

The Factors that Affects the Needs of the Korean Language Education in Children in Multi-cultural Families Using QUEST Algorithm

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Abstract. The purpose of this study was to analyze the factors that affect the needs of the Korean language education in children in multi-cultural families. Data were from the A Study on the National Survey of Multicultural Families 2012. Subjects were 19,431 persons aged 19~24 years. A prediction model was developed by the use of a QUEST algorithm of data-mining approach. In the QUEST algorithm analysis, level of Korean language (reading, listening, speaking, and writing), experience of social adjustment training, experience of using for Multicultural Family Support Center, experience of social discrimination, experience of career counseling were significantly associated with needs of the Korean language education in children in multi-cultural families.

Keywords: decision tree, prediction model, Korean language education, multi-cultural families

1 Introduction

In order for multicultural children to adapt to Korean society and grow into healthy members of society, Korean language education should take precedence over anything else because, in practice, they feel the greatest difficulty in their language although it is essentially required [1, 2]. As Korean education is emphasized for multicultural children on government level, educational institutions including schools are opening Korean language education courses for multicultural children and textbooks for them are being developed. In addition, studies have been conducted on the Korean language education for multicultural families. Korean textbooks for multicultural children, however, are mostly for elementary and middle school children and studies on Korean education have focused on necessity, educational contents and methods and educational policy on Korean in multicultural society [3]. Thus, there has been lack of basic researches such as fact-finding survey on demand and level of necessity of multicultural children for Korean education. Therefore, it is necessary to

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conduct integrated research on factors such as what are the factors affecting the level of necessity for Korean education of multicultural children, the priority of these factors and how the factors affect one another and to seek out Korean educational policy reflecting them.

This study provides basic materials for Korean education of multicultural children and its policies by developing statistical classification model which can predict the level of necessity of the Korean language for multicultural children.

2 Methods

2.1 Subjects

This study analyzed 19,431 young adults (9,835 males and 9,596 females) at the age of 19 to 24 from the family of married foreign immigrants who participated in 2012 National Survey of Multicultural Families.

2.2 Measurement

Dependent variable was defined as level of necessity of Korean language education (necessary, mediocre, not necessary).

Explanatory variables were included as age, gender, final education, residing place, speaking level in Korean, listening level in Korean, reading level in Korean, writing level in Korean, experience of having used Multicultural Family Support Center, education support experience, experience in consultation on education and career path, experience in adaptation education to Korean society, experience in social discrimination, and whether or not being engaged in economic activities.

2.3 Statistical analysis

For general characteristics, mean and percentage was presented and the difference between groups depending on whether or not related to the level of demand for Korean was analyzed with Chi-square test, when explanatory variables with less than significance level of 0.1 were defined as related factors to the level of necessity for Korean education and included in QUEST algorithm [4].

3 Results

3.1 General characteristics of subjects and factors related to the level of necessity of Korean education

Of a total of 19,413 subjects, those who responded that Korean education is necessary was 5,055 subjects (26.0%) while those who responded that Korean education is unnecessary was 11,275 subjects (58.0%).

As the result of chi-square test, level of necessity for Korean education has statistically significant difference in gender, residing city, (final) level of education, level of listening to Korean, level of speaking Korean, level of reading Korean, level of writing Korean, experience in social discrimination, experience in use of Multicultural Family Support Center, experience in adaptation education to Korean society and experience in consultation on education and career path ($p < 0.05$). Demand for Korean education was high in males (26.7%), city residents (27.3%), middle school graduates (34.7%), those who have low level of listening to Korean (80.7%), those who have low level of speaking Korean (82.1%), those who have low level of reading Korean (67.7%), those who have low level of writing Korean (63.3%), those who have experienced social discrimination (35.2%), those who have used Multicultural Family Support Center (52.3%), those who have experienced adaptation education to Korean society (39.4%) and those who have experienced consultation on education and career path (34.8%).

3.2 Prediction model for necessity level of Korean education for multicultural children using QUEST algorithm

Prediction model for necessity level of Korean education for multicultural children using QUEST algorithm is presented in Fig. 1. As the result of constructing statistical classification model using QUEST algorithm after including variables set as factors related to the level of necessity of Korean education through chi-squared test, factors having significant effect were level of reading Korean, experience in adaptation education to Korean society, level of speaking Korean, experience in use of Multicultural Family Support Center, level of writing Korean, experience in social discrimination, experience in consultation on education and career path and level of listening Korean. The most preferentially involved predictor was the level of reading. As the second predictor, experience in adaptation education to Korean society was categorical variable for the group who can read well while the level of speaking Korean was categorical variable for the group whose level of reading Korean was below average. Third predictor was the experience in use of Multicultural Family Support Center and the level of writing Korean. Fourth categorical variable was the experience in social discrimination. Fifth categorical variable was the experience in consultation on education and career path and the level of listening Korean.

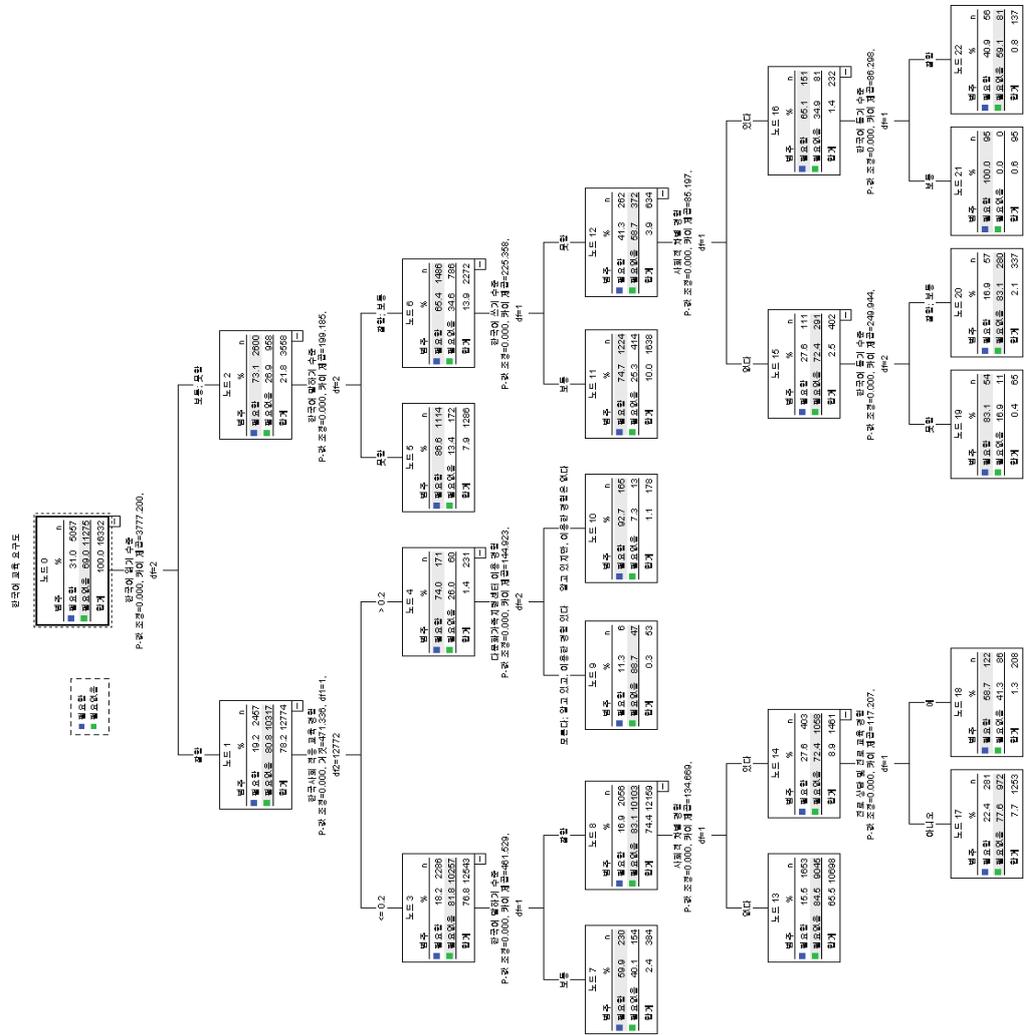


Fig. 1. Prediction model for necessity level of Korean education for multicultural children

In QUEST algorithm, the paths with improved gain of less than 100% are regarded as insignificant. When this study drew out profit indicator for each node to seek out prediction paths for the level of necessity for Korean education of multicultural children, 7 nodes were confirmed as significant

paths which effectively predict the groups requiring Korean education (Fig. 1, Fig. 2).

When the analysis on the prediction model by QUEST algorithm was completed, this study conducted 10-fold cross-validation test to assess developed prediction model. As the result of the (10-fold) cross-validation test to compare stability of drawn-out model, drawn-out risk index was 0.17 and misclassification rate was 17% for cross classification model, showing the same risk index (0.16) and misclassification rate (16%) of prediction model.

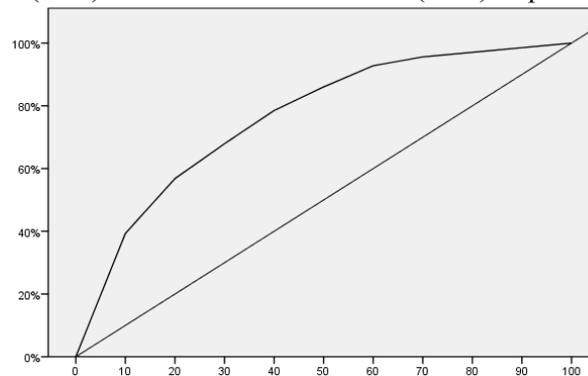


Fig. 2. Gains percentile of final model

4 Discussion

This study constructed prediction model for the level of necessity for Korean education of young adults from the age of 19 through 24 from multicultural families and suggest following policies.

First, continuous Korean education is required for young adults from multicultural families. Currently, policies on Korean education for children from multicultural families have focused only on primary and middle school education. As this study found out that young adults from multicultural families still need Korean education, policies for Korean education for this group are necessary. Korean education for them should focus not only on the improving daily communication abilities but also on obtaining academic achievements in universities and cultivating sense of community necessary for them to live as healthy individuals in Korean society.

Second, it is necessary perform thorough analysis on the demand of children from multicultural families for Korean education when establishing education curriculum and policies. It is the analysis on needs that is generally

conducted at the time of establishment of educational curriculum. Demand for Korean education is not simply decided by the lack of Korean language capability of reading, listening, speaking and writing but also complexly influenced by various factors such as experience of adaptation education to Korean society, experience of social discrimination and experience in use of Multicultural Family Support Center. As this study found out that although the lack of language ability such as reading and writing works as factor for the need of Korean education, those who have high level of language ability but at the same time experienced social discrimination or have little or no experience to have used Multicultural Family Support Center also have higher level of need for Korean education, the need for Korean education should be analyzed with various factors taken into consideration.

Based this study model, systematic education and development of programs are required for effective Korean education for young adults from multicultural families.

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