



The Relationship Between Humor Styles, Optimism and Quality of life, and the Role of the Gender, Age and Socio-Economic Status: A Typological Approach

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Abstract

The present study aims to extend knowledge on the relationship between humor styles, optimism and quality of life by employing the typological approach. Therefore, humor profiles were examined as patterns of humor styles and compared within profiles. The sample of 725 respondents from Spanish community was tested using Humor Styles Questionnaire, Life Orientation Test – Revised and the 12-Item Short Form Survey. Initial insight into the relations between humor styles, optimism and quality of life was provided using correlations controlling for gender, age, and socio-economic status, showing that optimism and quality of life measures correlated positively with affiliative and self-enhancing humor, and negatively with self-defeating humor styles. Four humor profiles (humor enhancers, endorsers, deniers and detrimenters) were identified using latent profile analysis, with the pairwise comparisons between the profiles in the analysis of differences in optimism and quality of life. Results revealed higher optimism and quality of life at humor profiles whose members use positive humor styles compared to profiles whose members use only negative humor styles, or do not use any kind of humor. In addition, significant role of gender, age and socio-economic position on observed relationship were confirmed. Advantages of typological approach in research of humor styles were discussed.

Keywords Humor styles profiles · Optimism · Quality of life · Latent profile analysis

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1 Introduction

Humor styles, as described by Martin et al. (2003), have consistently shown stable associations with various domains of quality of life and with optimism. However, most studies employ a correlational design, examining humor styles independently. According to Galloway (2010), this approach limits the potential to provide a comprehensive understanding of everyday humor use and its relationship with quality of life. Therefore, the present study adopts a typological approach to examine the relationship between humor styles, quality of life, and optimism, allowing for the simultaneous observation of all humor styles. It is anticipated that this approach will offer additional insights and enhance the understanding of the relationship between humor and well-being.

In addition, although numerous studies have examined the associations of age, gender, and socio-economic status with quality of life (e.g., Marquez et al., 2020; Jakobsson, 2007; Phyo et al., 2020; Nutakor et al., 2023) or with humor styles (Kazarian & Martin, 2006; Martin et al., 2003), only a few (e.g., Dyck & Holtzman, 2013) have closely analyzed their moderating role in the relationship between humor styles, optimism, and quality of life. Based on this gap, Schneider et al. (2018) concluded that the roles of age, gender, and socio-economic status in the relationship between humor styles and well-being deserve further examination. Thus, the current study investigates the relationship between humor styles, optimism, and quality of life, considering the gender, age, and social position of respondents.

1.1 Humor Styles and Relationship with well-being and Optimism

Humor styles (Martin et al., 2003) operationalize an individual's use of humor in everyday life and comprise four styles: affiliative, self-enhancing, aggressive, and self-defeating. The affiliative humor style refers to positive humor used to enhance relationships with others, aiming to increase group cohesion and reduce tension. In contrast, the self-enhancing humor style represents the tendency to use benevolent humor to enhance the self and refers to the ability to use humor when facing stressful situations. The aggressive humor style involves detrimental humor used to harm others, while the self-defeating humor style concerns the use of detrimental humor directed at oneself, aiming to reduce stress or gain acceptance from others.

Humor is an important resiliency factor that leads to cognitive-affective flexibility (Kuiper & Borowicz-Sibenik, 2005), indicating its coping functions (Martin, 2007). Studies have shown a positive relationship between humor styles and different aspects of quality of life, emphasizing the positive roles of affiliative and self-enhancing humor styles in happiness (Ford et al., 2016), life satisfaction (Dyck & Holtzman, 2013), and resilience (Veselka et al., 2010). Adaptive humor styles were also found to have negative associations with variables that decrease a person's quality of life, such as shyness (Fitts et al., 2009), loneliness (Schermer et al., 2017), depression (Dyck & Holtzman, 2013), and social anxiety (Tucker et al., 2013). In contrast, both detrimental humor styles were found to be negatively associated with happiness (Ford et al., 2016) and positively associated with loneliness (Schermer et al., 2017) and depressive symptoms (Tucker et al., 2013).

Studies examining the relationship between humor styles and physical health have not provided consistent findings. Fritz (2020) reported that self-enhancing and affiliative humor correlated with fewer health difficulties, while self-defeating humor correlated with greater health difficulties. Aggressive humor was associated with increased health difficulties over time, but only in conjunction with poor positive social interactions and support. Romundstad et al. (2016) identified humor as a beneficial factor for recovery from cardiovascular diseases in women and infection-related diseases in men. Furthermore, Peterson et al. (2006) reported that the use of humor predicted fewer detrimental outcomes during recovery in individuals suffering from various chronic diseases. Finally, Richards and Kruger (2017) found that self-defeating humor increased the negative impact of experienced stress and the intensity of physical symptoms, while Cann et al. (2010) concluded that, in a student population, humor used to enhance the self has a greater moderating effect on the relationship between stress and health than humor used to enhance others.

As can be observed, previous studies investigating the relationships between humor styles and physical health employed significantly different samples. Some studies included patients with a wide variety of physical diseases, while others were conducted on healthy older adults, and some focused on student populations. This great variety in age and health status among respondents likely decreased the ability to draw more generalizable conclusions. Therefore, to ensure more generalizable conclusion, the present study employs a sample the Spanish general community.

Regarding optimism, Myers and Diener (1995) identified it as one of the four personality traits that characterize happy people, while Carver et al. (2010) defined optimism as a variable concerning people's generalized favorable expectancies for their future. Optimism has been found to be positively associated with good mood, perseverance, achievement, and physical health (Peterson, 2000), as well as with coping strategies aimed at reducing stressors (Ness and Segerstrom, 2006) and better subjective well-being (Alarcon et al., 2013). Findings suggest that optimistic people cope with problematic situations more effectively than pessimistic individuals (Chemers et al., 2001). In line with this, Fry (1995) found correlations between humor, optimism, and the tendency to use different coping strategies, while Yue et al. (2010) reported that adaptive humor styles have positive and maladaptive humor styles have negative associations with optimism. Cheung and Yue (2013) confirmed strong associations between optimism and self-enhancement, concluding that optimists tend to use self-enhancing humor as a tool because they perceive themselves as capable of overcoming difficulties.

Studies analyzing the simultaneous relationships between humor styles, well-being, and optimism have provided consistent findings, suggesting that both optimism and mental health have positive associations with benign humor styles and negative associations with detrimental humor styles (Yue et al., 2010). The results of a meta-analysis conducted by Jiang et al. (2020) confirmed that affiliative and self-enhancing humor enhance subjective well-being, whereas aggressive and self-defeating humor detract from it, concluding that people who predominantly use benign humor have a balanced view of life and are more resistant to stress when facing life challenges. Crawford and Caltabiano (2011) examined the effectiveness of a humor skills program and reported increases in self-efficacy, positive affect, and optimism,

along with decreases in depression, anxiety, and perceived stress among participants assigned to the humor condition.

Relevant literature shows that humor styles, as well as optimism and quality of life, are associated with age, gender, and socioeconomic status. For example, men tend to score higher in aggressive humor styles, while women may favor affiliative humor (Kazarian & Martin, 2004; Heintz & Ruch, 2015), suggesting that gender differences may arise from social or cultural norms that shape humor styles differently for men and women. Schneider et al. (2018) noted that affiliative humor shows a stronger association with optimism and a weaker association with life satisfaction as the proportion of women in research samples increases. This observation suggests potential gender differences in the relationship between affiliative humor and mental health. Based on these results, Dyck and Holtzman (2013) found that gender moderates the relationship between the use of aggressive humor and well-being, indicating that aggressive humor may be maladaptive among women but not among men. These findings highlight the differential impact of social networks and support on the relationship between humor styles and well-being across genders.

Age also appears to influence humor style preferences. While younger individuals tend to use more aggressive or self-defeating humor, older adults employ more self-enhancing and affiliative humor, potentially reflecting changing social roles and priorities (Jiang et al., 2020). Regarding the relationship with socioeconomic status, studies suggest that higher socioeconomic status is positively associated with self-enhancing humor, which is in turn positively linked with well-being. In contrast, lower socioeconomic status is sometimes associated with self-defeating humor, potentially as a coping mechanism for stressors related to economic challenges (Diener & Scollon, 2003).

Studies confirm that younger age groups, being more physically fit and active, have a higher physically related quality of life (Marquez et al., 2020), while both physical and mental domains of quality of life decrease with advancing age (Jakobsson, 2007). Additionally, studies have shown that the mental aspects of quality of life are dependent on social interaction, support, and life satisfaction (Wu et al., 2018), which significantly influence mental quality of life. Regarding gender differences, results generally indicate higher quality of life scores related to mental health in men across all life stages (Phyo et al., 2020). Han et al. (2010) confirmed differences in social functioning, role-emotional, and mental health domains among men, with no significant gender difference in the physical subdomain. Similar findings were reported by Ruotolo et al. (2021), Gobbens and Remmen (2019), and Olsen et al. (2023). Finally, studies suggest that individuals in higher socio-economic positions tend to report a higher quality of life (Nutakor et al., 2023; Niedzwiedz et al., 2012). More precisely, Gobbens et al. (2019) reported that these differences are more pronounced in the mental health domains than in physical health domains. Hemingway et al. (1997) found that lower quality of life among individuals with low socio-economic status is related to their reduced participation in various social and health-related activities.

1.2 The Present Study

Studies that analyzed the relationship between humor styles, optimism, and well-being have focused on the examination of distinct humor styles, treating them as mutually independent. Galloway (2010) criticized this approach, claiming that only a simultaneous examination of all four humor styles can provide full insight into the nature of everyday humor use. Therefore, Galloway (2010) proposed a typological approach in which humor styles should be examined within clusters of people with similar patterns in their use of different humor styles. He identified four different profiles: (1) those with high scores on all four humor styles (i.e., humor endorsers); (2) those with low scores on all four humor styles (i.e., humor deniers); (3) those with high scores on positive and low scores on negative humor styles (i.e., humor enhancers); and (4) those with low scores on positive and high scores on negative humor styles (i.e., humor detrimenters). Subsequent studies highlighted the utility of the typological approach in examining the relationship between humor styles and various psychological variables, while also noting discrepancies regarding the number of typical humor clusters.

Among studies that confirmed the four clusters described by Galloway (2010), Chang et al. (2015) found that a cluster of individuals who scored above average on all humor styles demonstrated significantly higher creative potential compared to individuals from the other three humor types, while Chiang et al. (2014) reported significant differences in individual and family background factors among members of different clusters. Fox et al. (2016) also identified four humor types, although with certain deviations from Galloway's (2010) clusters.

While Galloway's (2010) four humor style clusters have been influential, it is important to note that most subsequent studies have confirmed only three clusters. Notably, the cluster characterized by above-average negative and below-average positive humor styles has failed to replicate consistently. Evans et al. (2020) identified three clusters as the more likely solution across countries, highlighting certain cultural differences in humor that may lead to substantively different patterns of humor use. This study also confirmed that humor types provide greater predictive value for well-being outcomes than humor styles, and that individuals utilizing affiliative and self-enhancing humor styles tend to report higher levels of well-being. This suggests that these styles facilitate better coping mechanisms and more satisfying social interactions. Similarly, Leist and Müller (2013) found that self-enhancers exhibited the most favorable associations with quality of life and well-being measures.

Among other studies reporting three clusters of humor styles, Čekrija et al. (2024) found significant differences in personality traits among humor profiles, Evans and Steptoe-Warren (2015) reported significant differences in job satisfaction, stress, communication, creativity, and perceptions of leader power between the clusters, while Hasan et al. (2021) discovered that individuals who scored above average on all humor styles were more likely to share memes that negatively portray others.

Therefore, the present study employed a typological approach to examine humor styles and their relationship with measures of optimism and quality of life. Unlike previous studies that used a typological approach, which primarily employed K-means cluster analysis to identify humor profiles, this study utilized latent profile analysis.

Additionally, the obtained results regarding differences between the identified humor style profiles in terms of optimism and quality of life were tested with respect to gender, age, and socio-economic status.

First, it is hypothesized that affiliative and self-enhancing humor styles will show positive correlations with optimism and all quality of life measures, while aggressive and self-defeating humor styles will exhibit negative correlations with general health and quality of life measures related to mental health. Moreover, it is anticipated that four latent profiles of respondents will correspond to Galloway's (2010) four clusters of humor styles. It is hypothesized that the classes of humor endorsers and humor enhancers will demonstrate higher scores on optimism and quality of life than humor deniers and detrimenters.

Finally, it is expected that age, gender, and socio-economic status will contribute to the differences between humor style profiles, indicating that men, younger individuals, and participants with higher socio-economic status will show higher scores on optimism and greater values in quality of life measures.

2 Method

2.1 Participants

The whole sample included 985 respondents (Men=465, Women=519 and 1 respondent who refused to declare) from a Spanish community sample, who were between 18 and 94 years old. Participant also reported their educational (1 - graduate professionals to 7 - less than seven years of school) and occupational level (1 - higher executives to 7 - unskilled employees), which formed the basis for calculation the Social Position Index (SPI; Hollingshead, 1957). We emphasize that the research sample consisted solely of participants who had completed their education and held a defined occupational status. Since both educational attainment and occupational status were necessary for calculating the Social Position Index, students were excluded from the sample. However, younger respondents were included if they had completed their education and had a clearly defined vocation. Complete data representing the respondents' age range and the Social Position Index are provided in Table A1 in the supplementary material. Participation in the study was completely voluntary, and all participants provided informed consent.

2.2 Measures

The Humor Styles Questionnaire (HSQ; Martin et al., 2003) consists of 32 items and includes four scales (8 items per scale) assessing humor styles (affiliative, self-enhancing, aggressive, and self-defeating). Participants responded on a 7-point Likert scale from 1 (completely disagree) to 7 (completely agree). Values of the reliability coefficients were good for the affiliative humor style scale (0.84) and acceptable for self-enhancing (0.69), aggressive (0.68) and self-defeating (0.71) humor style scales.

The Life Orientation Test - Revised (LOT-R; Scheier et al., 1994) was used to measure dispositional optimism. The scale consists of 10 items, of which three items

assess optimism, three assess pessimism, while four represent the filler items that are included in the calculation of overall scale score. The respondents answered on a 5-point Likert scale from 0 (strongly disagree) to 4 (strongly agree). The total score was calculated by adding the optimism and the inverted pessimism items. Higher scores on the scale indicate greater optimism. Cronbach's alpha coefficient indicated the scale's satisfactory reliability ($\alpha=0.71$).

The *12-Item Short Form Survey* (SF-12; Ware et al., 1996) was used to assess quality of life. The scale consists of 12 questions that measure eight health domains of physical (General Health, example item: "In general, would you say your health is..."; Physical Functioning, example item: "Climbing flights of stairs"; Role Physical, example item: "Were you limited in the kind of work or other activities as a result of your physical health?"; Bodily Pain, example item: "During the past 4 weeks, how much did pain interfere with your normal work?"), and mental health (Vitality, example item: "Did you have a lot of energy?"; Social Functioning, example item: "During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities?"; Role Emotional, example item: "Did you not do work or other activities as carefully as usual as a result of any emotional problems?"; and Mental Health, example item: "Have you felt downhearted and blue?"). Each item is answered using a categorical response scale, with different ranges for specific items, varying from binary to multi-point Likert-type scales. General Health is rated on a 5-point scale (from Excellent to Poor); Physical Functioning on a 3-point scale (from Limited a lot to Not limited at all); Role Physical on a binary scale (Yes/No); Bodily Pain on a 5-point scale (from Not at all to Extremely); Vitality on a 6-point scale (from All of the time to None of the time); Social Functioning on a 5-point scale (from All of the time to None of the time); Role Emotional on a binary scale (Yes/No); and Mental Health on a 6-point scale (from All of the time to None of the time). Besides distinct measures of these eight domains, the scale also provides the opportunity to calculate overall scores for physical and mental health, as well as an overall score as a general measure of quality of life. Since some of the scales within SF-12 include only one item, Cronbach's alpha coefficients were calculated for the Mental Health (0.77) and Physical Health (0.77) subscales, indicating satisfactory reliability for both subscales. Regarding the specific scales, good or satisfactory test-retest reliability values were reported for the Spanish sample, with the period between test and retest being two weeks (Vilagut et al., 2013): 0.87 for Physical Functioning, 0.85 for Role Physical, 0.84 for Bodily Pain, 0.75 for General Health, 0.78 for Vitality, 0.82 for Social Functioning, 0.80 for Role Emotional, and 0.76 for Mental Health.

Social Position Index (SPI; Hollingshead & Redlich, 1958) represents the socio-economic status of the respondents, which was calculated on the basis of data related to educational and vocational status using the following formula: $[SPI = (\text{Occupation score} * 7) + (\text{Education score} * 4)]$. The occupation and education scores are weighted differently (7:4 ratio) to account for potential differences in a person's occupational and educational levels. Some individuals with a high educational level might have a low occupational position, and vice versa; persons with a high work position might present a low educational level. The Social Position Index, based on the provided equation, corrects this situation, as the occupational level is more heavily weighted

than the educational level. To compute SPI, a larger loading is given to the score on occupational level (Aluja et al., 2021). The range of scores considered were upper: <17; upper-middle: 17–31; middle: 32–47; low-middle: 48–63; and low: >63. Lower scores represent a higher Social Position. Data representing the range of scores on the Social Position Index are included in Table A1 in the supplementary material.

2.3 Statistical Analysis

In the present study, latent profile analysis (LPA) was performed. LPA is a model-based approach that allows for the evaluation of different numbers of profiles. More specifically, these analyses examine patterns or profiles of variables among individuals, in contrast to variable-oriented research that examines the association of variables (Bogat et al., 2016). As the preliminary analyses suggested that the instruments used were reliable, factor scores were computed and consequently used in all analyses. Then, a series of LPAs was conducted with an increasing number of profiles, which were subsequently compared based on model fit indices and theoretical considerations (Masyn, 2013; Nylund et al., 2018): the lowest Bayesian Information Criteria (BIC), entropy values ≥ 0.70 , the Vuong-Lo-Mendell-Rubin (VLMR) test, and the bootstrap likelihood ratio test (BLRT). To avoid local solutions, 500 random starts with 50 initial stage iterations, of which 50 were also taken for final stage optimization, were used.

To assess research questions on the relationship between humor styles and optimism and quality of life, the three-step approach proposed by Lanza et al. (2013) was used. In this approach, the potential predictors and distal outcomes are specified as auxiliary variables. This approach overcomes issues with the measurement model, as auxiliary variables might affect latent profile formation. Consequently, optimism and quality-of-life variables were expected to be influenced by the latent classes, while age, gender, and social position were specified as covariates in predicting quality of life and optimism. Gender, age, and social position were included in the analysis as covariates.

Different statistical programs were used for the purpose of this study. The latent profile analysis was conducted using Mplus 8.10 (Muthén & Muthén, 1998–2017), while comparisons of latent profiles of humor in optimism and quality of life measures were conducted using R (R Core Team, 2023). Descriptive statistics and correlations were calculated using SPSS 26 (IBM Corp., 2019). The codes for all performed statistical analyses can be found at <https://osf.io/5mjbz/>.

3 Results

3.1 Descriptive Statistics, Relationship with Gender, Age and Social Position

Table 1 summarizes descriptive statistics for humor styles, optimism, and quality-of-life measures, as well as the differences between men and women. All four humor styles, the optimism scales, general health, vitality, and mental health showed low values of skewness indices, suggesting a normal distribution. Other measures of

Table 1 Descriptive statistics, reliability, and gender differences for HSQ, LOT-R and SF-12 scales

					Men		Women		<i>t</i>	<i>p</i>	Cohen's D
	<i>M</i>	<i>SD</i>	S	K	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
AFI	40.51	9.51	-0.50	-0.32	42.18	8.89	38.78	9.83	4.883	<0.001	0.36
ENH	35.42	7.72	-0.24	0.06	36.28	7.70	34.54	7.66	3.052	0.002	0.23
AGG	22.33	7.82	0.65	0.57	24.36	8.04	20.24	7.03	7.337	<0.001	0.54
DEF	20.72	7.75	0.43	-0.41	21.96	7.83	19.43	7.46	4.454	<0.001	0.33
Optimism	17.94	3.18	-0.39	0.37	18.27	3.07	17.61	3.27	2.794	0.005	0.21
Physical function	81.82	29.48	-1.52	1.19	85.35	27.94	78.21	30.64	3.281	<0.001	0.24
Role physical	78.70	26.00	-1.04	0.23	79.77	25.19	77.62	26.83	1.112	0.266	0.08
Bodily pain	74.62	32.47	-1.12	0.02	75.75	32.97	73.53	31.97	0.918	0.359	0.07
General health	64.92	25.16	-0.64	-0.32	67.23	24.73	62.56	25.44	2.511	0.012	0.19
Vitality	66.94	22.60	-0.81	1.10	70.10	20.74	63.76	23.98	3.809	<0.001	0.28
Social function	82.95	24.97	-1.34	1.06	84.13	24.83	81.84	25.08	1.232	0.218	0.09
Role emotional	82.87	23.38	-1.17	0.51	85.52	22.34	80.17	24.15	3.101	<0.002	0.23
Mental health	69.80	19.98	-0.33	-0.03	73.50	19.24	66.06	20.05	5.098	<0.001	0.38

Note: *M*=Mean; *SD*=Standard Deviation; S=Skewness; K=Kurtosis; α =Cronbach reliability coefficient; AFI=affiliative humor style; ENH=self-enhancing humor style; AGG=Aggressive humor style; DEF=Self-defeating humor style

***- p <.001; **- p <.01; Cohen's *d*: 0.10: very small, 0.20: small, 0.50: medium, 0.80: large, 1.20: very large

quality of life had negative skewness values higher than 1.00, suggesting a significant prevalence of respondents with higher scores. Reliability coefficients were good for the affiliative humor style scale and acceptable for other humor styles and optimism scales.

Regarding gender differences, men obtained significantly higher scores on all humor styles, with a medium effect size for aggressive humor and small effect sizes for affiliative, self-enhancing, and self-defeating humor styles. Men also scored significantly higher on optimism and quality-of-life measures. The differences in optimism, physical functioning, vitality, role emotional, and mental health had a small effect size, showed small effect sizes, while the difference in general health exhibited very small effect sizes.

The analysis with respect to the respondents' age (Tables 2 and 2A in the Appendix) reveals that younger individuals, aged 18 to 35, scored significantly higher on self-enhancing and self-defeating humor styles, as well as on measures of bodily pain and vitality. In contrast, middle-aged respondents, particularly those aged 51 to 65, exhibited significantly higher scores on optimism, social functioning, role-emotional, and mental health measures. However, all observed differences were characterized by a weak effect size.

Regarding the relationship between socio-economic position and quality of life, results presented in Table 3 and Table A3 in the Appendix show that optimism, all physical domains of quality of life, and vitality were significantly higher, though with a weak effect size, among individuals from the upper socio-economic class.

Table 2 ANOVA, Age range and humor styles, optimism, and quality of life measures

	F	<i>p</i>	η^2
Affiliative humor style	26.786	<0.001	0.100
Enhancing humor style	2.611	0.050	0.011
Aggressive humor style	13.372	<0.001	0.053
Self-defeating humor style	4.806	0.003	0.020
Optimism	1.590	0.191	0.007
Physical function	52.854	<0.001	0.180
Role physical	26.581	<0.001	0.099
Bodily pain	9.824	<0.001	0.039
General health	28.789	<0.001	0.107
Vitality	5.994	<0.001	0.024
Social function	4.459	0.004	0.018
Role emotional	5.893	<0.001	0.024
Mental health	1.128	0.337	0.005

Table 3 ANOVA, social position index and optimism and quality of life measures

	F(4,720)	<i>p</i>	η^2
Optimism	5.396	<0.001	0.03
Physical function	10.342	<0.001	0.05
Role physical	5.806	<0.001	0.03
Bodily pain	5.501	<0.001	0.03
General Health	8.685	<0.001	0.05
Vitality	2.615	0.034	0.01
Social function	1.627	0.166	0.01
Role emotional	1.501	0.200	0.01
Mental healths	0.717	0.581	0.00

3.2 Humor Styles' Correlations with Optimism and Quality of life Measures

The correlation analysis (Table 4) shows that affiliative (0.23) and self-enhancing humor (0.33) styles had significant positive correlations with optimism and almost all measures of quality of life. Aggressive humor showed a weak positive correlation only with physical function (0.10) and general health (0.14), while self-defeating humor was negatively correlated with optimism (-0.19), vitality (-0.09), social functioning (-0.12), role emotional (-0.14), and mental health (-0.13). When partial correlations were calculated, the correlations of both positive humor styles with measures of quality of life decreased significantly and became nonsignificant. Correlations with general health and vitality remained significant, but not with physical function, role physical, social functioning, or role emotional. In contrast, negative correlations for self-defeating humor styles increased when controlling for gender, age, and socioeconomic position.

3.3 Latent Profile Analysis

After specifying the latent profile models, the model fit indices were inspected and evaluated (Table 5). While the BIC and the BLRT did not favor any specific solution,

Table 4 Zero and partial correlation between HSQ, LOT-R and SF-12 scales, controlling for gender, age and social position

	Zero correlations (r)				Partial correlations (r_p)			
	AFI	ENH	AGG	DEF	AFI	ENH	AGG	DEF
Optimism	0.23***	0.33***	-0.02	-0.19***	0.21***	0.32***	-0.05	-0.21***
Physical function	0.19***	0.12**	0.10**	0.06	0.04	0.06	0.01	0.00
Role physical	0.11**	0.09*	0.03	-0.05	0.01	0.05	-0.01	-0.08
Bodily pain	0.06	0.02	0.02	-0.02	-0.02	-0.02	-0.01	-0.04
General Health	0.23***	0.17**	0.14***	-0.04	0.11**	0.13**	0.07*	-0.10*
Vitality	0.19***	0.21***	0.05	-0.09*	0.13***	0.18***	-0.01	-0.13***
Social function	0.08*	0.19*	0.04	-0.12***	0.03	0.07	0.01	-0.14***
Role emotional	-0.01	0.11**	-0.05	-0.14***	0.00	0.10	-0.07	-0.16***
Mental health	0.09*	0.20***	0.04	-0.13***	0.07	0.19***	0.01	-0.16***

Note. AFI=affiliative humor style, ENH=self-enhancing humor style; AGG=aggressive humor style; DEF=self-defeating humor style; PF=physical function; RP=role physical; BP=bodily pain; GH=general health; VT=vitality; SF=social functioning; RE=role emotional; MH=mental health; LOT-R=optimism

*** - $p < .001$; ** - $p < .01$; * - $p < .05$

Table 5 Latent profile model comparisons

#Profiles	#Par	LL	BIC	VLMRT	BLRT	Entropy
2	13	-3136,041	6357,72	<0.001	<0.001	0.66
3	18	-3084,103	6286,782	<0.001	<0.001	0.63
4	23	-3049,984	6251,482	0.028	<0.001	0.70
5	28	-3020,925	6226,302	0.053	<0.001	0.69
6	33	-3001,093	6219,576	0.377	<0.001	0.73

Notes. #Par=Number of parameters, LL=log-likelihood, BIC=Bayesian information criterion, VLMRT= p -value for the Vuong-Lo-Mendell-Rubin test, BLRT= p -value for the parametric bootstrapped likelihood ratio test

but rather continuously favored models with more profiles; the Vuong-Lo-Mendell-Rubin test favored the four-profile solution. This solution exhibited an adequate entropy value as well. Since the model fit indices did not unequivocally suggest the use of a certain profile solution, the four-profile solution was selected based on prior empirical research (Galloway, 2010), which indicated that additional clusters typically tend to exhibit sub-facets of the clusters presented in the four-profile solution.

Results presented in Fig. 1 and Table A4 in the appendix represent the four profiles which are mostly compatible with four clusters of humor styles identified by Galloway (2010). Profile 1 includes 38.84% respondents, representing the group of *humor enhancers* who are characterized by higher values of affiliative and self-enhancing humor style, but lower values of aggressive and self-defeating humor styles. Profile 2, with 16.67% of respondents, represents the *humor deniers* who score low on all four facets, while Profile 3 represents the *humor detrimenters*, with 38.57% of respondents who are characterized by high values of aggressive and self-defeating humor styles. Finally, Profile 4 represents the group of *humor endorsers*, who employ all humor styles and include only 5.92% of the respondents.

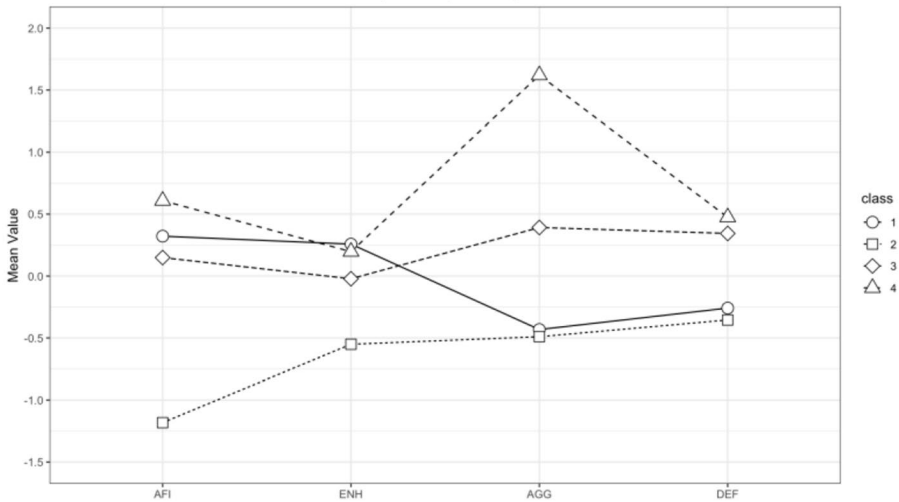


Fig. 1 Latent profile analysis of the humor styles. Note. AFI=affiliative humor style, ENH=self-enhancing humor style; AGG=aggressive humor style; DEF=Self-defeating humor style; Profile 1=humor enhancers, Profile 2=humor deniers, Profile 3=humor detrimenters, Profile 4=humor endorsers

Table 6 Optimism and quality of life measures' means for the four-profile solution

	Profile 1 Humor enhancers	Profile 2 Humor deniers	Profile 3 Humor detrimenters	Profile 4 Humor endorsers
	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)
Physical function	84.61(1.64)	69.82(3.08)	84.44(1.64)	85.42(3.93)
Role physical	81.92(1.46)	74.22(2.46)	76.97(1.61)	82.47(3.48)
Bodily pain	75.46(1.94)	72.84(2.90)	74.13(1.96)	77.91(4.57)
General Health	71.00(1.21)	54.67(2.15)	57.51(1.86)	82.37(2.16)
Vitality	74.03(1.03)	57.40(2.00)	61.65(1.62)	72.06(3.19)
Social function	85.78(1.39)	79.55(2.34)	81.56(1.55)	84.51(3.54)
Role emotional	87.03(1.13)	82.27(2.05)	79.26(1.51)	81.82(3.55)
Mental healths	74.45(1.12)	63.45(1.77)	67.55(1.22)	72.46(2.89)
Optimism	19.26(0.15)	16.81(0.24)	16.24(0.22)	19.45(0.38)

Note: *M*=Mean; *SE*=Standard error of mean

Comparisons of the values of humor styles across latent profiles (Table A5 in the Appendix) mostly provided expected results, indicating significant differences between profiles that have opposite values of benign and detrimental humor styles. Results also confirmed that, in general, observed differences between the humor enhancers and humor endorsers, whose members obtained higher scores on the positive humor styles, were significantly higher compared to the humor deniers and humor detrimenters, whose members had lower scores on positive humor styles.

Comparisons of latent profiles of humor in optimism and quality of life measures, when gender, age and socio-economic status were controlled (Table 6 and Table A6 in the Appendix), revealed several significant differences. Results show that humor

enhancers have significantly higher scores than deniers on optimism, vitality, role emotional, and mental health, as well as on general health. Results were similar to those when enhancers were compared with detrimenters, where enhancers showed higher optimism and better quality of life in vitality and mental health. Endorsers also showed significantly higher scores on optimism and general health when compared to both humor deniers and detrimenters. Finally, no significant differences between endorsers and enhancers, nor between deniers and detrimenters, were found after controlling for the covariates.

Finally, the relationships between gender, age, and social position with quality of life and optimism were examined using linear regression analysis (Table A7 in the Appendix). The results indicated that women reported lower quality of life in the domains of physical functioning, vitality, role emotional, and mental health, as well as lower levels of optimism. Regarding the association with age, the results suggest that younger respondents scored higher on all quality of life measures except for role emotional. Finally, lower socio-economic position, coded with lower values, was associated with higher scores in all physical domains of quality of life and optimism.

4 Discussion

The present study contributes to the literature on the relationship between humor styles, optimism, and quality of life by applying a typological approach to examining humor styles. Findings indicate that analyzing humor profiles as patterns of humor styles provides insights that can enhance understanding of how humor styles relate to both optimism and quality of life. In the current study, four humor style profiles were identified that, despite some deviations, closely aligned with Galloway's clusters, supporting the conclusion that distinct patterns of humor styles exist. However, further research using diverse samples is recommended to determine whether the stability of humor profiles depends on the analytical methods applied or the sample characteristics, thus potentially identifying specific subgroups within the same profile, as proposed by Evans et al. (2020).

The expected correlations between distinct humor styles, optimism, and quality of life measures were largely confirmed, confirming higher levels of optimism and quality of life among respondents who use affiliative and self-enhancing humor, and lower levels among those with higher scores in self-defeating humor. These results align with conclusions drawn by Jiang et al. (2020), suggesting that individuals who predominantly use positive humor styles tend to focus on life's positive aspects and evaluate their health, achievements, and overall life more favorably, while dominant use of self-defeating humor is based on negative self-perception, maladaptive coping and strategies and reduced resilience. Finally, aggressive humor, contrary to our hypothesis, was found to be weakly associated with better general health and physical functioning, what can be explained by reduced social inhibition and assertive coping mechanisms (Kuiper et al., 2004) or simply higher physical vitality in younger populations. Interestingly, while positive humor styles' associations with quality of life measures became insignificant in partial correlations, associations between self-defeating's associations with optimism and quality of life measures were significantly

higher when controlling for gender, age and social position, indicating the significant role of gender, age and social position on these correlations.

In line with this observation, our hypotheses regarding the relationships of gender, age, socioeconomic status, with optimism and quality of life were largely confirmed. Higher values of optimism and quality of life among men are probably explainable by the fact that women report higher levels of anxiety and depressive symptoms, which consequently may diminish their optimism, as suggested by Batz-Barbarich et al. (2022), while higher scores at younger ages are related to better health or less impairment among younger individuals and declining optimism with age as a result of accumulated life experiences and health challenges (Chopik et al., 2020). Finally, higher optimism and quality of life at respondents with higher socio-economic status can likely be attributed to higher participation in many social and health related activities, better medical health care and social support (Nutakor et al., 2023; Niedzwiedz et al., 2012). With all these results in mind, it is clear that gender, age and social position represent significant source of variance for optimism and quality of life and that it must be taken into account in similar studies when interpreting their relationship with humor styles.

The analysis of differences between identified humor profiles provided deeper insight into the relationship between humor styles and their specific relations with optimism and quality of life. Presumptions regarding the differences between humor profiles were partially supported, primarily for the respondents who employ only positive humor styles. Humor enhancers were found to be significantly more optimistic and to have significantly higher scores in domains related to the mental aspects of quality of life. These results confirm previous findings by Yue et al. (2010), who concluded that using positive humor is characteristic of people who have a greater ability to distance themselves from life difficulties, maintain positive expectations regarding their future actions and life in general, and positively evaluate their personal capacities and achieved outcomes. It is reasonable to assume that optimism and positive evaluation of personal mental health, along with the use of positive humor styles, represent a person's general orientation toward positive life aspects. Additionally, the lack of differences compared to other profiles in physical health domains, except for general health, suggests that the use of positive humor might help in developing a satisfying perception of one's physical state of health but does not necessarily lead to a higher quality of life in physical domains.

It is also important to emphasize that enhancers and endorsers were not significantly different from each other but exhibited different results when compared to the groups of humor deniers and detrimenters. In contrast to enhancers, endorsers were not found to have a higher quality of life than deniers and detrimenters, except in self-assessed general health. These findings likely reveal the greatest difference between enhancers and endorsers, which lies in their different basic motives for using humor. It is possible that adaptive humor styles are based on a person's orientation toward positive aspects of life, accentuating positive expectations and perceiving the glass as half-full. On the other hand, the use of maladaptive humor, even when used alongside positive humor, probably indicates a person's sensitivity to negative life events, an inability to overcome these using only positive coping strategies, and a need to add maladaptive humor to reduce unpleasant feelings. It can be inferred that

endorsers represent a group of people for whom positive humor styles are not sufficient to maintain a completely positive view of life, and who therefore intensify their effectiveness by adding maladaptive humor to their repertoire.

In addition, no differences between humor detrimenters and deniers were found, which aligns with the conclusion that positive humor styles play a key role in increasing optimism and the psychological aspects of quality of life, while maladaptive humor styles cannot enhance optimism or a person's quality of life per se. In general, the obtained results resonate with findings from previous studies that analyzed distinct humor styles (e.g., Alarcon et al., 2013; Martin & Ford, 2018) and also offer the potential to draw more detailed conclusions about the nature of humor styles.

5 The Limitations and Strengths of the Study

The present study was conducted on a community sample that represents the Spanish population well, which may be considered a strength of the study. Another strength lies in the fact that this is the first study to employ latent profile analysis in the investigation of humor styles, providing an opportunity to compare the obtained findings with results from previous studies that utilized cluster analysis and correlational studies. Furthermore, latent profile analysis offers a series of advantages compared to cluster analysis. The choice of a profile criterion is less arbitrary and provides rigorous statistical tests to assess model fit, as well as formal criteria to determine the appropriate number of profiles (Woo et al., 2018). Moreover, while cluster analysis assumes that cases with the most similar scores across variables belong to the same cluster, latent profile analysis is based on the assumption that latent profiles exist and explain patterns of observed scores across cases (Weller et al., 2020).

Regarding the limitations of the study, the first concerns the use of only self-report measures, which may be biased by social desirability. Peer reports for all examined variables would greatly enhance the generalizability of the obtained results. Future studies should also include other humor measures, which would further increase the generalizability of the results. Additionally, incorporating more objective indicators of physical and mental health quality of life would certainly provide a better basis for stable and generalizable conclusions. The use of the Humor Styles Questionnaire (HSQ; Martin et al., 2003) could also be considered a significant limitation of this study. Although the HSQ is the most popular instrument for measuring everyday humor use, several authors have argued that some of its aspects are questionable. Galloway (2023) noted that the HSQ scales do not capture all motives for using certain types of humor, while Heintz and Ruch (2015) stated that the HSQ does not include all indicators of the four humor styles. Furthermore, studies have criticized the construct validity (Heintz & Ruch, 2018; Ruch & Heintz, 2017) and divergent validity (Heintz & Ruch, 2015, 2016) of the HSQ. Additionally, Ruch and Heintz (2013) showed that the self-defeating and aggressive humor style scales are significantly influenced by personality traits and elements of social context, which may affect scores on these scales. Finally, an analysis of the HSQ items conducted by Silvia and Rodriguez (2020) revealed poor discrimination and high local dependence among several items. Such criticisms affect the generalizability of the results provided by

the HSQ and warrant caution for researchers when drawing conclusions based on HSQ assessments. Future studies should also consider including other measures of daily humor use, such as the Comic Style Markers (Ruch et al., 2018). Furthermore, assessing age in a categorical manner may represent another limitation of the study. This approach reduces precision by grouping participants into broad categories, potentially overlooking individual differences, and it can obscure linear or non-linear relationships between age and psychological outcomes. Lastly, the exclusion of students from the research sample represents another potential limitation, leading to a significant decrease in the number of younger participants and potentially reducing the generalizability of the findings. Thus, future studies should aim to replicate the research using a sample of students or a representative sample that includes students to enhance the generalizability of the results.

6 Conclusion

The obtained findings highlight the importance of adaptive humor styles in maintaining an optimistic view of life and a satisfactory quality of life. It is of great importance to emphasize that the results also clearly indicate that the use of maladaptive humor, even when combined with positive humor, does not contribute to the development of a positive outlook on life or an increase in quality of life. Instead, it indicates one's inability to overcome stressful situations by using adaptive coping mechanisms. It can be concluded that the findings from the current study support the idea of promoting benign humor within practical programs aimed at developing effective coping strategies. Overall, the results completely support the findings of previous studies that employed correlational designs in the investigation of humor styles and also provide sufficient arguments for investigating humor styles from a typological perspective. Finally, the study confirmed the importance of gender, age, and socio-economic status in research aimed at illuminating optimism and quality of life, as well as their relationship with psychological variables such as humor styles.

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Data Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to state restrictions [e.g. “them containing information that could compromise research participant privacy/consent”]. The codes for all performed statistical analyses can be found at <https://osf.io/5mjbz/>.

Declaration

Ethical Approval This study was approved by the ethics committee under file number CEIC-2160.

Compliance with Ethics Statement The whole study was conducted in alliance with Helsinki declaration.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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