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The Development of a Rating Scale for Humor Sensitivity



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Humor therapy has been growing in popularity in recent years and is now widely accepted as a viable method of therapy. This increase in popularity has brought the need to measure individual sensitivity to humor in order to predict whether prospective clients would be a good fit for humor therapy. The Humor Sensitivity Scale (HSS) contains 10 items specific to two domains: physical manifestations and cognitive appeal. Factor analysis of scale results identified a third factor, namely, social facilitation. Although Cronbach's alpha ($\alpha=.68$) was significant, this was explained by the low content-validity ratio (CVR) of two of the scale items (CVR range=.11-.63).



Why is it that a joke will bring one person to his or her knees with laughter while others are unaffected? Sensitivity to humor may be considered equivalent to having a sense of humor. A sense of humor can be beneficial to refreshing one's ability to concentrate, relieving stress, generating positive emotions, promoting communication, strengthening group identity, and benefiting both the actor and the reactor (Olson, 1994; Simon, 1990). Similarly, televised comedy has been shown to promote health benefits, such as strengthening the immune system, as well as positive effects on heart disease, diabetes, blood flow, and depressive symptoms (Brown, 2007). Humor can also be used to cope with stressors (Martin, 2002).

There is evidence that laughter and humor can be effective for psychotherapy (Kekae-Moletsane, 2008). Humor sensitivity is encompasses several personality traits (Olson, 1994) and may be an important factor in both physical and psychological health. Cattanaach, 2003; Kaduson, Cangelosi, & Schaefer, 2004; Kekae-Moletsane, 2008). A measurement scale of humor sensitivity could be beneficial to therapists.

We aimed to create a brief rating scale. In doing so, we hoped to help individuals improve their humor sensitivity as well as advance the usage of humor therapy. We operationally defined humor sensitivity as

an individual's susceptibility to jokes in everyday situations. The construct was defined by two independent domains. The first was cognitive manifestation, which we defined as being cognitively entertained by the occurrence. The second domain was physical manifestation, such as laughing or smiling.

Laughing is an expected reaction to stimuli such as jokes (Roth, Ritchie, Hudson, & Mergard, 2011). According to Svenbak, Sven, & Bergen (1974), laughing involves specific muscle groups and is characterized by overall muscle relaxation. The positive effects of laughing (Martin, 2002) are related to the two domains of the Humor Sensitivity Scale (HSS) we designed and tested.

The cognitive manifestation of humor sensitivity involves the resolution of initial incongruity (Bartolo, Benuzzi, Nocetti, Baraldi, & Nichelli, 2006). Functional-magnetic resonance imaging (fMRI) has identified brain activity correlated with this resolution (Bartolo et al., 2006). The brain areas activated vary depending on whether the humor stimulus is visual, as in the case of a cartoon, or multimodal in the manner of a television show (Polimeni, Campbell, Gill, Sawatzky & Reiss, 2010). To measure humor sensitivity, the HSS sought to measure cognitive manifestations by asking specifically how an individual thinks when experiencing something he or she considers humorous. Physical manifestations were measured by asking if an individual smiled or laughed. There are no previous published humor-sensitivity scales. We hypothesized that the HSS would reliably and validly measure humor sensitivity.

Method

Participants

One-hundred-eighteen individuals (39 men, 79 women) volunteered to take the HSS through links provided on Facebook and by e-mail. The HSS was administered through Qualtrics

(www.qualtrics.com) during a 2-week period. This provided a convenience sample. Of the participants, 1% had completed some high school, 3% had a high-school diploma or its equivalent (GED, etc.), 90% had completed some college, 5% had completed an undergraduate degree, 1% had completed some graduate school, and <1% had completed a graduate degree. Ninety percent of the subjects were single, and the remaining 10% currently were married. The participant's age range was 17 to 57 with a mean of 21.5.

Item Construction

The HSS consisted of four demographic items, with five positively and six negatively-worded items per domain. The initial 30 items were presented to a panel of judges consisting of our undergraduate classmates in order to obtain content validity ratio (CVR) ratings. With 43 judges, items needed a CVR rating of at least .29 to be considered as having statistically-significant content validity. The 10 non-demographic items with the highest CVR ratings were used in the final questionnaire. The ratings ranged from .11-.63 ($M=.42$, $S=.16$). The participants answered items using a Likert-type scale from 1 (strongly disagree) to 4 (strongly agree). The six negatively-worded items were reverse scored (see Appendix A).

Statistical Analysis

The measure of reliability of the HSS was based on Cronbach's alpha, which measures internal reliability, and Pearson's bivariate correlation coefficient, which measures item consistency. We used factor analysis to analyze the factor structure of the HSS. The final item was used to evaluate face validity based on participant's answers. All data were analyzed using SPSS 19.

Results

The measure of reliability of the HSS was based on Cronbach's alpha, which measures internal reliability, and Pearson's bivariate

correlation coefficient, which measures item consistency. We used factor analysis to analyze the factor structure of the HSS. The final item was used to evaluate face validity based on participants' answers.

As stated previously, the average CVR was .42 with a standard deviation of .16. This is a moderate level of content validity. The range was from .11-.63 (see Table 1). Three items had exceptional ratings, four had moderate ratings, two were adequate, and only one had an inadequate rating.

Internal Consistency

Cronbach's alpha for the HSS was .68, indicating that the HSS was approaching the acceptable level for reliability. Using Pearson's bivariate correlation-coefficient, nine of the items were significant at $p < 0.01$ (see Table 2). Ninety-eight (83%) of the respondents identified humor as the purpose of the survey. Only 6% identified the survey as specifically measuring humor or a sense of humor. This low face validity provided a potential barrier to malingering.

Factor Structure

A principal-components analysis showed that three components (see Table 3) accounted for 53.93% of the variance (see Table 4). This result was consistent with the deflection in the scree plot, where the three components had eigenvalues above 1.0: 3.22, 1.11, and 1.06 (see Figure 1). While three components were extracted, the HSS was intended to measure only two domains. This indicates an unforeseen component onto which items 1 and 4 loaded.

Discussion

The purpose of this study was to provide a reliable and valid measurement scale of humor sensitivity. The results support that the HSS can, with near acceptable reliability, measure an individual's level of humor sensitivity. Although this is not a low reliability score, it does raise some questions as to the reliability of items on the HSS. This

subpar Cronbach's alpha could be, in part, due to the use of two items in the HSS with unacceptably low CVR ratings. If these items were replaced or in the very least removed, the Cronbach's alpha would increase significantly.

Factor analysis showed that the HSS measured one of the domains we expected as well as another, unexpected domain. The items designed to measure physical manifestation of humor sensitivity correlated consistently. The items designed to measure cognitive were correlated less consistently and may have measured a different domain. This could be due to the fact that they did not focus solely on that domain. Items 1, 4, and 10 may have measured group interaction and social facilitation instead.

While there is a significant correlation between physical benefits and humor therapy, a revised HSS could have applications in organizations, counseling, and psychotherapy. For example, it could be used as a screening tool to identify individuals for whom humor therapy may be an effective treatment option. The HSS should be revised to assure minimal CVR ratings. The convenience sample consisted single, undergraduate students. Replications should extend to other age groups, as well as persons without college education.

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Table 1

Content-Validity Ratio (CVR) Results

Item	CVR
1	.42
2	.60
3	.55
4	.42
5	.37
6	.63
7	.30
8	.11
9	.49
10	.26

Table 2

Pearson Correlation - Coefficient Results

	1	2	3	4	5	6	7	8	9	10
1	1.00	-	-	-	-	-	-	-	-	-
2	-.06	1.00	-	-	-	-	-	-	-	-
3	.35**	-.20*	1.00	-	-	-	-	-	-	-
4	-.018	.04	-.07	1.00	-	-	-	-	-	-
5	-.33**	.25**	-.54**	.20*	1.00	-	-	-	-	-

Table 2 continues

Table 2 (continued)

	1	2	3	4	5	6	7	8	9	10
6	.12	-.20*	.28**	-.13	-.36**	1.00	-	-	-	-
7	-.24*	.19*	-.22*	.19*	.26**	-.28**	1.00	-	-	-
8	.19*	-.11	.34**	-.16	-.34**	.24*	-.43**	1.00	-	-
9	.21*	-.07	.31**	-.13	-.26**	.38**	-.33**	.39**	1.00	-
10	-.25**	.10	-.17	.08	.29**	-.12	.41**	-.29**	-.30**	1.00

* Significant at 0.05 level (2-tailed).

** Significant at 0.01 level (2-tailed).

Table 3*Component Matrix*

	Component 1	Component 2	Component 3
Item 1	.49		.57
Item 2	.34	.42	-.38
Item 3	.65	.46	
Item 4		.31	.55
Item 5	.71	.63	
Item 6	.56		-.40
Item 7	.64	-.40	
Item 8	.65		
Item 9	.63		
Item 10	.55	-.38	.34

Table 4

Total Variance Accounted For Using Principal-Component Analysis

Initial Eigenvalues			
Component	Total	% Variance	Cumulative %
1	3.22	32.16	32.16
2	1.11	11.14	43.30
3	1.062	10.63	53.93
4	0.930	9.30	63.23
5	0.89	8.90	72.13
6	0.71	7.10	79.22
7	0.63	6.34	85.57
8	0.59	5.85	91.41
9	0.48	4.77	96.17
10	0.38	3.83	100

Table 5*Cronbach's Alpha*

Reliability Statistics	
Cronbach's Alpha	N of Items
.680	10

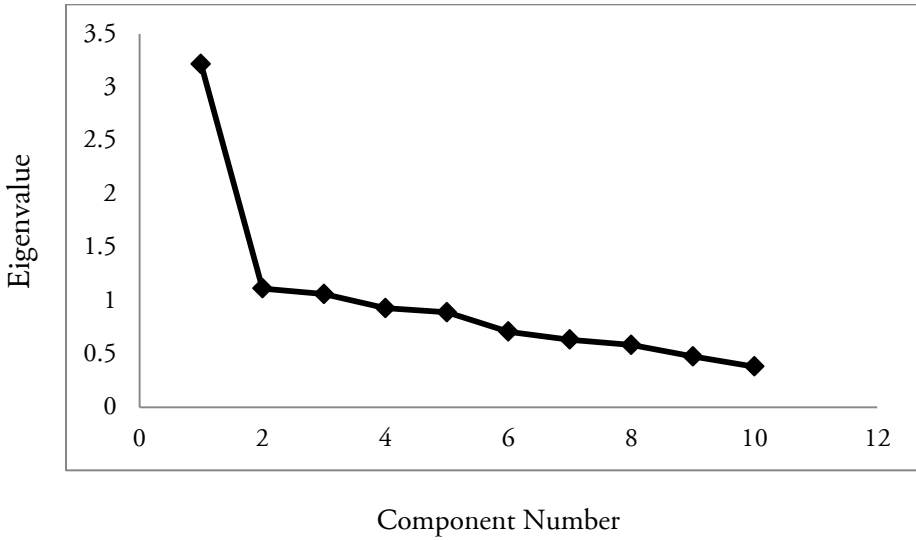


Figure 1: Scree Plot

Appendix A

Humor Sensitivity Scale

Gender: M F Age _____ Marital Status: Married Single Divorced
 Education Level: Some High School High School Degree Some College
 Undergrad Degree Some Grad School Graduate Degree

Please fill out this test to the best of your ability. Circle the response that applies.

1. I don't usually see the humor in situations that are funny for others.
 Strongly Disagree Disagree Agree Strongly Agree
 2. A well-placed joke can lighten the mood of most situations.
 Strongly Disagree Disagree Agree Strongly Agree
 3. I have trouble finding humor in everyday events.
 Strongly Disagree Disagree Agree Strongly Agree
 4. I don't need anyone around me for something to seem funny.
 Strongly Disagree Disagree Agree Strongly Agree
 5. I can find humor in most situations.
 Strongly Disagree Disagree Agree Strongly Agree
 6. I rarely smile at random humorous situations.
 Strongly Disagree Disagree Agree Strongly Agree
 7. If something is funny enough, I do more than just laugh (slap my knee, clap, etc.).
 Strongly Disagree Disagree Agree Strongly Agree
 8. I have trouble laughing at myself.
 Strongly Disagree Disagree Agree Strongly Agree
 9. When I laugh, I never laugh a lot.
 Strongly Disagree Disagree Agree Strongly Agree
 10. I find myself continuing to laugh after everyone has finished laughing.
 Strongly Disagree Disagree Agree Strongly Agree
- What do you think this test was measuring? _____