

Towards a New Structural Model of the Sense of Humor: Preliminary Findings

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Abstract

In this article some formal, content-related and procedural considerations towards the sense of humor are articulated and the analysis of both everyday humor behavior and of comic styles leads to the initial proposal of a four factor-model of humor (4FMH). This model is tested in a new dataset and it is also examined whether two forms of comic styles (benevolent humor and moral mockery) do fit in. The model seems to be robust but further studies on the structure of the sense of humor as a personality trait are required.

Introduction

No widely accepted definition or measurement of the sense of humor exists so far (Ruch 2007, 2008). In the past, researchers either identified core ingredients (e.g., “being able to laugh at oneself”, “the ability to perceive, interpret and create humor”) or proposed multicomponent models in only one domain of humor (e.g., of appreciation of jokes and cartoons, of uses of humor, of putatively healthy or unhealthy humor styles). It is legitimate to reduce the scope of one’s approach to a component of particular interest, but this then still raises the question of how this component relates to the others, or the construct as a whole, respectively. Thus, no matter how restricted or broad we define the *sense of humor*, we will need to investigate the entire field of humor related traits and study their interrelations. Thus, it will be necessary to examine *formal* and *content* characteristics of the sense of humor and to discuss *procedures* leading to a valid structural model of the sense of humor and how to *measure* it.

At a *formal* level, the expression “sense of humor” refers to a personality characteristic aimed at describing habitual

individual differences in humor-related thoughts, feelings, and actions. It is a descriptive *hypothetical construct*, an invention of research (or culture), not an existing entity with explicative power. A given conceptualization of the sense of humor may be *useful* or *not useful*, but not *true* or *false*. Its usefulness has to be demonstrated (also compared to already existing concepts) by predicting individual differences in humor-related phenomena, not in other behavioral domains (e.g., it should be verified that humor as a disposition actually predicts smiling and laughter in a funny situation, before it is tested whether it predicts health or personality). As a personality trait, the sense of humor refers to a *disposition* for humor-related behavior, not to the behavior itself. It cannot be observed directly but indirectly *inferred* through indicators (Ruch 1994).

At the *content* level, two issues are important. A humor component may either represent style or ability. Humor as style, or “typical” behavior (i.e., personality) may fall into different categories, such as predominant mood (e.g., good vs. bad-humored), attitude or world-view (e.g., taking oneself not too seriously), defense mechanism or coping style, affect-based temperament (e.g., trait cheerfulness), aesthetic perception (e.g., jokes preference), but also virtue (or even cardinal virtue). The common element is that people describe their typical way of thinking, feeling and acting. When humor refers to an ability or “maximal” behavior, the performance is coded as right or wrong, or its quality is judged. Wit, for example, shares elements with general creativity and the generated humor can be rated for funniness. Furthermore, telling jokes successfully is a skill, understanding sophisticated jokes may require problem solving, and the proper use of humor in social setting may be seen as competence. A second content issue refers to different facets of humor behavior (e.g., comprehension, enjoyment, creation, initiation, entertainment). This may help to structure the variety of domains that have been

discussed in relation to the sense of humor so far. Among those are individual differences in domains, such as the degree to which individuals comprehend and appreciate jokes, cartoons, and other humorous material; the amount individuals laugh and are easily amused; their ability to create humorous comments or perceptions; their tendency to tell funny stories and amusing other people; the degree to which they actively seek out sources that make them laugh; their memory for jokes or funny events; their tendency to use humor as a coping mechanism; a “smiling” attitude toward life and its imperfections; an understanding of the incongruities of existence, or a cheerful composed frame of mind amidst the adversities and insufficiencies of life (Hehl and Ruch 1985).

At the *procedural* level the different ways of arriving at valid trait models need to be considered. The first step is to define the domain one wants to study and build a model of; e.g., a classification of humorous artifacts (i.e., jokes, cartoons, funny stories, humorous films), everyday humor behavior, or words used to describe people with humor or lacking it. Some of these domains are clearly limited and countable (e.g., the number of humor-related words of a language) while others are innumerable or difficult to determine (e.g., the jokes told in a culture). In the latter case a rule will be needed to draw a random, yet representative sample of items. In a second step, the sample of humor items needs to be studied for similarity and dissimilarity to arrive at a classification. While this stage has rational elements most of them are empirical. For example, the items need to be rated for several criteria to make them more understandable (e.g., degree of social desirability).

The core is the building of a structural model. Typically, such a model is examined by first assessing (self-ratings, peer ratings) a large sample of participants regarding the selected items. These items are then intercorrelated and subjected to a factor analysis. The results of which allows determining whether one or more factors are needed to account for the observable differences among people. Figures 1 and 2 illustrate the relationship between observable habitual humor behaviors (i.e., the indicators) and the sense of humor (i.e., the latent construct) for uni- and multidimensional models, respectively.

Figure 1 shows a general (g) factor of humor that does incorporate *all* humor related, feelings, thoughts and actions. Such a model applies when one factor more or less fully explains the intercorrelation among all humor facets. In other words, the likelihood for a humor statement to be endorsed is a function of the location of that person on the latent dimension of sense of humor. Figure 2 shows the multidimensional case. Here the question is how many (n) dimensions (X_i) do we need to fully account for all habitual individual differences in humor? What is their nature, and what is the internal structure of these dimensions; i.e., are they correlated or uncorrelated? Thus research determines

whether a single or multidimensional approach is needed. If the steps before have been conducted properly (i.e., a comprehensive definition of one domain, random selection of items, representative sample of participants), the resulting system will be a valid structural model of humor.

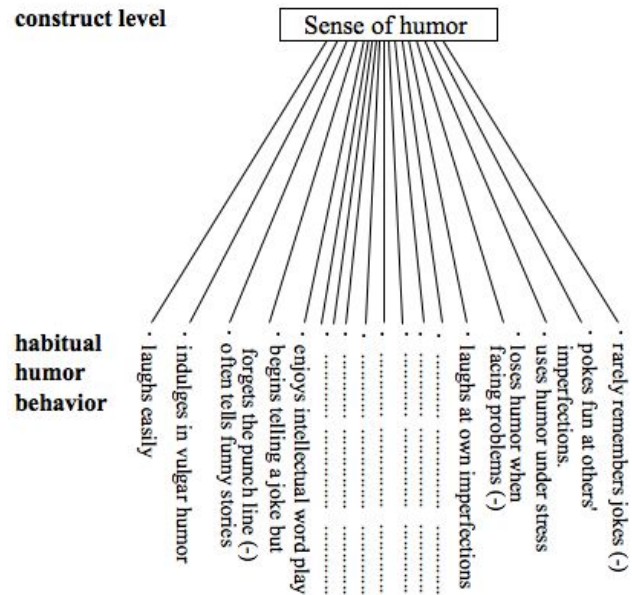


Figure 1. Sense of humor as a unidimensional concept. The sense of humor = f (all humor indicators).

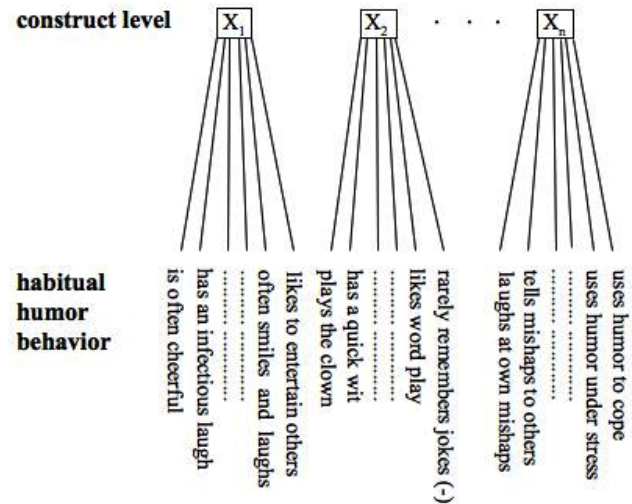


Figure 2. Sense of humor as a multidimensional concept. The sense of humor = f ($X_1, X_2, X_3, \dots X_i, \dots X_n$).

Finally, *assessment* issues need consideration. What is the best indicator for the g-factor of humor or the components of sense of humor? Not all items used in the factor analysis are needed for assessment. Items that load best on this factor are the prime candidates for being included in the list of markers. Later, a more sophisticated instrument

with good psychometric properties (i.e., objectivity, reliability and validity) is needed. One often-overlooked fact is that the class of traits certain components of humor fall into determines the nature of assessment instruments. While, for example, self-reports are suitable for humor as temperament, additional peer-ratings are needed when self-reports are biased (as in humor as virtue), and wit is best assessed via tests (like other abilities). A review of humor instruments gives an overview of informal surveys, joke telling techniques, diary method, joke and cartoon tests, questionnaires (self- and peer-reports), state measures, and humor scales in general instruments (Ruch 2007).

These considerations makes clear that establishing a valid concept of sense of humor involves a longer research program. However, it was observed that in the history of humor research often a questionnaire was put forward and validated in one *single* study or publication (Ruch 1996). To address these problems, in 1996 a special issue of the journal HUMOR was devoted to the measurement of the sense of humor. This volume evaluated existing instruments and presented some new ones. Also recommendations for the future of the measurement of the "sense of humor" were given (Ruch 1996).

First, we do not necessarily need more new scales (although high quality instruments will be more than welcome), but we need more theoretical and empirical work on the definition or foundation of the concepts. ... Second, new (narrow) measurement devices should perhaps focus on construct areas not yet tapped into. For example, we do not yet have instruments, which explicitly focus on aspects like humor as a benevolent worldview, which tolerates and acceptingly smiles at the shortcomings of life and fellow-creatures. Likewise, do we have instruments that predict destructive forms of humor? Third, we should broaden our range of methodological approaches; in the last years we seem to be focusing too much on self-report scales at the expense of behavioral observations, performance tests, peer-nomination, or peer-evaluations, biographic data, and others. Finally, the comprehensive definition of the sense of humor still remains the supreme but yet unattained goal (p. 250).

Sixteen years later few things have improved; e.g. aggressive humor is now measured (Martin et al. 2003). Yet little work on the concept is conducted, mostly self-reports are used, and there is no comprehensive definition of the sense of humor. In the following an initial step on proposing a new structural model is undertaken and self- as well as peer reports are being used.

Factor analytic studies of trait humor

Factor analysis was used to determine the number of components underlying different self-report humor scales, and also humor items. An analysis of early *instruments* yielded a strong factor of sense of humor/cheerfulness that was

mostly related to the general personality concept of extraversion (Ruch 1994). This factor describes the extraverts' greater susceptibility for positive affect, smiling, and laughter, and enjoying entertaining others. Also a minor factor of seriousness emerged, on which some humor scales had a second loading; this factor was associated with extraversion and low psychoticism (in the Eysenckian view; Köhler and Ruch 1996).

Studies at the *item* level were done too. Ruch (1980) generated 80 items based on a priori categories (e.g., cynicism, liking of aggressive humor, nonsense, profound humor). These were given to two samples of 156 and 110 adults and subjected to factor analysis. Some of the expected factors were verified, some merged into one, and also one new factor emerged. The seven factors were *sense of humor*, *cynicism/aggressive humor*, *lack of inhibitions and taboos*, *sexual humor*, *complexity vs. simplicity in humor* (or *conventional vs. unconventional humor*), *non-sense*, and *self-reported understanding of humor*.

The most comprehensive approach is by Craik, Lampert, and Nelson (1996). Three features characterize the approach underlying their *Humorous Behavior Q-sort Deck* (HBQD). Firstly, it attempts to cover the whole behavioral domain of everyday humorous conduct as comprehensively as possible (rather than writing redundant items for the assessment of selected components of humor). Secondly, it focuses on humor-related *behaviors* or behavior tendencies, and, when aggregated, styles of humorous conduct. Thirdly, it utilizes a Q-sort technique for the assessment of humor rather than using conventional questionnaires. The authors generated a set of 100 non-redundant statements from a survey of the theoretical and empirical literature on humor and from observations of everyday social life. Based on a principal components analysis of 456 students (self-descriptions), the authors arrived at 10 humor styles which were arranged on five bipolar dimensions, namely the *socially warm* versus *cold*, *reflective* versus *boorish*, *competent* versus *inept*, *earthy* versus *repressed*, and *benign* versus *mean-spirited* humorous styles.

What is the nature of those styles? The *socially warm* versus *cold humorous style*, at its positive pole, reflects a tendency to use humor to promote good will and social interaction, and, at its negative pole, a tendency to avoid mirthful behavior altogether and to remain socially aloof. The *reflective* versus *boorish humorous style* describes thoughtful appreciation of the humorous aspects of people, situations, and events at the positive pole, and a tendency toward unimaginative and overbearing joking behavior at the negative pole. The *competent* versus *inept humorous style* suggests an ability to be witty and tell jokes successfully at its positive pole, and poor joke-telling skills and a tendency for indiscriminant laughter at the negative pole. The *earthy* versus *repressed humorous style* captures raucous delight in joking about taboo subjects at the positive

pole, and an aversion toward macabre, sexual, and scatological forms of humor at the negative pole. The *benign versus mean-spirited humorous style*, at its positive pole, expresses interest in humor-related activities, which are mentally stimulating and innocuous and, at its negative pole, suggests a tendency toward a tough-minded or even mean-spirited use of humor.

Research using the HBQD shows that it is the *socially warm versus cold humor* that overlaps with other humor measures, such as the sense of humor scale by McGhee (2010), cheerfulness, or humor as strength (Müller and Ruch 2011; Ruch et al. 2011).

Development of a four-factor model of humor (4FMH)

The study of the German version of the HBQD led to some unexpected findings (Müller and Ruch 2011; Ruch et al. 2011) that eventually started the work on a new and slightly different model. First, there is evidence that self- and peer-correlations are low for some factors; e.g., *reflective versus boorish; benign versus mean-spirited* (Ruch et al. 2011). Also, factor one and three as well as four and five intercorrelate noticeable. Only two pairs on the bipolar dimension (*socially cold and warm*, and *earthy and repressed*, respectively) showed negative correlations in a direct rating task (i.e., without Q-Sort). Self-rated earthy humor style correlates more with peer-rated mean-spirited humor than self-rated mean-spirited does.

Overall, it seemed difficult to replicate the five-factor structure (Müller and Ruch 2011), but also Craik and colleagues (1996) report for the US version that solutions with four or six factor models were equally possible. Yet unpublished studies (Müller and Ruch 2012) using hierarchical factor analysis on direct self and peer ratings of the 100 items yielded a very high convergence between self- and peer-data for three Varimax-rotated factors. However, clearly more than three factors were needed to and like in the study by Craik and colleagues (1996) up to six factors were inspected. The hierarchical factor analysis first yielded a *general factor of humor* (vs. *seriousness, repressed*), which in the second step splits up into *negative* and *positive* humor. Then, in steps three and four, *positive* splits up into *socially warm humor* and *reflective humor*, and *negative* splits up into *mean-spirited* and *inept*. These four factors remain even in the psychometrically superior six-factor solution, which has two additional minor factors of *laughter propensity* and *spontaneous vs. joke telling*.

The first factor, tentatively called *socially warm humor* (V4.1) represents the social, emotional and communicative aspects. The high scorer is competent in entertaining others, expresses amusement freely, indulges in being a practical joker and entertains a group. He is an emotionally stable, extraverted, cheerful, and gelotophile (i.e., likes others to laugh about him) person. Factor two (V4.2) combines the mean-spirited and earthy humor styles of the HBQD

and builds upon the willingness to break rules and play with rudeness and aggression. The high scorer enjoys vulgar, scatological, blasphemous, obscene and other taboo forms of humor, and makes jokes about the macabre and the grotesque. He is sarcastic, pokes fun at the naive and unsophisticated and laughs at others, not with them (i.e., is a katagelastist, someone who enjoys laughing at others). He is typically younger and male, and low in agreeableness and conscientiousness. Factor three (V4.3) combines the inept and socially cold humor style and builds upon insecurity and lack of competence in humor. The high scorer is not readily amused (yet laughs indiscriminately depending on mood). He misinterprets the intent of other's good-natured kidding, just as gelotophobes (i.e., those who fear being laughed at) do. He covers anxiety with a nervous snicker and is generally in a bad mood, even in humorous situations. Factor four (V4.4) is primarily the reflective humor style and it draws on imagination, fantasy, and openness to ideas of people, but also their verbal skills. The high scorer enjoys the cognitive elements in humor. He takes pleasure in bemused reflections on self and others, detects incongruities in daily lives, and involves in punning, witticisms, and wordplay.

These four factors seem to capture most of the reliable variance in the 100 statements. They need replication, at best by combining new and existing (but optimized to fit the concept better) items. For a brief marker version of this four factor model of humor (4FMH), 24 items were generated, six for each of the four factors. These items (plus some more, see below) were administered to a sample of 706 adults, and the four-factor structure was replicated very well. Only one item showed low and diffuse loadings on several factors, and has to be revised for future use. This approach does by no means invalidate the HBQD as these factors were derived from ratings of the statements, not from a Q-sort as in the original. Also, these factors might be specific to the Swiss culture.

The study of comic styles

The study of individual differences in everyday humorous conduct is one source of reality that informs the 4FMH. It is the domain of what form of humor behaviors people show (or not) in their daily life. These wise or foolish, obscene or macabre, rude or sophisticated humor behaviors are further developed in art categories, such as comic theatre or humorous writings. Therefore rich description of styles of humor might be expected there.

Schmidt-Hidding (1963) postulated eight comic styles: *humor, fun, nonsense, wit, irony, satire, sarcasm* and *cynicism*. Each style is characterized by seven features that help defining these styles, namely (a) intention, goal, (b) object, (c) attitude of the agent as subject, (d) behavior towards the next, (e) the ideal audience, (f) method, and (g) linguistic peculiarities (see Table 1).

Table 1. Characterization of the comical styles according to Schmidt-Hidding (1963).

	Intention, Goal	Object	Attitude of the agent	Behavior towards other people	Ideal audience	Method	Linguistic peculiarities
<i>Humor</i>	To arouse sympathy and an understanding for the incongruities of life	Creation in all its forms; human and real issues	Distant, affirmative, conciliatory, tolerant, love of the individual creation	Understanding, benignly including oneself in judgments	Jovial, relaxed, contemplative	Realistic observation	Ambiguous, without punch line; first-person Narration preferred; dialects and professional jargon
<i>Wit</i>	To illuminate like a flashlight (desire for being brilliant); appreciation by society	Words and thoughts	Tense, vain, takes oneself seriously	Callous, malicious; without sympathy for "victims"	Educated society that appreciates wit; wit depends on the audience	Surprising punch line; "sensation" of the unusual combination	Brief, pointed, enjoying contrasting stylistic devices
<i>Irony</i>	To create a mutual sense of superiority over a third party	Individual situations	Conceited, superior, relaxed, often negatively critical	Introducing and persuading intelligent people, mocking the stupid	Circle of insiders	Confusing non-insiders; decision is undetermined	Ambiguous; no bona fide communication
<i>Satire</i>	To deery bad and foolish people, to improve the world	Moral world as a measure of the real one	Superior, critical, often negative, strained	Detecting weaknesses, aggressive	People with a critical mindset	Disclosing the true circumstances in an allegory, e.g. depicting an ideal world in an animal fable	Utopia, parody, caricature; ironic
<i>Fun</i>	To spread good mood and good comradeship	Everyday life	Agreeable, social, jovial	Brotherly jolly	Friends; People accustomed to bawdy matters	Teasing, waggyish, impish	All kinds of unconventional matters; slang, idiomatic twists
<i>Nonsense</i> (intellectual and spiritual fun)	To expose the ridiculousness of the sheer sense; though basically without any purpose	Constructed or upside-down world; language in its imperfection	Playful, cheerful	Distant, but sympathizing	Children and mature adults	Absolutizing playfulness, the mind at play	Liberal-creative relation to language
<i>Sarcasm</i>	To hurt the partner	Corrupt world	Derisive, feels like an undiscovered genius, thus often maliciously critical	Hostile	Subordinate and dependent people, who don't dare to disagree	Ruthless exposure	Ironic, with emphasis
<i>Cynicism</i>	Devaluate generally accepted values; to emit venom	Weak world	Negative, destructive	Galled (to extremes)	The insecure and immature people	Disillusionment, mockery	Sharp barb; generalizing

Note: Adapted from Schmidt-Hidding (1963, pages 50 -51).

Although styles were derived from comedy, they also characterize human everyday behavior and therefore individual differences in these styles should be measured and used in studies aimed at developing the sense of humor concept. Ruch (2001) found two factors (*good vs. bad humoredness* as affective factor and *sensibleness vs. nonsense* as cognitive factor) in a questionnaire where the content of each of the 56 cells entered the formulation of items. Müller and Ruch (2012) used a different procedure. For each style the behavior of a prototypical person was described using the information from Table 1. Then people rank ordered the descriptions according to how typical they are for them. Also, each style was rated separately to how well it describes one's humor. Table 2 shows how prevalent these styles are in an adult sample ($N = 230$).

Table 2. Prevalence of the eight comic styles

Comic styles	rating		ranks	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Fun	4.17	0.96	6.44	1.97
Humor	3.26	1.04	5.79	1.96
Nonsense	3.29	1.09	5.25	1.92
Wit	2.84	1.12	4.76	1.79
Irony	3.05	1.23	4.35	1.85
Satire	2.50	1.09	4.26	1.71
Sarcasm	2.56	1.24	2.51	1.94
Cynicism	2.19	1.12	2.63	1.94

Table 2 shows that people predominantly use fun, followed by humor and nonsense. This is followed by wit, irony and satire, and finally sarcasm and cynicism. The direct rating of how typical this is for the own comic behavior and the rank order of the comic styles converge. This is not surprising as there are few pre-requirements for indulging in fun, but people are less likely to admit to be sarcastic and cynical. The comic styles were intercorrelated and the coefficients are presented in Table 3.

Table 3. Intercorrelations among the eight comic styles

Comic styles	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Humor	.05	.03	.07	-.14	.02	-.14	-.11
Fun		.27	.06	.06	-.11	-.10	-.20
Nonsense			.11	.16	.06	.09	-.01
Wit				.17	.47	.30	.19
Irony					.31	.44	.50
Satire						.51	.47
Sarcasm							.58

Notes. 2-8 = fun, nonsense, wit, irony, satire, sarcasm, cynicism. Significant correlations ($p < .01$) are in boldface.

Table 3 shows that the correlations range from slightly negative (-.20) to strongly positive (.58). Humor, fun and

nonsense are relatively independent styles but irony, satire, sarcasm, and cynicism form a cluster of intercorrelated styles (with wit also correlating with satire and sarcasm).

The intercorrelations were subjected to a principle components analysis (PCA). Three factors (eigenvalues were 2.65, 1.37, 1.14, .81 and .71) explained 64.5% of the variance and were rotated using the Varimax routine (see Table 4, columns 2 to 4). As also peer ratings of the styles were obtained ($N = 227$) their intercorrelations were subjected to a PCA. Three factors (eigenvalues were 2.68, 1.22, 1.07, .91, and .71) explained 62.0% of the variance. The Varimax factors were correlated with the self-report factors of comic styles ($n = 151$) and the four peer-rating HBQD factors (Table 4).

Table 4. Orthogonal comic style factors in self- (cols 2-4) and peer-ratings (cols 5-7), their correlations with the HBQD-factors, and their convergence.

Comic styles	self			peer		
	V1	V2	V3	V1	V2	V3
Fun	-.15	.80	.03	-.24	.77	.12
Humor	-.26	.00	.75	-.02	.09	.84
Nonsense	.12	.77	.05	.30	.70	-.01
Wit	.44	.15	.63	.70	-.03	.42
Irony	.70	.26	-.22	.64	.33	-.21
Satire	.71	-.07	.43	.69	-.06	.16
Sarcasm	.82	-.01	.02	.78	.00	-.08
Cynicism	.81	-.17	-.06	.71	.06	-.38
Correlations with HBQD-factors						
V4.1	.38	.18	-.09	.65	.13	-.15
V4.2	-.07	.32	.10	-.06	.28	.04
V4.3	.01	-.15	.05	.25	-.14	.00
V4.4	.13	.07	.30	.16	.06	.23
Correlations with self-rating factors						
V1-self				.35	.10	-.03
V2-self				.03	.36	-.01
V3-self				.09	.06	.28

Note. Marker variables and significant ($p < .01$) correlations are in boldface.

Table 4 shows that the two sets of three factors always have between two and four marker variables. The three factors derived from the comic styles are tentatively labeled mockery (V1), playfulness (V2), and reflectiveness (V3). Table 4 shows that mostly the same three factors were extracted from the peer-ratings of the comic styles. First, the loadings are highly comparable (exceptions: in the peer-ratings wit loads more highly on V1 and lower on V3; also the loading of satire on V3 diminished). Second, the correlations between self- and peer-rating factors of comic styles were highest for the homologous factors. Third, the correlations with the (self- or peer-rating) factors

of the HBQD suggest that highly comparable factors are derived from comic styles and from everyday humorous conduct. The correlations are particularly high for mockery/mean-spirited humor in the peer rating analysis. As the comic styles were assessed by one item only they can't be very reliable and hence the lower correlations are to be expected. It should be noted that some of the "off-diagonal" correlations are different from zero; this suggests that a slight rotation would be needed to achieve maximal overlap.

Taken together, one can say that the two approaches (statements about everyday humorous conduct, comic styles as used in the literature) lead to a robust three-factor solution; i.e., three of the four HBQD factors are replicated in a different domain and with self and peer-ratings. Only the inept (and cold) humor style is not represented among the literary styles postulated by Schmidt-Hidding (1963), which is not surprising, as ineptness is not cultivated as a style (although neurotic behaviors are used to elicit laughter; e.g., in the humor of Woody Allen, Luis de Funes). It should also be noted that each of the four factors is strongly related to humor scales (Müller and Ruch 2012). This gives further validity to the factors.

The correlation with the comic styles and with others humor instruments might help to sharpen the meaning of the factors and one might think of adding the comic styles as facets of the factors. So far factor one (V4.1) contains items relating to sarcasm and cynicism, but irony was not strongly covered and could be added or tested where it can be located. Factor two (V4.2) refers more to the ability to entertain and the element of fun is not really covered. There is nothing to add to factor three (V4.3) but factor four (V4.4; reflective and benign) covers humor and also wit. All in all, the comic styles might need separate measurement to be able to test where exactly they are located in the 4FMH.

Where is "humor" in the 4FMH?

Craik et al. (1996) showed that an index of the sense of humor primarily correlated with 2 of the 10 styles, namely the socially warm and the competent humorous styles. However, the study was based on the quotidian term (i.e., the current understanding of sense of humor by laypeople), not the concept stemming from a theory, or the historical literature. Therefore it might not be surprising that for American students of the 80s the standup comedian will be the model for a humorous person. The cheerful, extraverted entertainer that is skilled and effective in amusing others is given prominence. Why is it not related to the benign or reflective humor style?

Interestingly, the HBQD does not have items prototypical for humor as a kind, benevolent attitude towards imperfections of the world and of fellow humans; i.e., the traditional understanding of humor as coming from the heart

and depicting love of fellows and the world (see Schmidt-Hidding 1963). Two items seem to have a philanthropic element ("Uses good-natured jests to put others at ease", "Maintains group morale through humor") and they primarily load on V4.2 and less so on V4.4. So does the statement marked the negative pole of V4.1 ("Does not respond to a range of humor due to moralistic constraints" [repressed style]), but it also has loadings on V4.4.

The question emerges whether the humor "coming from the heart" is located within the 4FMH or located outside, partly or fully. To answer this question, six items that follow the definition of humor by Schmidt-Hidding were written and included in a study of 706 participants. The Cronbach alpha (internal consistency) turned out to be sufficiently high (.79).

Likewise, as noted by Schmidt-Hidding, mock/ridicule could be based on moral sense or haughtiness. However, most items loading on V4.1 only describe the ridicule without any moral basis (i.e., katagelasticism). The one statement that does, -- "Uses humor to challenge social expectations and proprieties" (reflective style) -- was loading on both V4.4 and V4.1. The so-called "aggressive humor" is typically seen as the enjoyment of laughing at others but not as a virtuous behavior (e.g., in the service of justice, to correct power or attack abuse, to change inequality, etc.). The purpose is not derivation of pleasure from the actual behavior, but the communication of corrective/critical messages. Individuals using morally motivated mockery might use it as a tool for social correction. Beermann and Ruch (2009) found that when people use humor to achieve justice they tend to apply irony, wit and sarcasm. Thus, moral mockery is another omission in current literature and needs to be tested for inclusion in the model. Consequently six items were written to cover this aspect and this scale turned out to be highly reliable (Cronbach's alpha = .81).

In a sample of 706 adults the 24 markers of the 4FMH were factor analyzed. The scree test suggested the extraction of four factors (eigenvalues of 6.12, 2.62, 1.66, 1.39, 1.11, 1.03, 0.93, and 0.86) and an oblique rotation (Oblimin) yielded the expected factor structure. Only one item had no clear loading pattern and is marked for revision. The factor scores were correlated with the items of the philanthropic humor and moral mockery scales (see Table 5).

Table 5 shows that the items of both scales shared the reflective humor style which was even more strongly involved in the benevolent humor than in the moral mockery. Benevolent humor was also negatively correlated with ineptness of humor and positively with the socially warm humor style. Moral mockery additionally had consistent and high correlations with mean-spirited humor (V4.2) and some with the socially warm humor style (V4.1).

Table 5. Intercorrelations between the FFMH and items of benevolent humor ($N = 706$) and moral mockery ($n = 225$).

V4.1	V4.2	V4.3	V4.4	Statement (abbreviated)
.38	.03	-.32	.30	Benevolent to human foibles.
.32	.25	-.21	.39	Targets own weaknesses.
.38	.22	-.32	.45	Humorous view of adversity.
.30	.09	-.31	.34	Smiling at imperfections.
.17	.02	-.19	.35	Sympathy for imperfection.
.38	.19	-.29	.34	Adversities amusing.
.19	.36	-.01	.24	Mockery for justice.
.41	.38	.09	.30	Parody of weakness.
.23	.46	.09	.42	Targeting the powerful.
.43	.30	-.02	.27	Aimed at changing others.
.17	.35	.12	.24	Inducing critical mindedness.
.28	.35	.01	.24	Improving morals.

Note. Significant correlations ($p < .05$) in boldface.

A regression analysis with the total score in benevolent humor as a criterion and the obliquely rotated factor scores of the 4FMH as predictors yielded a multiple correlation of .70, with reflective humor (V4.4), low ineptness (V4.3), and socially warm humor (V4.1) entered consecutively. As the multiple correlation approaches reliability, probably not much of the variance of benevolent humor is located outside the model. Likewise, also moral mockery was used as a criterion and the multiple correlation was .62. This was predicted by mean-spirited (V4.2), reflective (V4.4), and socially warm (V4.1) humor. The size of the multiple correlation shows that some of the variable of the moral mocking is unexplained by the 4FMH.

Conclusion

The current research gives further support for a four factor-model of humor recently discovered in self- and peer-reports of everyday humor behavior (Müller and Ruch 2012). Three of the factors were also found in the comic styles. The fourth, ineptitude in humor, is not to be expected in theatre or literature, although neurotic behavior is often laughed at. More encouragingly, humor guided by benevolence and humanity can be located in the 4FMH, being a combination of reflective and socially warm humor styles free of ineptness. Furthermore, teasing and mockery that are claimed to be based on moral grounds and aimed at improving the target is largely covered by the 4FMH as well. While it is related to mean-spirited humor, it is also reflective and has some social warmth. Evidence for comprehensiveness needs to be collected in further studies.

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