

Minimal Pairs Test for Level 4 PIE Students

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Abstract

To ensure successful communication, it is necessary for interlocutors to be able to produce and distinguish between minimal pair sounds. In order to assess this construct, a listening test was developed and administered to 11 Level 4 students in the Program in Intensive English (PIE) at Northern Arizona University. The test served as an indicator of readiness; students' scores could inform the curriculum. However, statistical analyses of the results indicated that item difficulty was too low for the student sample (N=11, K=35, Mean=32.27, SD=2.15). Therefore, this minimal pairs test may be more appropriate for Level 2 or Level 3 students.

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Background

Being able to distinguish between sounds is a crucial aspect of communication. Werner (2001) defined minimal pairs as “words that are (1) identical except for one phonetic unit and (2) have different meanings” (p.100); thus, examples include “pit”/“bit” and “drive”/“drove.”

Werner continued on to say that “English is a particularly good language for minimal pairs because it has many short words that differ significantly in meaning and are phonetically identical except for one of the units” (p.100). Because of this prominence in minimal pairs in English, it is important for English language learners to be able to differentiate between them.

Although some researchers do not advocate for the explicit instruction of minimal pair discrimination (e.g., Brown, 1995), many note the importance they can have on intelligibility. For example, Catford (1987) and Brown (1991) proposed the functional load hypothesis, which claimed that some minimal pair phonemes are more likely to inhibit intelligibility (considered high functional load) than others (with a low functional load). Current research conducted by Okim Kang indicates that as learners’ proficiency increases, both the high functional load and low functional load errors decrease, and that learners produce fewer functional load errors across levels. Jenkins (2002) also notes the importance of accuracy of production of some phonemes over others in the creation of intelligibility.

Research Questions

Because receptive skills are generally acquired prior to productive skills, the test developers decided to assess the degree to which high intermediate (Level 4) Program in Intensive English (PIE) students were able to correctly distinguish minimal pair sounds on a listening only test. The test assessed two additional components: the degree to which the

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presence of context affected test takers' ability to distinguish the sounds and their ability to match the sounds heard with their orthographical mapping.

Methods

The minimal pairs test consisted of three parts, each with 12 questions, totaling 36 items. Each item was worth one point. The test was designed to increase in difficulty as it progressed. Each part of the test contained two initial vowel minimal pairs, two medial vowel, and two final vowel. Likewise, it contained two initial consonant minimal pairs, two medial consonant, and two final consonant. Each item was worth one point; therefore, each part (Passages, Sentences, and Words) was worth 33.3%.

Incorrect scores were indicated with a slash. The number of incorrect scores per part was then subtracted from the total possible points per part (12) to come up with a score for each section. The scores from the three parts were then added together to reach a final score. Each test taker's name, score per part, and total score were written on the Score Report Form. An interpretation of scores followed.

The minimal pairs test was administered by the test developers on Wednesday, November 21st, at the beginning of the 11:30 Level 4 Listening and Speaking class. Due to absences because of the upcoming holiday break, only 11 students were present. The entire administration took approximately 15 minutes, including directions and test takers' follow-up questions.

Results

Most of the items were of low difficulty and had low item discrimination. Those with a P value of 1.00 and a D value of 0.00 indicate that there was no variability, or in this case, that all students received a correct score on these items. D values should be at or above 0.30; due to the small variability of item difficulty, only 5 items met this criterion. This signifies that the

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items, and the test in general, may have been too easy for Level 4 students and more appropriate for Level 2 or 3 students.

Tables 1-3 contain descriptive statistics for the pilot sample. Table 1 is broken down by test part (Passages, Sentences, and Words) as reported to students on the Score Report Form. As shown by the smaller range and standard deviation, students scored more consistently on Part 1. The mean for Part 2 is lowest; however, this is due in part to a lower K size. The total mean for all test takers was 32.27 with a standard deviation of 2.15.

The total score reliability coefficient, indicating internal consistency, was also quite low at 0.59 (reliability should fall at or above 0.80). This statistic was calculated excluding the cases that had zero variability. Reliability coefficients were similarly quite low for each of the three parts, at 0.13, 0.30, and 0.43, respectively. Standard Error of Measurement (SEM) was 1.38, meaning that each test taker's score had a 68% chance of falling between -1.38 and 1.38 of his observed score. Furthermore, the true score was 97% likely to fall between -2.76 and 2.76 of the observed score.

Table 1

Descriptive Statistics by Test Part

Section	N	K	Min	Max	Mean	SD	r	SEM
Part 1: Passages	11	12	10	12	11.55	0.69	0.13	0.64
Part 2: Sentences	11	11	7	11	9.64	1.12	0.30	0.94
Part 3: Words	11	12	8	12	11.10	1.14	0.43	0.86
Total	11	35	27	35	32.27	2.15	0.59	1.38

Note. N = number of participants; K = number of items; SD = standard deviation

As can be seen in Table 1, only one student fell below the mastery cut point of 28. Because the total K equaled 35 after one item was removed, a score of 28 reflected 80%, the general cut score for mastery. The student who scored below that had a score of 27, very near

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mastery level. In fact, with the standard error measurement of 1.38, it is quite possible that the student's true score fell within mastery range.

Relevance to the PIE

Had this test worked as intended, the consequences would have been beneficial in that they would have helped inform curriculum development. Even as is, the information received was that the curriculum does not need to be modified to include more explicit instruction in the differentiation of minimal pair sounds, deriving words from context, or matching lexis with graphology. Thus, the specific decision made would have been to not unnecessarily modify the curriculum. As such, it is beneficial to PIE program developers, teachers, and students.

The information collected (score distribution, P values, D values, reliability, SEM, and feedback) are consistent in that they all point to a test that is too easy for the level assessed. However, scoring was uncomplicated and efficient and score reports were easily understood by the test takers.