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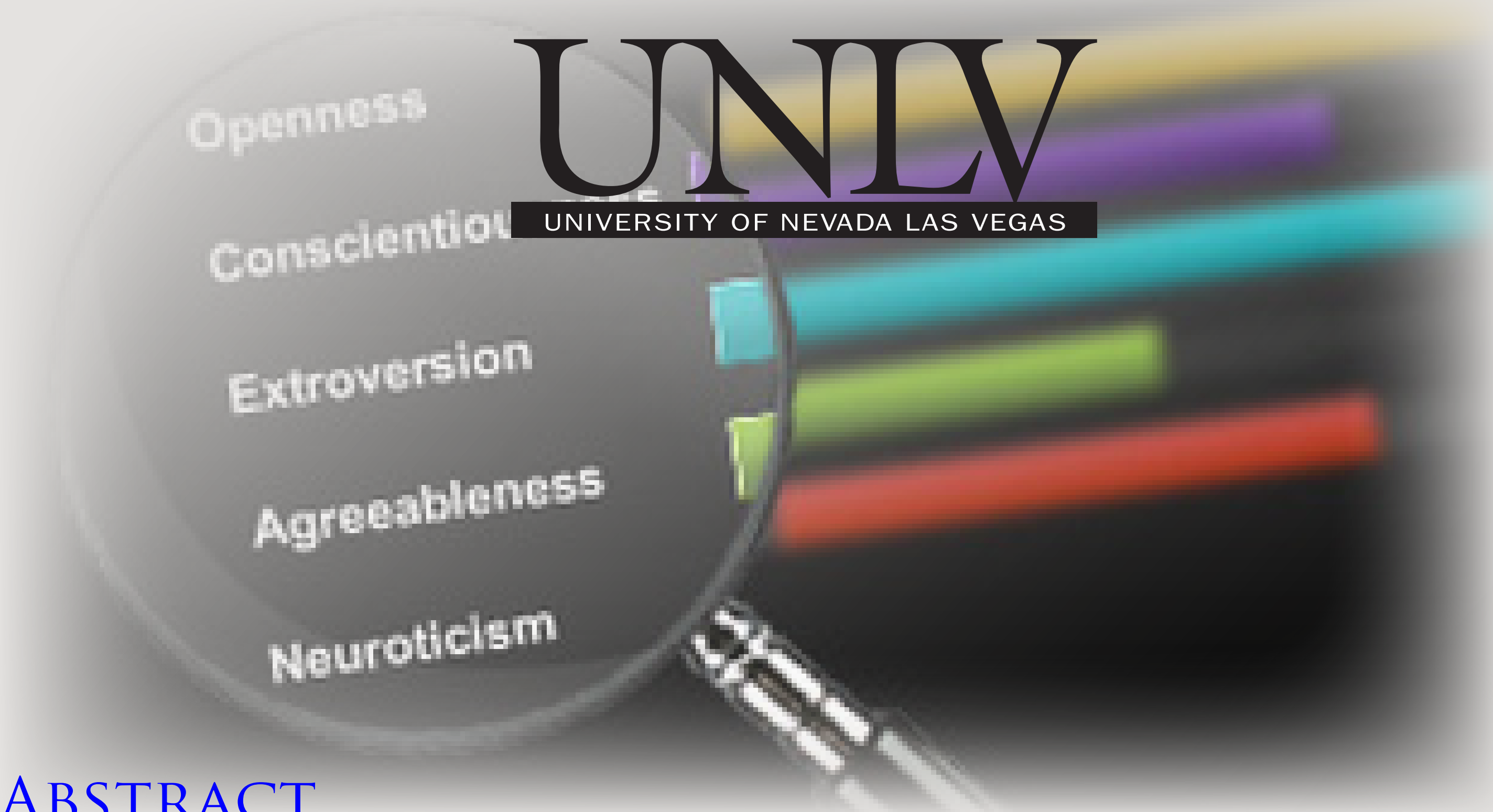Part of the Psychology Commons, and the Sociology Commons

Evaluating the Discriminant Validity of the Metaphors Test

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Abstract

The Metaphors Test (Barchard, Hensley, Anderson, & Walker, 2013) is a new test of emotion perception in which test takers indicate the extent to which various emotions are conveyed by metaphors. In order for the Metaphors Test to be considered a valid test of emotion perception, it must have discriminant validity. The Five-Factor Model (McCrae & John, 1992), also known as the Big Five Model, is one of the most well-known frameworks for personality. Based upon theory and previous research, the Metaphors Test should have low correlations with the Big Five. Conscientiousness had a moderate correlation with the Metaphors Test. Agreeableness had a moderate-to-high correlation with the Metaphors Test. This might suggest that the proportion consensus scoring (of any attribute) is influenced by the tendency to care about what other people think. Future research on emotion perception might benefit from focusing on tests with veridical scoring keys, such as the new Measure of Emotional Connotations (Barchard, Kirsch, Anderson, Grob, & Anderson, 2012).

Introduction and Purpose of the Study

The Big Five (Five Factor Model) was developed as a means to establish a list of personality traits and the Metaphors Test was designed to measure a cognitive ability. For the Metaphors Test to be considered a valid test, it needs to have discriminant validity. Discriminant validity is achieved when measurements between different constructs have low correlations (Reitsma, Scheepers & Janssen, 2007). Given that cognitive abilities and personality usually have low to moderate correlations, the Metaphors Test should have low to moderate correlations with the Big Five in order to have discriminant validity.

Literature Review

Verbal Emotion Perception Tests

Emotional Accuracy Research Scale (EARS)

The Emotional Accuracy Research Scale uses thought samples (descriptions of specific situations) from eight individuals. Test takers read the thought sample, and from each pair they chose the response that indicates how the individual felt. The Emotional Accuracy Research Scale allows researchers to calculate both target and consensus scores (Mayer & Geher, 1996).

Stories Task

The Stories task is one part of the Multifactor Emotional Intelligence Scale (Mayer et al., 2000). The stimuli consist of descriptions that were provided by real people and respondents provided ratings on seven emotion scales. Both EARS and the Stories Test measure both denotative and connotative knowledge. Thus, the EARS and the Stories Test do not provide pure measures of the ability to perceive the emotional connotations of written language.

Gregory and Waggoner's (1996) Test

Participants read 12 short (metaphors) sentences, selected one of two emotions that described the sentence, and then explained why they selected that emotion. The test was scored using a form of consensus scoring called "Mode Consensus Scoring" (Barchard & Russell, 2006) in which the correct answer to a test item is the most commonly selected answer.

The Metaphors Test

The Metaphors Test was designed to measure an individual's ability to perceive the emotional connotation of written language (Barchard et al., 2011), while avoiding the limitations of previous tests. Specifically, the item stems do not include any explicit emotion words, and items were designed to be relatively difficult. See Figure 1 for an example item.

Expected Discriminant Validity

The ability to perceive emotions is one aspect of emotional intelligence. To demonstrate that emotional intelligence is a new and useful construct, it is important that it is distinct from well-known constructs such as the Big Five personality traits (Joseph & Newman, 2010). The Big Five traits are Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism (McCrae & John, 1992). The Metaphors Test is expected to have low to moderate correlations with each of these dimensions, because it should be measuring different constructs.

Methodology

Participants

A total of 181 individuals participated in this study through mTurk. Participants were paid 10 cents. Participants ranged in age from 20 to 68. Of these, 44.8% were female and 55.2% were male. Participants lived in the following countries: 86.2% India, 9.9% United States, .6% Russia, and 3.5% other. Participants had a variety of first languages: 29.3% Tamil, 27.1% English, 22.7% Malayalam, 8.3% Hindi, and 12.7% other. Ethnically, participants identified themselves as follows: 78.8% Asian, 11.7% White, 4.5% Indian, 3.4% American Indian or Alaska Native, and 2.8% other.

Procedures

The study was completed online and took approximately 15 minutes to complete.
Measures

The Metaphors Test

The Metaphors Test (Barchard et al., 2011) was designed to measure the ability to perceive emotion in written language. The test contains ten metaphors, with three emotions each, for a total of 30 items. Participants are instructed to indicate the extent to which each metaphor conveys the given emotions. An example item is given in Figure 1. The test is scored using proportion consensus scoring.

International Personality Item Pool

The International Personality Item Pool (IPIP) was developed as a measure of personality that could be accessed at no cost (Ehrhart, Roesch, Ehrhart, & Kilian, 2008). The IPIP Big Five Personality Test (Goldberg, 1992) is a 50-item questionnaire in which the participants are asked how accurately each item describes them right now. The test contains ten items for each of the Big Five traits. Participants respond to each item using a five-point scale (1 = Very Inaccurate, 5 = Very Accurate).

Results

The Metaphors Test correlated significantly with four of the five scales of the Five-Factor Test. The only exception was extroversion. The results are shown in Table 1. Most of these correlations are small to moderate. However, the correlation with agreeableness (r = .58, p < .01) might be interpreted as large.

Conclusion

The original study on the Metaphors Test showed that it had small correlations with each of the Big Five personality traits. Only two dimensions had significant correlations and both of these correlations were small. They were openness (r = .26, p < .05) and agreeableness (r = 24, p < .05).

Two of the five correlations were similar in the current study: the correlation for extraversion was still very small and the correlation for openness was still small but significant. However, the other correlations were larger in this study than in the previous one. Restriction of range in the student sample might account for the difference in the size of the correlations.

Second, this study found a moderate correlation between the Metaphors Test and conscientiousness. This correlation might be due to the sample that was used in the current study. Participants for this study were recruited through mTurk. These participants are paid a small amount in return for completing the study. It could be that some participants did not attend carefully to the study materials. Future research should ensure that all participants attend to the study materials.

Third, this study found a much higher correlation with agreeableness (r = .58) than the original study. Perhaps the correlation is due to the way the Metaphors Test is scored. People who obtain high proportion consensus scores are ones who are sensitive to the people around them and understand how other people think. It therefore makes sense that the Metaphors Test would have a moderate-to-high correlation with agreeableness.

A new test has been designed to attempt to circumvent the problems found on the Metaphors Test. The Measure of Emotional Connotations (MEC) (Barchard, Kirsch, Anderson, Grob, & Anderson, 2012). On this test, the stimuli were carefully designed so that the correct answers were known for each item, regardless of the responses of the norm group. A study of the relationship of the MEC to personality (Hensley, Craun, Grob, & Barchard, 2012) found significant but small correlations with openness (r = .28, p < .01) and agreeableness (r = .28, p < .01).

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