2014a). Overall, recent research expanded the measurement of character strengths by developing short versions and by evaluating the psychometric properties of the VIA-IS and the VIA-Youth in more detail (e.g., McGrath, 2014, 2016; McGrath & Walker, 2016). It is thus

important to clarify whether the choice of the measure makes a difference in terms of gender differences.

Method

The recommendations by Cooper (2016) were used in the procedure of conducting the meta-analysis. Figure 1 presents the search process leading to the studies included in the meta-analysis.

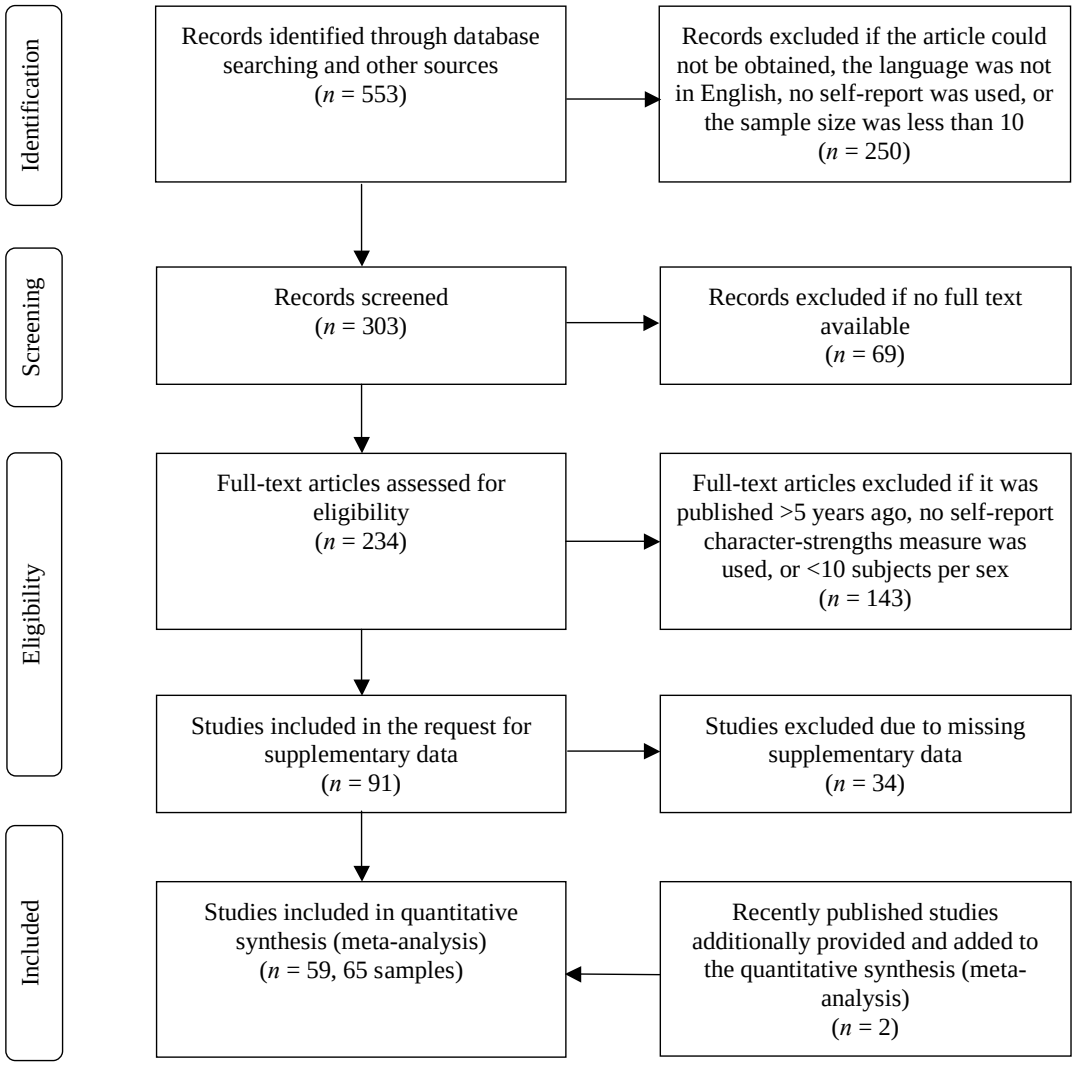

Figure 1. Flow chart of the search process leading to the studies included in the meta-analysis (template adapted from Moher et al., 2009).

Literature search

The literature search was conducted from March to May 2016. Three sources were employed: First, reference databases were searched for the terms “VIA-IS”, “Values in Action”, “character strengths”, or “inventory of strengths” (subject terms in EBSCO host and “intitle” in Google scholar, time period since January 2000). Second, all articles from the reference collection by the VIA Institute on Character (www.viacharacter.org/www/Research/Character-Strengths-Research-Findings-Summary) were included. Third, all articles that cited the VIA-IS (Peterson et al., 2005) or the VIA-Youth construction article (Park & Peterson, 2006) were included. These three sources yielded a total of 553 different publications.

Abstract screening

Two independent coders conducted the screening of abstracts (agreement rate 84.8% on the inclusion and exclusion of the abstracts for the meta-analysis). Resulting discrepancies were solved in a joint discussion between the two coders. Abstracts had to fulfil several inclusion criteria: (a) a quantitative study with >10 participants was conducted, (b) a self-report measure was employed, and (c) the abstract was written in English. Whenever an abstract did not provide necessary information on these criteria, articles were reviewed in more detail. Altogether 303 abstracts either met the inclusion criteria or could not be excluded based on the given information.

Study coding

Before coding the full-text articles, 143 studies were excluded due to the following criteria: (a) not written in English, (b) published >5 years ago and contained no information on gender differences (authors of studies published in the last 5 years were contacted for obtaining the raw data), (c) no self-report measure based on the 24

character strengths used, (d) the sample was already included in a different study (if so, only the larger sample was retained), and (e) the sample consisted of <10 males or females. Afterwards, the following information was extracted from each sample: (a) sample size, (b) mean age, (c) number of males and females, (d) participants' nationalities, (e) name of self-report measure used, and (f) if gender differences were reported.

When studies were included, but did not provide necessary data for coding and computing the meta-analytic statistics (n = 91 studies), the corresponding author was contacted and asked for providing supplementary information via e-mail. Taking together the available and the provided data, 59 studies with 65 samples could be included in the meta-analysis.

The first and second author carried out independent codings for the moderators of age group, nation, and type of measure for each sample. Resulting discrepancies were solved in a joint discussion between the two authors. Age group consisted of six categories: <13, 13–17, 18–20, 21–24, 25–34, and 35–54 years (agreement rate 91.8%). Nation incorporated the U.S., Switzerland, Israel, and Germany (agreement rate 94.8%), in which at least 60% of the participants in a sample had this nationality. Type of measure comprised the VIA-IS, the VIA-Youth, and the short measures of character strengths (agreement rate 95.9%).

Study sample

Overall, 59 studies containing 65 samples (mostly convenient samples) were included in the meta-analysis (total N = 1,189,924). The samples did not overlap to ensure the independence of effect sizes. (See Tables S2 and S3 in the supplementary material for the overview of effect sizes and information of each sample.)

Data analyses

Mean effect sizes and homogeneity tests were conducted with the MAd package (Del Re & Hoyt, 2014) in *R* (*R* Core Team, 2015). As the group sizes differed, we computed Hedges' *g* as the unbiased estimate of Cohen's *d* (see Ellis, 2010). Hedges' *g* was computed by subtracting the mean score for females from the mean score for males (see Hyde, 2014), divided by the pooled within-groups standard deviation. As we assumed that the effect differs between samples, analyses were computed using a random-effects model (Konstantopoulos & Hedges, 2009) in order to generalize beyond the included studies. Means and standard deviations were available for all effects of the included studies (one sample only investigated appreciation of beauty/excellence, and another sample did not provide means for citizenship). Negative values of *g* represent higher scores for females, while positive values represent higher scores for males. Effect sizes were categorized according to Cohen (1992) with ≥|0.80| as large, ≥|0.50| as medium, and ≥|0.20| as small. Due to the large number of variables in the analysis, the significance threshold was set to $p < .001$ (two-tailed).

Additionally, 95% confidence intervals (*CI*) for the effect sizes, the Q-statistic Q_T as a measure of homogeneity, and the percentage of the total variance that is attributable to between-sample variance (I^2) were computed. Furthermore, the relative and absolute median effect sizes across the 24 character strengths were computed as an overall index of the direction and size of gender differences, respectively. In order to test how sensitive the results were for publication bias, the trim-and-fill method (Duval, 2005) was applied to assess the potential impact of missing studies on the main effects.

Moderation analyses (mixed-effects models) were conducted to test whether *g* varied across the levels of the moderators. Different levels of age group (<13, 13–17, 18–20, 21–24, 25–34, and 35–54 years), nation (U.S., Switzerland, Israel, and

Germany), and type of measure (VIA-IS, VIA-Youth, and short measures) were included if they applied to at least five samples. Heterogeneity between studies was calculated by using the Q-statistic Q_B, which provides a test of whether a moderator accounts for significant variance among the effect sizes. Furthermore, effect sizes across the 24 character strengths were correlated (Spearman's ρ) across the different levels of the moderators as an index of rank-order similarity.

Results

Main effects

Table 1 shows the meta-analytic results of the gender differences in the character strengths. As shown in Table 1, 17 of the 24 character strengths showed significant gender differences. However, these effects were mostly negligible. Small to medium effects (g = |0.20–0.50|) occurred for only four of the character strengths (love, kindness, appreciation of beauty/excellence, and gratitude), with females scoring higher than males. The median effect size across the 24 character strengths was -0.06 (absolute value = |0.08|) and thus also negligible. The trim-and-fill method to assess the impact of missing studies on the observed results showed that 12 of the 24 character strengths were still significant, and the substantial effects of love, kindness, appreciation of beauty/excellence, and gratitude were replicated (see Table S4 for the detailed results of these analyses).

Table 1. Main effects of gender differences in the 24 character strengths.

Character strengths	*k*	*g*	95% *CI*	Q_T	I^2
Creativity	64	0.17***	[0.14, 0.19]	514.36***	88%
Curiosity	64	-0.01	[-0.03, 0.01]	168.13***	63%
Open-mindedness	64	0.08***	[0.06, 0.11]	437.61***	86%
Love of learning	64	-0.11***	[-0.13, -0.09]	246.14***	74%
Perspective	64	0.03	[0.01, 0.06]	706.19***	91%
Bravery	64	0.02	[-0.01, 0.05]	616.84***	90%
Persistence	64	-0.03	[-0.04, -0.01]	205.05***	69%
Integrity	64	-0.14***	[-0.16, -0.11]	558.77***	89%
Vitality	64	-0.03***	[-0.05, -0.02]	201.79***	69%
Love	64	-0.29***	[-0.32, -0.27]	312.91***	80%
Kindness	64	-0.30***	[-0.33, -0.27]	851.49***	93%
Social intelligence	64	-0.16***	[-0.18, -0.13]	636.72***	90%
Citizenship	63	-0.06***	[-0.09, -0.04]	518.44***	88%
Fairness	64	-0.12***	[-0.15, -0.10]	531.61***	88%
Leadership	64	0.00	[-0.03, 0.03]	758.41***	92%
Forgiveness/mercy	64	-0.06***	[-0.09, -0.04]	517.06***	88%
Humility/modesty	64	-0.08***	[-0.10, -0.05]	454.72***	86%
Prudence	64	-0.05	[-0.08, -0.01]	1045.20***	94%
Self-regulation	64	0.13***	[0.11, 0.15]	406.84***	85%
ABE	65	-0.32***	[-0.35, -0.29]	791.78***	92%
Gratitude	64	-0.27***	[-0.30, -0.25]	521.58***	88%
Hope	64	-0.01	[-0.02, 0.01]	136.31***	54%
Humour	64	0.05***	[0.02, 0.07]	344.12***	82%
Spirituality	64	-0.14***	[-0.16, -0.12]	275.30***	77%

Notes. *N* (males) = 395,602–395,769; *N* (females) = 793,834–794,155; ABE = appreciation of beauty/excellence, *k* = number of samples, *g* = Hedges' *g* (effect size), 95% *CI* = 95% confidence interval of *g*, Q_T = index of the total heterogeneity, I^2 = percentage of the total variance that is attributable to between-sample variance.
*** $p<.001$.

Moderation analyses

Both heterogeneity indices indicated that there was more variance between the samples than would be expected by chance. Thus, moderation analyses reveal whether the sample characteristics can systematically explain the variability of the gender differences in the character strengths.

Age

The effect sizes of the gender differences in the 24 character strengths across age groups are shown in Table 2. (Table S5 in the supplementary material shows their confidence intervals.) As shown in Table 2, age significantly moderated the gender differences in 13 of the 24 character strengths. Median effect sizes across the 24 character strengths were -0.15 for <13 years (|0.15|), -0.18 for 13–17 years (|0.18|), -0.05 for 18–20 years (|0.07|), 0.05 for 21–24 years (|0.14|), -0.10 for 25–34 years (|0.11|), and 0.00 for > 35 years (|0.09|). Thus, gender differences were negligible across the 24 character strengths in each age group, while there was a small trend for higher overall scores for females in comparison to males for children and adolescents. Also correlating the effect sizes across the 24 character strengths of each age group with one another revealed large positive correlations (Spearman's ρ ranging from .39–.92, all *p*s < .06), indicating a high rank-order similarity of the effect sizes across age groups.

In line with these findings, significant gender differences in children and adolescents always favoured girls in comparison to boys, while gender differences were mixed in adults. For creativity and open-mindedness, no gender differences were found for participants <20 years, while small effects were found for adults, with men scoring higher than women (especially in 21–24-year-olds). For perspective, citizenship, fairness, and humility/modesty, small gender differences were found for children and adolescents (with girls scoring higher than boys), while these effects were negligible for adults. Finally, the gender differences in kindness and appreciation of beauty/excellence were medium-sized in children and adolescents, while they were either negligible or small in adults.

Table 2. Effect sizes (Hedges' *g*) of gender differences in the character strengths across age groups (in years).

Character strengths	Q_B	< 13 (*k* = 5)	13–17 (*k* = 8)	18–20 (*k* = 5–6)	21–24 (*k* = 5–6)	25–34 (*k* = 13)	35–54 (*k* = 24)
N_{males}		750	6,944	1,282–1,415	1,035–1,056	162,073	17,334
$N_{females}$		824	8,701	1,628–1,861	1,356–1,444	316,916	35,183
Creativity	33.36***	-0.05	0.01	0.18	0.33***	0.20***	0.18***
Curiosity	10.13	0.04	-0.09	0.04	0.09	0.00	0.00
Open-mindedness	65.86***	-0.13	-0.11	0.03	0.28***	0.06	0.18***
Love of learning	8.91	-0.08	-0.14	-0.07	0.05	-0.10	-0.12***
Perspective	86.44***	-0.28***	-0.22***	-0.01	0.16	0.06	0.14***
Bravery	70.66***	-0.14	-0.19***	0.20***	0.27***	0.06	0.00
Persistence	6.81	-0.13	-0.04	0.02	0.05	-0.05	0.00
Integrity	14.94	-0.35***	-0.31***	-0.09	-0.13	-0.12	-0.10
Vitality	3.22	-0.06	-0.05	0.01	0.01	-0.06	-0.01
Love	8.08	-0.41***	-0.32***	-0.25***	-0.18	-0.34***	-0.28***
Kindness	46.75***	-0.57***	-0.61***	-0.30***	-0.05	-0.31***	-0.21***
Social intelligence	42.11***	-0.25***	-0.19***	-0.02	0.00	-0.09	-0.25***
Citizenship	48.43***	-0.29***	-0.28***	-0.04	0.19	-0.10	0.02
Fairness	48.51***	-0.27***	-0.38***	-0.13	0.04	-0.12	-0.04
Leadership	13.31	-0.05	-0.03	-0.06	0.20	-0.06	0.08
Forgiveness/mercy	48.45***	-0.23***	-0.19***	-0.21***	0.05	-0.13***	0.05
Humility/modesty	45.61***	-0.23***	-0.26***	-0.07	0.01	-0.15***	0.03
Prudence	7.69	-0.11	-0.04	-0.11	0.16	-0.11	0.01
Self-regulation	24.80***	-0.15	0.05	0.14	0.19	0.11	0.17***
ABE	62.31***	-0.53***	-0.62***	-0.14	-0.12	-0.26***	-0.30***
Gratitude	7.33	-0.26***	-0.22***	-0.16	-0.15	-0.30***	-0.30***
Hope	4.41	0.03	0.02	0.02	0.04	-0.05	-0.02
Humour	54.36***	-0.11	-0.11	0.02	0.31***	0.07	0.07
Spirituality	6.71	-0.09	-0.16	-0.06	-0.24***	-0.14***	-0.09

Notes. ABE = appreciation of beauty/excellence, *k* = number of samples, Q_B = significance of the moderation effect.
*** $p<.001$.

Additionally, the gender differences of several strengths showed idiosyncratic and complex patterns with age. For bravery, females scored higher than males in <18-year-olds, while males scored higher than females in 18–24 year-olds, and no gender difference was found in >25-year-olds. For social intelligence, females scored higher than males in <18-year-olds and 35–54-year-olds, while no gender difference was found for the other age groups. For forgiveness/mercy, females scored higher than males in <20 year-olds, and for humour males scored higher than females in 21–24-year-olds. Finally, girls' self-regulation scores were higher than those of boys in <13-year-olds, while males scored higher than females in adults.

Nation

The effect sizes of gender differences in the 24 character strengths across the four nations are shown in Table 3. (Table S6 in the supplementary material shows their confidence intervals.) As shown in Table 3, nation did not significantly moderate gender differences in any character strength. Median effect sizes across the 24 character strengths were -0.13 for the U.S. (|0.15|), -0.05 for Switzerland (|0.10|), -0.07 for Israel (|0.09|), and -0.04 for Germany (|0.09|). Again, correlating the effect sizes across the 24 character strengths across nations revealed large positive correlations (Spearman's ρ ranging from .29–.71, *p*s < .17), indicating a high rank-order stability of the effect sizes across nations.

Table 3. Effect sizes (Hedges' *g*) of gender differences in the character strengths across nations.

Character strengths	Q_B	U.S. (*k* = 4–5)	Switzerland (*k* = 16)	Israel (*k* = 8)	Germany (*k* = 5)
N_{males}		154,832–154,866	3,527	1,551	257
$N_{females}$		306,028–306,116	7,492	2,271	634
Creativity	4.89	0.30	0.14	0.10	0.00
Curiosity	9.95	-0.04	0.02	0.00	-0.21
Open-mindedness	8.03	0.01	0.11	-0.05	0.16
Love of learning	15.80	-0.16***	-0.13***	0.01	-0.34***
Perspective	2.48	0.04	0.01	-0.08	0.11
Bravery	4.99	0.15	-0.08	-0.06	-0.07
Persistence	0.36	0.00	-0.03	-0.05	0.00
Integrity	3.37	-0.15	-0.13	-0.23***	-0.04
Vitality	4.44	-0.06	-0.02	0.05	-0.10
Love	5.19	-0.37***	-0.29***	-0.29***	-0.38***
Kindness	1.93	-0.44***	-0.41***	-0.30***	-0.34
Social intelligence	13.82	-0.05	-0.23***	-0.13	-0.29
Citizenship	4.14	-0.12	-0.06	-0.15	0.04
Fairness	2.06	-0.20	-0.14	-0.18	-0.03
Leadership	12.16	-0.16	0.05	-0.04	0.08
Forgiveness/mercy	15.01	-0.23	0.03	-0.16	0.00
Humility/modesty	4.24	-0.12	-0.05	-0.19	-0.03
Prudence	1.41	-0.14	-0.05	-0.14	0.09
Self-regulation	3.14	0.17	0.13	0.01	0.06
Appreciation of beauty/excellence	5.05	-0.24	-0.43***	-0.30***	-0.48***
Gratitude	4.11	-0.34***	-0.24***	-0.22***	-0.40***
Hope	1.06	-0.03	0.01	0.01	-0.07
Humour	0.69	0.02	0.03	-0.02	0.03
Spirituality	1.94	-0.21	-0.12	-0.03	-0.12

Notes. *k* = number of samples, Q_B = significance of the moderation effect.
*** $p<.001$.

Type of measure

The effect sizes of gender differences in the 24 character strengths across the types of measure are shown in Table 4. (Table S7 in the supplementary material shows their confidence intervals.) As shown in Table 4, the type of measure significantly moderated the effect sizes of the gender differences in 14 of the 24 character strengths. Median effect sizes across the 24 character strengths were -0.03 for the VIA-IS (|0.10|), -0.17 for the VIA-Youth (|0.17|), and -0.03 for the short measures (|0.09|). Thus, gender

differences were negligible across the 24 character strengths in the VIA-IS and the short measures, while there was a small trend for higher overall scores for girls in comparison to boys for the VIA-Youth. Also correlating the effect sizes across the 24 character strengths showed large positive correlations (Spearman's ρ ranging from .60–.88, all *p*s < .002), indicating a high rank-order similarity of the effect sizes across measures.

Table 4. Effect sizes (Hedges' *g*) of gender differences in the character strengths across measures.

Character strengths	Q_B	VIA-IS (k = 38)	VIA-Youth (k = 14)	Short measures (k = 11–13)
N_{males}		385,345	7,598	2,729–2,862
$N_{females}$		780,128	9,371	4,423–4,656
Creativity	80.30***	0.23***	0.00	0.13***
Curiosity	6.69	0.00	-0.06	0.00
Open-mindedness	58.99***	0.13***	-0.10***	0.09
Love of learning	5.53	-0.12***	-0.11***	-0.05
Perspective	148.54***	0.10***	-0.25***	0.03
Bravery	68.99***	0.04	-0.18***	0.14***
Persistence	6.80	-0.02	-0.08	0.02
Integrity	36.57***	-0.10***	-0.31***	-0.10
Vitality	1.48	-0.03	-0.06	-0.03
Love	6.26	-0.31***	-0.30***	-0.23***
Kindness	92.21***	-0.26***	-0.58***	-0.20***
Social intelligence	6.03	-0.16***	-0.21***	-0.10
Citizenship	72.91***	-0.03	-0.28***	0.04
Fairness	67.03***	-0.10***	-0.33***	-0.03
Leadership	15.12	-0.02	-0.05	0.11***
Forgiveness/mercy	26.78***	-0.03	-0.20***	-0.07
Humility/modesty	42.04***	-0.04	-0.24***	-0.03
Prudence	8.24	-0.07***	-0.06	0.04
Self-regulation	36.38***	0.17***	0.00	0.12***
ABE	170.06***	-0.31***	-0.63***	-0.14***
Gratitude	170.24***	-0.31***	-0.23***	-0.14***
Hope	0.94	0.00	0.00	-0.03
Humour	63.75***	0.08***	-0.12***	0.09
Spirituality	0.34	-0.14***	-0.15***	-0.15***

Notes. ABE = appreciation of beauty/excellence, k = number of samples, Q_B = significance of the moderation effect.
*** p<.001.

Regarding individual character strengths, significant gender differences in the VIA-Youth always favoured girls in comparison to boys, while gender differences were

more mixed in the VIA-IS and the short measures. Specifically, small gender differences were found for perspective, integrity, citizenship, fairness, forgiveness/mercy, and humility/modesty in the VIA-Youth. Gender differences were medium-sized in the VIA-Youth for kindness and appreciation of beauty/excellence, while they were small or negligible in the VIA-IS and the short measures. Open-mindedness, bravery, self-regulation, and humour showed a trend towards males scoring higher than females in the VIA-IS and the short measures, while these strengths tended to be more strongly endorsed by females than males in the VIA-Youth. Finally, creativity only had a small gender difference in the VIA-IS (with males scoring higher than females).

Discussion

The present meta-analyses included 65 samples with overall 1,189,924 participants. Small gender differences were found for 4 of the 24 character strengths, with females scoring higher in love, kindness, appreciation of beauty/excellence, and gratitude compared to males. When computing the effect sizes across the 24 character strengths, the relative and absolute effects were negligible. Thus, the gender similarity hypothesis received support in the area of positive traits. The effect sizes of gender differences in character strengths were also similar to those found for personality traits and subjective well-being (Hyde, 2014). This supports the view that females and males do not differ substantially in their basic personality characteristics as well as their positive psychological functioning.

The moderation analyses indicated that the gender differences in 13–4 of the 24 character strengths differed across age groups and measures. As the ranks of the effect sizes across the character strengths were mostly similar, the levels of the moderators did not show completely different patterns of gender differences in character strengths. Still,

several notable findings emerged. First, the main effects of love, kindness, appreciation of beauty/excellence, and gratitude were found in all moderator levels except for 18–24-year-olds and the short measures (only appreciation of beauty/excellence and gratitude for the latter). Notably, these two levels of the moderators were confounded: Eight of the 12 samples that investigated 18–24-year-olds employed a short measure. Thus, it cannot be determined in the present meta-analysis whether the lack of gender differences was due to the age group (young adults), the measure (short measures), an interaction of these variables, or other aspects that these studies might have had in common (e.g., mostly college or university students).

Second, most differences were found between children/adolescents and adults: For children and adolescents, all gender differences favoured females, while in adults gender differences were more mixed. The same effect was found for the VIA-Youth in comparison to the other two measures, which were mostly employed with adults. As age group (children/adolescents vs. adults) and measure (VIA-Youth vs. VIA-IS as the standard instrument) were confounded, this could be a genuine age or maturation effect, or it could be due to the measure. Specifically, the VIA-Youth items were adapted to fit to the appropriate age group, also slightly changing their contents. Thus, these items might be more sensitive to gender differences or might apply more to girls than boys. These different explanations could be tested in future studies for example by employing cognitive interviewing techniques, which yield information on the cognitive processes underlying the item responses in the measures of character strengths (Beatty & Willis, 2007). Also measurement invariance as well as differential item functioning should be tested to establish the extent to which the measures and items assess the same constructs across both genders. As first steps in this direction, McGrath recently investigated the measurement invariance of the second-order factors for different languages in the VIA-

IS (McGrath, 2016) and for age, gender, and countries in the VIA-Youth (McGrath & Walker, 2016).

Third, the VIA-IS and the short measures showed similar gender differences across the 24 character strengths, as indicated by large rank correlations and the same median differences in the effect sizes. Still, the short measures only showed two gender differences (love and kindness), while the VIA-IS also showed gender differences in creativity (with higher scores for males than females) as well as appreciation of beauty/excellence and gratitude (with females scoring higher than males). Thus, gender differences in these three character strengths differed for the VIA-IS and the short measures. This needs to be taken into account when choosing or comparing measures of character strengths. Some studies that developed short measures tested and confirmed the convergence with the VIA-IS (e.g. Littman-Ovadia, 2015; Ruch et al., 2014), yet no systematic comparisons were made in terms of gender differences of the different measures. Future studies could systematically vary the properties of a measure (e.g., item contents, wordings, and formats, number of items, or reliability) to investigate their influence on the obtained gender differences in character strengths.

Fourth, nation did not significantly moderate gender differences. Thus, the gender differences in the 24 character strengths were comparable for the U.S., Switzerland, Germany, and Israel. This is in line with McGrath's (2015) findings of the similarity of the means and rank order of the character strengths across 75 nations.

Limitations and future directions for research

First, as in most psychological studies, the meta-analysis included more females than males (ratio 2:1). Still, at least 200 males could be included at each level of the moderators. Second, it would be desirable to include more fine-grained age groups for children and adolescents as well as for middle-aged and older adults. This seems

especially important as age moderated the gender differences also in non-linear and complex patterns, varying between the different character strengths. Similarly, it would be advisable to compare gender differences across more nations, which should also cover more world regions. Third, some levels of the moderators were not independent from one another (i.e., measures and age groups). This prevents conclusions on which moderators actually contributed to an effect, and whether any interactions between the moderators exist. Future studies could compare samples that allow the independent interpretations of the moderators as well as their interactions. For example, the same age group (e.g., 16–19-year-olds) could complete both the VIA-IS and the VIA-Youth, which enables comparisons of gender differences in the two measures without age as a confounding variable. Fourth, similar scores in the character strengths do not automatically allow the conclusion that the same processes underlie the responses of males and females. For example, while leadership did not show significant gender differences, males and females tend to employ different leadership styles (for an overview, see Snaebjornsson, & Edvardsson, 2012). Employing cognitive interviewing and testing measurement invariance across genders could elucidate these processes. Fifth, self-reports in mostly convenience samples were employed, which potentially suffer from self-selection and response biases. Future studies could thus employ multi-method approaches in samples that are representative for a nation.

Conclusions

The present meta-analysis supports the idea that males and females are mostly similar in their character strengths, with the exception of love, kindness, appreciation of beauty/excellence, and gratitude, in which females scored higher than males. Age and type of measure moderated the gender differences in character strengths (while nationality did not), with the largest differences occurring for children/adolescents

(VIA-Youth) in comparison to adults (VIA-IS and most of the short measures).

Overall, these findings have several implications for both research and application. First, although no major biases are expected, gender should best be controlled for in statistical analyses concerning character strengths, especially when different measures and age groups are employed. Second, the provided effect sizes (overall and separate for each level of the moderators) can serve as a reference with which newly collected samples can be compared. This allows inferences on whether the collected sample is "typical" in terms of its gender differences in character strengths. Third, methodological issues might have contributed to the obtained gender differences (e.g., measurement invariance, differential item functioning, reliability, item content, wording, and format), which requires further investigations. If the gender differences turn out to be substantial, their causes (e.g., influence of gender on character strengths development, biological, or societal factors) and conditions (i.e., determining circumstances under which gender differences in the character strengths are intensified or reduced) could be investigated. Fourth, strength-based positive interventions, especially those targeting love, kindness, appreciation of beauty/excellence, and gratitude, might differ in their effectiveness across genders; that is, training some strengths (or a combination thereof) might be more effective for females than for males, or vice versa.

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