Text vs. Subtext: Discriminant Validity of the Metaphors Test

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ABSTRACT

Society has dramatically shifted from face-to-face interactions to written communication methods (e.g., email, text messages, blogs, and social media). People rely upon such written methods in both their personal and professional lives. However, these written methods lack many of the cues that convey emotion in face-to-face interactions (e.g., tone of voice, volume, timing, and gestures). It is important that people understand the emotions in written language so that they can distinguish whether a family member is tired or upset and whether a supervisor is rushed or annoyed. Therefore, it is more important than ever to examine how people decode the emotional connotations of written language. One key ingredient for that research is a test of the ability to perceive the emotional connotations of written language. A new test of this skill has recently been developed: the Metaphors Test (Barchard, Hensley, Anderson, & Walker, 2013). Previous research has shown that individuals who have difficulty with emotion perception also show diminished verbal ability (Montebarocci, Surcinelli, Rossi, & Baldaro, 2010). It is essential, however, that the Metaphors Test measures a skill that goes beyond simple vocabulary. Therefore, the purpose of this study is to examine the discriminant validity of the Metaphors Test with respect to vocabulary.

A total of 181 adults (100 males, 81 females) completed the study. Participants completed the 30-item Metaphors Test and a 4-item self-report test of verbal skill online. There was a moderate positive correlation between the Metaphors Test and verbal ability ($r(179) = .30$, $p < .001$), demonstrating that the Metaphors Test is not just a measure of verbal ability. These findings are consistent with previous research (Sepulveda, DeVaney, Grob, & Barchard, 2012), which found a correlation of .31 between the Metaphors Test and the Las Vegas Vocabulary Test (Barchard, 2004). One limitation of the current study is that it used a self-report measure of verbal ability. Future research should use a maximum-performance test of this skill.

INTRODUCTION

As written language becomes more prevalent than face-to-face interactions, it is more important than ever to examine how people decode the emotional connotations of written language. Instantaneous written communication – such as emails, texts, and social media messages – have revolutionized the way that ideas and emotions are transmitted. However, these modes of communication lack important physical attributes, such as tone of voice, delivery, volume, and timing. This makes it a lot harder to decipher their emotional connotations. Therefore, it may be valuable to do research on the ability to decipher the emotional connotations of written language: In which situations is this skill most important? How do we teach it? What are the consequences when someone has low skills and misunderstands the emotional content of a written message? To conduct such research, it is necessary to have a test of the ability to decode the emotional connotations of written language. The Metaphors Test (Barchard et al., 2013) has been designed to measure that skill.

The ability to decode the emotional connotations of written language is one aspect of emotional intelligence (Mayer, Salovey, Caruso, & Sitarenios, 2003). Emotional intelligence refers more generally to the ability to perceive emotion, understand emotion, productively utilize emotions, and regulate emotions (Mayer et al., 2003). The Metaphors Test therefore measures one aspect of emotional intelligence: emotion perception. Previous research has demonstrated that the Metaphors Test is more closely associated with emotion perception than emotional understanding (Barchard et al., 2013).

The ability to perceive the emotional connotations of written language logically depends upon two skills: emotion perception and verbal ability. Verbal ability includes the ability to comprehend both the connotative and denotative aspects of a word (Hunt, 1978). The denotative meaning of a word is its dictionary definition. The connotative meaning of a word includes the implications of the word. The Metaphors Test is unique among measures of the ability to decipher the emotional meaning of written language in that it focuses exclusively on the emotional *connotations* of the words, not their denotative meanings (Barchard et al., 2013). Nonetheless, it is important that the Metaphors Test is not simply a test of verbal ability. Therefore, the purpose of this research is to examine the discriminant validity of the Metaphors Test with respect to verbal ability.

We predict that the Metaphors Test will have a moderate positive relationship with verbal ability. Although the Metaphors Test is not designed as a pure test of verbal ability, the Metaphors Test will have a positive relationship with verbal ability because these are related constructs. For example, individuals who have difficulties expressing and experiencing emotions have problems with verbal ability (Montebarocci, Surcinelli, Rossi, Baldaro, 2010). Additionally, emotional intelligence has a positive correlation with verbal intelligence (Brackett, Mayer, & Warner, 2004). Similarly, knowledge of language will have an impact on performance on the Metaphors Test. However, perceiving the emotional connotations of these metaphors does not hinge solely on verbal aptitude; in order to understand the items on the Metaphors Test, one must understand the emotional content of the phrase.

METHOD

Participants

A total of 181 individuals (100 males and 81 females) participated in this study. The age of participants ranged from 20 years to 68 years of age (average age being 31.1 years; SD of 10.8 years). The participants identified themselves as follows: 78.5% Asian, 11.6% Caucasian, 3.3% American Indian or Alaska Native, 1.1% African American, and 5.5% other.

Measures

The Metaphors Test

The Metaphors Test is used to measure the ability to decipher the emotional connotations of written language (Barchard et al., 2013). This multiple-choice test consists of 10 metaphors. For each three emotions are listed. The participant must indicate the extent to which the metaphor conveys each of these three emotions, using a five-point scale, randing from 1 *not at all* to 5 *extreme* (Barchard et al., 2013). Participants' scores were calculated using proportion consensus scoring, in which a person's score is equal to the proportion of the norm group that chose the same answer (Barchard et al., 2013). For example, if 30% of the people in the norm group chose A, then answer A would have a score of .30 (Barchard et al., 2013).

Verbal Ability

Participants completed four questions regarding their comfort with speaking, reading, writing, and listening to English. Participants indicated their comfort with English using a 10-point sacle, which ranged from 1 (very uncomfortable, it's a real struggle) and 10 (perfectly comfortable).

Procedure

Participants were recruited through Amazon's Mechanical Turk (mTurk) and completed the study for monetary compensation of 10 cents. mTurk is an international website where individuals and business (requestors) can post human intelligence tasks (HITs) for individuals (workers) to complete for money (Paolacci, Chandler & Ipeirotis, 2010).

Data Analysis

To examine the relationship between the Metaphors Test and verbal ability, we used

Music is a torch that lights the soul.					
Happy	1	2	3	4	5
Passionate	1	2	3	4	5
Inspired	1	2	3	4	5

Figure 1: Metaphors Test Example

Pearson Product-Moment Correlation. The two variables we correlated were the Metaphors Test total score and verbal ability total score.

RESULTS

Descriptive statistics for each variable are given in Table 1. There is a moderate positive correlation between the Metaphors Test and verbal ability ($r(179) = .30$, $p < .001$). Figure 2 shows a scatter plot for these two variables.

DISCUSSION

The study examined the relationship between the Metaphors Test and verbal ability. As shown in Figure 2 the relationship between the two constructs is moderately positive. This suggests that the Metaphors Test does not strictly measure verbal skill. These findings are consistent with previous research, showing a moderate correlation between the Metaphors Test and a multiple-choice test of vocabulary (Sepulveda et al., 2012).

Taking a closer look at Figure 2 shows that there were a considerable number of people who scored low on the Metaphors Test, yet scored high on their self-reported verbal skill. It is counterintuitive to believe that people with a low comprehension of metaphors would have a high verbal aptitude. Some of these individuals may have over-estimated estimated their verbal abilities. Such over-estimation would have weakened the correlation.

Table 1
Mean and Standard Deviation for Verbal Ability and the Metaphors Test

Measures	Mean	Standard Deviation
Verbal Ability	35.20	6.12
Metaphors Test	8.75	3.12

The verbal ability measure also has a ceiling effect; many people rated themselves as 10 / 10 on all four verbal ability items. Therefore, it is hard to tell the difference between people who have pretty good verbal skills. This ceiling effect will have reduced the correlation between verbal ability and the Metaphors Test. The correlation would probably go up if we used a verbal ability test that didn't have a ceiling effect. Future research should use a measure where the verbal ability skills are more spread out. This will give a more accurate assessment of the relationship between verbal ability and the Metaphors Test.

It is also important to note that there was an outlier. This individual scored exceptionally low on verbal skill, yet exceptionally high on the Metaphors Test. We examined the datafile to learn more about this participant and discovered that his first language was not English. In giving himself a low score for English skills, perhaps he was comparing his English skills to his native language skills, or perhaps he was comparing his English skills to the English skills of people who are native English speakers. This outlier will have reduced the correlation between the Metaphors Test and verbal ability. If future research used a more homogeneous group of participants – for example, all with English as their first language – the correlation would likely increase.

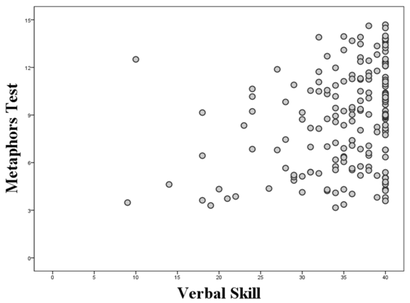

Figure 2: Relationship between the Metaphors Test and verbal skill

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