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Presenting a Model Based on Essential Capabilities in the Entrance Exam of the Humanities Group; Combining the Multidimensional Scaling Method and Structural Equations

Fateme Sabbaghi[1], Ebrahim Khodaie[2], Ali Moghadamzdeh[3]

1. Ph.D. Student in Assessment and Measurement, Faculty of Psychology and Education, University of Tehran, Tehran, Iran.
2. Professor, University of Tehran, Tehran, Iran.
3. Associate Professor, Faculty of Psychology and Education, University of Tehra, Thran, Iran.

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Corresponding Author:
Ebrahim Khodaie

Email:
khodaie@ut.ac.ir

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Abstract

Today, the entrance exam is one of the basic and important requirements for students to enter universities, which requires extensive research. Therefore, the present study will present a model based on the basic capabilities of candidates in university entrance exams, by applying and combining two methods: multidimensional scaling and structural equations. The statistical population of this study was (370,112) candidates for the humanities entrance exam in 1400, of which (33,204) candidates were selected based on random sampling. The data collection source was the national exam report card of candidates. At the first, based on the analyses conducted using the multidimensional scaling method, we reached four dimensions of general ability, mental ability, computational ability, and verbal ability. And then using the structural equation modeling method, the strong relationship was identified between the first and second factors, which may be considered as one factor, but the third and fourth factors, are completely independent of other factors, which can also be confirmed based on theoretical foundations.Finally, Research results indicate the excessive breadth and diversity of courses in the humanities field, the decrease in students' focus on their interest area, the great similarity of general and specialized courses, and, as a result, the lack of formation of specific factors for the national humanities exam, the independence of the two subjects, mathematics, and English, like similar large-scale exams, the lack of attention to the distinctive presentation of Persian language and literature as the main country language. This has led to the necessity of designing a multidimensional national exam process, and the emphasis on research and research skills, in the selection process of candidates. Accordingly, several suggestions were presented to curriculum and researchers in this field.

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Extended Abstract

Introduction

Today, the entrance exam is one of the basic and important requirements for students to enter universities, which requires extensive research, because, it leads to the selection of competent human resources, training of specialized labor and connecting them with appropriate job opportunities, appropriate allocation of human capital in academic fields, increasing the quality of higher education, and ultimately improving the cultural, social, and economic conditions of the country. Accordingly, finding a correct admission policy or an appropriate test is very important. In evaluating candidates for admission to higher education, the national exam and its questions are one of the important elements of candidate evaluation that can directly reflect their ability. In the national exam, the format and content of the exam, and also its scoring method (weighted scores for different subjects), confirm its multidimensionality, hence it can be said that the national exam is designed to evaluate various dimensions of knowledge, ability, and talent. Since the type of test and its underlying abilities affect the study style and academic progress of candidates, it is necessary to specify the dimensions of the national test to increase the effectiveness of the test and the fair process of evaluating and selecting candidates. Considering the aforementioned points and the paucity of data in the field, the present study aims to "provide a model based on essential capabilities in the entrance exam of the humanities department by combining multidimensional scaling methods and structural equation modeling" and seeks to answer the questions "Which of the capabilities of candidates does the Iranian National Humanities Entrance Exam measure?" and "What is the structure of the capabilities measured in the Iranian National Humanities Entrance Exam?"

Method

The present study, with a quantitative approach and descriptive method, aims to describe the underlying structure of the national humanities entrance exam and seeks to answer two questions: "Which of the capabilities of candidates does the Iranian National Humanities Entrance Exam measure?" and "What is the structure of the capabilities measured in the Iranian National Humanities Entrance Exam?" and also to present a model based on the essential capabilities of candidates in university entrance exams, these capabilities are explored in the entrance exam for the humanities science group by applying and combining two methods: multidimensional scaling and structural equations. The statistical population of this study was (370,112) candidates for the humanities entrance exam in the year 1400, of which about ten percent (33,204) candidates were selected based on random sampling. The data collection source in the present study was the national exam report card of candidates in the humanities group in 1400. To discover the essential abilities of the volunteers, the data were first analyzed using the multidimensional scaling method, and then, using the structural equation modeling method, the relationships between the obtained factors were tested.

Result

At the first, based on the analyses conducted, we reached four dimensions of general ability (including Persian literature, Arabic language, Islamic culture and education, economics, Persian literature, Arabic language, social sciences, and psychology), mental ability (including history and geography, and philosophy and logic), computational ability (including mathematics), and verbal ability (English language). And then the relationships between the factors (the existence of a strong relationship only between the first and second factors) were determined, which means that the subjects of the second factor, including history and geography, philosophy and logic, are

related to the subjects of the first factor that measure general ability and may be considered as one factor, but the third and fourth factors, namely mathematics and English language, are completely independent of other factors, which can also be confirmed based on theoretical foundations.

Discussion

Finally, after an in-depth analysis of the findings, the researchers reached conclusions. The most important result of the present study is that the structural model presented in the present study (the significance of the relationships between the first and second factors and the relative independence of the third and fourth factors) can almost explain the essential, determining, and effective capabilities of candidates for the humanities entrance exam. In other words, examining the success rate of candidates for the humanities entrance exam can be explained in the form of a structural model by considering the identified capabilities of this test. Researchers also reached results including the excessive breadth and diversity of courses in the humanities field, the decrease in students' focus on their interest area, as well as the secondary education and the national exam's lack of focus on courses related to the chosen university field, the great similarity of general and specialized courses, and, as a result, the lack of formation of specific factors for the national humanities exam, the independence of the two subjects, mathematics, and English, as computational and verbal abilities in terms of their importance in similar large-scale exams, the lack of attention to the distinctive presentation of Persian language and literature as the main country language, the necessity of designing a multidimensional national exam process, and an emphasis on research and research skills in this process. Accordingly, several suggestions were presented to curriculum and national exam planners and researchers in this field.

Author Contributions: Author 1 was responsible for collecting, analyzing, and interpreting the findings and writing the text of the article in the research process. Author 2 as the supervisor, guided and supervised the overall research process, and made corrections and additions to the article. In general, the conclusions from the findings, expansion, and interpretation were made jointly and through discussion and exchange of opinions among all colleagues and with the assistance of the third author, as the advisor.

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Ethical Approval: All stages of this study were carried out in accordance with the principles of research ethics.