HUMOR PREFERENCES AND CREATIVITY

by

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ABSTRACT

Commonalities in the creative process and the process of humor preference were examined to determine if creative individuals show preference for humor in which two or more incongruent ideas are juxtaposed to create the humorous situation as opposed to humor that involves less incongruity. Sixty junior and senior level undergraduates were recruited from creative writing, engineering, and fine arts classes to participate in a 2 1/2 hour testing session. During the testing session five creativity measures were administered (Remote Associates Test, The Similes Test, Barron-Welsh Revised Art Scale, The Franck Drawing Completion Test and the Adjective Check List scored with the creativity scale) and a humor preference measure consisting of 60 cartoons drawn from three content areas: sexual humor, aggressive humor and incongruity humor. The scores on the creativity measures were transformed to normalized T-scores and summed to obtain a unitary creativity score. The highest 20 creativity scores and lowest 20 served as the basis for dividing the participants into a high creative and low creative group. It was found that the high creative group significantly rated the incongruity cartoons as more humorous as demonstrated by the Mann-Whitney U-test ($p \leq .05$) than did the low creative group. No other comparisons between the groups were significant. The study demonstrates that the appreciation of incongruity in humorous situations may be related to the process of creative achievement.

INTRODUCTION

Ferris (1972) introduced his article on humor and creativity by stating that there is an interesting contrast between research and theory in these two areas. The area of creativity is characterized by much research and few attempts at theorizing and that the study of humor consists of much theorizing and little research. Treadwell (1967), in a bibliography, listed only 95 empirical studies dealing with humor from 1897 to 1966. The present paper will discuss the theoretical and research developments in the areas of humor and creativity with the goal of integrating these concepts and proposing a correlational study to demonstrate the hypothesized relationship between these two concepts.

Theories of Humor

Philosophers throughout the ages have attempted to delineate that which is humorous from that which is not, with little agreement. Eysenck (1942) suggested that the difficulty may have arisen because philosophers have intrinsically tied their theory of humor to their philosophy, making their theory of humor subject to the same assumptions and controversy as their philosophy. Philosophers have also been content to theorize about humor with little interest in placing their theories to the empirical test of predicting what will be found humorous. More recent humor theorists have approached the area of humor from three differing perspectives: the psychoanalytic approach, the cognitive approach, and the behavioral-cognitive approach.

Freud (1960) wrote one of the first comprehensive works dealing with humor. He differentiated two modes of humor. The first mode is tendentious humor, which is a form of humor that gratifies sexual and aggressive drives. Humor permits a momentary gratification of a forbidden impulse. The accompanying anxiety is discharged through laughter. The second form of humor, non-tendentious, is based on the pleasure that humans derive from regressing from a logical and rational world to the playground of the unconscious. By escaping reality, a person is permitted to suspend the rules of logic and perceive humor in the illogical, the irrational, and the incongruent. Kris (1952), extending the Freudian model of humor, suggested that the comic, as well as the artist, consciously uses regression as a tool to allow the individual to obtain material that is not reality-based, but will be integrated with reality when regression ceases. This regression allows the comic to gain access to unconscious humorous material and to expose his audience to their own repressed material.

The next group of humor theorists stressed the cognitive, rather than regressive, aspects of humor creation and humor appreciation. Eysenck (1942; 1943) proposed three possible approaches to the study of humor. The first approach emphasizes the cognitive elements in the humorous situation; that is, the incongruity, the contrast between ideas, and the contrast between expectations. This approach is illustrated by Schopenhauer's definition as cited in Rapp, 1949, p. 82, "The cause of laughter in every case is simply the sudden perception of the incongruity between a concept and the real objects which have

been thought through in some relation, and laughter itself is just the expression of this incongruity." The second approach involves the conative aspect of humor, emphasizing the sense of superiority over others in humorous situations. The affective approach to humor stressed the importance of the emotional component, a single emotion, or of emotions in combination, as in joy and fear. In his own research Eysenck emphasized the cognitive approach to humor and arrived at five characteristics that constitute humor: (1) a joke usually contains two or more attitudes or ideas between which there exists some amount of incongruity; (2) these ideas become integrated or fused during the course of the joke and when this point is reached, laughter results; (3) this integration must come suddenly or unexpectedly; (4) the integration is accompanied by insight and a new understanding of the first part of the joke is achieved; and (5) the elements of the joke must be experienced objectively, not emotionally.

Another cognitively based theorist, Fry (1968), based his work on Bateson's (1959) work in human communication. Fry proposed that humor is perceived when incongruity is coupled with unexpectedness. This process results in an understanding of the paradoxical nature of human existence. Humorous communications must have two parts: (1) the process part, which provides all of the necessary information, and (2) the climax part, which succeeds in making what was implicit in the process part explicit in the climax. Humor is a figure-ground reversal, where the implicit structure of the joke is made explicit in the punchline and results in unexpected cognitive resolution.

A similar approach was presented by Suls (1972). He used a two stage information-processing model for understanding humor. In the first stage, the perceiver finds that his expectations concerning the ending are disconfirmed by the punchline and incongruity results. In the second stage, the perceiver engages in problem-solving activity to retrieve some cognitive rule that will explain the incongruent elements and follow from the main text of the joke. Suls (1972) defines a cognitive rule as a logical proposition, a definition, or a fact of experience. When the individual is able to retrieve a cognitive rule appropriate to the humorous situation, he is able to reconcile the incongruencies within the joke. Suls distinguishes four factors that will determine the humorousness of a joke: (1) the incongruity of the joke ending, (2) the complexity of the second stage problem-solving, (3) the time taken to resolve the incongruity, and (4) the salience of the joke's content for a given individual.

Other humor theorists have taken a behavioral-cognitive approach to humor. Berlyne (1960) views the arousal in humor not as a psychological state, but as a neurophysiological event precipitated by the experience of arousal, conflict, anxiety, surprise or unfamiliarity. This experience is followed by some sign that indicates safety, readjustment, clarification, or release. Berlyne terms the experience as an "arousal jag." Successful resolution produces a humor response, which is a form of relief from tension and anxiety.

In an extension of the behavioral-cognitive approach to humor, Kagan (1967) examined humor by starting with the development of the

smile response in infants. The cognitive development of a child begins with the creation of a schema. A schema is a representation of an external pattern. When the child is confronted with new stimuli which do not fit into a pre-existing schema, the smile response occurs. The basic requirement is that the infant has a pre-existing schema to cover the situation. For example, an infant is shown a picture of a man's head with a donkey's body. If the child has a schema for what a man's head should be attached to, then the child will find the man's head with a donkey's body humorous. However, if no schema exists, the stimulus will be seen as confusing, threatening, or will be ignored. McGhee (1971, 1972) continued Kagan's theoretical developments by examining a child's mastery over his environment. McGhee defined mastery as a child's attempts to learn the rules governing survival. As the child gains mastery, he learns the distinction between reality and fantasy. This distinction is learned as the child becomes aware of the rules that govern reality. The second condition for humor development entails an understanding of how certain fantasy elements do not fit into the rules governing reality. The child must then develop a level of confidence in the impossibility, or improbability, of fantasy occurring in reality. In this theory incongruity is seen as a stimulus discrepancy, or as a violation of expectancy. The incongruity demands that the child deal with the situation. If the incongruity is resolved immediately, or is so difficult that it cannot be resolved, no humor results. Humorous responses occur when the incongruity is gradually resolved. When the child reaches a developmental stage where both

reality and fantasy can be simultaneously perceived, greater humor appreciation results.

Humor, in all theories, is an active process demanding that the participant interact with the humorous stimulus to be able to appreciate the humor. It should also be noted that the humor theorists emphasized humor comprehension and appreciation, but little has been said about humor creation. The unifying thread through all the theories of humor discussed is the element of perceived incongruity and its resolution. This element appears in discussion of the creative process as well.

Theories of Creativity

Theories of creativity have examined the creative individual, the creative act, and the process of creation in an effort to understand what occurs during the act of creation. The creative individual has been conceived as an integrated set of incongruities. MacKinnon (1962) discussed the seeming incompatibility of certain personality dimensions of creative individuals. Creative persons, including artists and scientists, place a high personal value both on theoretical thinking with its cognitive and highly rational components, and on aesthetic thinking with its associated emotional concern for form and beauty. As a group they tend to have both strong male and female identifications, integrating opposites into a single personality profile. The creative individual has the ability to explore inner resources in ways that might be seen as psychopathic were it not for the adequate control mechanisms which allow the person to function productively and creatively.

Crutchfield (1961), in an analysis of the creative process, suggested the following elements as necessary for the creative act to occur:

- (1) availability of the necessary units of information for the problem;
- (2) selective activation of information so that not all associations are responded to, only those directly influencing the problem;
- (3) contiguous stimulation of the units of information so that units are activated in close temporal sequence and can be perceived as a possible combination;
- (4) salience of the information units so that they will distinguish themselves from other surrounding units;
- (5) the freedom of units such that they are not rigidly, or deeply, embedded in another frame of reference and cannot be seen in isolation; and
- (6) the fittingness of the units must be such that the units are combined in a way that results in a useful combination.

In another approach to the creative process, Poincare (Koestler, 1964) listed the steps involved in the creative process:

- (1) preparation, where the problem is defined and necessary information is accumulated;
- (2) incubation, where the problem is approached indirectly through intuition, dreaming, or working in another unrelated area;
- (3) illumination, where the solution rises from the background and is perceived in the proper context; and finally
- (4) verification, which is the empirical test of the new synthesis.

Koestler (1964) discussed a process where scientific creativity, artistic creativity, and humor appreciation and creation were linked by a unitary process, the process of bisociation. Bisociation is defined as "the perceiving of a situation, or idea, in two self-consistent but

habitually incompatible frames of reference" (Koestler, 1964, p. 35). When two habitually incompatible matrices of thought collide with each other, the pattern of thought must make an adjustment. If the adjustment occurs suddenly, as in a joke, the energy is dissipated through the path of least resistance, or laughter. If the matrices become fused, as in theoretical thinking, a new intellectual understanding has been achieved. And, if the matrices confront each other, as in artistic expression, an aesthetic experience results. Thus, although comics, scientists, and artists approach creative activities with different needs and different results, the underlying connecting thread is the process of bisociation.

The contention of this discussion is that the cognitive aspects of humor comprehension and appreciation are similar to some of the cognitive aspects of the creative process. Humor that is designed to place two logically incongruent ideas in simultaneous presentation should be preferred by individuals who use this same process in their creative activities.

Humor and Creativity: Current Research

Empirical research has provided little in the way of understanding the relationship between humor and creativity. Part of the difficulty involves differentiating creation of humor from the appreciation of humor or the comprehension of humor. Ferris (1972) referred to methods of assessing humor in which a subject, or group of subjects, rate the humorousness of an item as a "reactive" humor measure. He believes that the assessment of reactive humor taps creativity at a

low level. "Generative" humor requires the subject to create humor. This would, according to Ferris, tap creativity at a higher level. The question still remains, is humor creation the same process as humor appreciation or humor comprehension and can they be studied in an interchangeable fashion.

Treadwell (1970) developed a Cartoons Test, using original cartoons and requiring the subject to write a humorous caption. The humor ratings were found to correlate significantly with the creativity measures used; however, no correlation was found between TAT protocols scored for need for variety or desire for novelty. The important element in this study is that creativity and humor were related in an adult population; however, writing a caption for a cartoon may be more of a creative act than a humorous act.

Getzels and Jackson (1962) reported that in their studies of children they found that creative children tend to use humor more frequently, particularly in their fantasy life as opposed to non-creative, yet more intelligent children. Schoel and Busse (1971) attempted to prove that the same relationship holds for adults. They used instructor ratings to obtain 16 men and 16 women who were rated as the most humorous individuals in their freshmen English classes. A control group was randomly selected from the same classes. They found no significant relationship between instructor ratings of humorous individuals and the creativity scores obtained by the humorous individuals. One difficulty with this study may lie in having instructor ratings be the sole criterion of humor. An individual may

see himself as using humor in his thought processes and yet not exhibit overt humorous responses. Getzels and Jackson (1962) observed that creative children use humor in their fantasy life. There may be qualitative differences between being perceived as humorous by an outsider and using humor in covert thought processes.

In another study, Smith and White (1965) attempted to test the following hypotheses: (a) that humor and creativity are related; (b) that creativity and defensiveness would be negatively correlated; (c) that the wit would be a more effective leader than an influence agent, a person who is best at winning an argument; and (d) that the wit would be even more effective under conditions of stress. They tested group problem-solving ability where the group leader was either a wit, a person who says witty things, or an influence agent. The groups each consisted of six airmen, tested under a stress or a non-stress condition. The group leader was chosen using sociometric methods, then given the correct answer to the problem, and told to influence the group in any way possible to make the correct response. All subjects were given a creativity measure. The experimenters found a significant correlation between wit and creativity and that creativity and defensiveness were negatively correlated. The other hypotheses were unconfirmed. Due to the multiplicity of factors under consideration, it is difficult to assess the effectiveness of a wit as a group leader. One important factor discussed by the authors was that the group members could designate an individual as either a wit or an influence agent, but one person could not be rated as both. Perhaps the most effective

group leader combines both wit and skill at winning an argument to influence group processes.

A study dealing more specifically with humor preferences was conducted by Grziwok and Scodel (1956). They used five categories to initially rate the cartoons: (1) aggressive humor; (2) sexual humor; (3) social commentary humor; (4) incongruity humor; and (5) no category applies. The first two groups were combined to form an "oletic" humor group and the third and fourth categories were combined into a "cognitive" humor group. The humor preferences were compared with TAT protocols scored for degrees of sexual and aggressive content, as well as intraception versus extraception. Subjects were also administered the Allport-Vernon-Lindzey Study of Values. The results indicated that subjects high in TAT aggression prefer aggressive humor, while those low in TAT aggression prefer social commentary humor. The more important finding to the current discussion is that those individuals high on the aesthetic scale preferred logically incongruent humor, whereas those low on this scale preferred aggressive humor.

In a study examining the relationship between creativity and humor comprehension, Rouff (1975) found that creative individuals were better able to comprehend the main themes of 20 cartoons than were less creative individuals. The relationship existed even when the effects of intelligence (i.e., S.A.T. scores) were partialled out. Ziv (1976) found that listening to a humorous record facilitated performance on a creativity test over the performance of control subjects not exposed to the humorous record.

Although the research in this area is neither plentiful or definitive, there seems to be some connection between humor and creativity. The connection, more specifically, suggests that creative individuals utilize a creative process which has cognitive elements that are similar to the cognitive elements used to process incongruity humor. As Koestler (1964) points out, the comic, the artist, and the scientist, are involved in the process of placing incongruent ideas together to form a unique combination. This study attempted to explore the relationship between the appreciation of incongruity humor and creative ability. A humor preference measure based on contemporary cartoons was developed containing 60 cartoons representing three humor content areas: sexual humor, aggressive humor, and incongruity humor. Creativity was determined by the use of five creativity measures to allow a more global assessment of creativity. To deal more precisely with the creative process as a whole, the creativity scores were converted to normalized T-scores and summed to give the overall rating of creativity. After all subjects had taken the humor preference measure and the creativity measures, the subjects were ranked according to their overall creativity scores into a high and low creative group for more in-depth analysis.

The following hypothesis was tested: There should be a positive relationship between preference for incongruity humor and creativity. The high creative group should display a higher rating for incongruity humor than for other forms of humor.

METHOD

Participants

The participants were 60 junior and senior level undergraduates, 17 female and 43 male, in creative writing, engineering and fine arts programs, 20 from each program. (Table 1 contains the breakdown of participants by sex and program.) The participants ranged in age from 20 to 36 with a mean age of 23.87. The recruitment was accomplished by the experimenter in upper-division level courses.

Table 1. Breakdown of participants by sex and program

		Creative Writing	Engineering	Fine Arts	Total
Female	N	6	1	10	17
	%	10.0	1.7	16.7	28.3
Male	N	14	19	10	43
	%	23.3	31.7	16.7	71.7
Total	N	20	20	20	60
	%	33.3	33.3	33.3	100

The recruitment information contained a statement regarding the purpose of the project. The statement indicated that the purpose was to determine if humor preferences are in any way related to creativity. Potential participants were informed that the entire testing session would last 2 1/2 hours and that they would be asked to fill out some interesting questionnaires related to creativity and to rate the humor in a series of cartoons during that time. Potential participants were informed that the results would be confidential, but if they desired individual feedback after the testing session that such time could be arranged. A person wishing to participate was asked to provide name, age, sex, address, phone, class and major and indicate a possible testing session time. Participants were also asked to read and sign an informed consent form. Additionally, each participant was given a copy of the informed consent agreement, a listing of the testing sessions, and the researcher's office and home phone number for future reference.

All participants who attended the testing sessions also completed the testing and were included in the study with the exception of two participants who were excluded because English was not their primary language. All participants had the opportunity to ask any questions they had after the testing session and were encouraged to contact the experimenter in a month's time if they desired individual feedback regarding their performance on any or all of the measures.

Instruments

Humor Preference Measure

A humor preference measure was developed using cartoons from a wide range of contemporary periodicals. The cartoons were selected to represent three content areas: (1) sexual cartoons, in which the primary theme is directly related to sexual material; (2) aggressive cartoons, in which the primary theme is directly related to overt aggressive acts; and (3) incongruity cartoons, in which the primary theme consists of two or more ideas that do not logically belong together, yet are juxtaposed in the cartoon. In each content area there were 20 cartoons for a total of 60 cartoons.

The 60 cartoons were drawn from an original pool of 118 cartoons. The original pool of cartoons was rated by six adult raters, four female and two male, representing diverse adult occupations, as to the content area represented by each cartoon. Each rater was given instructions as to the selection criteria for each content area and a set of examples of each content area. Those cartoons in which at least four out of the six raters agreed as to the content were used in the study.

A new set of eight adult raters, four female and four male, again representing diverse adult occupations, were selected to rate the degree of humor found in the original pool of cartoons. A seven-point Likert-type scale ranging from "extremely humorous" to "not humorous" with an additional rating for non-comprehension of a cartoon was used to obtain a mean humor score for each cartoon. The mean humor scores

were used to match the cartoons across the three content areas so that the content areas were matched for degree of humor.

The final set of 60 cartoons was selected on the basis of meeting the following criteria:

1. Four out of six raters agreed as to the content area of the cartoon,
2. Each cartoon to be used in any content area could be matched with a cartoon in the other two content areas as to their mean humor score,
3. No cartoon was used that had two or more raters state that they did not understand the cartoon.

The 60 cartoons were then placed in a standardized order, randomly mixing the three content areas. They were duplicated, one per page, in black and white, and assembled in a booklet format. The instructions for the humor preference measure and the answer sheets were prepared separately (see Appendix A for the instructions and answer sheets).

The humor measure was scored by obtaining a mean score for each of the three content areas, excluding any cartoon that was not understood. An overall mean was also obtained for each individual. Each participant had four scores from the humor preference measure: (1) mean score across the 20 sexual cartoons indicating preference for sexual cartoons; (2) mean score across the 20 aggressive cartoons indicating preference for aggressive cartoons; (3) mean score across the 20 incongruity cartoons indicating preference for incongruity cartoons;

and (4) mean score across all 60 cartoons indicating a total preference for humor score.

Creativity Measures

The creativity measures were selected to give a balance between verbal and visual-spatial mediums, with the addition of a personality measure. They are as follows:

1. Remote Associates Test (RAT). Mednick (1962) proposed an associative theory of creativity. According to the theory, creativity depends upon the ability of an individual to place differing ideas in the same frame of reference and abstracting a unique, productive response from the combination. To test this theory, Mednick developed a measure called the Remote Associates Test (RAT). The test consists of 30 triads to which the participant must supply the correct word which meets the associative requirements of the triad (Mednick and Mednick, 1967).

2. The Similes Test. Schaefer (1971) created the Similes Test which consists of 10 incomplete sentences. The participant is asked to provide three different and imaginative endings for each of the 10 sentence stems in the course of 15 minutes.

3. Barron-Welsh Revised Art Scale (BWRA; Barron, 1957). This test is a subset of the Welsh Figure Preference Test (Welsh, 1959). It is proposed to be a non-verbal measure of preference for complexity as opposed to simplicity, originally developed on the basis of distinguishing artists from people-in-general. The BWRA consists of 60 black and white sketches and the participant is asked to state his/her like or dislike for each item.

4. Franck Drawing Completion Test (FDCT). Franck and Rosen (1949) originally developed the FDCT as a projective technique for assessing masculinity and femininity using 36 stimulus drawings that the subjects were asked to complete according to their liking. Anatasi and Schaefer (1971) used the FDCT as a measure of creativity. Using the first 12 drawings, they scored the drawings along five dimensions: (1) elaboration, (2) flexibility, (3) asymmetry, (4) abstraction, and (5) originality. For the purposes of the study, the first 12 drawings will be administered with a 15 minute time limit and scored using the criteria for the originality scale using the Anatasi and Schaefer (1971) guidelines.

5. Adjective Check List-Creativity Scale (ACL-CR). Gough (1960) developed a check list of 300 adjectives that yields a profile of how an individual views himself. The ACL can be scored to obtain 24 personality dimension scales. Domino (1970) developed a 59 item creativity scale for the ACL that would differentiate between creative and non-creative individuals without being influenced by sex, type of creativity, or field of endeavor. Percentile norms for undergraduates have been established by Yarnell (1971).

The scoring for the five creativity measures was accomplished in the following fashion. The RAT and the BWRA scale were scored according to the keys provided with the manuals (Mednick and Mednick, 1967; Welsh, 1959). The scores for the ACL-CR scale were obtained by tabulating the number of adjectives indicated on the ACL for each participant that are also contained in the creativity score developed

by Domino (1970) and converting that score to a percentile norm based on the work of Yarnell (1971). The Similes Test was scored by the experimenter using the criteria listed in the Similes Test Manual (Schaefer, 1971). Since two of the creativity measures (Similes Test and FDCT) required subjective scoring procedures, a subset of 20 protocols from both tests were randomly selected and scored by a rater trained in the use of the criteria for both tests to establish interrater reliability. Interrater reliability coefficients ranged from +.79 to +.84. The creativity scores were then transformed into normalized T-scores ($\bar{X} = 50$; S.D. = 10) and summed to provide a unitary creativity score for each participant.

Procedure

After the participants had indicated their interest by completing the recruitment forms, each participant was scheduled for a testing session and notified by telephone of the date, time and setting. The testing sessions were arranged in a small group setting with between three and eight participants per session. Complete testing of each participant was accomplished in one session which lasted approximately 2 1/2 hours. Each participant was given a code number to use on all of the creativity measures and the humor measure to provide anonymity during scoring. The creativity measures were administered first, followed by the humor preference measure. Following the testing, time was reserved for any questions that the participants had.

When the tests had all been scored, the summed creativity scores were rank-ordered and the top 20 scores constituted the high creative

(HiCr) group and the bottom 20 scores made up the low creative (LoCr) group. These groups served as the basis for further analysis.

Analysis

Because of the preselected nature of the HiCr and LoCr groups and the interdependence of the four components of the humor measure, non-parametric statistics were chosen as the most appropriate statistical analysis procedure. The data were analyzed by Mann-Whitney U-test comparisons between the HiCr and LoCr groups in terms of their mean preference score for sexual humor, aggressive humor, incongruity humor and total humor. Within group comparisons were also made using Mann-Whitney U-test comparisons.

RESULTS

Table 2 presents some of the comparative descriptive data for the HiCr and LoCr groups. No significant mean differences were found between groups on the age variable. Chi-square analysis indicates no significant differences between groups in their sex composition, but there are significant differences in terms of program representation in the two groups ($\chi^2 = 6.86, p \leq .05$). The HiCr group had proportionately more creative writing students and fewer engineering students than the LoCr group which had more engineering and fewer creative writing students. Fine Arts students were approximately equally distributed between the two groups.

Table 3 presents the means and standard deviations for the unitary creativity scores (HiCr, $\bar{X} = 282.07$, S.D. = 12.31 and LoCr, $\bar{X} = 217.21$, S.D. = 18.21) and for the mean preference scores for sexual humor (HiCr, $\bar{X} = 3.61$, S.D. = 1.08 and LoCr, $\bar{X} = 3.56$, S.D. = .99), aggression humor (HiCr, $\bar{X} = 3.92$, S.D. = .54 and LoCr, $\bar{X} = 3.58$, S.D. = .85), incongruity humor (HiCr, $\bar{X} = 3.90$, S.D. = .64 and LoCr, $\bar{X} = 3.41$, S.D. = .79) and total humor (HiCr, $\bar{X} = 3.81$, S.D. = .62 and LoCr, $\bar{X} = 3.51$, S.D. = .80). For the HiCr group the mean on the unitary creativity score was 282.07 (S.D. = 12.31) while for the LoCr group the mean was 217.21 (S.D. = 18.21), a statistically significant difference ($t = 13.24, p \leq .001$). This indicates that the HiCr and LoCr groups were clearly different populations as a result of the

Table 2. Descriptive data for the HiCr and LoCr groups

Demographic Variables	HiCr (N = 20)	LoCr (N = 20)
Age		
$\bar{X}$	24.65	22.45
S.D.	4.07	5.83
Sex		
Male	13	15
Female	7	5
Program		
Engineering	3	9
Creative Writing	11	3
Fine Arts	6	8

Table 3. Means, standard deviations, t-test values, and Mann-Whitney U-test values for the HiCr and LoCr groups

Measure	HiCr (N = 20)	LoCr (N = 20)	
Creativity Total Score			t-test Values
$\bar{X}$	282.07	217.21	13.24**
S.D.	12.31	18.21	
Humor Preference Measure			Mann-Whitney U-test Values
Sexual Humor			
$\bar{X}$	3.61	3.56	U = 204
S.D.	1.08	.99	U ¹ = 206
Aggression Humor			
$\bar{X}$	3.92	3.58	U = 169
S.D.	.54	.85	U ¹ = 231
Incongruity Humor			
$\bar{X}$	3.90	3.41	U = 138*
S.D.	.64	.79	U ¹ = 262
Total Humor			
$\bar{X}$	3.81	3.51	U = 163
S.D.	.62	.80	U ¹ = 237

*p $\leq .05$

**p $\leq .001$

selection procedure. No significant differences existed between the HiCr and LoCr groups in their mean preference for sexual humor, aggressive humor, or for overall humor preference. As predicted, the HiCr group significantly differed from the LoCr group in their ratings of incongruity humor ($U = 138$, $U^1 = 262$, $p \leq .05$). Figure 1 graphically presents the means for comparison of the HiCr and LoCr group across the four humor preference measures.

Table 4 presents the within group comparisons for the HiCr and LoCr groups across the three humor preference measures. No significant within group differences were found.

Figure 1. Means comparing the HiCr and LoCr groups across the four humor preference measures

Table 4. Mann-Whitney U-test comparisons within the HiCr and LoCr groups across the three humor preference measures

Groups	U Prime		
Low Creative Group			
Sexual Humor--Incongruity Humor	U = 175	$U^1 = 225$	n.s.
Incongruity Humor--Aggression Humor	U = 153	$U^1 = 247$	n.s.
Aggression Humor--Sexual Humor	U = 196	$U^1 = 204$	n.s.
High Creative Group			
Sexual Humor--Incongruity Humor	U = 177	$U^1 = 223$	n.s.
Incongruity Humor--Aggression Humor	U = 199	$U^1 = 211$	n.s.
Aggression Humor--Sexual Humor	U = 171	$U^1 = 229$	n.s.

DISCUSSION

The results of this study indicate that creative individuals differ from less creative individuals in their ratings of humor in which two or more incongruent ideas are juxtaposed to create a humorous situation as opposed to humor that involves less incongruity. There are a few difficulties in reliably interpreting the results. Although previous researchers (Grziwok and Scodel, 1956) have used incongruity cartoons as a separate class of cartoons, incongruity may run through all humor content areas to a greater or lesser degree. Attempts were made in this study to obtain as pure content areas as possible, but the possibility exists that incongruity existed in the aggression humor and sexual humor. Another difficulty was in the Likert-type scaling used to assess the degree of humor preference. This form of scaling may not have been sensitive enough to detect subtle gradations in humor preference. Additionally, the fact that the humor preference measure followed approximately an hour and a half of creativity testing may have placed a damper on the participants' ability to appreciate any form of humor. Subjectively most participants seemed to enjoy the creativity measures and many expressed their pleasure with the humor measure; however, participant fatigue, or performance anxiety, cannot be ruled out as possible variables affecting the humor preference measure. Finally, the measurement of creativity is not a highly validated process. The creativity measures were selected to tap verbal and visual-spatial

skills, to provide subjective and objective scoring procedures, to utilize convergent and divergent thinking, and to provide a personality measure. No single creativity test measures all those potential aspects of creativity. The results from all the creativity measures were combined to provide an "over-all" creativity score for each participant. The individual creativity measures functioned as part of a creativity battery. Whether this approach continues to be useful in future research remains to be seen.

Since two of the creativity measures (Similes Test and FDCT) required subjective scoring procedures, reliability of scoring becomes a problem. Measures were taken to establish interrater reliability. Interrater reliability coefficients ranged from $+ .79$ to $+ .84$. Obviously, reliability could be improved, but was acceptable for the purposes of this study.

The only difference between, or within, the HiCr and LoCr groups was the mean preference score for incongruity humor which was higher in the HiCr group as compared to the LoCr group ($U = 138$; $U^1 = 262$, $p \leq .05$).

The implications of these results suggest that the ability to playfully place ideas in different contexts, to juxtapose incompatible ideas to achieve a humorous combination may be part of the cognitive process of creative individuals. This is consistent with the descriptions of the creative process by creative individuals where major advances in their thinking occurred once they were able to cease taking their ideas so seriously, relaxed their cognitive process, tossed

around their ideas in a playful fashion (Ghiselin, 1952). The ability to use incongruity as an element in a cognitive process may be part of what is known as inspiration or innovation.

The nature of this research is essentially exploratory and tentative. The elements of the creative process are not clearly defined. The elements of humor appreciation are even less well understood. One common linkage between creativity and humor is the finding that creative individuals rate incongruity cartoons higher than do less creative individuals. Future research is needed to delineate the elements of the creative process and the role humor plays in that process.

APPENDIX A

HUMOR PREFERENCE SURVEY

The following cartoons are being used as a measure of cartoon preference. I need to find out how humorous these cartoons are to you. I want you to look at each cartoon. Then, on the answer sheet, locate the number which corresponds with the cartoon. Circle the rating that indicates how humorous this cartoon is to you.

The ratings are:

Extremely Humorous--EH--This means that the cartoon is one of the funniest cartoons that you have ever seen.

Very Humorous--VH--This means that you really enjoyed the humor in the cartoon.

Above Average--AA--This means that the cartoon is funnier than your average cartoon.

Average--A--This means that the cartoon is equal to most average cartoons.

Below Average--BA--This means that the cartoon is less funny than your average cartoon.

Slightly Humorous--SH--This means that there was only a little humor in the cartoon.

Not Humorous--NH--This means that you understood the cartoon but found nothing humorous in it.

If you did not understand the cartoon, circle DNU which means that you did not understand.

Take your time doing the ratings. However, don't spend too much time on any one cartoon. Your first impression is usually your best. Take each cartoon separately. Try not to let the cartoons before influence the cartoon that you are rating. There are 60 cartoons in all.

When you are finished, return the cartoon book and answer sheet to me.

Number

Extremely Humorous	EH
Very Humorous	VH
Above Average	AA
Average	A
Below Average	BA
Slightly Humorous	SH
Not Humorous	NH
Did Not Understand	DNU

1.	EH	VH	AA	A	BA	SH	NH	DNU
2.	EH	VH	AA	A	BA	SH	NH	DNU
3.	EH	VH	AA	A	BA	SH	NH	DNU
4.	EH	VH	AA	A	BA	SH	NH	DNU
5.	EH	VH	AA	A	BA	SH	NH	DNU
6.	EH	VH	AA	A	BA	SH	NH	DNU
7.	EH	VH	AA	A	BA	SH	NH	DNU
8.	EH	VH	AA	A	BA	SH	NH	DNU
9.	EH	VH	AA	A	BA	SH	NH	DNU
10.	EH	VH	AA	A	BA	SH	NH	DNU
11.	EH	VH	AA	A	BA	SH	NH	DNU
12.	EH	VH	AA	A	BA	SH	NH	DNU
13.	EH	VH	AA	A	BA	SH	NH	DNU
14.	EH	VH	AA	A	BA	SH	NH	DNU
15.	EH	VH	AA	A	BA	SH	NH	DNU
16.	EH	VH	AA	A	BA	SH	NH	DNU
17.	EH	VH	AA	A	BA	SH	NH	DNU
18.	EH	VH	AA	A	BA	SH	NH	DNU
19.	EH	VH	AA	A	BA	SH	NH	DNU
20.	EH	VH	AA	A	BA	SH	NH	DNU

Extremely Humorous	EH
Very Humorous	VH
Above Average	AA
Average	A
Below Average	BA
Slightly Humorous	SH
Not Humorous	NH
Did Not Understand	DNU

21.	EH	VH	AA	A	BA	SH	NH	DNU
22.	EH	VH	AA	A	BA	SH	NH	DNU
23.	EH	VH	AA	A	BA	SH	NH	DNU
24.	EH	VH	AA	A	BA	SH	NH	DNU
25.	EH	VH	AA	A	BA	SH	NH	DNU
26.	EH	VH	AA	A	BA	SH	NH	DNU
27.	EH	VH	AA	A	BA	SH	NH	DNU
28.	EH	VH	AA	A	BA	SH	NH	DNU
29.	EH	VH	AA	A	BA	SH	NH	DNU
30.	EH	VH	AA	A	BA	SH	NH	DNU
31.	EH	VH	AA	A	BA	SH	NH	DNU
32.	EH	VH	AA	A	BA	SH	NH	DNU
33.	EH	VH	AA	A	BA	SH	NH	DNU
34.	EH	VH	AA	A	BA	SH	NH	DNU
35.	EH	VH	AA	A	BA	SH	NH	DNU
36.	EH	VH	AA	A	BA	SH	NH	DNU
37.	EH	VH	AA	A	BA	SH	NH	DNU
38.	EH	VH	AA	A	BA	SH	NH	DNU
39.	EH	VH	AA	A	BA	SH	NH	DNU
40.	EH	VH	AA	A	BA	SH	NH	DNU
41.	EH	VH	AA	A	BA	SH	NH	DNU

Extremely Humorous	EH
Very Humorous	VH
Above Average	AA
Average	A
Below Average	BA
Slightly Humorous	SH
Not Humorous	NH
Did Not Understand	DNU

42.	EH	VH	AA	A	BA	SH	NH	DNU
43.	EH	VH	AA	A	BA	SH	NH	DNU
44.	EH	VH	AA	A	BA	SH	NH	DNU
45.	EH	VH	AA	A	BA	SH	NH	DNU
46.	EH	VH	AA	A	BA	SH	NH	DNU
47.	EH	VH	AA	A	BA	SH	NH	DNU
48.	EH	VH	AA	A	BA	SH	NH	DNU
49.	EH	VH	AA	A	BA	SH	NH	DNU
50.	EH	VH	AA	A	BA	SH	NH	DNU
51.	EH	VH	AA	A	BA	SH	NH	DNU
52.	EH	VH	AA	A	BA	SH	NH	DNU
53.	EH	VH	AA	A	BA	SH	NH	DNU
54.	EH	VH	AA	A	BA	SH	NH	DNU
55.	EH	VH	AA	A	BA	SH	NH	DNU
56.	EH	VH	AA	A	BA	SH	NH	DNU
57.	EH	VH	AA	A	BA	SH	NH	DNU
58.	EH	VH	AA	A	BA	SH	NH	DNU
59.	EH	VH	AA	A	BA	SH	NH	DNU
60.	EH	VH	AA	A	BA	SH	NH	DNU

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