

Levels of Emotional Awareness Scale: Comparing Computer and Hand Scoring

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ABSTRACT

The Levels of Emotional Awareness Scale (LEAS; Lane, Quinlan, Schwartz, & Walker, 1990) is a valid measure of the depth and breadth of understanding of emotion words. In each of 20 emotionally evocative situations, respondents describe how they and another person would feel. Hand scoring proceeds in three steps. The first step is to score the emotion words that are used in the response. The second step is to calculate the score for the emotion words that are attributed to the self, and another score for the emotion words that are attributed to the other person. The last step is to calculate the total score for that item. Hand scoring requires subjective judgments at each of these three steps. Moreover, training new scorers is time-consuming, as is the scoring itself. Program for Open-Ended Scoring (POES; Leaf & Barchard, 2010a) was designed to score the LEAS automatically. The purpose of this study was to determine if one of the POES scoring methods is as valid as hand scoring.

A total of 379 healthy adults completed the LEAS and the Perception of Affect Task (Rau, 1992). Using this sample, Lane, Sechrest, Reidel, and Weldon (1996) found a moderate positive correlation between the LEAS and the Perception of Affect Task, when the LEAS is scored by hand. In the current poster we obtained their data and replicated their analyses, but we also scored the LEAS using five POES scoring methods. We then correlated each LEAS score with the Perception of Affect Task. Four POES scoring methods had correlations that were similar in magnitude to the correlation for hand scoring. The highest correlation of all was found for the Highest40-AllinOne method, which sums the word scores for the 40 words that have the highest scores across all 20 items. This method thus only gives credit the first time an emotion word is used. The high correlation for this method suggests that it could perhaps be used in place of hand scoring in some circumstances. Future research should further examine the validity of the Highest40-AllinOne method.

INTRODUCTION

The Levels of Emotional Awareness Scale (Lane, Quinlan, Schwartz, & Walker, 1990) is the most commonly used measure of the ability to use emotion words in a complex and differentiated fashion. It has strong reliability and validity and is associated with a variety of important clinical disorders (see Barchard, Bajgar, Leaf, & Lane (2010) and Barchard, Brehman, Watson, Grob, Rojas, Lane, et al. (2011) for reviews). However, because it is open-ended, it takes a long time to score. In our lab, it takes 5 weeks to learn to score the LEAS, and once a person is fully training it still takes 10-20 minutes to score each protocol. The time required to hand score the LEAS has hindered its use in both applied and research settings.

Program for Open-Ended Scoring (POES; Leaf & Barchard, 2010a) was designed to score the LEAS. It includes several different scoring methods, which range from fairly simple techniques to complex techniques – some of which do a relatively good job of mimicking the steps involved in hand scoring. Previous research (Barchard et al., 2010) has shown that POES scoring results in adequate internal consistency and convergent validity, and that some methods have high correlations with hand scoring. Thus, POES scoring is a promising technique, warranting further study.

The purpose of the current study was to determine if POES scoring correlates as highly with emotion perception tasks as hand scoring does. Emotion perception is the ability to recognize what another person is feeling (Lane, Sechrest, Reidel & Weldon, 1996). People can use a variety of cues to perceive emotions in others. These include body language, tone of voice, facial expressions (Lane et al., 1996). In addition, people can try to perceive emotions that have been conveyed verbally. The Perception of Affect Task (PAT; Rau, 1992) assesses the ability to match the emotions conveyed by pictures and language. Lane et al. (1996) found a moderate positive correlation between the LEAS and the Perception of Affect Task, when the LEAS is scored by hand. In the current poster we obtained their data and replicated their analyses, but we also scored the LEAS using five POES scoring methods. We then correlated each LEAS score with the Perception of Affect Task, to determine if computer scoring is as valid as hand scoring.

We have two research questions. First, we want to know if POES scoring results in positive correlations with the PAT.

If it does, this would provide further evidence for the construct validity of these scoring techniques. Second, does POES Scoring correlate as highly with the PAT as hand scores do. If the correlations are as high, then it may be possible to use computer scoring to replace hand scoring at some point in the future.

METHOD

Participants

A total of 379 participants (193 female, 183 male, 3 undisclosed) participated in this study. Ages ranged from 18 – 85 (mean 42.7, SD 19.0). The participants were predominantly White (85.9%), with the next largest groups being Hispanic (6.4%) and Black (2.7%).

Measures

Levels of Emotional Awareness Scale

The LEAS (Lane et al., 1990) includes 20 open-ended questions. For each, respondents are presented with an emotionally evocative situation that involves two people: the respondent and another person. They are asked to answer two questions: “How would you feel?” and “How would the other person feel?” In this study, we scored the LEAS six ways: we used hand scoring (Barchard et al., 2011; Lane, 1991) and five computer scoring methods (Leaf & Barchard, 2010b).

Hand scoring proceeds in three steps. The first step is to score the emotion words that are used in the response. The scorer can either look up the scores for many words in the LEAS Glossary (Lane, 1991), but many words are not in the glossary. For those words, the scorer needs to use the scoring rules to determine what score is appropriate. Higher scores are given to words that indicate more precisely what emotion the person is feeling. The second step is to calculate the Self score based upon the emotion words that are attributed to the self, and the Other score based upon the emotion words that are attributed to the other person. Higher scores are given if the response includes multiple emotion words that are not redundant with each other. The last step is to calculate the Total score based upon the Self and Other scores. Higher scores are given if the two people are described as having different emotional responses. Hand scoring requires subjective judgments at each of these three steps. Therefore, training a new LEAS scorer is time-consuming. Moreover, it takes a long time to score each protocol after training is complete. In our lab, training takes 5 weeks, and it often takes 10-20 minutes to score each protocol.

Computer scoring also uses three steps (Leaf & Barchard, 2010b). In the first step, each word in the response is compared to the LEAS Wordlist. The Wordlist is based upon the original LEAS Glossary (Lane, 1991), but is somewhat different. For example, the Wordlist includes all possible verb tenses for the corresponding Glossary items.

Method	Calculation	Example Scores ^a
<i>Gives Credit when Same Emotion Word is Used in Multiple Items</i>		
Hand Scoring	Item Score is based upon Self and Other scores, as described above	Item 1: 4 Item 2: 3
AllSum	Item Score is the sum of all Values in the Valuables List	Item 1: 9 Item 2: 7 Total: 16
Highest-4	Item Score is the sum of the four highest Values in the Valuables List	Item 1: 9 Item 2: 7 Total: 16
334	Item Score is the maximum Value in the Valuables List, unless two non-identical Valuables with a Value of 3 are present, in which case the Item Score is 4.	Item 1: 4 Item 2: 3 Total: 7
<i>Only Gives Credit the First Time an Emotion Word is Used</i>		
AllSum-AllinOne	A combined Valuables List is created using the responses to all items. The Total Score is the sum of all Values for all non-identical Valuables in the Valuables List.	Total: 10
HighestN-AllinOne	A combined Valuables List is created using the responses to all items. The Total Score is the sum of the highest N Values for non-identical Valuables in the Valuables List. N can be set to any number. In this study, N = 10, 20, 30, 40, 50, 60 were used.	N = 2 Total: 6 N = 5 Total: 10

a. These are the scores for the responses: Item 1: “I would be happy he likes me. He would also be happy.” Item 2: “I do not think I would be happy. He would feel bad. He might cry.” The Valuables Lists are as follows: Item 1: happy 3, likes 3, happy 3. Item 2: happy 3, bad 2, cry 2. Combined: happy 3, likes 3, happy 3, happy 3, bad 2, cry 2.

In this study, we used LEAS Wordlist 2.4 (Barchard, 2010). Words and phrases that occur in the Wordlist are referred to as Valuables. The scores associated with each are referred to as Values. Thus, the purpose of the first step is to create a Valuables List for each response. The second step in computer scoring is to calculate the score for each subpart of the response. If the LEAS is administered on the computer, the first subpart is the response for the question about the self, and the second subpart is the response for the question about the other person. If the LEAS was administered on paper, using the traditional format, then the entire response is entered into a single subpart. Some of the POES scoring methods have a third step, in which the scores from the various subparts are combined to create a total score. This study used five POES scoring methods. They are explained in Table 1.

Perception of Affect Task

The Perception of Affect Task (PAT; Rau, 1992) includes a total of 140 items, which are divided into four subtasks that each contain 35 items. Participants are asked to associate emotion words (happiness, sadness, fear, anger, surprise, disgust, and neutral), with sentences, pictures of faces, and photographs that do not contain people. The participant is given a score out of 1.0 for each of the subtasks, indicating the proportion of the items that the participant got right. The total score is calculated as the average score across the four subtasks.

Procedures

Participants completed the LEAS and the Perception of Affect Task as part of a larger study that took one to two hours (Lane et al., 1996).

Data Analysis

To examine the relationship between the six LEAS scoring methods and the Perception of Affect Task, we calculated Pearson product-moment correlations.

RESULTS

All of the computer scoring methods had moderate positive correlations with the Perception of Affect Task. With the exception of the AllSum technique, all of the computer scoring techniques had correlations that were similar to the correlation for hand scoring

Of all the correlations, the one for Highest40-AllinOne was the strongest, indicating that Highest40-AllinOne can be used as an alternative to the hand scoring method.

Table 2
Correlation of LEAS Scoring Methods to Perception of Affect Task

Scoring Method	Correlation
Hand Scoring	.43**
AllSum	.35**
Highest-4	.41**
334	.43**
Highest40-AllinOne	.48**
AllSum-AllinOne	.41**

** $p < .001$.

DISCUSSION

This study examined the correlations between computerized scoring of the LEAS and the Perception of Affect Task. As hypothesized, we found significant moderate positive correlations between each of the computer scoring methods and the Perception of Affect Task. These results demonstrate the convergent validity of computer scoring of the LEAS. Four of these correlations were roughly the same size as the correlation for hand-scoring. In fact, Highest40-AllinOne had a higher correlation with the Perception of Affect Task than hand-scoring did. This suggests that computer scoring might be used in place of hand scoring at some point in the future. Future research should continue to examine the validity of computer scoring, to determine if it is as valid as hand scoring in both normal and clinical populations. If it could be used in place of hand scoring, this would both simplify and speed the scoring process.