

Item Ordering Theories Based on Nonparametric Item Response Theory

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Abstract

The main purpose of this study is to develop item ordering theories based on nonparametric item response theory (Ramsay, 1991). Item ordering theories (Airasian & Bart, 1973; Bart & Krus, 1973; Takeya, 1991) were developed to detect item ordering relationships or structures of a group of subjects. The differences of these structures and experts' knowledge structures can provide rich information for planning remedial instruction, developing instruction materials, or educational researches.

In this study, Ramsay's nonparametric item response theory without the local independence assumption was used to estimate the joint probability of two items, and construct "personal" item ordering structures. A computer program is developed for computing and drawing item structures. A Mathematics example is also provided in this paper to illustrate the advantages and disadvantages of the proposed methods.

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