Public Abstract
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A MULTILEVEL STRUCTURAL EQUATION MODELING ANALYSIS

The purpose of this study is to examine a model of relationship among teachers' workloads and assignments, teacher collaboration, student motivation, school bonding, and student achievement. This study analyzed Trends in International Mathematics and Science Study (TIMSS) 2003 data collected from 377 mathematics teachers and 8,912 students in the United States. Five multilevel structural equation models (overall collaboration and four specific types of teacher collaboration) were created to compare the association between teacher collaboration and student achievement and the mediation effect of student motivation and school bonding.

Results indicated that overall teacher collaboration was not associated with student achievement, and the mediation effect of student motivation and school bonding was not found after controlling for student socioeconomic status (SES), gender, race, school SES, school size, and urbanicity. However, teachers who had more observations on classroom teaching were more likely to have students with lower achievement. Only nearly significant ($p < .10$) mediation effect was found in the models with the following two types of collaboration: material preparation and teaching observed. Furthermore, the study also examines the association between teachers' workload and assignment and frequency of teacher collaboration after controlling for school climate, school SES, school size, and urbanicity. Contrary to the hypothesis, teachers who had more noninstructional tasks outside of school (i.e., administrative and other duties) were more likely to join other teachers in teaching discussion, material preparation, and overall collaborative activities. Suggestions for future research as well as implications for educational policy and practice were also presented.