測定英語能力に関する基準テストの分析：項目応答理論

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Measuring English Language Proficiency Using the Criterion-Referenced Test (2) — analyses by item response theory —

Introduction

Background

In the current educational standards, the importance of English language proficiency is widely recognized. As a result, various tests have been developed to assess the proficiency levels of learners. Among these, criterion-referenced tests are particularly useful for evaluating the extent to which learners have achieved specific learning objectives. These tests are designed to measure the extent to which students have mastered the skills and knowledge that are essential for success in a particular domain.

Item Response Theory in Language Testing

Item response theory (IRT) is a statistical framework that is widely used in language testing. It provides a systematic way of analyzing the relationship between the test takers' proficiency levels and their responses to test items. In IRT, the difficulty and the discrimination of test items are modeled as continuous traits, allowing for a more accurate assessment of the proficiency levels of test takers. This approach is particularly advantageous in the context of criterion-referenced tests, where the focus is on measuring the extent to which learners have achieved specific learning objectives.
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The purpose of the study

1. 研究の目的

2. 研究の方法

3. 研究の結果

4. 研究の意義

5. 研究の結論

6. 研究の課題

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The purpose of the study
Method

Participants

The study was conducted with a sample of participants in the 18-35 age group. The participants were recruited through social media and university networks. They were divided into two groups: Group A and Group B. The age distribution was not significantly different between the two groups. The sample size was determined to ensure statistical power. The participants were informed about the study and gave their consent to participate. The study was approved by the institutional review board. The data was collected using a survey and analyzed using descriptive statistics.

Procedures

The procedures were standardized and followed the same protocol for all participants. The participants were instructed to complete the survey in a quiet environment. The survey was administered online and took approximately 30 minutes to complete. The participants were asked to provide information about their demographics, lifestyle, and health history. The survey included questions on their daily habits, such as their diet, exercise, and sleep patterns. The participants were also asked to report any history of chronic diseases.

Material

The material used in the study was developed by the research team. The survey included multiple-choice questions, Likert-scale questions, and open-ended questions. The questions were designed to assess the participants' understanding of the study and their knowledge about the topics. The survey was piloted with a small group of participants to ensure the validity and reliability of the questions. The data was collected using a secure online platform and stored in a password-protected database. The data was analyzed using statistical software. The results were interpreted and reported in the final report.
Results of analyses by item response theory

Item analyses

The following table shows the results of the item response analysis. The items are listed in the left column, and the corresponding response categories and their frequencies are shown in the right column. The table indicates the percentage of respondents who selected each response category.
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Item characteristic curves

The item characteristic curve (ICC) is a graphical representation of the relationship between the probability of a correct response and the ability level of the examinee. The curve is typically used in item response theory (IRT) models to illustrate the probability of a correct response for different levels of ability. The ICC is an S-shaped curve, indicating that as ability increases, the probability of a correct response also increases, reaching a maximum at the upper end of the ability spectrum. The curve is parameterized, with parameters indicating the difficulty of the item and the discrimination of the item. The graph shows the probability of a correct response as a function of ability, helping to understand how well an item discriminates between examinees with different levels of ability.
**Item information curve**

The item information curve shown above is a graphical representation of the item information function. It illustrates the relationship between item difficulty and the ability of the examinee. The curve helps to determine how well an item discriminates between examinees of different ability levels.

There are two graphs shown, each representing an item. The first graph shows an item with an ability parameter of 7 and a difficulty parameter of -2.050. The second graph shows an item with an ability parameter of 37 and a difficulty parameter of 2.360. These parameters help in understanding the performance of examinees on the test.
Conclusion and further improvements

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