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A Comparison of Different Statistical Moderation Methods in Applying the GPA to Senior High Schools

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Abstract

Based on the Guidelines Regarding the Multiple Admission Process to Comprehensive and Vocational High Schools, admission to senior high school without entrance examinations has been proposed and advanced by the Ministry of Education in Taiwan. Without the reference of the entrance exams, the grade point average (GPA) has been adopted as an alternative in admission selection. However, due to different grading criteria and standards among schools and teachers, the application of GPA in admission decision involves troublesome disputes. The goal of this research is to discuss the potential controversies involved in the use of GPA in admission selection and to compare different statistical adjustment methods to enhance the comparability of GPA among schools. Multiple regression and hierarchical linear modeling (HLM) were investigated. The dependent variable of these methods was the students' scores in the Basic Competency Test for junior high school (BCTEST). The predictive variables were the *Z* score of GPA in junior high school, the *Z* score of GPA adjusted by the standard deviation of junior high school, and the *Z* score of GPA adjusted by the standard deviation of school combined with the *Z* scores of junior high school in the BCTEST. Data was collected from the students who attended the BCTEST in 2008. The results indicated that when the *Z* score of GPA was used alone, the percentage of the explained variance to the BCTEST scores ranged from 65% to 80%. When the *Z* score of GPA was adjusted by the standard deviation of junior high school, the percentages of the explained variance to the

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BCTEST scores were similar to the case where the *Z* score of GPA was used without adjustment. When the *Z* scores of junior high school in the BCTEST was taken into account, the percentages of the explained variance to the BCTEST scores ranged from 72% to 89%. The moderation effects of multiple regression and HLM were similar. It is suggested that when the GPA is used as an admission requirement to senior high school, an equating procedure can be employed to enhance its comparability.

Keywords: multiple regression, average grade point, admission to school, hierarchical linear modeling