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Summary

Over the last several years, new measurement tools and analytic models for quantifying teacher quality have helped researchers understand not only the distribution of teacher effectiveness, but also what contributes to making some teachers more effective than others. Studies indicate, for example, that students learn more from teachers who have mathematics-specific higher degrees, strong content and/or pedagogical content knowledge, and more classroom experience (Author, 2005; Chetty, et al, 2011; Wayne & Youngs, 2003).

While this work helps describe characteristics of effective *teachers*, much less is known about factors that predict effective *teaching*. That is, which elements in teachers' backgrounds and environments are related to the quality of their instructional practices? Prior research points to relationships between instructional quality and three types of characteristics: education and prior career experience related to education (Kunter, et al. 2013; Scribner & Akiba, 2010); personal resources including content and pedagogical content knowledge, enthusiasm, and self-efficacy (Baumert & Kunter, 2013; Author, 2008; Holzberger, Phillipp, & Kunter, 2013); and school resources including student composition, leadership, and curricula (Correnti & Rowan, 2007; Croninger, Buese, & Larson, 2012; Printy, 2010). However, no one has provided a holistic assessment of the broad array of predictors of instructional quality in one study; neither has anyone explored possible heterogeneity in these relationships for different types of instructional quality, e.g., general versus content-specific practices.

We extend this line of research by investigating teacher career and background characteristics,

personal resources, and school and district resources that predict an array of instructional practices identified on a mathematics-specific observational instrument, MQI, and a general instrument, CLASS. To understand these relationships, we use correlation and regression analyses. For a subset of teachers for whom we have data from multiple school years, we exploit within-teacher, cross-year variation to examine the relationship between class composition and instructional quality that is not confounded with the sorting of “better” students to “better” teachers.

We find that teachers who took more mathematics methods courses and have stronger content and pedagogical content knowledge in mathematics have stronger mathematics instruction. Teachers with a bachelor’s in teaching and stronger self-efficacy exhibit higher-quality instruction related to classroom climate, organization, and behavior management. When analyzed in a full regression framework, background characteristics explain between one percent and 21% of the variance in instructional quality, for classroom organization/management and overall mathematical quality of instruction, respectively. In addition, even when controlling for teachers’ math knowledge, experience, certification, and higher degrees, we find statistically significant differences in instructional quality across districts that may be related to the curricula, labor market context, and policies of these districts. Finally, we find a relationship between mathematics instructional quality and the classroom average initial achievement and the percent of students classified as special education. While there still is significant variation in teachers’ instructional quality left to be explained, we provide some of the first evidence using a wide range of characteristics. We conclude that multiple teacher- and school-level characteristics – rather than a single factor – are related to teachers’ classroom practices.

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