Personality and humor appreciation: Evidence of an association between trait neuroticism and preferences for structural features of humor

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Abstract

This study examines the relationship between trait Neuroticism and appreciation of humor structure (incongruity-resolution and nonsense humor). Higher levels of Neuroticism are associated with increased anxiety, and more anxious people are known to dislike novel situations more than less anxious individuals do. Given that nonsense humor is an instance of a novel state of affairs, it was predicted that increases in Neuroticism would be associated with a decreased preference (indicated by funniness ratings) for nonsense humor compared to humor in which the incongruity is fully resolved. Results obtained from a total of 107 participants (34 males and 73 females) supported that prediction. It is argued that these results, as well as those which indicate associations between humor structure preferences and various other personality constructs, can be accounted for by reference to an individual’s trait and/or state arousal levels. Implications of the findings for theories of humor are examined.

Keywords: Humor structure preferences; personality; neuroticism.

1. Introduction

The humor appreciation component of sense of humor has long been a focus of study in humor research. One major aim has been to clarify the nature of the appreciation of humor content, as well as humor structure, through identification of personality variables associated with aspects of each. Several notable relationships have been identified. For instance, observations regarding humor content include that Psychoticism (high
scorers being characterized by enjoyment of stimulating situations and a lack of planning; Ruch 1994), Sensation Seeking (characterized by a need for varied, novel, and complex situations; Arnett 1994), Extraversion (higher scorers enjoy and actively seek the company of others; Buchanan 2001), and Toughmindedness (generally viewed as being synonymous with psychoticism; Ruch and Hehl 1986), are related to liking of sexual humor; Extraversion is related to enjoyment of personal superiority humor, and Introversion is associated with enjoyment of nonsexual humor (Hehl and Ruch 1985; Ruch 1988; Ruch and Hehl 1986). In addition, Aggression is related to liking of sexual and aggressive humor (Galloway and Cropley 1999).

Personality is also related to appreciation of structural features of humor. In general, two structure-based categories of humor can be distinguished— incongruity-resolution humor and nonsense humor. In the former, an incongruity is introduced which can be completely resolved. However, in nonsense humor, an incongruity is left unresolved, or only partially resolved, or new absurdities are created in attempts to resolve the incongruity (Ruch and Hehl 1998). Findings regarding personality and appreciation of structural features of humor include that Psychoticism and Sensation Seeking are negatively related to the rated funniness of incongruity-resolution humor and positively related to funniness ratings of nonsense humor. The latter are also negatively related to tendermindedness (Hehl and Ruch 1985). Conservatism (a generalized fear of stimulus and response uncertainty; Ruch and Hehl 1998), Intolerance for uncertainty, and Agreeableness (friendliness; Buchanan 2001) are positively related to the rated funniness of incongruity-resolution humor (Ruch and Hehl 1986). Openness (associated with a need for novelty, variety, and complexity; Buchanan 2001) is positively related to preference for nonsense humor and negatively related to preference for incongruity-resolution humor (Ruch and Hehl 1998).

The present study examines whether another personality variable, Neuroticism, is related to appreciation of humor structure. Neuroticism relates to the extent to which people experience negative thoughts and feelings (Buchanan 2001), higher levels of Neuroticism being associated with increased levels of anxiety, depression, hostility, and self-consciousness (Gunthert et al. 1999). An association between Neuroticism and humor structure preference has not previously been reported. However, there are several reasons to expect such a relationship. Specifically, as indicated, Neuroticism is positively associated with anxiety. More anxious
people show greater dislike for unstructured/uncertain/novel situations than do people who are lower in anxiety (Mazzanti et al. 1998). In fact, results consistent with these points have been reported by Schick et al. (1972), who found a positive relationship between anxiety and preference for familiar, compared to novel, cartoons.

Given the abovementioned considerations, and the fact that nonsense humor is an instance of a novel state of affairs, it can be predicted that Neuroticism will be associated with the difference between preferences for incongruity-resolution and nonsense humor. Specifically, as Neuroticism increases, it is expected that a person’s preference for nonsense humor will decrease relative to his/her preference for incongruity-resolution humor.

2. Method

2.1. Materials

2.1.1. Humor stimuli. A set of eight jokes judged by the experimenters as being good exemplars of nonsense humor and eight jokes characterized by them as good examples of incongruity-resolution humor were used as the humor stimuli in the present study. The jokes were chosen from a larger set of 112 jokes, compiled by the experimenters for use in humor research, which represent a broad range of different humor types. Items in the larger joke set were chosen from existing humor instruments (e.g., The Antioch Humor Test; Mindess et al. 1985), humor texts (e.g., Raskin 1985), and humor-related websites. Each of the items in the larger set was rated for funniness by reference to a 5-point Likert scale (5 = very funny, 1 = not funny).

Given the findings reported by Hehl and Ruch (1985) that sexual humor appears to be the only type of humor content that influences humor appreciation, the items chosen for inclusion in the two humor structure categories examined in this study were ones judged by the researchers as not being characterized by sexual content. The jokes examined are reported in Table 1.

Several of the nonsense items appear to be susceptible to some resolution of the incongruity introduced in the joke; however, the resolution is incomplete, and so those items were accepted as being appropriate for examination of the research question. With a view to the internal validity of the study, the construct validity of the nonsense and incongruity-resolution
Table 1. Jokes included in the humor structure categories

**Incongruity-resolution jokes**

1. “Get this,” said the bloke to his mates. “Last night while I was down the pub with you guys, a burglar broke into my house.” “Did he get anything?” his mates asked. “Yeah, a broken jaw, six teeth knocked out, and a pair of broken nuts — the wife thought it was me coming home drunk.”

2. A police car pulls up in front of grandma Bessie’s house, and grandpa Morris gets out. The policeman explained that this elderly gentleman said that he was lost in the park and couldn’t find his way home. “Oh Morris,” said grandma, “you’ve been going to that park for over 30 years, so how could you get lost?” Leaning close to grandma so that the policeman couldn’t hear, Morris whispered, “Lost I wasn’t. I was just too tired to walk home.”

3. It is better to keep your mouth shut and appear stupid, than to open it and remove all doubt.

4. Did you ever notice that when you blow in a dog’s face he gets mad at you? But when you take him for a drive, he sticks his head out the window.

5. I went into a McDonalds yesterday and said, “I’d like some fries.” The girl at the counter said, “Would you like fries with that?”

6. A blind man enters a department store, picks up his dog by its tail, and begins swinging it over his head. A clerk hurries over and says “Can I help you sir?” “No thanks,” he replies, “I’m just looking around.”

7. What happens if you get scared half to death twice?


**Nonsense jokes**

1. If it weren’t for electricity, we’d all be watching television by candlelight.

2. I just can’t stand people who are intolerant.

3. The two most abundant things in the universe are hydrogen and stupidity.

4. I’ve never had major knee surgery on any other part of my body.

5. Q: Why are elephants colored grey? A: So you don’t confuse them with canaries.

6. A man walks into a bar, sits down, and orders a drink. “Hey, nice tie!” comes out of nowhere. He looks up at the bartender to see if he had said anything, but since he was on the other side of the bar the man just ignores it. “Hey! Nice shirt!” The man looks up but, again, the bartender is engaged elsewhere. “Hey! Nice suit!” The man then calls the bartender over and asks him if he keeps talking to him. “It’s not me, it’s the complimentary peanuts”.

7. A man comes into a bar with his dog and orders two martinis. He drinks one and the dog drinks the other. The next day, the same thing, the day after, the same. Finally, the dog comes in alone, so the bartender serves him a drink without even asking. The next day the man comes in with a box under his arm. “I brought you a present for being nice to my dog,” he says. “It’s a king crab.” “Oh, thanks,” says the bartender. “I’ll take him home for dinner.” “No,” says the man. “He’s already had his dinner. Why don’t you take him out to a movie instead?”

8. Two cannibals eating a clown. One says to the other, “Does this taste funny to you?”
scales used in this study was examined using the same participants whose scores on the scales were examined for association with Neuroticism.

2.2. **Personality measures**

The 41 item International Personality Item Pool (IPIP; Buchanan 2001) was used to obtain measures of the “Big 5” personality variables: Openness, Extraversion, Agreeableness, Neuroticism, and Conscientiousness. The first four are described above. Conscientiousness concerns how organized and persistent one is in pursuing goals, with higher scorers being methodical, well-organized, and dutiful (Buchanan 2001). Participants rated each of 41 statements (e.g., have frequent mood swings; pay attention to details; am the life of the party) using a 5-point Likert scale to indicate how accurately each statement describes them (1 = very inaccurate, 5 = very accurate). Several of the personality variables are used in the construct validation of the humor structure scales examined.

3. **Participants and procedure**

As indicated above, the nonsense, and incongruity-resolution, jokes examined in this study were chosen from a larger set of 112 jokes. Questionnaires containing the 112 jokes as well as the 41 item IPIP personality inventory were distributed to a convenience sample of participants, and returned anonymously to the experimenters in sealed, unmarked envelopes. One hundred and seven usable questionnaires were returned, which represents a response rate of just over 50%. The respondents comprised 34 males and 73 females. A broad range of ages was sampled: under 20 years (N = 25); 21–30 years (N = 51); 31–40 years (N = 9); 41–50 years (N = 11); 51–60 years (N = 10); 61 years and over (N = 1).

4. **Results**

4.1. **Construct validation of the humor scales**

A principal components analysis was conducted on the sixteen joke stimuli chosen by the experimenters (eight nonsense and eight incongruity-
resolution) in order to examine their underlying structure. The data set met all requirements for good factorability. Specifically, examination of the matrix of correlations indicated the presence of various correlations in excess of .30; the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy exceeds .6 (it was .719); values on the diagonal of the anti-image correlation matrix all exceed .5; and Bartlett’s test of sphericity is large and significant (see Tabachnick and Fidell 2001). Examination of the scree plot indicated that a 3-component solution was most appropriate. However, the 3-component solution was characterized by three items (blind man in department store; scared half to death twice; and broccoli and kids—see Table 1), which loaded highly on more than one component. Those items were removed from the data set, and another principal components analysis was run.

The KMO for the 13-item data set is .717, and all of the other measures of sampling adequacy referred to above are at acceptable levels. An oblimin rotation indicated that none of the components were correlated with each other greater than $+/-.30$, and so use of a varimax rotation of components is justified (Diekhoff 1992). Components 1 and 2 are correlated .3, components 2 and 3 are correlated .283, and components 1 and 3 are correlated .271. The varimax rotated matrix is reported in Table 2.

The five jokes characterized by the experimenters as incongruity-resolution which remained in the reduced data set all loaded highly ($>.40$) on component 1. Component 2 is associated with five of the jokes characterized by the experimenters as nonsense (all loaded $>.50$ on that component). The remaining three “nonsense” items (each of which involves a pun) all loaded $>.6$ on component 3.

All distributions for the five personality variables and the factor scores on the components were checked and found to be normal. The means, standard deviations, and Cronbach alpha reliabilities for the personality variables are reported in Table 3.

All are at an acceptable level. Alpha values for the items which loaded highly on components 1, 2, and 3 are reported in Table 2. Those values are acceptable for components 1 and 2, but the value is lower than desirable ($<.60$) for component 3.

In order to clarify the nature of the components, relationships between the factor scores and the five personality variables were examined using Pearson product moment correlations. The correlations are reported in Table 4.
Table 2. Varimax rotated component matrix for incongruity-resolution (IR) and nonsense (N) jokes rated for funniness

<table>
<thead>
<tr>
<th>Item</th>
<th>Components</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Item</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR1 Burglar broke in</td>
<td>.816</td>
<td>.034</td>
</tr>
<tr>
<td>IR2 Lost I wasn’t</td>
<td>.810</td>
<td>.039</td>
</tr>
<tr>
<td>IR3 Keep mouth shut</td>
<td>.578</td>
<td>.306</td>
</tr>
<tr>
<td>IR4 Blow in dog’s face</td>
<td>.571</td>
<td>.176</td>
</tr>
<tr>
<td>IR5 Fries with fries</td>
<td>.400</td>
<td>.330</td>
</tr>
<tr>
<td>N1 TV by candlelight</td>
<td>.026</td>
<td>.834</td>
</tr>
<tr>
<td>N2 Can’t stand intolerance</td>
<td>.230</td>
<td>.709</td>
</tr>
<tr>
<td>N3 Hydrogen and stupidity</td>
<td>.291</td>
<td>.617</td>
</tr>
<tr>
<td>N4 Knee surgery</td>
<td>.186</td>
<td>.518</td>
</tr>
<tr>
<td>N5 Elephants and canaries</td>
<td>−.030</td>
<td>.468</td>
</tr>
<tr>
<td>N6 Complimentary peanuts</td>
<td>.008</td>
<td>.052</td>
</tr>
<tr>
<td>N7 Take crab to movie</td>
<td>.114</td>
<td>.077</td>
</tr>
<tr>
<td>N8 Cannibals and clown</td>
<td>.215</td>
<td>.199</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>2.366</td>
<td>2.359</td>
</tr>
<tr>
<td>% of variance explained</td>
<td>18.203%</td>
<td>18.148%</td>
</tr>
<tr>
<td>Sum of variance explained = 50.814%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cronbach alphas</td>
<td>.723</td>
<td>.700</td>
</tr>
</tbody>
</table>

Table 3. Means, standard deviations, and reliabilities (coefficient alphas) for the personality variables used in this study

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Coefficient alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>2.7</td>
<td>.81</td>
<td>.78</td>
</tr>
<tr>
<td>Openness</td>
<td>3.6</td>
<td>.68</td>
<td>.73</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>3.6</td>
<td>.63</td>
<td>.77</td>
</tr>
<tr>
<td>Extraversion</td>
<td>3.4</td>
<td>.66</td>
<td>.82</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>3.8</td>
<td>.67</td>
<td>.80</td>
</tr>
</tbody>
</table>

Table 4. Correlations between personality and component scores

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>Difference between components 1 and 2</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Openness</td>
<td>−.325*</td>
<td>−.238*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.111</td>
<td>.276*</td>
</tr>
<tr>
<td>Extraversion</td>
<td>−.058</td>
<td>.099</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>−.024</td>
<td>−.062</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.248*</td>
<td>.115</td>
</tr>
</tbody>
</table>

key: * p < .05 (one-tailed)
Hehl and Ruch (1985) observed that scores on the incongruity-resolution component of their 3 WD humor tests were negatively correlated with Psychoticism. A major component of Psychoticism is Conscientiousness (Buchanan 2001), lower levels of Psychoticism being characterized by higher levels of Conscientiousness (McCrae and Costa 1985). Given this, it can be predicted that liking of incongruity-resolution humor will be positively related to Conscientiousness. As indicated in Table 4, Conscientiousness is positively correlated with scores on component 1 identified in the principal components analysis in the present study, which is consistent with interpretation of component 1 as relating to incongruity-resolution humor.

Ruch and Hehl (1998) report that liking of the incongruity-resolution component of the 3 WD is negatively correlated with Openness, and that Openness is positively correlated with liking of the nonsense component of the 3 WD. The present findings indicate that Openness is negatively correlated with component 1 and positively related to component 2, which supports interpretation of those components as incongruity-resolution and nonsense, respectively. Hehl and Ruch (1985) also found a positive correlation between Surgency (extraversion) and liking of the nonsense component of the 3 WD. Extraversion is positively related to component 2 in this study. Furthermore, it was observed that Neuroticism is negatively related to component 2. Given the points introduced above that anxiety can be expected to be negatively related to liking of unstructured/novel situations, those findings provide further support for the characterization of component 2 as nonsense. None of the personality variables are correlated with component 3. However, given that an incongruity-resolution and a nonsense component have arguably been identified (components 1 and 2 respectively), no further reference to component 3 is necessary.

4.2. Relationship of Neuroticism to the difference between rated funniness of incongruity-resolution and nonsense humor

The differences between component 1 and component 2 were normally distributed. Reliability of those difference scores was examined by randomly pairing a given incongruity-resolution joke with a nonsense joke, computing the difference, and determining the Cronbach alpha value for the five difference scores. The alpha value is .50, which is relatively low.
This would make it more difficult to detect an effect of the sort predicted. However, as indicated in what follows, such an effect was observed, so the reliability level of the difference scores was not considered to be a problem.

Correlations between the personality variables and the differences between scores on component 1 (incongruity-resolution) and component 2 (nonsense) are reported in Table 4. As predicted, Neuroticism is significantly related to that difference such that, as Neuroticism increases, liking of nonsense humor decreases relative to liking of incongruity-resolution humor (nonsense liking scores were subtracted from incongruity-resolution liking scores, which is why the correlation is positive).

One point, however, needs to be clarified in regard to this finding. Specifically, it is widely known that females tend to score higher on Neuroticism than do males (Buchanan 2001). In this study, Neuroticism and gender were significantly correlated, $r(105) = .335$, $p < .05$, confirming the tendency for females to be higher Neuroticism scorers. Gender was also observed here to be significantly related to the differences between incongruity-resolution and nonsense humor, $r(105) = .304$, $p < .05$. One possible reason for such a relationship is that it is attributable to the tendency for females to score higher on Neuroticism. However, it is also possible that gender-related variables other than Neuroticism might be responsible for the pattern observed.

To investigate that possibility, the relationship between Neuroticism and the difference scores was examined for just the female participants. The correlation between those variables was significant, $r(71) = .253$, $p < .05$, which serves to increase confidence in the conclusion that the relationship between Neuroticism and the difference scores is indeed attributable to Neuroticism.

5. Discussion

The present results indicate that, as predicted, Neuroticism is related to humor structure preferences. Increases in levels of Neuroticism are associated with increased preference for incongruity-resolution compared to nonsense humor. Such a pattern is consistent with the general observation that more anxious people prefer structured situations (represented in the present research by incongruity-resolution humor) compared to
unstructured situations (nonsense humor in this study). In what follows, several issues raised by these results are examined.

5.1. Methodological issues

It is notable that a relationship between Neuroticism and appreciation of humor structure has not previously been reported in the literature. One possible reason is that research of this kind tends to be characterized by medium to low effect sizes, which is consistent with the view that attitudes and behaviors are multiply determined (see Stanovich [2004] for a detailed discussion). Given this, careful consideration should be given in such research to the question of whether the study is powerful enough to detect an effect of the size expected. In the present study, an attempt was made to lessen the influence of factors that could reduce the power of the tests used. Specifically, examining differences between ratings of nonsense humor and ratings of incongruity-resolution humor provides an indication of the effect of humor structure controlling for the effects of extraneous individual difference variables, such as the level a given person rates items relative to another person. By reducing the “noise” associated with such variables, effects present are more likely to be detected — that is, the test is more powerful. Additionally, the number of participants tested in this study (N = 107) was above that required (N = 68) to achieve the desirable 80% power for effects of the size expected (see Aron and Aron 2003).

5.2. Theoretical and practical implications

The observation that Neuroticism is related to humor structure preferences is relevant to a number of theoretical issues. For instance, that finding can help explain results described by Hehl and Ruch (1985) which indicate that factor analytic studies have identified three dimensions underlying humor appreciation — two structural ones (incongruity, and incongruity-resolution) and one content dimension — sexual content. Given the present findings, Neuroticism can be suggested to be one determinant of the structural dimensions.

The relationship between Neuroticism and humor structure preferences is also consistent with claims in Arousal theories of humor that physiological arousal might be a mechanism underlying humor appreciation.
According to one version of that view (Berlyne 1969, 1971), the relationship between physiological arousal and the experience of pleasure can be described in terms of an inverted U function. Now, if level of trait Neuroticism is seen as being an indicator of a person’s base/trait arousal level, then individuals who are higher in Neuroticism have a higher base level of arousal than do those who are lower in Neuroticism. Given this, for high Neuroticism scorers, nonsense humor (which is an instance of an unstructured/novel situation of the sort which more anxious people dislike) is likely to raise the already high trait arousal level of higher Neuroticism scorers to an aversive level than it is to have that effect on a lower Neuroticism scorer. Accordingly, and as observed in this study, Neuroticism can be expected to be associated with differences between preferences for incongruity-resolution humor (an instance of a situation which is less feared by such people because it is structured) and nonsense humor. The same reasoning can be used to account for the finding that decreases in sensation seeking are associated with decreases in liking of nonsense humor. Lower sensation seekers are supposed to be characterized by higher base arousal levels (Arnett 1994). Of course, for other types of people, such as higher conservatism scorers, novelty in the form of nonsense humor may be disliked not because it increases already high base arousal levels, but because it clashes with their personal and/or socio-cultural values resulting in heightened levels of state arousal.

The present results also have implications for Incongruity-Resolution theories of humor appreciation (see, for instance, Hillson and Martin [1994] for an example of such an approach). Such views suggest that humorous materials occasion humorous reactions through the introduction of an incongruity by violating an expectation which a reformulated perception of the humor can explain (Wicker et al. 1980). The present results suggest that full incongruity-resolution is more important as a basis for humor appreciation for, among others, higher Neuroticism scorers than it is for people who are lower in Neuroticism. That point is also informative about the issue, described by Martin (1998: 26), of whether incongruity alone is a necessary and sufficient condition for enjoyment of humor (see also Staley and Derks [1995] on this point).

The abovementioned findings are also relevant to another theoretical perspective suggested by Suls (1977, cited in Wicker et al. 1980). Specifically, Suls argues that Superiority/Disparagement theory, which claims that humor appreciation depends on a joke diminishing the value or importance of features of the people or objects to which the joke
is relevant, can be integrated with Incongruity-Resolution theory (see Mio and Graesser 1991; Wyer and Collins 1992, for examples of disparagement-based analyses of humor appreciation). Suls proposes that an unexpected disparagement in humor can more easily be made sense of — that is, resolved, if the victim in the humor is disliked.

The present findings indicate that ease of incongruity-resolution determined by certain variables related to humor content will be more important for individuals who are more threatened by novelty, such as lower Openness scorers, higher trait Neuroticism scorers, and people higher in Conservatism, than it is for those who are not threatened by novelty.

Two practical applications of the present results highlight their importance. One relates to the fact that humor is widely used in advertising (see Weinberger and Gulas [1992] for a review). Knowledge about the kind of humor structure that is likely to appeal to segments of the market defined in terms of such variables as Neuroticism, and Sensation Seeking, can potentially enable more effective targeting of such market segments through the use of humor.

The potential utility of using humor in psychotherapy has also been widely discussed (see Galloway and Cropley [2001] for a review). The findings reported here indicate that it would be more appropriate for a therapist to use incongruity-resolution humor with people who are characterized by higher fear of uncertainty (e.g., conservatives, higher Neuroticism scorers). On the other hand, incongruity/nonsense humor seems to be best suited for individuals who are higher in sensation seeking, or Psychoticism.

The present findings, then, extend knowledge about the origins of appreciation of humor structure through provision of additional information about personality correlates of such liking. Clearly, any comprehensive model of humor appreciation must take into account the effects of personality. The concepts of state and trait arousal provide a ready model of how various relationships of that kind could come about.

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Ruch, Willibald  


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