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Published on: 01 Jan 1990 - Humor: International Journal of Humor Research (Walter de Gruyter, Berlin / New York)

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DOI: <https://doi.org/10.1515/humr.1990.3.2.119>

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ZORA URL: <https://doi.org/10.5167/uzh-78070>

Journal Article

Published Version

Originally published at:

McGhee, Paul E; Ruch, Willibald; Hehl, Franz-Josef (1990). A personality-based model of humor development during adulthood. *HUMOR: International Journal of Humor Research*, 3(2):119-146.

DOI: <https://doi.org/10.1515/humr.1990.3.2.119>

A personality-based model of humor development during adulthood¹

PAUL E. MCGHEE, WILLIBALD RUCH, and FRANZ-JOSEF HEHL

Abstract

The present article advances a model of humor development extending from late adolescence until about age 60. Previously advanced models of humor development during the preadolescent years are reviewed, and issues related to the proposal of models of adult humor development are discussed. The developmental model presented here draws from a series of factor-analytic studies which document the importance of two principal humor-appreciation factors (nonsense and incongruity plus resolution), and from a broad range of data demonstrating age-related changes in personality measures closely associated with these two factors. Separate attention is given by the model to positive (funniness) and negative (aversiveness) aspects of reactions to cartoons and jokes.

The development of humor has received increased attention over the past 10 to 15 years (see Bariaud 1983; McGhee 1979, 1983; and McGhee and Chapman 1980; for reviews). However, nearly all developmental theory and research has been restricted to early and middle childhood. Only a handful of developmental studies of humor in adolescence has been completed (see McGhee 1979; and Simmons et al. 1986), and they are virtually nonexistent during the adult and aging years. McGhee (1983, 1986) attempted to alter this state of affairs by drawing attention to issues that must be confronted in a life-span approach to studying humor development. Interest in the study of humor among the elderly has also been advanced by the conference on "humor and aging" held at West Virginia University in 1983 (Nahemow et al. 1986 is based on this conference). The present article advances a model of humor development in adolescence and adulthood which is based on existing research on (1)

personality correlates of humor appreciation and (2) age differences in these personality dimensions across adulthood.

Existing theories of humor development

While numerous theories of humor have been advanced by philosophers and (more recently) psychologists (see Keith-Spiegel 1972 for a review), theoretical models of humor development have been rare. Primary attention has been given in these models to the development of incongruity-based humor and to the role of cognitive development in determining general developmental changes. Only limited attention, mainly in the psychoanalytic tradition, has been given to sources of individual differences in humor development

General developmental changes

Attention will be limited here to theoretical views which discuss normative developmental changes in humor, that is, systematic age-related changes in humor that hold for most individuals.

Psychoanalytic theories. Psychoanalytically oriented theories of humor in both children and adults have generally not attended to issues associated with general developmental changes in humor. The most common notion associated with these views is the Freudian (1905) view that humor helps one cope with sources of anxiety and stress (see Grotjahn 1957; Kris 1938; Levine 1977; Wolfenstein 1954). While humor is presumably used by most children to help master sources of distress, the only general developmental transition described by these writers concerns the notion of development of the "joke facade," originally described by Freud (1905) but discussed more fully by Wolfenstein (1954). A joke facade is designed to disguise the true sexual or aggressive nature of a joke, thereby permitting momentary gratification of these impulses. Wolfenstein argued that children become aware of the need to disguise sexuality and hostility in their humor at around six years of age. Instead of directly expressing sexual or aggressive ideas they think are funny, six- and seven-year-olds increasingly rely upon some other cognitive vehicle (such as puns or other forms of ambiguous meaning) for expressing their

humor. The most common assumption is that this vehicle takes the form of incongruity.

Cognitive-stage theory. McGhee (1979) viewed humor as a form of intellectual play and argued that the level of humor a child is capable of understanding and producing at any given point in development depends primarily on the level of cognitive functioning achieved. Drawing primarily from a Piagetian theoretical framework, he argued that each new major cognitive acquisition leads to the appearance of a qualitatively different form of humor. Thus, in McGhee's stage 1 of humor development, children are capable of experiencing humor by acting on an object as if it were a different object. This corresponds to the transfer of sensory-motor to representational schemas within Piaget's model and begins with the onset of pretend behavior; the experience of humor occurs only because the child is *knowingly distorting some aspect of the known world*. This distortion is experienced as funny only when the child is in a playful mood or frame of mind. Comparable incongruous actions may be sources of curiosity and exploration when the child is in a more serious frame of mind.

McGhee's stage 2 comes soon after the onset of stage 1. It reflects further movement away from a sensory-motor level of functioning and is based on the production of verbal incongruities by misnaming objects or events. Stage 3 simply involves a shift to the production of conceptual forms of incongruity as the capacity for conceptual thought emerges at around age three. Stage 4 reflects the acquisition of concrete operational thinking and involves the first appearance of ambiguity mediated by the awareness of multiple meanings of words.

Although McGhee (1979) acknowledged that the appearance of formal operational thinking in early adolescence should lead to the appearance of satire, irony, and other more abstract forms of humor, his model did not extend past middle childhood. Within a Piagetian theoretical framework, then, a fifth stage of humor based on abstract thought capacities should mark the highest level of humor attainable. More recent cognitive developmental theorists, such as Fischer (1980), have proposed the occurrence of systematic cognitive developmental changes into the middle adult years. If new forms of humor do automatically appear (at least among those individuals with a strong general disposition toward play) with the mastery of new levels of cognitive functioning, then qualitatively new forms of humor should appear with the achievement of new levels of

cognitive functioning during the adult years. The key issue in this regard, however, may be the extent of mastery achieved in connection with these more advanced levels of cognitive functioning. Drawing upon the prior work of numerous earlier theorists and researchers, McGhee emphasized the importance of a "mastery-play cycle" in connection with the utilization of newly emergent cognitive skills in the service of humor. That is, individuals only begin to play with new skills after they have been mastered. Since the level of mastery achieved by most individuals at the higher levels of Fischer's stage model has been questioned by Fischer himself, it seems likely that only certain (presumably few) individuals achieve a sufficiently high level of mastery of the more advanced stages of functioning to use them playfully in humor. Accordingly, it seems unlikely that these more advanced cognitive acquisitions during adulthood contribute to normative developmental changes in humor. In general, cognitive developmental changes should provide a basis for normative qualitatively different forms of humor only to the extent that most individuals master the use of the new cognitive skills associated with these changes.

Incongruity-resolution theory. Philosophers have drawn attention to the importance of incongruity in humor for centuries (see Keith-Spiegel 1972; Suls 1972, 1983). Shultz (1972, 1976) and Suls (1972, 1983), however, stressed the importance of distinguishing between mere detection of an incongruous relationship and the resolution of that incongruity. In their view, incongruity *per se* is generally not funny to adults. Rather,

humor results when the incongruity is resolved; that is, the punch line is seen to make sense at some level with the earlier information in the joke. Lacking a resolution, the respondent does not "get" the joke, is puzzled, and sometimes even frustrated. The resolution phase is a form of problem solving, an attempt to draw information or inferences that make a link or provide a fit between the initial body of the joke, cartoon, or situation and its ending ... (Suls 1983: 42).

Suls (1983) provides the following jokes to demonstrate the problem-solving processes involved in humor:

A group of kidnapers is arrested, tried, and sentenced to 15 years on a chain gang. But they escape, 12 of them chained together at the ankle, getting by the guards posing as an immense charm bracelet.

Professor: Mr. Twirp, what do you know about French syntax?

Student: Gosh, I didn't know they had to pay for their fun!

In the first joke, the incongruity consists of the notion of prisoners escaping by posing as a charm bracelet. According to Shultz and Suls, the humor of this idea cannot be fully appreciated without going beyond the mere recognition of the incongruous event to the realization that a group of men chained together at the ankle really do, in one sense, resemble a charm bracelet. This enables us to resolve, or see some sense in, the incongruity; and this, in turn, makes the joke funny — given a playful frame of mind (see McGhee 1972; Suls 1983). In the second joke, resolution is provided by insight into the second meaning which results from the phonetic ambiguity present in the word "syntax."

Shultz (1972, 1974, 1976; Shultz and Horibe 1974; Shultz and Robillard 1980) has extended his model to describe general developmental changes in humor, although Suls (1972, 1983) does not address developmental issues. According to Shultz, children do not begin to appreciate the resolution aspects of incongruity until seven or eight years of age, presumably reflecting the onset of concrete operational thought. Prior to this age, children are said to find humor in "pure incongruity." Even if there is information available which resolves the incongruity, the preschool child does not have the cognitive capacities required to detect and appreciate this information. For preschool children, then, incongruity-based humor is funny *because it makes no sense*, not because it makes sense in some new and unexpected way. Empirical support for this view was provided by Shultz (1972, 1974) and Shultz and Horibe (1974).

Pien and Rothbart (1976) criticized Shultz's view that resolution information contributed to humor appreciation only after age seven or eight, noting that this was simply true for the kinds of jokes and cartoons used by Shultz. Shultz's humor stimuli produced incongruities on the basis of ambiguous words, and Shultz himself (Shultz and Pilon 1973) has shown that children do not begin to become aware of different forms of linguistic ambiguity until about age seven. Pien and Rothbart demonstrated that if similar cartoons based only on visual incongruities (for example, a person who, upon realizing that the book he is reading is upside down, stands on his head in order to read the book — instead of simply changing the book orientation) are used, even four- and five-year-olds can appreciate resolution information in humor.

The Pien and Rothbart (1976) data cast serious doubt upon the developmental aspect of Shultz's model. The point at which children actually do begin to appreciate resolution information in humor, however, remains unclear. While this is a major issue in connection with the

origin and early development of humor, the lack of "resolution" of this problem does not pose a major obstacle to the proposal of a model of adult humor development since there is both theoretical and empirical consensus that incongruity and resolution information both contribute to enjoyment of humor from early childhood on.

According to Shultz's stage model, mere incongruity alone should cease to be very funny once individuals become capable of enjoying the resolution information in cartoons and jokes. There are ample grounds, however, for rejecting this view. First, some jokes and cartoons contain no resolution information. Also, factor-analytic studies of humor appreciation (such as Ruch 1981, 1984; Ruch and Hehl 1986b) have shown that incongruity-resolution and nonsense (unresolved incongruity) structures of cartoons and jokes consistently emerge as independent determinants of funniness. Their studies have shown that these two factors generally play a more important role in determining one's enjoyment of humor than does the actual content. Ruch and Hehl note that in nonsense humor there is generally a surprising or incongruous punchline, just as is the case for incongruity-resolution humor. In nonsense humor, however, the punchline may (1) provide no resolution at all, (2) provide a partial resolution (leaving an essential part of the incongruity unresolved), or (3) create new absurdities or incongruities. Pien and Rothbart (1976; Rothbart and Pien 1977) have similarly stressed that resolution information often gives the appearance of making sense out of incongruities without completely doing so. Thus, in the following children's riddle, even after resolving the incongruity created by the punchline we are left with the incongruous notion of a mouse carrying luggage and going on a vacation.

What's grey and has a trunk?

A mouse on vacation.

It would appear, then, that jokes and cartoons are best conceptualized along a continuum ranging from complete nonsense or unresolvable incongruity, through various degrees of partially resolvable incongruity (resulting from various combinations of [2] and [3] above), to incongruities which are fully resolvable and do not leave any residue of unresolved incongruity.

Deckers and Nerhardt and their colleagues have adopted a different approach to demonstrating that incongruity alone can lead to laughter and humor (Deckers et al. 1977; Deckers and Kizer 1975; Deckers and Salais 1983; Nerhardt 1970, 1976). Using a series of lifted weights to

generate the acquisition of expectations, they showed that laughter varied as a function of the degree to which the final weight was discrepant (incongruous) from the expectation built up from prior experience. The extent to which this laughter can be equated with humorous laughter is not clear. While Deckers and Nerhardt feel that it does indicate an experience of humor, this form of incongruity is considered by the present authors to have no implications for the model presented here.

Considerations for general developmental changes in adulthood. No model of general developmental changes in humor in adulthood has been proposed to date. However, some possible bases for predicting lifespan changes in humor have been advanced recently. Loeb and Wood (1986) offered some broad guidelines for constructing a model of humor development based on Erikson's (1963) stage theory of psychosocial development. The key notion in their proposal is that "humour may be a useful mechanism for dealing with the crises posed in each of Erikson's eight stages of human development" (1986: 280). This approach simply extends the basic psychoanalytic position regarding coping and humor and applies it to characteristic sources of distress associated with different phases of the lifespan. As such, it may prove to have some value in predicting stage-related changes in the content of humor enjoyed or produced. That is, humor related to themes of identity (vs. role diffusion) or intimacy (vs. isolation) may be most funny while individuals are in the midst of crises associated with these stages — or, more likely, when they are close to successful resolution of the crisis. This is consistent with McGhee's suggestion that "To the extent that different periods of the lifespan can be characterized by different sources of conflict ... the content of initiated humor should vary accordingly" (1983: 117).

Goldstein et al. (1972) criticized the psychoanalytic position that the emotional salience of the content of cartoons and jokes (that is, the degree to which the content is pertinent to emotional needs, desires, conflicts, etc.) is crucial in determining their funniness. They argued that mere cognitive salience is sufficient to increase appreciation of humor. They showed that simply making a person more cognizant of even such neutral themes as "automobiles" and "music" (hence increasing their cognitive salience) is enough to make humor centered around these themes funnier. Kuhlman (1985), however, failed to replicate this finding using different experimental procedures. Thus, it remains unclear whether cognitive salience has a sufficiently strong impact upon funniness to overshadow

the effects of emotional salience. It seems likely that future research will show that each factor contributes to funniness in an interactive fashion. To the extent that cognitive salience does prove to play an important role in humor enjoyment, age differences in funniness of different themes may be predicted simply by determining the relevance of different content areas to people's lives at different points in the lifespan.

Finally, McGhee (1983, 1986) has suggested that identification theory (LaFave 1972; LaFave et al. 1976) and disposition theory (Zillmann 1983; Zillmann and Cantor 1976) might be used to predict lifespan developmental changes in enjoyment of disparagement humor. LaFave argued that the extent of positive or negative identification with a disparaged individual or group in a joke is the most important determinant of its perceived funniness. Zillmann and Cantor similarly proposed that "humor appreciation varies inversely with the favourableness of the disposition toward the agent or entity being disparaged, and varies directly with the favourableness of the disposition toward the agent or entity disparaging it" (1976: 100-101). These theories have been quite successful in predicting appreciation of racial, ethnic, political, and gender (at least for males) forms of disparagement humor (see Zillmann 1983).

It follows from these theories that if systematic changes in one's identification with or disposition toward various individuals and groups can be shown to occur across the lifespan, a clear basis exists for predicting developmental changes in humor disparaging those individuals and groups. McGhee (1983) listed the following as one possible developmental sequence in enjoyment of disparagement humor based on these theories: "(1) child victimizes parent, (2) student victimizes teacher, (3) employee victimizes employer or boss, (4) spouse of one's own sex victimizes spouse of the opposite sex, (5) parent victimizes child, and (6) old person victimizes young person" (1983: 116). Developmental predictions along these lines during adulthood are complicated, of course, by the fact that different individuals change their status as student, spouse, parent, etc., at different ages and in different sequences. Thus, progressive developmental changes in humor must be predicted separately for individuals showing a particular sequence of life circumstances. This contrasts sharply with existing models of development of incongruity humor through adolescence, where age-related changes are assumed to reflect underlying cognitive developmental changes. While individual differences in sense of humor and humor development exist in childhood as well as adulthood, all children and adolescents with normal patterns of

cognitive development can be expected to show the same pattern of humor development — at least for those forms of humor mainly dependent upon cognitive level. Neither identification/disparagement theory nor any other theory of humor that we are aware of provides for the possibility of predicting sequential patterns of adult humor development that hold for (nearly) all individuals in the fashion of developmental theories for children. Thus, any theory of adult humor development must simultaneously consider both general developmental trends and individual differences.

Some support has been obtained for the treatment of identification and disparagement theories of humor as developmental theories. McGhee and Lloyd (1981) and McGhee and Duffey (1983a, 1983b) found that preschoolers found it funnier when an adult/parent is victimized in humor than when a child is victimized. Also, Zillmann and Cantor (1972) found that college students preferred humor in which a professor (vs. another student), father (vs. a son), or employer (vs. an employee) was victimized.

Individual differences in humor development

A great deal of empirical attention has been given to individual differences in humor in both children (see Brodzinsky and Rightmyer 1980) and adults (see Hehl and Ruch 1985; Nias 1981; Ruch and Hehl 1983, 1986a, 1986b, 1988; Wilson 1973). While some of these studies have had a clear theoretical focus, theory-based studies of individual differences in humor development have been rare. Generally speaking, two kinds of questions must be addressed in explaining individual differences in humor development. Such differences may take the form of a faster or slower rate of the same kind of developmental change, in which case the basic sequence of development would remain the same as that shown by people in general. Not surprisingly, this question has not yet been raised in connection with humor development in adults. In the case of children, factors (environmental or genetic) which accelerate or retard rate of cognitive development have been considered (McGhee 1979, 1986) as causes of such individual differences in rate of development of comparable forms of humor appreciation.

The second question, of course, concerns individuals' own unique pattern of developmental change in humor. This pattern may be unique in certain respects, but similar to that of groups of individuals in other

respects. In the former case, a number of ideographic studies of professional comedy performers and writers have been completed (see Fisher and Fisher 1981, 1983; McGhee 1979; for a review). These studies have generally focused on these individuals' early backgrounds, however, and have not examined developmental changes in humor *per se*. In the latter case, a differential approach is called for. While this approach has been adopted in connection with different points of the lifespan, as noted above, no attempt has been made to consider the implications of these findings for humor development across the lifespan. Brodzinsky and his associates, however, have considered the implications of individual differences in cognitive style (reflection-impulsivity) for the development of children's humor (see Brodzinsky and Rightmyer 1980). It would be especially valuable for future studies of individual differences in humor to determine whether precursors and current personality or other correlates of different aspects of humor remain constant across the lifespan. Both sets of questions may be raised in connection with (1) the frequency and kind of humor *initiated* and (2) the kind of humor *appreciated* (and the degree or intensity of that appreciation). The model proposed below is restricted to developmental changes in the kinds of humor appreciated at different points during adulthood.

A model of adult humor development

The model proposed here draws from the finding in several factor-analytic studies that (1) two principal factors may be distinguished in connection with the enjoyment of humor, and that (2) these factors have consistently been found to be associated with certain personality characteristics. The fundamental basis for the model is that if these personality characteristics are reliably associated with the enjoyment of specifiable forms of humor, and also show systematic changes across the lifespan, lifespan changes in humor should parallel the underlying personality changes.

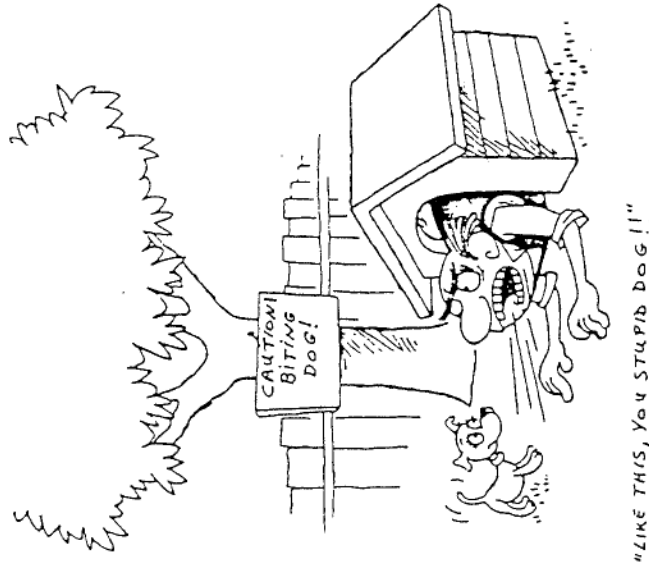
Incongruity and resolution and nonsense as bases for humor

Ruch (1981, 1984) and Ruch and Hehl (1986b) have completed several factor-analytic studies which showed that the first two humor-appreciation

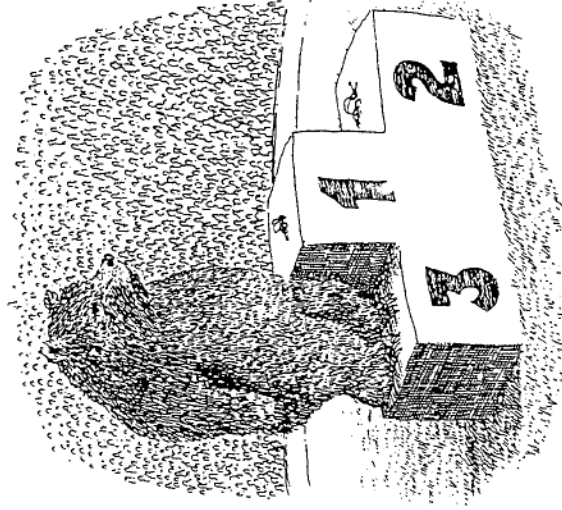
factors were consistently based on the structure of cartoons and jokes, not on their content. They defined these two factors as enjoyment of incongruity-resolution humor and of nonsense humor. This is a noteworthy finding, since it confirms the significance of both incongruity and resolution information in humor, as stressed in theoretical views (see above). It is important to note that Ruch and Hehl did not select their humor stimuli on the basis of these theories. Rather, they simply selected a large broadly representative sample of (initially over 600) German cartoons and jokes and determined empirically the distinctive factors associated with appreciation of them. Jokes and cartoons associated with the incongruity-resolution factor contain some incongruity which is fully resolvable upon consideration of information available in the joke. Once this information has been identified, one has the sense of having "gotten the point" or understood the joke. Generally, there are no leftover traces of incongruity in these jokes; that is, there is no residual ambiguity or uncertainty. This does not necessarily mean that subjects always agree on what makes this kind of joke funny. One person's explanation of why it is funny may differ from another's, but both leave the joke with a sense of closure — with the feeling that they "got it." The left side of Figure 1 shows a sample incongruity-resolution cartoon.

Nonsense humor, on the other hand, does not provide such closure. This may occur for any of the following reasons: (1) no resolution information is provided, leaving one with "pure incongruity"; (2) resolution information is provided, but it is not capable of fully resolving the incongruity, leaving one with some residual incongruity; (3) while the resolution information available does fully resolve the original incongruity, it introduces some new incongruity, again leaving the recipient with some degree of residual incongruity. The right side of Figure 1 shows a sample nonsense cartoon. The incongruity-resolution and nonsense factors are heterogeneous with respect to content, suggesting that structural properties of humor are generally more important than content in determining funniness. Support for the significance of these two factors has now been obtained in four countries (Germany, Austria, France, and the United States).

Distinction between funniness and aversiveness. Investigations of humor have (with rare exceptions) only examined positive aspects of reactions to humor. This has traditionally taken the form of either judgments by an observer of the amount of smiling/laughter shown or a funniness rating



"LIKE THIS, YOU STUPID DOG!!"



"ACTUALLY, I SHOULD BE GLAD - THIRD BEST IN BUZZING - BUT STILL..."

Figure 1. Examples of incongruity-resolution (left) and nonsense (right) cartoons

provided by the subject. Ruch (1981), however, argued that individuals may also have varying degrees of negative reactions to humor. Thus, to fully assess the degree and nature of one's appreciation of humor, measures of both positive and negative reactions to jokes should be assessed. While Ruch originally expected these two dimensions of humor appreciation to be negatively correlated, several studies have shown them to be independent of each other (Rath 1983; Ruch 1981, 1984; Ruch and Hehl 1987). This is consistent with Bradburn's (1969) finding of no relationship between his Positive and Negative Affect Scales. Similar findings by Andrews and Withey (1976), Lowenthal et al. (1975), and McDowell and Praught (1982) suggest that the extent to which people generally experience positive affect in association with daily-life events is independent of the extent to which they experience negative affect. Humor stimuli, then, may be viewed as simply providing an additional opportunity to display one's characteristic positive or negative emotional reactions. These findings suggest that future studies of humor should assess the perceived aversiveness of humor (for example, due to its being seen as hostile, too overtly sexual, embarrassing, boring, etc.) as well as its funniness.

Personality as a source of individual differences in humor

Prior research relating personality variables to humor appreciation has yielded inconsistent findings (see Hehl and Ruch 1985; Ruch and Hehl 1986a, 1986b. for a review). Ruch and Hehl (1983, 1986a, 1986b; Ruch 1981, 1984, 1988) suggested that this inconsistency is due to the fact that these studies were based on the content of jokes and cartoons rather than on their structure. They reasoned that since the structure of humor stimuli generally plays a more important role than their content in determining funniness (as their data suggest), personality variables bearing some meaningful conceptual link to these two structural factors offer the most promise for demonstrating consistent relationships between personality and humor.

While theoretical models (such as those of Shultz 1972, 1976; Suls 1972, 1983) suggest that both the identification and resolution of incongruities are involved in the enjoyment of humor among adults and adolescents, Ruch and Hehl (1983, 1986a, 1986b) hypothesized that individual differences exist in the need for resolution information as a prerequisite to

humor appreciation. In their view, this should simply be one manifestation of a broader pattern of individual differences in the need for contact with structured, stable, unambiguous forms of stimulation, as opposed to uncertain, unpredictable, ambiguous ones. This led them to focus principally on the personality variables "conservatism," "intolerance of ambiguity," and "sensation-seeking" (assessed via questionnaires) as bases for predicting individual differences in humor appreciation.

Conservatism and humor. Conservatism would appear to be ideally suited for predicting individual differences in humor since (1) it has consistently been shown to be a fundamental broad personality dimension (Eysenck 1954; Eysenck and Wilson 1978; Wilson 1973), and (2) characteristics of conservative vs. liberal individuals have a clearly identifiable conceptual link to the two basic types of humor structure. Wilson's (1973) theory of conservatism clearly demonstrates this link. He argues that conservatism reflects a general negative reaction to both stimulus and response uncertainty. This should lead more conservative individuals to show greater avoidance and dislike of novel, complex, incongruous, etc., events which may leave them in a state of subjective uncertainty. They should prefer and seek out simpler and "safer" forms of stimuli. Support for this view has been obtained in connection with art (Wilson 1973), poetry (Gillies and Campbell 1985), and music preferences (Glasgow et al. 1985). In the case of humor, conservative people should find incongruity-resolution humor more funny and less aversive than more liberal (less conservative) individuals, since the full resolution of incongruities present leaves the person with no residual uncertainty. Nonsense humor always leaves a residue of uncertainty, however, so conservatism should be associated with lower funniness ratings and higher aversiveness ratings for this form of humor. This prediction has now been confirmed in several studies (Accoce et al. i.p.; Hehl and Ruch 1985, i.p.; Joachim 1986; Rath 1983; Ruch 1981, 1984; Ruch and Hehl 1985, 1986b). Four different conservatism scales were able to predict the main results (Ruch and Hehl 1986a).

Intolerance of ambiguity and humor. Intolerance of ambiguity would appear to be a key component of the conservative personality, since ambiguity — by definition — must be associated with subjective uncertainty. It follows that subjects with high levels of intolerance of ambiguity should tend to enjoy incongruity-resolution forms of humor but not

nonsense humor. Consistent with this prediction, Ruch and Hehl (1983, 1985, 1986b; Accoce et al. i.p.) found that intolerant individuals gave both higher funniness ratings to incongruity-resolution humor and higher aversiveness ratings to nonsense humor than did subjects who were more tolerant of ambiguity.

Sensation-seeking and openness to experience. Several personality variables have been studied which bear a close relationship to the aspects of the conservative personality described above, including sensation- or stimulus-seeking and openness to experience. Kish (1973) noted that stimulus-seeking and conservatism share a common dimension (although at opposite ends of the continuum) of attitude toward change: "... whether a person is a stimulus-seeker or a conservative may derive from the balance of two opposing responses to novel, changing stimulation, namely fear and curiosity ..." (1973: 197). Zuckerman (1979) defines sensation-seeking as "a trait defined by the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (1979: 10). Zuckerman (1979) reports that sensation-seeking is negatively related to conservatism and positively related to tolerance of ambiguity. Thus, stimulation- and sensation-seeking should be associated with enjoyment of nonsense humor and indifference toward or dislike of incongruity-resolution humor.

Sensation-seeking turned out to be a potent predictor for appreciation of aesthetic objects such as art (Furnham and Bunyan 1988; Zuckerman 1979) or music (Glasgow et al. 1985; Litle and Zuckerman 1986) differing along various stimulus dimensions like intensity, complexity/simplicity, or representational/abstract. Experience-seeking and boredom susceptibility turned out to be the most highly correlated subscales with art.

Costa and McCrae (1978; McCrae and Costa 1980, 1985) developed a model of personality based on three "superfactors," one of which was labeled "openness to experience." The concept is applied to the area of ideas, values, actions, fantasy, aesthetics, and feelings. In each area, more open individuals are considered to have a greater imagination and need for variety, increased tolerance of the unfamiliar (perhaps even pursuit of it), and generally broader interests and openmindedness. Thus, in the context of humor, openness to experience should be positively related to enjoyment of nonsense humor and negatively related to enjoyment of incongruity-resolution humor.

Consistent with the predictions for these personality variables, Hehl and Ruch (1985) found a positive relationship between funniness of nonsense humor and both sensation-seeking and venturesomeness. Aversiveness of nonsense humor was negatively related to these same variables. Funniness of incongruity-resolution humor was negatively related to two of the sensation-seeking subscales (experience-seeking and boredom susceptibility) and imaginativeness and positively related to rigidity and measures of stimulus aversion on the 16 PF scale (Schneewind et al. 1983). While all of the sensation-seeking subscales were negatively related to aversiveness of incongruity-resolution humor, only the thrill- and adventure-seeking subscales and the measure of venturesomeness were significantly negatively related. Furthermore, it turned out that in four different samples sensation-seeking was most predictive of two structure-preference indices, which were derived for both the funniness and aversiveness scores (Ruch 1988). These indices represented the Ss' preference for one humor category relative to the other and were computed by subtracting the scores of one humor category from the other. Ss high in experience-seeking, boredom susceptibility, disinhibition, and the total scale showed more relative preference for nonsense over incongruity resolution.

Additional supporting data. Ruch (1986) described several additional unpublished studies which support the view that individual differences in enjoyment of incongruity-resolution and nonsense humor are predictive of a broader general disposition to enjoy/dislike complexity, novelty, asymmetry, etc. In one study, subjects were given a square card containing 10 rows and 10 columns of dots along with 100 small tiles which were black on one side and white on the other. They were asked to place the tiles in a black/white pattern which was aesthetically pleasing. They then produced an aesthetically displeasing pattern. Finally, subjects rated a series of patterns varying in complexity for their pleasingness. For "pleasing" patterns, complexity of the form produced was significantly positively related to perceived funniness of nonsense humor and negatively related to funniness of incongruity-resolution humor. Also, enjoyment of nonsense humor was associated with finding simple forms less pleasing, while enjoyment of incongruity-resolution humor was associated with finding complex forms more displeasing.

In another study, subjects were presented with pairs of polygons ranging from 5 to 25 sides. Each member of a pair had the same number of sides, but the sides were arranged symmetrically in one case and asymmetrically in the other. Subjects simply indicated which member of

the pair they liked the best. Heightened funniness of nonsense humor was associated with a preference for asymmetrical forms. In another task, subjects rated the pleasingness of 36 polygons (3 to 34 sides) representing 12 different levels of complexity. Again, individuals who found more complex forms more pleasing also gave higher funniness ratings to nonsense humor.

In a third study, subjects were presented with 50 art postcards categorized as simple (representational, realistic), complex (generally nonrepresentational) and fantastic (for example, Dali) and were asked to rate each card for aesthetic pleasingness. While subjects who found incongruity-resolution humor funnier found simple art forms more pleasing, those who found nonsense humor funnier found fantastic art forms more pleasing.

A final study involved the use of "prism glasses" which distorted the normal visual field by either turning everything upside down or reversing the right-left relationship. Under the guise of having a "warm-up" period to allow subjects to get used to the glasses before the beginning of the experiment, subjects were allowed as much time as they wanted and were allowed to do whatever they wanted to with the glasses before starting the experiment. Subjects who gave higher funniness ratings to nonsense humor spent a greater amount of time wearing the glasses and engaged in more activities (such as moving objects in one's hand, moving one's head, standing up, walking, etc.) designed to produce novel or incongruous visual feedback.

Taken together, these findings and those reported above provide ample support for the view that the enjoyment of different forms of humor reflects a broader disposition to seek out and enjoy events which offer more or less stimulus uncertainty (simple/complex, familiar/novel, predictable/unpredictable, consistent/varied, unambiguous/ambiguous, etc.). Thus, humor appreciation appears to be closely associated with and reflective of such basic personality characteristics as conservatism, sensation-seeking, and openness to experience. If these personality qualities show predictable changes across the lifespan, enjoyment of incongruity-resolution and nonsense forms of humor should change in a parallel direction.

Personality development as a basis for the model

Most investigations of the personality variables described above have not been concerned with developmental issues. However, considerable infor-

mation is available on age differences in scores on measures of some of these variables. Thus, several cross-sectional studies have demonstrated a progressive increase in conservatism through the adult years (at least into the 60s), with the sharpest increase beginning in the late 20s (Feather 1979; Schneider and Uhl 1978; Wilson 1973; Wilson and Patterson 1968). Those studies (for example, Wilson 1973) which include subjects in their late teens and early to mid-20s typically show no significant change in conservatism during this period. Taken together, these developmental findings and the close relationship consistently found between enjoyment of incongruity-resolution humor and conservatism suggest that funniness of this kind of humor should progressively increase, beginning in the late 20s or early 30s. Funniness during the 15 or so years preceding this point should remain relatively constant. The finding that rigidity also increases during the adult years (for example Angleitner 1974; Reigel 1959) adds further support for the prediction that incongruity resolution should become increasingly funny during this period. Figure 2² shows the hypothesized development of funniness of incongruity-resolution humor.

Zuckerman (1979) noted that in sharp contrast to conservatism, sensation-seeking decreases with age during adulthood. Data demonstrating this decrease up to the age of 60 have been obtained by Ball et al. (1984), Brownfield (1966), Coursey et al. (1975), Kish and Busse (1968), and Zuckerman et al. (1978). The failure to find any significant age differences in sensation-seeking between 14 and 17 years of age (Farley and Cox 1971) and among college students (Jacobs and Koepfel 1975; Zuckerman et al. 1972) suggests that sensation-seeking is at a peak during the late teens and very early 20s. However, the most potent predictor of funniness of nonsense humor, the experience-seeking subscale of sensation-seeking, continues to increase until about 30, especially in women (Ball et al. 1984; Zuckerman 1979; Zuckerman et al. 1978). Venturesomeness (the Eysenck equivalent of sensation-seeking), on the other hand, has been found to increase between 8 and 15 years of age in both British and American samples and to decrease during adulthood (Eysenck et al. 1984; Eysenck et al. 1985). Thus, while there is a clear basis for predicting a drop in funniness of nonsense humor after age 30, there are conflicting possible predictions between ages 15 and 30. The experience-seeking data suggest an inverted-U curve for the early and middle adult years, while the total sensation-seeking scores suggest a relatively stable level of funniness of nonsense during the late teens and 20s before dropping at around age 30. The venturesomeness data suggest that the

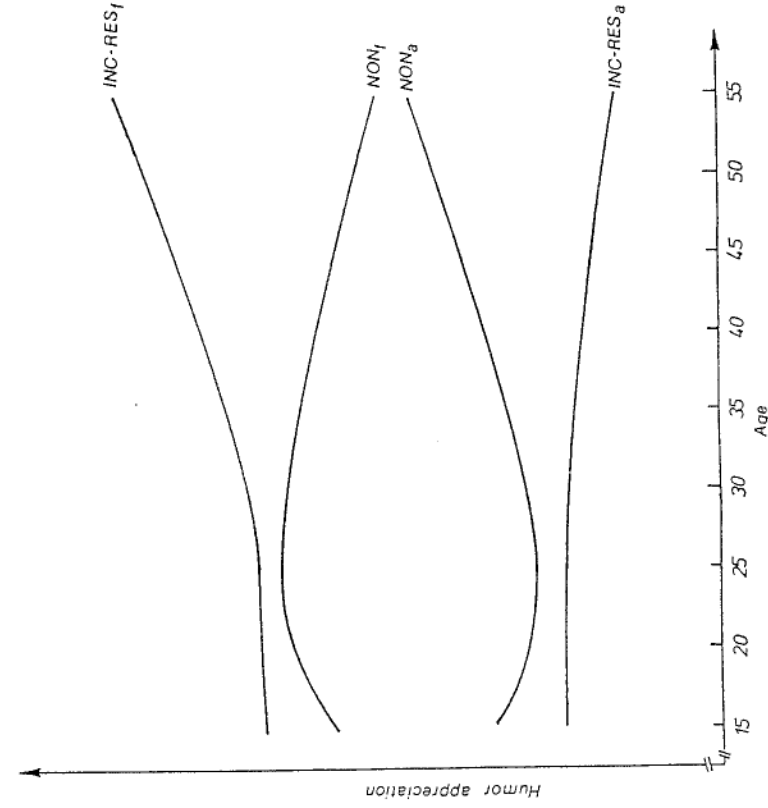


Figure 2. Adult life span changes in funniness and aversiveness of both incongruity-resolution and nonsense humor, as predicted by the model of humor development proposed

drop might come even earlier. Thus, the hypothetical curve depicting developmental changes in funniness of nonsense humor (shown in Figure 2) reflects a synthesis of these conflicting bases for prediction, with a very mild inverted-U curve followed by a progressive drop in funniness after age 30. The fact that this entire curve is placed below that for funniness of incongruity-resolution humor reflects our consistent finding that nonstudent samples generally find incongruity-resolution humor funnier than nonsense humor. In student samples the means of the two humor categories do not differ or nonsense yields even higher scores.

Since the incongruity-resolution cartoons and jokes used by Ruch and Hehl in their studies contain a broad range of specific contents, and since they have found the presence of resolvable incongruity to be a factor which overrides content in determining funniness, it would seem that the only thing which could consistently make incongruity-resolution cartoons or jokes aversive would be the very fact that they do leave the recipient with a sense of having fully understood the point of the joke. There is little theoretical basis for expecting such a full understanding of humor to be aversive, however. Since Ruch and Hehl have not controlled for complexity of humor stimuli in their studies, it may be that some individuals find incongruity-resolution humor somewhat aversive simply because it is experienced as being too simple. That is, all the information necessary to achieve a sense of completion with the joke is provided in the punchline. While conservative individuals should find this quality appealing, sensation-seekers should find it aversive. The above described age-related changes in these variables suggest that incongruity-resolution forms of humor should become progressively less aversive with increasing age. Hehl and Ruch (1985) found that aversiveness of incongruity-resolution humor was positively correlated with such variables as emotional lability or neuroticism, anxiety, and depression. Since these progressively decrease between adolescence and later adulthood (Eysenck et al. 1985; Royce and Powell 1983), this strengthens the prediction that incongruity-resolution humor should become less aversive with increasing age. Figure 2 shows the hypothesized relationship between age and aversiveness of incongruity-resolution humor. The fact that this curve is lower than those supplied for funniness suggests that we certainly expect this form of humor to generally produce stronger feelings of funniness and pleasure than of aversion. Similarly, the generally more elevated curve shown for aversiveness of nonsense reflects our assumption that for those individuals who do find different

types of humor aversive, nonsense humor will be experienced as more aversive than incongruity-resolution humor.

At first glance, the prediction of age-related changes in aversiveness of nonsense humor would appear to be a simple matter. Since nonsense humor is rated as more aversive by individuals high in conservatism (Ruch 1981, 1984; Ruch and Hehl 1986) and low in sensation-seeking and venturesomeness (Hehl and Ruch 1985; Ruch, 1988), it follows that nonsense humor should become more aversive with increasing age, at least after age 30. The finding of a positive correlation between aversiveness of nonsense humor and tendermindedness (Ruch and Hehl 1986b), which also increases with age (Eysenck 1954; Eysenck and Wilson 1978), is also consistent with this prediction. However, aversiveness of nonsense humor has also been found to be positively related to variables (such as anxiety; Hehl and Ruch 1985) that decrease with increasing age. This suggests that, like incongruity-resolution humor, nonsense humor should become progressively less aversive as adults get older. Finally, as noted earlier, there is reason to think that sensation-seeking and venturesomeness are actually increasing during adolescence and early adulthood. Since aversiveness of nonsense humor is negatively related to these variables, as noted above, this suggests that until age 30 or so aversiveness of nonsense should progressively drop with age. While the summed effect of these opposing influences should clearly depend on the relative strength of each contributing influence, it seemed to us that factors contributing to progressively reduced aversiveness should prevail until age 30 or so, while factors contributing to progressively greater aversiveness should prevail after this age. Thus, aversiveness of nonsense humor should be related to age in a U-shaped manner, as depicted in Figure 2.

Empirical tests of the model. A true test of the model proposed here requires either a long-term longitudinal study, in which the same individuals are followed from adolescence through adulthood, or a short-term longitudinal study, in which groups of subjects representing the period covered by the model are tested regularly over a shorter period (such as five or ten years). Special problems are posed, however, in attempting a longitudinal study of humor; namely, the same joke or cartoon cannot be presented twice to the same subject. With rare exceptions humorous events are simply not as funny the second time around. Thus, parallel forms of the humor stimuli must be developed, such that the researcher can safely assume that different cartoons or jokes

are comparable in terms of their potential funniness or aversiveness. To this point, Ruch and Hehl (1985) have succeeded in developing two comparable sets of incongruity-resolution and nonsense humor, but five would presumably be needed for a short-term longitudinal study (allowing for a testing session every one or two years).

Ruch et al. (i.p.) have completed a large-scale cross-sectional study which sampled most of the age levels represented in the model. Over 4000 German adolescents and adults between 14 and 50 years of age (with 37 over age 50) rated incongruity-resolution and nonsense cartoons and jokes for both funniness and aversiveness. These cross-sectional data closely approximated the curves shown in Figure 2 for INC-RES_f, NON_f, and INC-RES_a. The findings for NON_a were less clear; while the data did resemble a U-shaped curve, the aversiveness scores for the oldest age group again dropped in a manner comparable to that obtained for INC-RES_a. Strong support was obtained for our view that underlying changes in conservatism (representative of more general changes in like or dislike of subjective uncertainty) account for developmental changes in enjoyment of the two types of humor structure. Age-related differences in conservatism across the sample accounted for 90.5% and 75% of the age-related variance in INC-RES_f and NON_f scores, respectively (in opposite directions). While these data only demonstrate age differences, and not developmental changes, they provide strong support for the model presented here. Longitudinal studies must now be undertaken to assure that these findings also reflect patterns of genuine development and not mere cohort effects.

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Notes

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2. We thank Englebert Jansa for drawing the figure.

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