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THE LOCATION OF SENSE OF HUMOR WITHIN COMPREHENSIVE PERSONALITY SPACES: AN EXPLORATORY STUDY*

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Summary-The present paper tries to discover the position of sense of humor in personality space. Several definitions of humor are discussed and a review of studies relating personality and humor is given. The authors' conceptualization of humor is introduced and two studies are presented that tried to locate these humor dimensions within personality space. Our humor tests were given to two samples: these samples also had to answer several multidimensional personality inventories to cover the whole domain of temperament (e.g. EPQ, 16PF, FPI, STPI, SSS-IV and STAI). The Humor scores were correlated with each of the personality variables. The factor compositions of the best predictors for a humor category were used to arrive at a tentative hypothesis of the location of dimensions of humor in personality space. The results show that strong relationships between humor and temperament exist. Some of the hypotheses discussed in the literature were supported, but also some new hypotheses were derived from this study. All in all, the results show that the separation of appreciation of humor into the independent components of funniness and rejection is appropriate since they are located in different parts of the personality space.

INTRODUCTION

Every theory of personality that claims to be comprehensive should also have assigned a place to such basic human phenomena as humor and laughter. In fact, some personality theorists (e.g. Allport, Cattell, Eysenck, Erikson, Freud, Guilford, Maslow, Murray) have discussed or integrated humor into their theories to a certain extent. But generally, looking into psychological literature (introductory textbooks, monographs, readers etc.) one very seldom finds the corresponding keywords [humo(u)r, laughter, smiling, wit, cartoons, jokes] listed in the index. Allport (1960) complained that the majority of psychological investigators are preoccupied with decidedly unpleasant emotions at the expense of pleasant emotions. Now, a quarter of a century later, how much has changed? Have we overcome this 'tenderness tabu' (Allport, 1960) or is it still present?

As far as the psychology of humor is concerned there have been some changes. Some multidisciplinary International Conferences on Humo(u)r and Laughter (Cardiff, Wales, 1976; Los Angeles, Calif., 1979; Washington, D.C., 1982; Tel Aviv, 1984; Cork, Eire, 1985) and the publication of several books (e.g. Goldstein and McGhee, 1972; Chapman and Foot, 1976; McGhee, 1979; Wilson, 1979; Bariaud, 1983; Ziv, 1984) demonstrate the increased activity in this realm. The future will show whether the results obtained will also find their way out of the humor ghetto and gain the attention of a broader psychological public.

The present paper explores the relationship between sense of humor and personality. More specifically it tries to define sense(s) of humor as personality concepts and place them within already existing, comprehensive personality systems.

Two problems arise. How can sense of humor be defined, and with what domains of personality might there be relationships? These problems are discussed in the next two sections.

SOME POSSIBLE DEFINITIONS OF HUMOR

Humor can be defined in several ways, depending on which aspects of humor are emphasized. First we have to distinguish between trait and state aspects of humor. The state aspect (cheerful, mirthful, joyful) is usually represented in the 'Elation' or 'Surgency' scales of mood-adjective lists [for a recent survey of mood instruments see Howarth and Schokman-Gates (1981)].

A further distinction can be drawn with regard to different aspects like comprehension, appreciation, expression or creation of humor. Humor comprehension refers to the often observed fact that people sometimes fail to understand the meaning of a joke for intellectual as well as emotional reasons. Similar phenomena can be found in Feingold's (1982, 1983) 'Humor Perceptiveness Test' which quantifies two components, memory for jokes and humor-reasoning ability. Cattell and Warburton (1967) regarded the ability to solve riddles (MI 26) as a marker for the factor U.I.19 (Promethean Will).

Expression of humor refers to differences in quality and quantity of reaction to humorous stimuli. Independent of the amount of cheerfulness experienced, people differ in the way (e.g. smile, laughter, body movements, facial responses) they express this emotion. The reaction to humor can differ depending on the degree to which different systems are involved (motor, acoustic, respiratory, cardiovascular, sympathetic, cortical etc. system). For example, one can laugh loudly or quietly, with or without vocalization, in different rhythmicity, with a certain respiratory pattern, with involvement of only a few or more muscular systems etc. Humor expressiveness could be related to temperamental variables of the introversion-extraversion complex.

Creation of humor denotes the ability to bring neutral stimuli or situations into a new, funny context. Creation of humor is usually assessed by confronting Ss with incomplete jokes or cartoons without captions and giving them the task of producing funny endings. Sociometric methods as well as questionnaires are also used to assess the individual's ability to create humor (Babad, 1974; Ziv, 1984). Babad (1974) showed that production and reproduction of humor should be distinguished carefully. Zero correlations between the two variables supported his suggestion. The ability to create humor is supposed to be related to creativity (Brodzinsky and Rubien, 1976; Rouff, 1973; Threadwell, 1970). Writing original and funny captions for pictures is used in creativity tests (König, 1983).

Krismanic, Kolesaric #, Rohac # ek and Vlasta (1982) have designed humor tests which also distinguish between production of funny captions and selection of the right caption out of five given alternatives. Ss have to choose captions that make the joke funniest and least funny. The intercorrelation (0.65) between these two tests is higher than their separate correlation with a humor appreciation test. Cartoon tests (ordering separate pictures of a cartoon in a meaningful manner, prediction of cartoons, missing cartoons) are included in test batteries measuring social intelligence (e.g. Probst, 1982; O'Sullivan and Guildford, 1966).

Appreciation of humor, the more passive aspect of humor, has been investigated most frequently. It refers to a S's susceptibility to experience amusement, mirth and cheerfulness in the presence of humorous stimuli and situations. Differences exist in the ease of experiencing cheerfulness as well as in the variety of humor categories that are enjoyed. Usually jokes, cartoons etc. are presented to the S in order to rank them on rating scales according to their 'funniness' or similar criteria. Recent investigations (Hehl and Ruch, 1984; Rath, 1983; Ruch 1981) showed that it is also useful to use criteria that cover the negative reactions to humor since they tap other sources of variance, i.e. their correlations with the Funniness scale are

close to zero. With regard to stimulus dimensionality it turned out that there is no general factor in humor appreciation. Differences in stimuli are due to structural properties as well as to the content of the material.

Many humor tests have been constructed (e.g. Almack, 1928; Cattell and Tollefson, 1966; Krismanic *et al.*, 1982; Mindess, Turek and Corbin, 1984; O'Connell, 1960; Redlich, Levine and Sohler; 1951; Roback, 1943; Ruch and Hehl, 1984a) in order to measure appreciation of humor, some of them on a more intuitive basis, some employing sophisticated statistical procedures.

There is empirical evidence that appreciation of humor and expressivity should be distinguished since they are often dissociated (Cupehik and Leventhal, 1974; Young and Fry, 1966; Osborne and Chapman, 1977). Many investigations have been carried out to explore the relationship between this aspect of humor and personality and intelligence variables, attitudes, sex, age and other variables characterizing the individual.

There are still other aspects of humor that remain to be mentioned. One can use humor actively (e.g. frequency of joke-telling, amusing others, inducing humor in others, making others laugh). These aspects are exemplified in personality scales like 'Play' and 'Exhibition' (PRF) or 'Surgency' (16PF) which are subfactors of extraversion. In the EPQ (Eysenck and Eysenck, 1975) agreeing to the item 'Do you like telling jokes and funny stories to your friends?' is scored for extraversion. There are also differences in the frequency with which individuals actively seek out sources that make them laugh (TV shows, cinemas, cabarets, circuses, carnivals etc.). Humor can also be used as a tool to neutralize or inhibit other emotions (e.g. fear, sadness). Thus, humor in the form of cynicism, irony or gallows humor can serve as a coping mechanism (Ziv, 1984; Dixon, 1980; O'Connell, 1966).

Differences also exist in memory for jokes or funny events. Other definitions of humor describe it as a certain ability to see the world, to see the funny side of even tragic events, as a socialized way to release suppressed energy or as a way of gratifying socially unacceptable impulses. There is also the statement that humor is a myopic illusion (La Fave, Haddad and Maesen 1976).

A TAXONOMY OF JOKES AND CARTOONS

It would be useful to have a taxonomy of stimuli that are considered humorous. Independent of the aspect (e.g. appreciation, creation) of humor we are interested in, one must take into consideration the category to which the joke that is created, appreciated, or not comprehended, belongs. There are several ways to establish categories and there have been numerous attempts to establish a taxonomy empirically or theoretically. We used factor analysis and found a three-dimensional system (Ruch and Hehl, 1984a; Ruch, 1981, 1984). In short, we found that jokes and cartoons differ with respect to two properties, structure and content. Our two basic structural dimensions are formed by combinations of the two most fundamental ingredients in jokes, 'incongruity' and 'resolution'. There are jokes that contain punchlines that are incongruent and surprise the recipient but can be resolved completely afterwards (incongruity-resolution jokes). The other type of joke is characterized by impossible incongruities that cannot be resolved or not resolved completely (nonsense jokes). These two factors are heterogeneous with regard to content, whereas the third category (sex jokes) is dominated by a common theme. [For a more elaborate discussion of the origin of the three-dimensional system and its relation to other systems see Hehl and Ruch (1983a), Ruch (1981,1984) and Ruch and Hehl (1983a, 1984a).] In the future we will make extensions of the present model by systematic variations of the two modes content and structure.

PERSONALITY CORRELATES OF HUMOR APPRECIATION

In this paper we discuss some results which reveal a relationship between humor appreciation and individual differences in the field of personality. A hypothesis set forth in the first half of this century with a lot of supporting results (but also failures) stated that extraversion goes along with liking of orectic (sexual and aggressive) humor. One of the earliest indications for the relevance of extraversion was offered by Kambouropoulou (1930); extraverts preferred superiority humor. Later on Cattell, as well as Eysenck, provided support for the view that extraversion is positively related to appreciation of sex jokes [for a recent survey of Eysenck's contributions to this field see Nias (1981)]. Luborsky and Cattell (1947) showed that some of their humor categories correlated with factors of the Guildford and Zimmermann STDCR-GAMIN factors. Their humor test and other variables dealing with humor were included in the 1967 collection of objective tests of personality (Cattell and Warburton, 1967). A low amount of overt laughter at jokes (MI 157) was an index for a high U.I.21 (Exuberance) score, Criticalness in humor (MI 29) loaded in U.I.17 (Inhibition-Timidity). Later, 13 dimensions of humor were listed in the 'IPAT Humor Test of Personality' (Cattell and Tollefson, 1966) in which the first factor ('anxious considerateness vs debonair sexual and general inhibitedness') was thought to be synonymous with the second-order factor of extraversion. This could be inferred because of correlations with the markers of extraversion F (Surgency), A (Cyclothymia) and H (Venturesome). One scale was considered to provide a rough estimate of general intelligence. Also some of the other humor scales offer information not only about a S's sense of humor but also allow inferences about more general personality traits (especially about G, I, M, Q1, Q2). Unfortunately, the actual size of the intercorrelations is not reported in the handbook. However, the reliabilities appear to be small (<0.58). This test was used in several studies (e.g. Breme, 1975; Mones, 1974; Saper, 1984).

Terry and Ertel (1974) used the 16PF as a predictor for liking of a priori defined cartoon categories. Sex jokes were preferred by toughminded (16PF I), group dependent (Q2) males. However, the correlations to the markers F, A and H could not be replicated. Hostile jokes had no correlation with any of the 16PF scales.

Eysenck's (1942) early study suggested a relationship between sex jokes and self-rating factors of extraversion and masculinity. Wilson and Patterson (1969) found a positive relationship between the Extraversion scale of the EPI and sexual jokes. Some studies supported the hypothesis; others found no relationships (Babad, 1974; Ehrenstein and Ertel, 1978; Godkewitsch, 1972; Koppel and Sechrest, 1970; Ruch, 1981; Verinis, 1970).

Neuroticism does not seem to be relevant to the area of humor research (Verinis, 1970; Wilson and Patterson, 1969). Recently, Ziv (1984) offered some very complex hypotheses about the relationship between various types of humor and extraversion and neuroticism; these remain to be tested.

Given the strong relationship between neuroticism and anxiety one would also expect little relationship between anxiety and humor. Goodkind (1976) reported a positive relationship between anxiety and hostile humor, but there was no correlation with sex jokes. On the other hand Doris and Fierman (1956) showed that Ss with low anxiety levels preferred aggressive jokes. Studies with repression-sensitization (which is also related to neuroticism) produced inconsistent results (Babad, 1974; Burns and Tyler, 1976; Byrne, 1958; Goodkind, 1976; Rath, 1983; Ruch, 1981; Ullmann and Lim, 1962; Unterweger, 1983). Repressors were supposed to show a lower appreciation of sex jokes than sensitizers. This turned out to be true only for females (Burns and Tyler, 1976), but some of the replications failed.

Depressivity does not seem to be related to low sense of humor (Scogin and Merbaum, 1983). Other personality variables investigated are aggression (e.g. Byrne, 1956; Grziwog and Scodel, 1956; Murray, 1934; Ruch, 1981), locus of control (Lefcourt, Antrobus and Hogg,

1974; Prerost, 1983), dogmatism (Mones, 1974; Rouff, 1973; Ruch and Hehl, 1983b; Smith and Levenson, 1976) and intolerance of ambiguity (Ruch and Hehl, 1983b).

Eysenck's third dimension, psychoticism (P), might be related to humor. Since low scorers are characterized by superego strength and impulse control they could represent the kind of people who-in Freud's terminology-'repress' unacceptable impulses more than the 'acting-out' type of high scorers. Freud (1905) suggested that socially unacceptable impulses are repressed but can find relief in humor. The more one has repressed the more one will find funny. Therefore, applying the Freudian model, one would expect negative correlations between P and humor categories (especially aggressive and sexual). Applying the trait theory, Eysenck and Wilson (1975) expected a positive correlation between hostile humor and P. Kline (1977) offered some hypotheses about individual differences in humor that are based on the Freudian theory.

The problem with most of the studies in humor is that there is a lack of comparability with regard to the humor categories used. How do we know that the sex jokes used in a certain study are comparable to the jokes used in another. study? Our results show that incongruity-resolution sex jokes and nonsense sex jokes yield quite different results. Also, Nias and Wilson (1977) show that sex jokes are not unidimensional. Some studies employ jokes that are only used in that single study and then never again. For better comparability dimensional investigations should be carried out. Sense of humor inventories that are controlled for cross-national stability should be constructed. Only by using a standardized assessment method can we really compare the different results obtained in different cultures. We tried to explore the cross-national stability of our sense of humor inventory (3 WD-K) and the results look promising (Ruch and Hehl, 1984a); but hitherto only the results from two nations are available.

Since the scores obtained by the 3 WD-K are sufficiently reliable we can speak of appreciation of humor as a trait. In this paper we tried to find out how our dimensions of sense of humor relate to other personality traits. A couple of questionnaires were employed to cover the whole domain of personality (temperament). Humor scores were then related to these dimensions of temperament to see what traits influence sense of humor. Based on the correlation between personality traits and types of humor a positioning of each type of humor in personality space has been attempted.

The second problem concerns the selection of an appropriate personality space. The discussion about the exact number of dimensions of personality is still going on and therefore we cannot rely on a single model, e.g. Eysenck's model or Cattell's model. But much work has been done to relate the different models [for recent surveys see Kline and Barrett (1983) and Royce and Powell (1983)], so that lately it has become possible to transform the results found with one model into the other.

The question arises, at what level in the hierarchy of personality traits humor should be expected. It seems necessary to use variables of different levels, i.e. 'primaries' and 'higher order' factors. Furthermore, it is also possible that humor 'variables will not exactly lie close to one axis in the personality space but fall between two or more Dimensions. For example, one type of humor may not only relate to introversion but also to neuroticism, i.e. lie in the diagonal where also other concepts like anxiety, depressivity or low ego strength can be found. Many traits (e.g. impulsivity, sensation-seeking) are known to be composed by more than one higher order factor. Therefore it seems fruitful to include variables in the study that are located off the diagonal in order to have a balanced distribution of traits in the personality space. Thus, traits of different levels in the hierarchy and of mixed factor compositions will be used to facilitate the location of sense of humor.

Although we already offered and supported hypotheses on links between humor and personality elsewhere (Hehl and Ruch 1983a, b; Ruch, 1984; Ruch and Hehl, 1983a, b,

1984b) this paper is designed as explorative. But many of the research hypotheses discussed in the literature can be found in the present design, i.e. they are tested implicitly.

METHOD, SUBJECTS AND MATERIAL

Different versions of the humor test and also some multidimensional personality inventories were given to two samples. The first sample consisted of 95 male students of all faculties except psychology. These voluntarily participating, paid Ss took part in a psychophysiological experiment and answered, among other questionnaires, also the Freiburg Personality Inventory (FPI-A; Fahrenberg, Selg and Hampel, 1978) and the German version of the STAI (Laux, Glanzmann, Schaffner and Spielberger, 1981). Sense of humor was assessed by an earlier version of our humor test, which included all, except one, of the jokes used in the latest version (3 WD-K). For a better comparability in the present study only these jokes were used and scored which appeared in the newer test. Ss were tested on 3 different days at 1-week intervals.

The second sample consisted of 105 students (49 male and 56 female). About half of them were psychology students of introductory courses, the other half came from other faculties. The Ss answered the German version of the 16PF (Schneewind, Schröder and Cattell, 1983), the EPQ (Eysenck and Eysenck, 1975), a translation (Unterweger, 1980) of the SSS-IV (Zuckerman, 1979), the Impulsiveness, Venturesomeness and Empathy scales of the I# (Eysenck and Eysenck, 1978), the Trait form of the State-Trait Personality Inventory (STPI; Schwarzer and Spielberger, 1982), an assertiveness questionnaire (GAT; Skatsche, Brandau and Ruch, 1982) and Forms A and B of our humor test (3 WD-A, 3 WD-B). Ss participated voluntarily and were tested on 2 different days with a 1-week interval. For the 16PF and the 3 WD-B data for only 92 Ss are available. For ease of presentation and to enhance reliability, scores of both humor tests were combined.

In each sample Ss were tested individually. The procedure of data analysis was the same in all samples. The reliabilities of all questionnaires and the distribution of the scores were checked and product-moment correlations between the six Humor scores (three for 'funniness' and three for 'rejection') were calculated. Of course we do not exclude the possibility that nonlinear relations might exist, or humor might be the result of higher order interactions between personality traits, but as a first step we concentrated on the evaluation of single linear relationships.

ANALYSIS OF THE 'FUNNINESS' SCORES

The product-moment correlations between the Funniness scores and the personality inventories are presented in Table 1. Because of the large number of tests of significance, the probability of a Type I error arises. Therefore the levels of significance are merely regarded as cutoff points for descriptive interpretation. In particular, the incongruity-resolution joke factor and the sex joke factor have a large number of predictors; but also the number of significant correlations with funniness of nonsense jokes is above chance level. Therefore an interpretation of the data is justified. Where not specified, the presented correlations reach the 5% level.

Table 1. Correlations between personality measures and the Funniness scores of the humor test

	Incongruity- resolution jokes	Nonsense jokes	Sex jokes
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<u>FPI</u>			
1 Nervousness	-0.27++	-0.18	-0.17
2 Spontaneous Aggressivity	-0.09	-0.01	0.13
3 Depressivity	-0.25*	0.05	-0.21
4 Irritability	-0.07	0.09	0.05
5 Sociability	0.29**	0.14	0.37***
6 Composedness	0.31**	0.10	0.32**
7 Dominance	0.08	0.16	0.31**
8 Inhibitedness	-0.29"	0.04	-0.30**
9 Frankness	-0.03	0.19	0.07
E Extraversion	0.22*	0.11	0.32**
N Emotional Lability	-0.15	0.04	-0.07
M Masculinity	0.29**	0.13	0.35***
<u>STAI</u>			
Anxiety	-0.21*	0.06	-0.21*
<u>EPQ</u>			
Extraversion	0.06	0.14	0.15
Neuroticism	0.02	0.11	0.09
Psychoticism	-0.20*	0.05	--0.02
Lie	0.11	-0.03	-0.01
<u>STAI</u>			
Anxiety	-0.09	0.03	0.07
<u>STPI</u>			
Anxiety	-0.00	0.15	0.12
Curiosity	0.08	0.15	0.02
Anger	0.10	0.15	0.19
<u>SSS-IV</u>			
AS Thrill and Adventure Seeking	0.13	0.22*	0.16
IS Disinhibition	-0.14	0.16	0.12
s Experience Seeking	-0.20"	0.09	-0.04
BS Boredom Susceptibility	-0.21*	0.08	-0.00
Sensation Seeking Total	-0.12	0.19*	0.09
<u>I5</u>			
Impulsiveness	0.05	0.24"	0.16
Venturesomeness	0.06	0.25**	0.18
Empathy	0.21*	0.06	0.09
<u>GAT</u>			
1 Social Competence	0.04	0.02	-0.03
2 Expressing Feelings/Opinions	-0.12	0.01	-0.06
3 Defending Own Rights	-0.14	-0.08	-0.09
4 Low Fear of Social Rejection	-0.05	-0.09	-0.13
5 Self-confidence	0.05	0.07	0.10
Assertiveness Total	-0.03	-0.00	-0.04
<u>16PF</u>			
A Affectothymia	0.23*	0.02	0.07
B Intelligence	-0.06	-0.15	-0.02
C Ego Strength	0.03	0.03	-0.08
E Dominance	-0.10	0.10	0.16
F Surgency	0.15	0.25*	0.16
G Superego Strength	0.25*	0.08	0.20
H Parmia	0.12	0.22*	0.11
I Premsia	-0.08	-0.28*"	-0.21*

L Protension	0.01	0.19	0.16
M Autia	-0.29**	-0.15	-0.34**
N Shrewdness	0.22*	0.07	0.27**
O Guilt Proneness	0.15	0.02	0.18
Q1 Radicalism	-0.17	0.02	-0.05
Q2 Self-sufficiency	-0.24*	-0.07	-0.13
Q3 Self-sentiment	0.21*	0.04	0.13
Q4 Ergic Tension	-0.00	-0.01	-0.02

*P <0.05; **P<0.01: ***P<0.001

Funniness of incongruity -resolution jokes

In Sample 1 incongruity-resolution jokes are preferred by extraverted (FPI E, $r = 0.22$), Sociable (FPI 5, $r = 0.29$ $P < 0.01$) Ss on the one hand, and by masculine (FPI M $r = 0.29$, $P < 0.01$) and composed (FPI 6, $r = 0.31$, $P < 0.01$) Ss on the other. These jokes are rated as less funny by anxious (STAI, $r = -0.21$), nervous (FPI 1, $r = -0.27$, $P < 0.01$), depressive (FPI 3, $r = -0.25$) and inhibited (FPI 8, $r = -0.29$, $P < 0.01$) Ss. The results of the first eight scales and scales E, N and M are not independent from each other because the latter consist exclusively of selected items of the former. E is mainly composed of some items of sociability and aggressivity; N contains some items of depressivity and irritability, while M contains items especially of nervousness and inhibitedness. But also E and M share some common items. Combining the results in Sample I we can see that extraverted, masculine and low-anxious Ss prefer incongruity-resolution jokes.

Sample 2 only partly confirms the results of Sample 1. Affectothymia (16PF A, $r = 0.23$) and Self-sufficiency (16PF Q2, $r = -0.24$) do correlate with the incongruity-resolution jokes, but all of the other markers of extraversion (F and H) and the Extraversion scale (EPQ E, $r = 0.06$, NS) do not. Also Emotional Lability, the Anxiety scales and the 16PF markers of Cattell's third-order factor 'anxiety' (C, O and Q4) are not related to our first humor factor. But other sectors of personality which were not assessed in Sample 1 become significant. Ss scoring low on Psychoticism (EPQ P, $r = -0.20$), Experience Seeking (SSS ES, $r = -0.20$), Boredom Susceptibility (SSS BS, $r = -0.21$) and Autia (16PF M $r = -0.29$, $P < 0.01$) scales, and high on Empathy ($r = 0.21$), Superego Strength (16PF G, $r = 0.25$), Shrewdness (16PF N, $r = 0.22$) and Self-sentiment control (16PF Q3, $r = 0.21$) scales give higher Funniness ratings to the incongruity-resolution jokes. Of course, all these predictors are related to each other. All the correlations between these variables (except Empathy, which is only partly connected) are in the expected direction and nearly all of them are significant. In order to locate them in the personality space we look at their correlations with the higher factors. Recently Lynn, Devane and O'Neill (1984) showed that Self-sentiment (16PF Q3) is a subfactor of P. In our sample the two scales correlate significantly ($F = -0.29$, $P < 0.01$). We can also confirm the correlations of Empathy with Neuroticism ($r = 0.32$, $P < 0.01$) and Psychoticism ($r = -0.26$, $P < 0.01$) found by Eysenck and Eysenck (1978). Affectothymia ($r = -0.21$) and Superego Strength ($r = -0.27$, $P < 0.01$) correlate negatively with Psychoticism while Experience Seeking ($r = 0.32$, $P < 0.01$) and Boredom Susceptibility ($F = 0.32$, $P < 0.01$) correlate positively. Shrewdness ($r = -0.13$, NS) lies on the expected side but fails to reach significance.

In Cattell's model, funniness of incongruity-resolution jokes can be located in the factor Cortertia since it can be predicted by two of the markers of Cortertia (A, I and M). Cortertia has been considered a subfactor of Psychoticism (Royce and Powell, 1983).

Neuroticism correlates with some of the predictors (ES, BS, Empathy, Superego Strength). This suggests that funniness of incongruity-resolution jokes is located along the P-/N + diagonal. But further research has to be done in order to substantiate this hypothesis.

The hypothesis of a correlation between low P and high N, on the one hand, and humor factor 1, on the other, is not in contrast to our previous results. We proposed a hypothesis about individual differences in this factor elsewhere and showed that conservatism and intolerance of ambiguity are potent predictors of this humor factor (Ruch, 1984; Ruch and Hehl, 1983b, c). Whether conservatism and the present variables correlate and thus overlap in their prediction or not has to be seen. Since conservatism questionnaires were given to both samples we can see that conservatism is correlated with most of the predictors. We will have to investigate whether it is more fruitful to discuss this humor factor within the temperamental framework or within that of attitudes.

Funniness of nonsense jokes

Funniness of nonsense jokes is correlated with Thrill and Adventure Seeking (SSS TAS, $F = 0.22$) and the Total (SSS TOTAL, $r = 0.19$) score of the Sensation Seeking Scale (SSS). Also, the Venturesomeness scale of the 16PF (H Pharmia, $r = 0.22$) and the I# ($r = 0.25$, $P < 0.01$) are predictors for funniness of nonsense jokes. The latter scale was derived from items of the SSS and shares items especially with the TAS subscale. Impulsiveness (1#, $r = 0.24$) and Surgency (16PF F, $r = 0.25$) form another group of predictors. All the scales are also significantly correlated with each other in the expected direction. Tendermindedness (16PF I), is also negatively related to nonsense jokes ($r = -0.28$, $P < 0.01$) but is only correlated with Venturesomeness ($r = -0.28$, $P < 0.01$) and not with the other predictors of funniness of nonsense jokes. Frankness (FPI 9, $r = 0.19$, $P < 0.06$) fails to reach significance. We obtained similar but significant results using Lie or Social Desirability scales (unpublished results).

Although the correlations are not very high and have to be replicated we can formulate a tentative hypothesis Nonsense jokes are considered funny by tough and venturesome (sensation-seeking) Ss. The present data suggest that extraversion as well as psychoticism is involved in the appreciation of nonsense jokes. Recently, Unterweger (1983) reported as an encouraging result a positive correlation between the Nonsense scale of the 3 WD-K and P. But we have to be cautious because in her and in our study only a small part of the variance could be explained by individual differences in temperament, i.e. the larger part of the variance of nonsense lies outside the personality sphere. Further caution is indicated by the fact that, although the significant predictors of nonsense are accepted markers for the higher order factors, none of the correlations with the E, N or P scales (EPQ) themselves reach significance.

Funniness of sex jokes

Since sex jokes are based either on the incongruity-resolution structure or the nonsense structure, we can expect that variables predicting one of the first two humor factors will also correlate with sex jokes. Additionally, there should be variables that specifically predict funniness of sex jokes, i.e. they correlate with sex jokes but not (or only to a lower extent) with the other humor factors.

Indeed, in Sample I a new predictor emerges. Dominance or Reactive Aggressivity (FPI 7, $r = 0.31$, $P < 0.01$) enhances funniness of sex jokes in males. Also the Sociability ($r = 0.37$, $P < 0.001$) and Extraversion ($r = 0.32$, $P < 0.01$) scales are more powerful in predicting sex jokes than they are in predicting incongruity-resolution jokes. A slight increment in predictive power can be found for Masculinity ($r = 0.35$, $P < 0.001$). Composedness ($r = 0.32$, $P < 0.01$), Inhibitedness ($r = -0.30$, $P < 0.01$), Depressivity ($r = -0.21$) and Anxiety ($r = -0.21$) remained stable predictors while Nervousness became an insignificant ($r = -0.17$, NS) predictor. In Sample 2 the Dominance scale (16PF E, $r = 0.16$, NS) correlates with sex jokes in the

expected direction but fails to reach significance. Analysing this correlation separately for both sexes we can see that for males the correlation is high ($r = 0.26$, NS, $df = 42$); for females there is no correlation at all ($r = 0.00$). Further, in an unpublished study we found that dominance and aggression are predictors for sex jokes in males but not in females. The markers of extraversion and the Extraversion scale itself are positively related with funniness of sex jokes but they are below the level of significance.

Sex jokes are judged as funny by tough (16PF I, $r = -0.21$), practical (16PF M $r = -0.34$, $P < 0.01$) and shrewd (16PF N, $r = 0.27$, $P < 0.01$) Ss. The correlations with the variables listed as predictors for the first two humor factors had the same sign but fell below the significance cutoff point.

Relating these results with the hypotheses discussed in the literature one can say that the extraversion hypothesis got some support, especially in Sample I. The masculinity hypothesis was supported in Sample 1 and (if toughmindedness is seen as an indicator for masculinity) Sample 2.

ANALYSIS OF THE 'REJECTION' SCORES

The product-moment correlations between the Rejection scores and the personality scores are presented in Table 2. Three results are salient. First, rejection of nonsense jokes can be predicted well. Second, the rejection of a joke category cannot be predicted by the variables which predicted the funniness of that category. Third, some of the variables which correlated with funniness of the first joke factor now correlate with rejection of the other two. We have to add that the funniness and rejection ratings are unrelated within each category (with the exception of sex jokes in Sample 2; $r = -0.30$, $P < 0.01$).

Rejection of incongruity -resolution jokes

In both samples neurotic especially anxious Ss consistently reject incongruity-resolution jokes. The Neuroticism scales (FPI N, $r = 0.27$, $P < 0.01$; EPQ N, $r = 0.19$) as well as the Anxiety scales (STAI, $r = 0.26$ and $r = 0.22$; STPI, $r = 0.36$, $P < 0.001$) correlate with the rejection of the first humor category. The other markers of this personality segment are also good predictors. In the FPI the Nervousness ($r = 0.20$), Depressivity ($r = 0.29$, $P < 0.01$) and Inhibitedness ($r = 0.20$) scales are significant. Those Assertiveness subscales (OAT 1, Social Competence, $r = -0.20$; GAT 4, Low Fear of Social Rejection, $r = -0.25$) that are located in the extraversion-stability diagonal (i.e. which correlate with E positively and with N negatively) and the Total score (OAT, $r = -0.22$) are potent predictors. Using the 16PF some markers of Cattell's anxiety factor (C, Ego Strength, $r = -0.21$, L, Protension, $r = 0.23$) correlate significantly, others (0, Guilt Proneness, $r = 0.16$, NS; Q4, Ergic Tension, $r = 0.08$) do not.

Table 2. Correlations between personality measures and the Rejection scores of the humor test

	Incongruity- resolution jokes	Nonsense jokes	Sex jokes
<u>FPI</u>			
1 Nervousness	0.20*	0.22*	0.02
2 Spontaneous Aggressivity	0.06	0.13	-0.23*
3 Depressivity	0.29**	0.14	0.10
4 Irritability	0.22*	0.09	-0.03
5 Sociability	-0.02	0.05	-0.15
6 Composedness	-0.22*	-0.17	-0.10
7 Dominance	0.10	-0.01	-0.18

8 Inhibitedness	0.20*	-0.02	0.14
9 Frankness	0.10	-0.03	-0.00
E Extraversion	-0.03	0.09	-0.16
N Emotional Lability	0.27**	0.15	0.02
M Masculinity	-0.18	-0.13	-0.14
<u>STAI</u>			
Anxiety	0.26*	0.10	0.23*
<u>EPQ</u>			
Extraversion	-0.04	-0.06	-0.07
Neuroticism	0.19*	0.25*	0.14
Psychoticism	0.01	0.23*	0.24*
Lie	0.07	0.11	0.16
<u>STAI</u>			
Anxiety	0.22*	0.18	0.10
<u>STPI</u>			
Anxiety	0.36***	0.33*	0.21*
Curiosity	-0.20*	-0.22*	-0.14
Anger	0.02	0.05	-0.05
<u>SSS-IV</u>			
TAS Thrill and Adventure Seeking	-0.20*	-0.38***	0.27**
DIS Disinhibition	-0.06	-0.28**	-0.34***
Es Experience Seeking	-0.14	-0.33***	-0.29**
Bs Boredom Susceptibility	-0.07	-0.24*	-0.26**
Sensation Seeking Total	-0.17	-0.43***	-0.39***
<u>I#</u>			
Impulsiveness	0.08	0.01	-0.10
Venturesomeness	-0.22*	-0.41***	-0.40***
Empathy	0.10	0.21*	0.26**
<u>GAT</u>			
1 Social Competence	-0.20*	-0.17	-0.10
2 Expressing Feelings/Opinions	-0.15	-0.19	-0.20*
3 Defending Own Rights	-0.07	-0.01	-0.05
4 Low Fear of Social Rejection	-0.25*	-0.33***	-
5 Self-confidence	-0.17	-0.23*	-0.27**
Assertiveness Total	-0.22*	-0.25*	-0.21*
<u>16PF</u>			
A Affectothymia	-0.02	-0.02	0.14
B Intelligence	-0.22*	-0.18	-0.10
C Ego Strength	-0.21*	-0.23*	-0.02
E Dominance	-0.14	-0.23	0.34**
F Surgency	-0.07	-0.07	-0.10
G Superego Strength	0.14	0.35**	0.25*
II Parmia	-0.12	-0.20*	-0.15
I Premsia	-0.16	0.01	0.14
L Protension	0.23*	0.18	-0.04
M Autia	-0.13	-0.25*	-0.02
N Shrewdness	0.04	0.17	0.02
O Guilt Proneness	0.16	0.37***	0.15
Q1 Radicalism	-0.15	-0.32**	-0.27**
Q2 Self-sufficiency	-0.07	-0.14	-0.13
Q3 Self-sentiment	0.130	0.19	0.17
Q4 Ergic Tension	0.08	0.09	0.12

*P<0.05: **P<0.01: ***P<0.001

Further correlations can be found with low Intelligence (16PF B, $r = -0.22$), low TAS ($r = -0.20$), low Venturesomeness ($r = -0.22$) especially and low Curiosity ($r = -0.20$) scores.

The significant predictors (except 16PF B) have in common the fact that they predominantly correlate with N, slightly with Introversion but riot with P. Variables that

correlate with N and positively with E (e.g. impulsiveness, anger) or with N and P, do not predict rejection of incongruity-resolution jokes.

If we combine all these results we can postulate that anxious Ss, i.e. neurotics that also tend to be introverted, reject incongruity-resolution jokes.

Rejection of nonsense jokes

As in the case of incongruity-resolution jokes high Rejection scores are obtained by anxious Ss; but nonsense is also rejected by low sensation-seekers. All of the SSS subscales TAS, $r = -0.38$, $P < 0.001$; DIS, $r = 0.28$, $P < 0.01$; ES, $r = -0.33$, $P < 0.001$; BS $r = -0.24$ the Total score (SSS, $r = -0.43$, $P < 0.001$) the Venturesomeness scales (I#, $r = -0.41$, $P < 0.001$, 16PF H, $r = -0.20$) and curiosity ($r = -0.22$) are potent predictors. In Eysenck's system sensation seekers are characterized as high E, low N and high P scorers (Eysenck and Zuckerman, 1978). Indeed, Neuroticism (EPQ N, $r = 0.25$. FPI N. $r = 0.15$, NS) and Psychoticism ($r = -0.23$) scales correlate with rejection of nonsense. but the Extraversion scale and markers of extraversion do not. The hypothesis that emotional lability is involved in rejection of nonsense is also further substantiated by the STPI Anxiety scale ($r = 0.33$, $P < 0.01$), Nervousness ($r = 0.22$), low Assertiveness (OAT 4, Low Fear of Social Rejection, $r = -0.33$, $P < 0.001$; GAT 5, Self-confidence, $r = -0.23$; GAT Total, $r = -0.25$) and Empathy ($r = 0.21$), scores, and Cattell's anxiety components low Ego Strength (16PF C, $r = -0.23$) and Guilt Proneness (16PF O, $r = 0.37$, $P < 0.001$). Since Empathy is also inversely related to P it substantiates the hypothesis that low P also contributes to rejection of nonsense. The higher rejection of nonsense by Ss scoring low in Autia (16PF M, $r = -0.25$), Radicalism (16PF Q1, $r = -0.32$, $P < 0.01$) and Dominance (16PF E, $r = -0.23$) and by Ss with high Superego Strength ($r = 0.35$, $P < 0.01$) also points in the same direction.

The significant predictors of rejection of nonsense are composed of all possible (double and triple) combinations of low E, high N and low P. The order of degree of involvement seems to be N, P and E. However, the best description of Ss who reject nonsense jokes is anxious and low sensation-seeking.

Rejection of sex jokes

The results are similar to the rejection of nonsense jokes, but P and E seem to have gained weight at the expense of N. Venturesomeness (I#, $r = -0.40$, $P < 0.001$) and the SSS subscales TAS, $r = -0.27$, $P < 0.01$; DIS, $r = -0.34$, $P < 0.001$; ES, $r = -0.29$, $P < 0.01$; BS, $r = -0.26$, $P < 0.01$; Total score, $r = -0.39$, $P < 0.001$) are the best predictors. High Rejection scores are further given by conservative ($r = -0.27$, $P < 0.01$) Ss and by those with high Superego Strength ($r = 0.25$) scores. In addition to the Assertiveness scales which are related to rejection of nonsense the subscale expressing feelings and opinions (OAT 2, $r = -0.20$) becomes significant. Empathy ($r = 0.26$), Anxiety (STPI, $r = 0.21$; STAI, $r = 0.23$), and low P ($r = 0.24$) help to locate this humor actor and indicate the affinity to rejection of nonsense. The FPI markers of neuroticism and the 16PF anxiety markers are not related to rejection of sex jokes.

The correlations with Spontaneous Aggressivity (FPI 2, $r = -0.23$) and Dominance (16PF E, $r = -0.34$, $P < 0.01$; FPI 7, $r = -0.18$, $P < 0.06$) are specific for rejection of sex jokes and underline the importance of E and P.

Given the result that rejection of sex jokes is associated most with low sensation-seeking and low dominance we can locate rejection of sex jokes also in the E -, N + and P - octant. The difference from rejection of nonsense can be seen in an enhanced emphasis on the P and E components.

CONCLUSIONS

The results of this study give evidence for the hypothesis that humor is related to temperamental variables. Several significant predictors were found for each of the six Humor scales. The positions given to the humor dimensions are tentative, i.e. they have to be replicated. The results substantiate some of the hypotheses discussed in the literature; but also some new hypotheses were derived from the present data. The validity of our taxonomy was supported since the different humor Categories could be located at different places in the personality space. We further showed that the separation of positive (funniness) and negative (rejection) humor responses is necessary since they are correlated with quite different predictors. All in all we can conclude that the study of individual differences contributes to a better understanding of the phenomenon of humor but further research is needed.

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