Computer administration of an open-ended test of Emotional Awareness: Testing the effect of administration method on response length and test scores

Cory R. Zhong, Gizelle A. Romero, Melinda B. Cannon, and Kimberly A. Barchard
University of Nevada, Las Vegas

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Contact Information: Kim Barchard, Department of Psychology, University of Nevada, Las Vegas, 4505 S. Maryland Parkway, P.O. Box 455030, Las Vegas, NV, 89154-5030, USA, barchard@unlv.nevada.edu

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Abstract

The Levels of Emotional Awareness Scale (LEAS; Lane, Quinlan, Schwartz, Walker, & Zeitlan, 1990) is an open-ended measure of one's ability to describe emotions. Traditionally, the LEAS is administrated on paper, but recently a computerized form of the test has been created. The purpose of this study was to examine the effect of administration method on response length and LEAS scores. Computerized administration might result in changes in response length, and response length might be related to LEAS scores. To test these hypotheses, the LEAS was administered to 955 undergraduates. Participants completed either the paper or computerized version of the LEAS. The paper LEAS had longer responses than the computerized LEAS, and also higher total scores. When response length was partialled out of the LEAS scores, the difference between the two administration methods was very small: the difference in response length between the two administration methods accounted for most of the difference in LEAS scores. Future research should examine the effect of computerized LEAS formatting on response length and test scores.

Introduction

Emotional Awareness has been defined as the extent to which an individual describes emotions in themselves and others (Ciarrochi, Caputi, & Mayer, 2003, p.1478). The most popular measure of Emotional Awareness is the Levels of Emotional Awareness Scale (LEAS; Lane et al., 1990). The LEAS contains 20 items. Each item contains an emotionally evocative situation involving the participant and one other person. The participants are asked to describe how they would feel in that situation, and how the other person would feel. The responses to each item are assigned three different scores: a score for self, a score for the other person, and a total score. Item scores range from 0 (being the least emotionally aware) to 5 (being the most emotionally aware) based on the emotion words used by the participant (Lane, 1990).

Since its conception, the LEAS has been scrutinized and tested to assure its validity in measuring Emotional Awareness. Ciarrochi et al. (2003) examined the relationship between the LEAS, an empathy scale, the Multifactor Emotional Intelligence Scale, a test of verbal intelligence, and an affect intensity measure. The LEAS had significant correlations with empathy ($r(87) = .23$, $p < 0.05$), verbal ability ($r(107) = .27$, $p < 0.01$), and two of the four emotional intelligence subscales, namely the ability to identify emotions in stories ($r(107) = .20$, $p < 0.05$) and the ability to estimate the feelings of two characters in conflict ($r(107) = .21$, $p < 0.05$). These results support the validity of the LEAS. Furthermore, the LEAS is a distinctive measure: it does not measure exactly the same thing as any existing test. Ciarrochi et al. compared the LEAS to the Toronto Alexithymia Scale (TAS-20), which is a 20-item self-report measure of difficulty describing and identifying feelings (Bagby, Parker, & Taylor, 1994). They found no relationship between the LEAS scores and total scores on the TAS-20. Finally, Lane et al. (1990) found that the LEAS Total scores are unrelated to ratings of daily positive and negative emotions, to the length of responses, and to the tendency to give socially acceptable responses. Thus, the LEAS is suggested to be a valid and distinctive measure of emotional awareness.

Scoring the LEAS by hand is time-consuming. Fortunately, scoring has been automated through a computer program, Program for Open-Ended Scoring (POES, Leaf & Barchard, 2005). To score the LEAS, the

program uses a Wordlist adapted from the LEAS Scoring Manual (Lane, 1991). POES scans the participants' responses for words and phrases from the Wordlist and assigns each one a score based on its value in the Wordlist. These scores are then used to calculate the total test score (Barchard & Leaf, 2006).

Major advantages of scoring the LEAS by computer include the elimination of the need to train scorers, and the reduction of time and resources required to score the LEAS. This could potentially lead to an increase in the number of researchers using this measure (Barchard & Leaf, 2006). As well, computerized scoring eliminates concerns about inter-rater reliability, and obviates the need to examine inter-rater reliability by having multiple raters score each protocol. However, if the traditional paper-based LEAS is used, LEAS responses must be typed into the computer before they can be scored by POES. This can take as long as scoring the LEAS by hand. Hence, Barchard and Leaf recommend that computer scoring only be utilized when participants have typed their own responses.

In addition to allowing computerized scoring, administering the LEAS over the computer has several other advantages over paper-administration. One advantage is that computerized administration allows participants to be involved in the study at their convenience without having to make appointments or be geographically proximate to the researcher. This might greatly increase sample size (Smith & Leigh, 1997). Also, many experiments are subject to a variety of demand characteristics, including experimenter expectancies. Administering the LEAS over the computer would allow for some degree of anonymity for participants, which might decrease demand characteristics (Hewson et al., 1996). Other benefits of web-based research include the fact that anonymity can reduce anxiety and that web-based research may allow extra time to reflect on responses, which could result in more valid data (Shields, 2003).

Although there are many benefits of administering and scoring the LEAS using the computer, there are still some issues to explore. One of these is the effect of the administration method on the length of responses. This is important because response length may have an influence on total LEAS scores. Previous research has found that electronic surveys elicit more self-disclosure than paper surveys (Weisband & Keisler, 1996). Higher self-disclosure rates may mean longer responses and higher scores. Consistent with that hypothesis, preliminary research of the LEAS using 119 participants (Barchard & Leaf, 2006), revealed that longer responses received higher scores. Surprisingly, average response length was lower for computer administration (mean length 19.06 words) than paper administration (mean length 22.72 words).

The purpose of this present study is to expand the analysis of the effect of response length on LEAS scores by using a larger sample. Our study will investigate three questions. First, is there a difference between computer and paper administration, in terms of total LEAS scores? Second, is there a difference between computer and paper-administration, in terms of response length? Finally, is the difference in response length responsible for the difference in LEAS scores between the two administration methods?

Method

Participants

A total of 955 undergraduate students (male 35.3% and female 64.7%) participated in return for course credit. They ranged in age from 18 to 65. The mean age was 20.9 with a standard deviation of 5.3. They identified themselves as Caucasian/White (59.6%), African-American/Black (7.4%), Hispanic (10.1%), Asian (11.4%), Native (.7%), and other (8.1%), and there were participants (2.7%) that did not give a response for their ethnic background. All participants were comfortable reading and writing in English.

Measures

The Levels of Emotional Awareness Scale (LEAS; Lane et al., 1990) consists of 20 items designed to elicit four types of emotions (happiness, sadness, fear, and anger). Each item is presented at the top of a page, and it is immediately followed by two open-ended questions: "How would you feel?" and "How would the other person feel?" (p.127). Participants are asked to describe their own emotions as well as the emotions of the other person involved in the situation.

In the paper-administered LEAS, each page contains one item and participants could write as much or as little as needed. In the computerized LEAS, participants typed their responses in text input boxes, one for each of the two questions (Leaf, Charoenchote, D'Errico, & Barchard, 2004, p.2). The 20 items were divided into two separate web pages.

Scoring

After responses from the paper-based LEAS were typed, each response was scored using Program for Open-Ended Scoring (POES; Leaf & Barchard, 2005). A Wordlist adapted from the LEAS Scoring Manual and Glossary was used to score the LEAS. Each Wordlist entry contains a word or a phrase, known as a Valuable, followed by its Value. Values range from 0 to 3. The Valuables list for a particular response contains the Valuables and Values that occurred in that particular response.

POES uses four methods to score the responses (Barchard & Leaf, 2006): All-Sum, Highest-4, 334, and 3345. For this project, we used only the All-sum method, but future research should use the Highest-4 and 334 methods as well. The 3345 method cannot be used in this study because it relies upon two separate text boxes, one for "self' and one for "other". The paper administration of the LEAS does not contain separate text boxes. The POES All-Sum method is a straightforward procedure that calculates the sum of all the Values in the Valuables List for that question (Barchard & Leaf, 2006). Scores are then summed across the 20 items.

Statistical Analysis

To determine if there is a difference between computer and paper administration in terms of total LEAS scores, we used an independent sample t-test. To determine if there is a difference in response length between computer-administration and paper-administration, we compared the average response length using another independent sample t-test. Finally, to determine if the difference in response length is responsible for the difference in LEAS scores between the two administration methods, we used regression to predict LEAS scores based upon response length, and then used an independent sample t-test to compare the residuals. If no difference remained in the LEAS scores once response length has been partialled out, we would conclude that the difference in LEAS scores was accounted for by the difference in response length.

Results

Our results indicated that LEAS scores were higher for paper administration than they were for computer administration ($t(953) = 2.58$, $p < .010$). The mean for paper administration was 63.98, while the mean for computer administration was 60.74. In addition, paper administration was associated with longer responses than computer administration ($t(887) = 6.13$, $p < .001$). The mean response length for paper administration was 556.19, while the mean response length for computer administration was 381.15. After response length was partialled out, a significant difference in LEAS scores remained ($t(887 = 6.13$, $p < .001$). However, the size of the difference was much smaller. The means of paper and computer administration after the response length was partialled out were 63.81 and 61.21, respectively. We conclude that the difference in response length accounted for most of the difference in the LEAS scores.

Conclusions

This study examined whether the difference in response length between paper and computer administration of the LEAS accounted for the difference in the LEAS scores obtained from these two methods. Results indicated that LEAS scores were higher for paper administration than they were for computer administration, and the average response length for paper administration was significantly longer than that for the computer administration. Finally, when response length was partialled out of the LEAS scores, the difference between the two administration methods was very small. We therefore conclude that the difference in response length is accountable for most of the difference in LEAS scores between paper and computer administration.

Some of these results were surprising. We hypothesized that computer administration would result in longer responses, and thus higher LEAS scores. In fact, computer administration resulted in shorter responses and lower LEAS scores. One factor that may have reduced response length in this study was the size of the text box from the computer-administered LEAS. This textbox was 8 rows by 40 columns, which is relatively small. Although participants could have typed more than 320 characters, the small textbox may have made participants more likely to give short responses. Therefore, future research should examine the effects of page layout on response length for the computerized version of the LEAS.

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