Current Psychology
https://doi.org/10.1007/s12144-019-00552-y

Humor styles across 28 countries

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Abstract
Responses to a measure of the four humor styles of affiliative, aggressive, self-enhancing, and self-defeating from the Humor Styles Questionnaire (HSQ; Martin et al. *Journal of Research in Personality, 37*(1), 48–75, 2003) were collected from individuals ($N = 8361$) in 28 countries encompassing 21 different languages. The purpose of this global collaboration was to examine both differences and similarities of humor styles across nations at the descriptive level. Across the countries, typically the highest scores were for the affiliative humor style. When each humor style was examined, some country samples demonstrated differences in mean scores. For example, the samples from Hungary, Indonesia, South Africa, and Serbia had high self-enhancing scores and Japan scored the lowest. In contrast to mean differences, almost all of the countries demonstrated positive inter-scale correlations, similar sex differences, and similar correlations with age, suggesting more similarities than differences. As discussed, some of the samples had low internal consistency values and poorly fitting factor structures for the humor style scales, suggesting that those results should be interpreted with caution.

Keywords Humor styles · Cross culture · Adults

Introduction

This study investigates the possible similarities and differences in four humor styles across 28 countries and 21 languages at the descriptive level. As humor styles are representative of how individuals use humor in their daily life and are conceptualized as individual difference variables akin to personality (Martin et al. 2003), knowing more about humor styles across countries adds information to how individuals interact with each other and use humor both individually and interpersonally.

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The Four Humor Styles

Humor styles are representative of how individuals use humor in their daily life (Martin et al. 2003). The four humor styles model proposed by Martin et al. (2003) decomposes humor styles into a 2 × 2 design with one dimension representing the focus (or target) of the style (self versus the group) and the other representing the nature of the humor (positive or benevolent versus negative or potentially detrimental or malevolent). The two group or outward or other-oriented humor styles are affiliative and aggressive. The affiliative humor style is a positive humor style that involves using humor to improve the cohesiveness of the group, for example agreeing to the item, "I enjoy making people laugh" (Martin et al. 2003, p. 58). The aggressive humor style is a negative style of humor where the direction is outward and involves belittling and teasing others, for example agreeing to the item, "If someone makes a mistake, I will often tease them about it" (Martin et al. 2003, p.58).

Published online: 06 December 2019

The two self-oriented humor styles include the self-enhancing and the self-defeating humor styles. The self-enhancing humor style represents a positive self-oriented humor style. People who score highly on the self-enhancing humor scale use humor to improve their mood even when alone (can "cheer" themselves), for example, agreeing to the item, "Even when I'm by myself, I'm often amused by the absurdities of life" (Martin et al. 2003, p. 58). The self-defeating humor style is a negative person-oriented style. Individuals who engage in self-defeating humor use themselves as the target of ridicule and make fun of themselves. Individuals may use self-defeating humor to try to ingratiate themselves into a group or to gain acceptance, but the target of the humor is the self and not a group, for example, agreeing to the item, "Letting others laugh at me is my way of keeping my friends and family in good spirits" (Martin et al. 2003, p. 59).

How people use humor styles can provide a greater understanding about individual differences. The four humor styles have been found to correlate with various mental health variables. For example, positive humor styles correlate positively with measures of social competence (Fitts et al. 2009), happiness (Ford et al. 2014; Yue et al. 2014), perceived social support, satisfaction with life (Dyck and Holtzman 2013), and resiliency (Cann and Collette 2014). Negative correlations are found between the positive humor styles and loneliness (Schermer et al. 2017), shyness (Fitts et al. 2009), suicidal ideation (Tucker et al. 2013b), depression (Dyck and Holtzman 2013; Tucker et al. 2013a), anger-proneness (Torres-Marín et al. 2018), neuroticism (Dyck and Holtzman 2013), and social anxiety (Tucker et al. 2013a). In contrast, the negative humor styles correlate negatively with happiness (Ford et al. 2014) and positively with thwarted belongingness (Tucker et al. 2013b), depressive symptoms (Tucker et al. 2013b), and loneliness (Schermer et al. 2017). These results suggest a pattern where negative humor styles are associated with mental health problems whereas positive humor styles are associated with better mental health. Many of these correlations with mental health may reflect the relationships also found between humor styles and personality, especially neuroticism, as described below.

With respect to personality, the four humor styles have been correlated with the Big Five factors. For example, in a meta-analysis by Mendiburo-Seguel et al. (2015) combining the results of 15 studies, the affiliative humor style correlated positively with extraversion, agreeableness, and openness to experience. The affiliative humor style had a negative correlation with neuroticism. The aggressive humor style scores correlated positively with neuroticism and extraversion. Negative correlations were found between the aggressive humor style and agreeableness, openness to experience, and conscientiousness. The self-enhancing humor style had positive correlations with extraversion, openness to experience, agreeableness, and conscientiousness and a negative correlation with neuroticism. Positive correlations were reported between the self-defeating humor style and neuroticism and openness to experience. The self-defeating humor style had a positive correlation with neuroticism and negative correlations with extraversion, agreeableness, and conscientiousness (Mendiburo-Seguel et al. 2015).

Polimeni and Reiss (2006) have suggested that humor is an essential component of human interaction with a strong evolutionary history. Across some behavior genetic studies using adult twin samples, humor styles have been found to have a genetic component with heritability estimates ranging from a low of 5% for self-defeating humor in one sample to a high of 47% for both aggressive and self-defeating humor styles (Baughman et al. 2012; Schermer et al. 2017; Vernon et al. 2008a, 2008b). Because humor styles have a genetic component and because humor styles correlate with personality and mental health variables, humor styles provide a unique insight into individual differences.

Cross-National Studies Using the Humor Styles Model

Only a few cross-country studies have been conducted with the humor style model proposed by Martin et al. (2003), and of those available, only two countries are compared at one time together. Kalliny et al. (2006) investigated differences between American and Arab university students on the scale scores for the humor styles. Although there were no differences between Arabs and Americans in affiliative and aggressive humor styles, Americans did score significantly higher than the Arab sample on self-enhancing and self-defeating styles. Kalliny et al. (2006) suggested that these differences reflected findings that Americans are more individualistic in nature (as they scored higher on the self-oriented humor styles) but that there were no differences in the more group oriented humor styles (aggressive and affiliative). Cruthirds et al. (2012) examined American versus Mexican television commercials and categorized the commercials based on the four humor styles. Cruthirds et al. (2012) reported that American commercials were twice as likely to use humor compared to Mexican commercials and that American commercials were scored higher on affiliative, aggressive, and self-defeating humor styles. In contrast, Mexican commercials were scored higher on self-enhancing humor style. Chen and Martin (2007) investigated the differences between Chinese participants and the Canadian score norms of the Humor Style Questionnaire (HSQ; Martin et al. 2003) and reported that Chinese individuals scored lower on all four humor styles, compared to the Canadians, and especially lower for the aggressive humor style. Although mean comparisons were not made on the humor styles, Wang et al. (2018) reported that positive humor styles reduced the relationship between

stress measures over time for Australian employees but not for Chinese employees. Also reported was that negative humor styles did not mitigate the correlation between stress over time for either the Chinese or the Australians (Wang et al. 2018).

The country comparison studies demonstrate that groups of individuals' humor styles may have similarities as well as differences. Expanding upon the number of countries assessed can add further information in the field of humor research. For example, Proyer et al. (2009) examined gelotophobia (the fear of being laughed at) across 73 countries. The scale properties of the single gelotophobia scale was tested across the samples. The authors reported that the nation accounted for more variance in item responses than did language. Heintz et al. (2018) investigated corrective and benevolent humor across 22 countries. For all of the samples, individuals scored higher on benevolent humor than they did on corrective humor. National differences were also reported. For example, samples of individuals from countries such as Malaysia used corrective humor more than Croatians and Latvians. In general, these large comparisons of national samples provide an insight into the similarities and differences across countries with respect to certain dimensions of humor.

Current Study

The aim of the current study was to explore how humor styles relate to each other across multiple countries as there is empirical evidence on the individual differences for people in using humor styles across nations, as described above. Following, the scale properties for each country are examined. In particular, the internal consistency (reliability), inter-scale correlations, and confirmatory factor analyses were established for the sample from each country. Also for descriptive purposes, the profile of the humor style scores for each country sample is presented.

Participants and Procedure

The study was completed by $N = 8361$ participants (5238 females, 3107 males, 16 missing sex information) from 28 countries. Participants were mostly young adults, with an average age of 23.23 years ($SD = 6.42$) and ranging from 17 to 82 (the 17 year old individuals represent first year undergraduate students; see Table 1 for demographic information about the samples).

Measure

Participants completed the Humor Styles Questionnaire (HSQ; Martin et al. 2003). The HSQ is comprised of 32 items measuring different behaviors corresponding to the four humor styles: affiliative, aggressive, self-enhancing, and self-defeating. Respondents answer the items using seven-point Likert type scale ranging from 1 (*definitely disagree*) to 7 (*definitely agree*). As each scale consists of eight items, scale totals can range from a low of 8 to a maximum value of 56.

In order to conduct our study, we have involved a number of researchers who not only supervised data collection in their countries but also developed 16 new native language (translated) versions of the HSQ (see Table 1). Scales which were delivered in German (Ruch and Heintz 2016), Hungarian (Boda-Ujlaky et al. 2017), Polish (Hornowska and Charytonik 2011), Russian (Ivanova et al. 2013), and Spanish (Torres-Marín et al. 2018) had been previously translated and published. Each of the new translations were translated and then back translated prior to administration. Nevertheless, these new translated scales have not been independently assessed, and the results in this paper are the first to report upon the scale properties. Therefore, the results with these new measures should be interpreted as preliminary (note that each of the new and unpublished translations of the scales are available from the associated authors upon request).

Statistical Analyses

First, we report the descriptive statistics on the manifest scores, i.e., means, reliability estimates, inter-item correlations, and Pearson's correlations between the scales. However, as manifest scores are burdened with measurement error, we further examined the HSQ in the framework of structural equation models (i.e., four correlated factors model) in order to assess the influence of this error (Kline 2013). In the assessment of the HSQ factorial structure, we parcelled the eight items per factor into four parcels per factor using the item-to-construct balance approach (Little et al. 2002). No correlations between residuals were entered. Given the fact that the CFI tends to be biased in models with a high number of variables (Kenny and McCoach 2003), to evaluate model fit, we relied on the estimates of the Root Mean Square Error of Approximation (RMSEA), which, according to Byrne (1994), should be below .08. The computations were carried out in Mplus (v. 7.2. Muthén and Muthén 2012). The data for this paper are available at: https://osf.io/yb4mj/?view_only=adee09e66fc24145884c2e7a217270dd

Research Ethics Board approval was obtained from two host universities before collecting data. Before completing the questionnaires, each participant was acquainted with the research procedure and informed about the subject of the study. All rights of the participant were described in detail and informed consent for participation in the study was obtained. The study was anonymous, and no sensitive or personal data were collected. The procedure lasted approximately 15–30 min.

Table 1 Demographic statistics for the samples across the 28 nations

Country	Language	Data collection procedure	*N* females	*N* males	Age *M* years (*SD*)	Age range
Bosnia & Herzegovina	Bosnian	Paper-pencil	297	203	20.91 (2.70)	18–43
Brazil	Portugese	Online	209	95	28.76 (11.38)	18–71
Bulgaria	Bulgarian	Paper-pencil	128	131	19.94 (1.49)	17–33
Canada	English	Online	109	119	24.30 (5.20)	18–55
Chile	Spanish	Online	164	69	20.97 (3.10)	17–49
Colombia	Spanish	Online	142	114	21.06 (3.22)	18–48
Croatia	Croatian	Online	185	64	21.35 (2.61)	18–34
Estonia	Estonian	Paper-pencil	153	215	24.28 (6.96)	18–49
Germany	German	Online	258	75	26.83 (6.56)	17–57
Hungary	Hungarian	Online	243	43	30.11 (11.81)	18–73
Indonesia	Indonesian	Online	147	147	21.28 (2.51)	18–36
Iran	Farsi	Online/ Paper-pencil	172	156	28.79 (8.30)	17–62
Japan	Japanese	Paper-pencil	65	132	19.64 (1.16)	18–24
Latvia	Lativian	Online	142	61	26.65 (8.36)	18–66
Malaysia	English	Paper-pencil	94	106	21.72 (1.31)	20–25
Pakistan	English	Paper-pencil	289	63	21.20 (1.30)	19–26
Poland	Polish	Online	167	78	23.75 (4.43)	18–40
Portugal	Portuguese	Online	375	94	22.82 (7.46)	17–78
South Africa	English	Online	217	148	20.71 (3.57)	17–45
Romania	Romanian	Paper-pencil	100	100	20.06 (1.14)	18–27
Russia	Russian	Online	189	125	19.64 (1.64)	18–29
Serbia	Serbian	Online	302	102	21.73 (4.86)	18–52
South Korea	Korean	Paper-pencil	96	88	21.77 (2.13)	18–27
Spain	Spanish	Online	226	100	23.71 (5.84)	18–55
Turkey	Turkish	Paper-pencil	140	62	20.40 (2.24)	18–34
Ukraine	Ukrainian	Online	270	71	26.93 (9.82)	17–82
United States	English	Online	233	188	26.75 (3.26)	19–55
Vietnam	Vietnamese	Online	126	158	20.22 (1.66)	17–28

Results

Descriptive Statistics and Reliability Estimates

The descriptive statistics and reliability estimates (coefficient alpha values) for the humor styles for each country are in Table 2. For the affiliative humor style, the average coefficient alpha value was .75 with a 95% confidence interval (CI) between .72 and .79. Although these values are acceptable, the value for the sample from Pakistan was too low at .47. Upon further investigation, the alpha would only increase to .50 if the reverse-keyed item, "I rarely make other people laugh by telling funny stories about myself" was removed. Because of this low alpha value, the scale descriptives for Pakistan should be interpreted with caution. The second-lowest alpha value was .60 for the sample from Malaysia. This value was estimated to rise to .65 with the removal of the reverse-keyed item, "I usually can't think of witty things to say when I'm with other people." As with Pakistan, the results with Malaysia should be interpreted with caution. The remaining countries all had alpha values greater than a liberal alpha value of .60 for the affiliative humor style scale. Although there is no definitive "cut-off" for alpha values, a .60 has been characterized as moderate or satisfactory (Taber 2018).

Of the four humor styles, the aggressive humor style had the lowest coefficient alpha values with a mean of only .59 (95% CI: .55 to .64). As reported in Table 2, 10 of the 28 countries had alpha values less than .60. The lowest alpha was .32 for the sample from Pakistan. Further examination suggests that the alpha value may increase to .33 with the removal of the item, "Sometimes I think of something that is so funny that I can't stop myself from saying it, even if it is not appropriate for the situation". The alpha is estimated to increase to .34 with the removal of the item, "People are never offended or hurt by my sense of humor" and increase to .36 with the removal of the item, "I never participate in laughing at others even if all my friends are doing it"; both of these items are negatively-keyed. The coefficient alpha for the

Table 2 Scale descriptives for the four humor style scales for each country sampled

Country	Affiliative *M*(*SD*|α|mean inter-item correlation)	Aggressive *M*(*SD*|α|mean inter-item correlation)	Self-enhancing *M*(*SD*|α|mean inter-item correlation)	Self-defeating *M*(*SD*|α|mean inter-item correlation)
Bosnia & Herzegovina	42.34(7.70|.63|.18)	25.70(7.05|.45|.09)	34.72(8.25|.64|.18)	28.25(8.60|.67|.21)
Brazil	44.47(8.58|.84|.41)	24.17(7.36|.63|.17)	34.11(9.90|.82|.37)	26.75(9.69|.80|.34)
Bulgaria	44.48(7.52|.73|.25)	27.43(7.97|.62|.17)	35.32(8.68|.71|.24)	30.02(7.89|.64|.18)
Canada	45.82(6.74|.80|.34)	28.78(8.02|.73|.25)	33.92(9.52|.84|.40)	28.12(8.62|.78|.31)
Chile	42.76(8.31|.82|.37)	25.71(7.94|.71|.24)	35.78(8.90|.81|.35)	27.70(8.46|.75|.27)
Colombia	41.06(8.30|.78|.31)	24.01(7.51|.67|.21)	35.77(9.22|.81|.35)	23.94(8.21|.77|.29)
Croatia	42.41(7.44|.70|.23)	27.61(6.34|.42|.08)	32.96(7.88|.69|.22)	25.90(8.02|.73|.26)
Estonia	44.26(7.13|.80|.35)	29.08(7.56|.71|.24)	35.48(8.13|.78|.31)	28.04(7.76|.75|.28)
Germany	43.43(8.23|.85|.42)	26.71(7.22|.66|.20)	34.05(9.16|.83|.37)	25.54(9.56|.85|.42)
Hungary	42.70(9.15|.83|.40)	24.74(8.09|.72|.25)	36.14(9.88|.82|.37)	25.79(9.18|.76|.29)
Indonesia	43.83(7.14|.83|.39)	28.60(5.92|.51|.11)	37.51(7.68|.79|.32)	31.65(7.69|.76|.28)
Iran	40.80(9.28|.81|.36)	22.56(6.99|.57|.16)	31.29(10.70|.84|.39)	24.32(7.60|.68|.22)
Japan	37.95(7.68|.80|.33)	28.35(6.84|.67|.20)	29.83(5.78|.52|.12)	31.25(6.23|.63|.18)
Latvia	34.41(6.27|.61|.16)	28.79(5.84|.51|.11)	33.79(7.09|.76|.29)	29.88(7.57|.78|.31)
Malaysia	32.42(5.23|.60|.16)	31.54(4.38|.41|.08)	31.36(4.06|.33|.06)	31.26(4.08|.36|.07)
Pakistan	34.76(7.20|.47|.10)	28.45(6.55|.32|.05)	34.81(7.50|.57|.15)	30.05(8.09|.62|.17)
Poland	42.86(8.52|.85|.41)	27.44(7.79|.72|.25)	34.10(8.44|.80|.33)	29.42(8.72|.79|.33)
Portugal	43.57(7.68|.81|.35)	24.32(6.73|.61|.17)	33.33(9.65|.83|.37)	23.66(9.46|.83|.38)
South Africa	42.94(8.04|.74|.26)	25.90(7.66|.58|.15)	37.40(9.29|.76|.28)	26.11(9.09|.72|.25)
Romania	43.62(7.13|.65|.20)	28.42(6.63|.47|.10)	35.33(8.09|.68|.21)	25.04(7.47|.64|.18)
Russia	41.88(8.40|.80|.34)	29.73(7.57|.63|.18)	34.05(8.49|.74|.26)	28.25(8.03|.70|.23)
Serbia	46.06(6.59|.75|.29)	24.57(7.42|.64|.19)	36.85(8.86|.76|.26)	27.60(9.17|.79|.32)
South Korea	40.95(6.79|.82|.37)	25.31(6.57|.70|.22)	32.09(6.54|.70|.22)	28.29(7.32|.77|.30)
Spain	43.80(7.14|.78|.31)	22.26(7.10|.66|.21)	34.45(8.64|.79|.32)	26.66(8.03|.74|.27)
Turkey	42.08(7.57|.61|.18)	26.77(7.08|.40|.08)	32.27(10.58|.79|.32)	24.74(8.26|.62|.18)
Ukraine	42.66(8.20|.81|.35)	24.96(6.93|.63|.18)	35.03(8.68|.79|.32)	23.84(8.12|.76|.29)
United States	41.35(8.99|.86|.44)	27.84(7.68|.71|.23)	35.64(9.20|.85|.42)	27.37(9.05|.82|.37)
Vietnam	39.24(7.60|.71|.23)	25.10(6.72|.54|.13)	35.50(7.50|.64|.19)	27.68(8.32|.71|.24)

sample from Turkey was .40 which is also quite low. The alpha is estimated to increase after removing negatively-keyed items, specifically, removing "People are never offended or hurt by my sense of humor" is estimated to increase alpha to .42 and removing "I never participate in laughing at others even if all my friends are doing it" is estimated to increase alpha to .44. The sample from Malaysia also had a low alpha value of .41. Removing the same negatively keyed items as suggested for the sample from Turkey increases the alpha estimate to .45 and .46, respectively. In contrast to the negatively keyed item issue, the sample from Croatia had an alpha of .42 which was estimated to increase to .51 with the removal of the item, "Sometimes I think of something that is so funny that I can't stop myself from saying it, even if it is not appropriate for the situation", and increase to .53 with the removal of the item, "When telling jokes or saying funny things, I am usually not very concerned about how other people are taking it." Both of these items are positively keyed. Removing these two items for the sample from Bosnia and Herzegovina also increased the coefficient alpha estimate from .45 to .47 and .48, respectively. Removing the first item increased the alpha estimate for the sample from Romania from .47 to .48. These results suggest that the aggressive humor style scale does not perform well across many of the countries and that the problem does not lie necessarily with the negative versus positive keyed items. Results based on the aggressive humor style scores for the 10 countries with low reliability estimates should be interpreted with caution.

For the self-enhancing humor style scale, the mean coefficient alpha was .74 across the 28 country samples (95% CI of .69 to .78). Three country samples had alpha values less than .60: Malaysia at .33, Japan at .52, and Pakistan at .57. Upon further examination, the alpha for the sample from Malaysia was found to only increase to an estimated .35 with the deletion of the positively-keyed item, "Even when I'm by myself, I'm often amused by the absurdities of life". The alpha value

was not found to increase with the deletion of any items for either the Japanese or Pakistan samples. Because of these low alpha values, results with these countries should be interpreted with caution.

The internal consistency value for the self-defeating humor style scale averaged at .72 (95% CI .68 to .76). Only the sample from Malaysia had an estimate lower than .60, with a value of .36. Even with the deletion of the negatively keyed item, "I don't often say funny things to put myself down", the alpha estimate remained low at .49. Based on this result, the results for Malaysia should be interpreted with caution.

In general, the mean values in Table 2 suggest that across countries, the highest scores were for the affiliative humor style (grand mean = 42.01, *SD* = 8.33), then the self-enhancing humor style (grand mean = 34.59, *SD* = 8.82), followed by the self-defeating humor style (grand mean = 27.24, *SD* = 8.65), and the lowest for the aggressive humor style (grand mean = 26.40, *SD* = 7.45). For descriptive purposes, Figs. 1, 2, 3, 4 provide the manifest mean humor style scores for the 28 countries for the affiliative, aggressive, self-enhancing, and self-defeating humor style scores, respectively. For the affiliative humor style, the highest scores were found for the samples from Canada and Serbia and the lowest score came from the sample from Malaysia. The aggressive humor style means were generally the lowest values for each of the 28 samples. As reported above, the aggressive humor style scale had the lowest internal consistency (coefficient alpha values) for the humor style scores, therefore these results should be viewed as descriptive only. The sample from Malaysia had the highest mean aggressive humor style score (but also an unacceptably low internal consistency value), followed by Russia. Samples with low aggressive humor style scores came from Iran and Spain.

Samples from the countries of Hungary, Indonesia, South Africa, and Serbia had high self-enhancing humor style scores and the sample from Japan scored the lowest. For the self-defeating humor style, the highest means were from the samples from Indonesia, Japan, and Malaysia (although the results from Malaysia need to be interpreted with caution due to the low internal consistency value). The samples with the lowest means for the self-defeating humor style scores were from Colombia, Iran, Portugal, and Ukraine.

Sex Differences for each Country

The sex differences for each of the humor style scale scores for each sample from each of the 28 countries are listed in Table 3. In their report of the scale properties of the HSQ, Martin et al. (2003) reported significant sex differences for each of the four humor style scales and that men scored higher than women for each comparison. Using the results from all of the participants in the present study (see bottom of Table 3) as a comparison basis, men and women did not differ significantly on the affiliative humor style scores, but men were found to score higher on the aggressive, the self-enhancing, and the self-defeating humor style scales. In general, these results align with the results reported by Martin et al. (2003) except for the affiliative humor style scores. Women scored significantly higher than men on the affiliative humor style in the samples from Croatia and Latvia, but the reverse was the case for the sample from Iran. For the majority of the country samples, men scored higher than women on the aggressive humor style scores. Interestingly, in the sample from Estonia, women scored significantly higher on the aggressive humor style than men, the only country to show this significant pattern.

Mean differences for the self-enhancing humor styles were typically non-significant for each county sample with the exceptions of Canada and the United States where men scored significantly higher than women. With respect to the self-defeating humor style, men scored significantly higher than women in the samples from Colombia, Iran, Latvia, Poland, Portugal, South Africa, Spain, and Vietnam. In contrast, women in the Estonian and Romanian samples scored significantly higher than men on the self-defeating humor style scores.

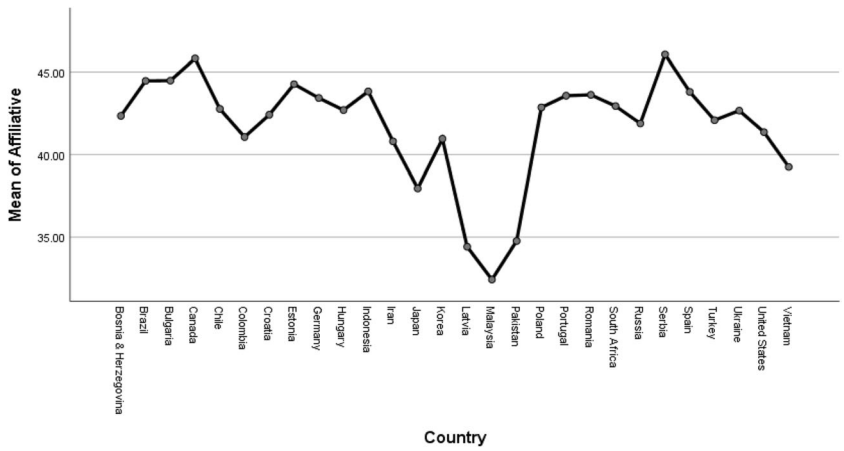

Fig. 1 Mean affiliative humor style scores for each country sample

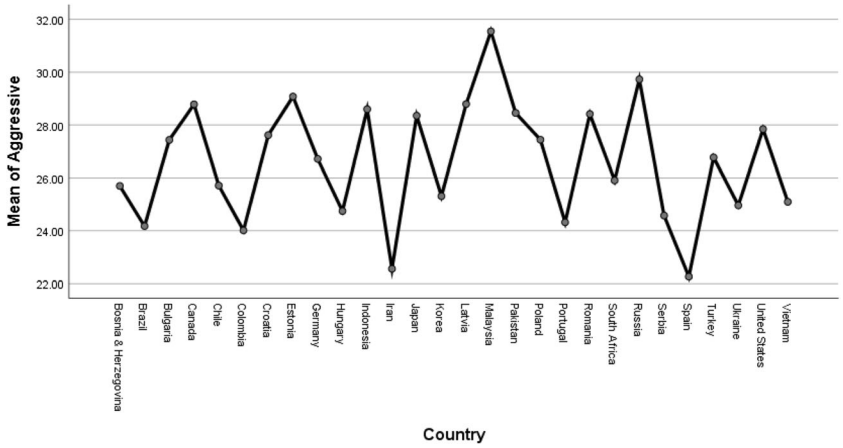

Fig. 2 Mean aggressive humor style scores for each country sample

Correlations with Age

As reported in Table 1, although all participants were adults, the age ranges for each sample varied from a six year range for Japan (18–24) to a 66 year range for the Ukrainian sample (17–82). To investigate possible correlations between age and the humor styles, age is included in the inter-scale correlations for each country sample in Table 4. Using the pattern for all participants at the bottom of Table 4 as a comparison, the affiliative humor style had a non-significant correlation with age, the aggressive humor style had a significant negative correlation with age, the self-enhancing humor style had a small but significant positive correlation with age, and the self-defeating humor style had a significant negative correlation with age. This pattern of correlations was also found for the sample from Hungary. The sample from Latvia too had the same pattern of correlations between age and humor styles but also had a significant positive correlation between age and the affiliative humor style. In contrast, the samples from Canada, Estonia, Iran, and Malaysia had significant negative correlations between age and the affiliative humor style. The Brazilian, Serbian, and Ukrainian samples had significant positive correlations between age and the self-enhancing humor style scores.

In addition to the above, significant negative correlations were between age and the aggressive humor style scores for the samples from Brazil, Canada, Iran, Spain, and Ukraine. Significant negative correlations were also found between the self-defeating humor style and the samples from Germany, Iran, Portugal, and Turkey. In general, the results suggest similar generational patterns of humor styles across the samples of different countries. Only for the correlations with age and the affiliative humor style scores, did the direction in correlation change across samples.

Inter-Scale Correlations

The question of whether or not the humor style scores intercorrelated in a similar fashion across the samples from the countries was examined. As reported by Martin et al. (2003), the four humor style scores tend to have positive inter-scale correlations. Using the inter-scale correlations for all

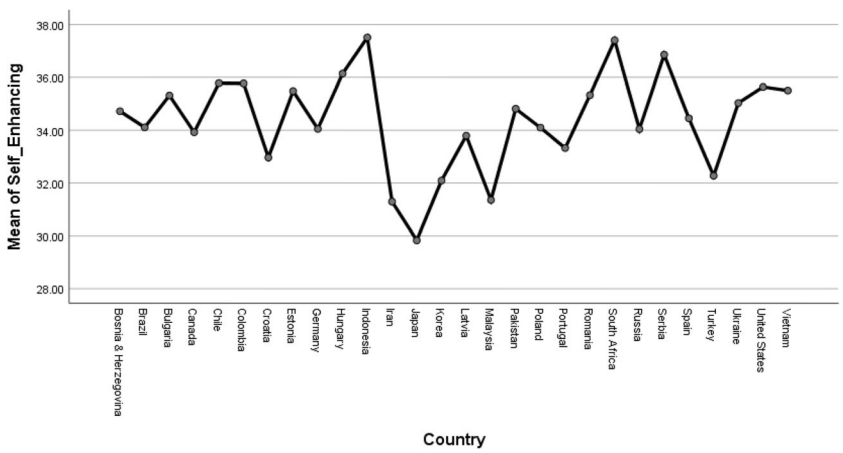

Fig. 3 Mean self-enhancing humor style scores for each country sample

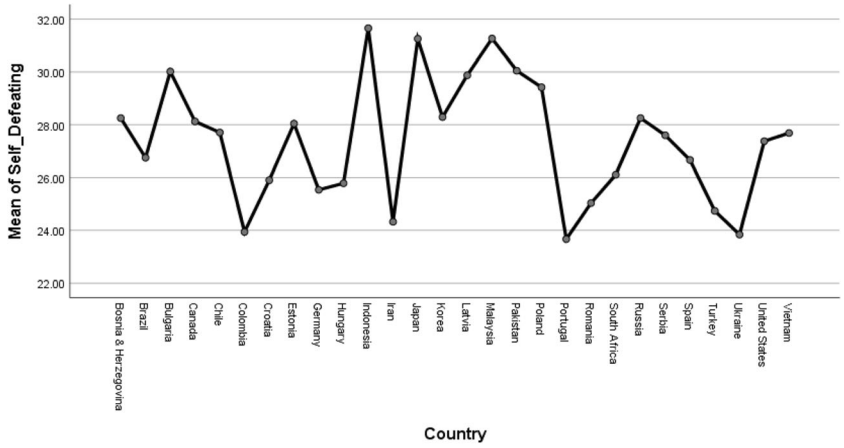

Fig. 4 Mean self-defeating humor style scores for each country sample

participants at the bottom of Table 4 as a reference, each of the humor style scores were found to have significant positive correlations with each other. Of note, the correlations between the affiliative humor style and both the aggressive and self-defeating humor styles and between the self-enhancing humor style and the aggressive humor style were small in magnitude and significant because of the large sample size. A similar pattern of correlations is seen in each of the 28 samples with only four exceptions. Significant negative correlations were found between the affiliative and aggressive humor styles in the samples from Croatia, Latvia, and Malaysia. In addition, in the sample from Latvia, a significant negative correlation was found between the affiliative and self-defeating humor styles. Although of potential interest, it must be noted that, as reported in Table 2, the internal consistency values for the aggressive humor style scale for these countries, and the internal consistency value for the self-defeating humor scale for Malaysia, were unacceptably low. Therefore these exceptions to the positive inter-scale correlations should be interpreted with caution.

Assessment of confirmatory factor analysis across countries

Overall, the analyzed measurement model tested on all samples simultaneously, did not fit the data well according to the Confirmatory Fit Index (CFI), but did fit well according to the RMSEA ($\chi^2(98) = 3277.54$; $p < .001$; CFI = .882; RMSEA = .062[.060, .064]). The results for each country are provided in Table 5. The four-factor structure of the HSQ reproduced moderately well, according to at least one fit statistic (RMSEA), in most countries, however the estimates of CFI were mostly below acceptable thresholds. The poorest fit to the data was found in the samples from Croatia, Iran, Latvia, Malaysia, Pakistan, Romania, and Turkey, where the values of CFI were below .800 and/or the values of RMSEA were above .080. The results for these countries should be interpreted with caution, as the evidence supporting the four-factor model is limited.

Discussion

The countries assessed in this study showed some interesting similarities and differences in scale responses to the four humor styles based on Martin et al.'s (2003) model. The means (Table 2 and Figs. 1, 2, 3,4) showed variability across the 28 countries. One consistent pattern across all of the countries for the four humor styles was that each country tended to have higher affiliative humor style scores. These results are similar to those reported by Heintz et al. (2018), who found that benevolent (positive) humor was consistently higher than corrective (negative) humor across their samples from 22 countries. Upon further analysis of the humor style scales, low internal consistency values were found for three of the four scales for the samples from Malaysia and Pakistan and for 10 country samples, the aggressive humor style scale had low internal consistency estimates. Malaysia and Pakistan have been found to score high on a measure of inconsistent or careless responding to personality measures (Grau et al. 2019). Possibly careless responding helped to contribute to the lower internal consistency values for some of the samples. In addition, as the original Humor Styles Questionnaire (HSQ; Martin et al. 2003) was developed in Canada, the results based on the 28 country samples do suggest caution when using the HSQ in some Asian countries and specifically when measuring aggressive humor across countries.

Examining the scale scores for each country sample demonstrated a poor fit for a correlated four factor solution for some of the groups, suggesting that for some of the samples, the results should be interpreted with caution. With respect to the inter-scale correlations within each sample, the four humor style scales were typically found to correlate positively together, suggesting a similar inter-scale pattern across the samples.

Table 3 Sex differences in homogeneity of variance (Levene's F-tests), means (t-tests), and effect sizes (d) for each humor style scale for each country sample

	Men *M*(*SD*)	Women *M*(*SD*)	*Levene's F*	*t*	*d*
Bosnia & Herzegovina					
Affiliative	42.05 (7.48)	42.54 (7.85)	0.01	−0.71	−0.06
Aggressive	27.07 (6.55)	24.76 (7.25)	5.02	3.63*	0.33
Self-enhancing	34.28 (7.72)	35.02 (8.59)	3.63	−0.98	−0.09
Self-defeating	28.80 (8.27)	27.87 (8.81)	1.84	1.19	0.11
Brazil					
Affiliative	44.16 (9.43)	44.61 (8.19)	0.92	−0.42	−0.05
Aggressive	27.42 (7.94)	22.70 (6.60)	4.30	5.42*	0.67
Self-enhancing	33.61 (10.54)	34.33 (9.62)	2.26	−0.59	−0.07
Self-defeating	28.00 (10.36)	26.18 (9.34)	0.50	1.52	0.19
Bulgaria					
Affiliative	44.97 (7.73)	43.98 (7.29)	0.03	−0.86	−0.11
Aggressive	25.21 (7.76)	29.70 (7.57)	0.03	−0.86	−0.11
Self-enhancing	35.50 (9.40)	35.12 (7.91)	6.04	−0.02	0.00
Self-defeating	29.06 (7.90)	31.00 (7.78)	0.04	−0.83	−0.10
Canada					
Affiliative	46.14 (6.58)	45.46 (6.93)	1.28	0.74	0.10
Aggressive	31.00 (7.67)	26.37 (7.72)	0.03	4.37*	0.58
Self-enhancing	35.55 (9.20)	32.12 (9.59)	0.47	2.65*	0.35
Self-defeating	28.34 (7.60)	27.88 (9.66)	7.42*	0.38	0.05
Chile					
Affiliative	41.94 (7.51)	43.11 (8.62)	1.02	−0.98	−0.14
Aggressive	28.97 (7.73)	24.34 (7.64)	0.01	4.21*	0.60
Self-enhancing	36.91 (7.58)	35.30 (9.38)	3.47	1.26	0.18
Self-defeating	29.84 (7.27)	26.80 (8.78)	4.95	2.53	0.36
Colombia					
Affiliative	42.50 (7.83)	39.90 (8.51)	0.55	2.52	0.32
Aggressive	26.54 (7.44)	21.98 (6.96)	0.03	5.06*	0.64
Self-enhancing	37.08 (8.56)	34.72 (9.62)	1.18	2.05	0.26
Self-defeating	26.02 (7.38)	22.27 (8.48)	1.13	3.72*	0.47
Croatia					
Affiliative	36.48 (6.24)	44.46 (6.70)	1.94	−8.36*	−1.21
Aggressive	30.66 (4.66)	26.56 (6.51)	19.87*	5.43*	0.79
Self-enhancing	30.95 (6.82)	33.66 (8.12)	2.40	−2.39	−0.35
Self-defeating	27.75 (6.29)	25.26 (8.45)	6.90*	2.48	0.36
Estonia					
Affiliative	43.84 (7.37)	44.88 (6.73)	1.47	−1.36	−0.14
Aggressive	27.42 (7.24)	31.43 (7.40)	0.11	−5.14*	−0.54
Self-enhancing	34.60 (8.06)	36.77 (8.09)	0.98	−2.50	−0.26
Self-defeating	27.01 (7.50)	29.57 (7.76)	0.01	−3.14*	−0.33
Germany					
Affiliative	43.90 (7.78)	43.30 (8.38)	0.12	0.56	0.07
Aggressive	29.56 (6.66)	26.03 (7.12)	0.03	3.79*	0.50
Self-enhancing	35.69 (7.87)	33.65 (9.44)	3.27	1.66	0.22
Self-defeating	26.57 (8.94)	25.38 (9.69)	1.13	0.94	0.12
Hungary					
Affiliative	44.23 (9.80)	42.42 (9.02)	0.34	0.56	0.09
Aggressive	26.79 (8.72)	24.38 (7.94)	0.09	0.76	0.13
Self-enhancing	35.07 (10.19)	36.33 (9.84)	0.15	0.70	0.12

Table 3 (continued)

	Men *M*(*SD*)	Women *M*(*SD*)	*Levene's F*	*t*	*d*
Self-defeating	27.70 (9.44)	25.45 (9.10)	0.05	0.82	0.14
Indonesia					
Affiliative	43.48 (7.30)	44.18 (6.98)	0.71	−0.84	−0.10
Aggressive	29.83 (6.02)	27.37 (5.57)	0.51	3.64*	0.42
Self-enhancing	37.43 (7.76)	37.58 (7.63)	0.00	−0.17	−0.02
Self-defeating	32.46 (7.36)	30.84 (7.94)	1.26	1.81	0.21
Iran					
Affiliative	42.66 (7.95)	39.09 (10.07)	6.73*	3.56*	0.39
Aggressive	24.85 (7.65)	20.47 (5.59)	29.55*	5.85*	0.65
Self-enhancing	32.35 (10.57)	30.34 (10.75)	0.06	1.70	0.19
Self-defeating	25.63 (7.64)	23.14 (7.38)	0.81	3.00*	0.33
Japan					
Affiliative	38.18 (7.54)	37.48 (8.00)	0.08	0.59	0.09
Aggressive	28.98 (7.14)	27.08 (6.04)	2.17	1.83	0.28
Self-enhancing	30.50 (5.91)	28.48 (5.27)	0.32	2.30	0.35
Self-defeating	30.99 (5.89)	31.79 (6.91)	2.22	−0.83	−0.13
South Korea					
Affiliative	41.08 (7.18)	41.00 (6.48)	2.98	0.08	0.01
Aggressive	26.73 (6.89)	24.01 (6.09)	1.47	2.84*	0.42
Self-enhancing	33.17 (6.76)	31.16 (6.04)	0.02	2.12	0.31
Self-defeating	29.52 (6.71)	27.07 (7.79)	2.20	2.28	0.34
Latvia					
Affiliative	32.97 (3.82)	35.03 (6.98)	26.69*	−2.71*	−0.41
Aggressive	31.28 (2.76)	27.72 (6.47)	45.00*	5.48*	0.84
Self-enhancing	32.41 (5.12)	34.39 (7.73)	6.57	−1.83	−0.28
Self-defeating	31.75 (5.36)	29.07 (8.23)	18.23*	2.76*	0.42
Malaysia					
Affiliative	31.70 (4.48)	33.23 (5.89)	4.65	−2.09	−0.30
Aggressive	31.69 (4.34)	31.37 (4.45)	0.02	0.51	0.07
Self-enhancing	31.58 (4.44)	31.09 (3.59)	4.73	0.85	0.12
Self-defeating	31.87 (3.82)	30.57 (4.27)	0.04	2.26	0.32
Pakistan					
Affiliative	35.13 (6.57)	34.68 (7.34)	2.19	0.44	0.06
Aggressive	30.94 (6.56)	27.91 (6.43)	0.56	3.37*	0.47
Self-enhancing	34.36 (7.47)	34.91 (7.51)	0.09	−0.53	−0.07
Self-defeating	31.52 (7.12)	29.73 (8.26)	2.51	1.60	0.22
Poland					
Affiliative	44.45 (6.94)	42.11 (9.08)	2.85	2.01	0.28
Aggressive	30.76 (7.90)	25.89 (7.26)	1.10	4.75*	0.65
Self-enhancing	35.38 (8.46)	33.50 (8.38)	0.01	1.64	0.22
Self-defeating	32.52 (8.37)	27.97 (8.53)	0.10	3.92*	0.54
Portugal					
Affiliative	43.32 (8.17)	43.63 (7.56)	0.66	−0.35	−0.04
Aggressive	28.14 (6.65)	23.36 (6.41)	0.63	6.41*	0.74
Self-enhancing	34.84 (8.32)	32.94 (9.92)	5.57	1.71	0.20
Self-defeating	27.33 (8.26)	22.75 (9.54)	3.21	4.27*	0.49
Romania					
Affiliative	43.95 (7.16)	43.29 (7.12)	0.03	0.65	0.09
Aggressive	27.24 (6.55)	29.59 (6.52)	0.50	−2.54	−0.36

Table 3 (continued)

	Men *M*(*SD*)	Women *M*(*SD*)	*Levene's F*	*t*	*d*
Self-enhancing	34.92 (8.03)	35.74 (8.17)	0.02	−0.72	−0.10
Self-defeating	23.29 (6.99)	26.78 (7.55)	0.12	−3.39*	−0.48
South Africa					
Affiliative	43.49 (7.94)	42.56 (8.10)	0.00	1.08	0.12
Aggressive	27.80 (7.85)	24.61 (7.27)	0.19	3.99*	0.43
Self-enhancing	37.14 (9.56)	37.58 (9.12)	0.27	−0.44	−0.05
Self-defeating	27.72 (9.18)	25.01 (8.88)	0.14	2.81*	0.30
Russia					
Affiliative	42.66 (8.57)	41.36 (8.28)	0.19	1.34	0.15
Aggressive	31.66 (7.65)	28.45 (7.26)	0.03	3.74*	0.43
Self-enhancing	35.13 (8.08)	33.33 (8.69)	1.70	1.85	0.21
Self-defeating	28.18 (7.79)	28.30 (8.20)	0.35	0.12	0.01
Serbia					
Affiliative	46.08 (7.29)	46.05 (6.35)	0.17	0.04	0.00
Aggressive	28.24 (7.88)	23.33 (6.84)	2.83	6.02*	0.69
Self-enhancing	38.12 (9.00)	36.43 (8.79)	0.08	1.67	0.19
Self-defeating	29.19 (10.14)	27.06 (8.78)	3.81	2.03	0.23
Spain					
Affiliative	43.79 (7.87)	43.80 (6.80)	2.83	−0.01	0.00
Aggressive	25.68 (6.95)	20.74 (6.63)	0.01	6.11*	0.73
Self-enhancing	36.20 (7.97)	33.68 (8.83)	2.34	2.44	0.29
Self-defeating	29.05 (7.57)	25.60 (8.02)	0.31	3.64*	0.44
Turkey					
Affiliative	41.10 (6.98)	42.51 (7.80)	1.99	−1.20	−0.18
Aggressive	27.59 (7.60)	26.42 (6.85)	0.25	1.07	0.16
Self-enhancing	32.44 (9.98)	32.21 (10.86)	0.54	0.14	0.02
Self-defeating	25.31 (6.90)	24.50 (8.78)	3.96	0.61	0.09
Ukraine					
Affiliative	44.38 (8.57)	42.21 (8.06)	0.00	1.99	0.27
Aggressive	27.38 (6.54)	24.33 (6.91)	1.10	3.35*	0.45
Self-enhancing	36.25 (9.11)	34.71 (8.55)	0.37	1.33	0.18
Self-defeating	24.77 (8.98)	23.59 (7.87)	2.45	1.09	0.15
United States					
Affiliative	41.71 (8.84)	41.06 (9.11)	0.83	0.74	0.07
Aggressive	29.49 (7.12)	26.52 (7.87)	0.02	4.02*	0.39
Self-enhancing	37.84 (8.21)	33.86 (9.57)	0.01	4.52*	0.44
Self-defeating	28.31 (8.11)	26.61 (9.69)	0.01	1.92	0.19
Vietnam					
Affiliative	38.23 (7.66)	40.52 (7.36)	0.17	−2.54	−0.30
Aggressive	26.82 (6.72)	22.93 (6.08)	1.83	5.06*	0.60
Self-enhancing	35.41 (7.56)	35.62 (7.45)	0.02	0.23	0.03
Self-defeating	29.26 (8.52)	25.70 (7.64)	2.67	3.67*	0.44
All Participants					
Affiliative	41.97 (8.27)	42.03 (8.37)	0.35	−0.29	−0.01
Aggressive	28.23 (7.27)	25.32 (7.34)	7.69*	17.55*	0.40
Self-enhancing	34.97 (8.49)	34.37 (8.99)	14.15*	3.03*	0.07
Self-defeating	28.78 (8.11)	26.51 (8.87)	43.38*	10.31*	0.23

*$p < .01$, two-tailed

Table 4 Inter-correlations between the humor styles and age for each country sample

	Affiliative	Aggressive	Self-enhancing	Self-defeating
Bosnia & Herzegovina				
Aggressive	−.07			
Self-enhancing	.40*	.03		
Self-defeating	.09	.21*	.33*	
Age	−.03	.01	.09	.06
Brazil				
Aggressive	.12			
Self-enhancing	.41*	.02		
Self-defeating	.33*	.26*	.16*	
Age	−.06	−.17*	.20*	−.12
Bulgaria				
Aggressive	.12			
Self-enhancing	.38*	.16		
Self-defeating	.22*	.30*	.33*	
Age	.02	−.08	.06	−.06
Canada				
Aggressive	.19*			
Self-enhancing	.41*	.27*		
Self-defeating	.02	.32*	.25*	
Age	−.19*	−.21*	−.06	.04
Chile				
Aggressive	.12			
Self-enhancing	.43*	.17*		
Self-defeating	.30*	.32*	.41*	
Age	−.06	.03	.08	.01
Colombia				
Aggressive	.07			
Self-enhancing	.41*	−.03		
Self-defeating	.26*	.28*	.33*	
Age	−.01	.01	.10	.09
Croatia				
Aggressive	−.18*			
Self-enhancing	.43*	−.07		
Self-defeating	−.05	.21*	.37*	
Age	.03	.01	.03	.01
Estonia				
Aggressive	.22*			
Self-enhancing	.41*	.15*		
Self-defeating	.16*	.30*	.22*	
Age	−.18*	−.12	.02	−.02
Germany				
Aggressive	.20*			
Self-enhancing	.53*	.16*		
Self-defeating	.15*	.32*	.16*	
Age	−.12	−.08	.01	−.17*
Hungary				
Aggressive	.14			
Self-enhancing	.51*	.08		
Self-defeating	.31*	.40*	.20*	
Age	−.05	−.28*	.20*	−.21*
Indonesia				
Aggressive	.21*			
Self-enhancing	.32*	.16*		
Self-defeating	.37*	.42*	.41*	
Age	−.02	−.02	−.09	−.12
Iran				
Aggressive	.21*			
Self-enhancing	.41*	.06		
Self-defeating	.34*	.49*	.16*	
Age	−.15*	−.32	.11	−.27*
Japan				
Aggressive	.14			
Self-enhancing	.32*	.07		
Self-defeating	.31*	.13	.32*	
Age	.04	.06	.08	.14
South Korea				
Aggressive	−.09			
Self-enhancing	.37*	−.08		
Self-defeating	.01	.24*	.15	
Age	.01	−.01	.12	.04
Latvia				
Aggressive	−.26*			
Self-enhancing	.14	−.08		
Self-defeating	−.40*	.48*	.38*	
Age	.30*	−.38*	.20*	−.30*
Malaysia				
Aggressive	−.27*			
Self-enhancing	−.02	−.03		
Self-defeating	−.15	.11	.33*	
Age	−.19*	.14	.09	.06
Pakistan				
Aggressive	.02			
Self-enhancing	.23*	−.05		
Self-defeating	.05	.31*	.31*	
Age	−.02	.02	.06	−.09
Poland				
Aggressive	.12			
Self-enhancing	.47*	−.02		
Self-defeating	.07	.23*	.10	
Age	.07	.01	.15	.06
Portugal				
Aggressive	.15*			
Self-enhancing	.40*	.05		
Self-defeating	.04	.30*	−.02	
Age	−.09	−.07	.10	−.23*
Romania				
Aggressive	.04			
Self-enhancing	.23*	.25*		
Self-defeating	−.10	.41*	.32*	
Age	.09	−.02	.07	.05
South Africa				
Aggressive	.21*			
Self-enhancing	.32*	−.01		
Self-defeating	.18*	.19*	.02	
Age	−.02	.07	−.01	−.01
Russia				
Aggressive	.29*			
Self-enhancing	.42*	.18*		
Self-defeating	.14	.27*	.28*	

Table 4 (continued)

	Affiliative	Aggressive	Self-enhancing	Self-defeating
Age	−.02	.02	−.03	−.01
Serbia				
Aggressive	.14*			
Self-enhancing	.41*	.08		
Self-defeating	.25*	.22*	.34*	
Age	.03	−.08	.15	−.03
Spain				
Aggressive	−.02			
Self-enhancing	.38*	.14*		
Self-defeating	.21*	.25*	.40*	
Age	−.02	−.18*	.14	−.01
Turkey				
Aggressive	.12			
Self-enhancing	.32*	.23*		
Self-defeating	.14	.31*	.27*	
Age	−.05	−.03	.03	−.21*
Ukraine				
Aggressive	.16*			
Self-enhancing	.46*	.14*		
Self-defeating	.12	.26*	.09	
Age	.01	−.18*	.17*	−.11
United States				
Aggressive	.04			
Self-enhancing	.57*	.06		
Self-defeating	.02	.35*	.13*	
Age	.04	−.02	.09	−.06
Vietnam				
Aggressive	−.09			
Self-enhancing	.28*	−.08		
Self-defeating	−.09	.40*	.22*	
Age	−.08	.12	−.01	.10
All Participants				
Aggressive	.05*			
Self-enhancing	.39*	.07*		
Self-defeating	.09*	.32*	.21*	
Age	−.01	−.13*	.07*	−.12*

*$p < .01$, two-tailed

Sex differences for each humor style for each sample were examined. Martin et al. (2003) reported that in their sample, men scored higher than women for each of the four humor style scales. In general, the present study results demonstrated non-significant sex differences in the affiliative humor style scores except for the samples from Croatia and Latvia where women scored higher than men and in the sample from Iran where men scored higher than women. Men scored higher than women on the aggressive humor style scores except for the sample from Estonia. Only the samples from Canada and the United States had significant sex differences in the self-enhancing humor style scores with men scoring higher than women. For the self-defeating humor style scores, the sex difference direction depended on which country sample was examined. Men scored significantly higher than women in the samples from Colombia, Iran, Latvia, Poland, Portugal, South Africa, Spain, and Vietnam. In contrast, women in the Estonian and Romanian samples scored significantly higher than men on the self-defeating humor style scores, with the remaining sample differences not reaching significance.

Table 5 Results of the confirmatory factor analysis of the HSQ measurement model across 28 country samples

Country	$\chi^2_{(98)}$	CFI	RMSEA
Bosnia	361.39	.784	.073
Brazil	238.84	.905	.069
Bulgaria	202.36	.868	.064
Canada	212.52	.915	.071
Chile	215.81	.900	.072
Colombia	226.88	.885	.072
Croatia	266.47	.789	.083
Estonia	255.82	.897	.064
Germany	275.63	.902	.074
Hungary	225.77	.912	.068
Indonesia	197.27	.920	.059
Iran	434.03	.786	.102
Japan	210.54	.799	.076
Korea	227.03	.810	.084
Latvia	307.18	.740	.103
Malaysia	206.26	.663	.074
Pakistan	290.62	.682	.075
Poland	258.78	.876	.082
Portugal	368.82	.876	.077
Romania	222.90	.756	.080
South Africa	245.00	.873	.064
Russia	314.76	.826	.084
Serbia	271.77	.884	.066
Spain	240.18	.891	.067
Turkey	229.53	.720	.090
Ukraine	315.01	.849	.080
US	386.56	.881	.084
Vietnam	268.75	.775	.078

Also examined were the possible correlates with age and the four humor style scores. For almost every sample, the youngest participants were 17 or 18 years old. The upper limit for the age range varied greatly from 24 years in the Japanese sample to 82 years in the sample from the Ukraine. For the affiliative humor style, age either had a non-significant or negative correlation for each sample except for the sample from Latvia which was a moderate positive correlation. In contrast, the aggressive humor style scores were negatively correlated with age and reached significance for the samples from Brazil, Canada, Hungary, Iran, Latvia, Spain, and Ukraine. Across the country samples, the self-enhancing

humor style scores were positively correlated with age and reached significance for the samples from Brazil, Hungary, Latvia, Serbia, and Ukraine. The self-defeating humor style scores were negatively correlated with age and reached significance for the samples from Germany, Hungary, Iran, Latvia, Portugal, and Turkey. In general, the pattern of correlations between age and humor style scores suggested more generational similarities than differences across the nation samples.

Limitations

Although the data represent multiple national samples, the various languages may limit the study as well as the two different data collection procedures (paper versus online). These factors may have resulted in some of the lower coefficient alpha values found (see Table 1). For example, for the affiliative humor style, although most of the country samples had alpha values around .75, suggesting that the scale was fairly consistent, the values did range from .47 for Pakistan to .86 for the United States of America. In addition, the aggressive humor style scale performed poorly in 10 of the 28 countries. Greater scale analysis and possible translation improvements are required in the future, especially for those 16 scales which were translated and created for this study. Nevertheless, the results may point to country differences in the aggressive humor style. For example, possibly the content of the aggressive humor style scale was too confusing for some of the participants from certain countries/languages to respond consistently or the aggressive humor style may not be readily applicable in the same way for individuals across countries due to different normative behaviours for people in those countries. We also did not examine the influence of factors such as social desirable responding. Possibly there are national differences in how individuals perceive the social attractiveness of each humor style and respond accordingly. Following, future research may want to examine the influence of social desirability responding on the four humor style scales.

Conclusions

In general, the results add descriptive knowledge about humor styles across diverse samples across countries and 21 languages. Typically, humor style comparison studies have concentrated on comparing only two countries at one time. By examining 28 diverse country samples, the results here demonstrate some fascinating similarities and dissimilarities, and as has been found in a recent review of humor use and perception across countries (Jiang et al. 2019) and a report of benevolent and corrective humor in 25 countries (Heintz et al. 2019), the present study found more similarities than differences across the countries in terms of ranks of humor style scores, sex differences, correlations with age, and inter-scale correlations. As humor styles correlate with personality, mental health dimensions (Heintz 2017; Kuiper and McHale 2009; Martin 2007; Schermer et al. 2015, 2017; Tucker et al. 2013b) as well as behaviour in organizations/work environments (Romero and Arendt 2011), it is of interest to note that for the samples included in this study, there appeared to be greater similarities, such as correlations with age, sex effects, and inter-scale correlations, than there were differences.

Acknowledgements Henrietta Bolló, Eötvös Loránd University, Hungary: ÚNKP-17-3 New National Excellence Program of the Ministry of Human Capacities.

Jan Crusius, University of Cologne, Germany: University of Cologne – Advanced PostDoc Grant.

Maria M. Kwiatkowska, Cardinal Stefan Wyszyński University in Warsaw, Poland: The work of Maria M. Kwiatkowska was supported by the Polish Ministry of Science and Higher Education under the Diamond Grant program [grant number 0101/DIA/2017/46.

Ha Truong Khanh, Vietnam National University, Vietnam: grants 501.01-2016.02 from the Vietnam National Foundation for Science and Technology Development (NAFOSTED).

Radosław Rogoza, National Science Center, Poland [grant number 2015/19/N/HS6/00685].

Compliance with Ethical Standards

Ethical Approval "All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards."

Conflict of Interest The authors do not have a conflict of interest.

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