Classroom Behavior Over Time: Do Student Trajectories Vary?

Janice Kooken[1], Faith G. Miller[1], Megan E. Welsh[1], Gregory A. Fabiano[2],
T. Chris Riley-Tillman[3], & Sandra M. Chafouleas[1]

University of Connecticut[1], University at Buffalo[2], & University of Missouri[3]

Introduction

Background

Behavioral regulation is a key prerequisite for academic success, however, little is known about how classroom behavior varies by grade level or the degree to which behavior changes as students and teachers adjust to each other over the course of a school year. The current study examines the degree to which first-, second-, fourth-, fifth-, seventh- and eighth-grade teachers perceived students to be academically engaged, disruptive, and respectful in fall, winter and spring of one school year. Utilizing observations over five consecutive days per student on the Direct Behavior Rating Single Item Scales (DBR-SIS), the current study examines variations in the trajectories observed between grade levels, students at-risk and not at-risk for behavioral difficulties, and by minority status, gender, and students with disabilities.

Method

Participants and Setting

For this study, a total of 1976 students were rated by teachers on both measures in the fall, winter and spring. Students were mostly Caucasian (82%), with 7% Hispanic, and 13% students with disabilities. Students were nested within teachers, with 202 teachers participating in 23 urban, suburban, and rural schools in 3 states: Connecticut, New York, and Missouri.

Measures

The current study utilizes data from a larger validation study of the Direct Behavior Rating Single Item Scales (DBR-SIS; Chafouleas, Riley-Tillman & Christ, 2009), which consists of three single items that require teachers to rate on a 10 point scale the proportion of time that a student demonstrates academic engagement (AE), disruptive behavior (DB), and respectful behavior (RS). Students were rated for five days in the fall, winter, and spring. The study also collected teacher ratings at all three time points from the Behavior Assessment System for children (BASC-2 BESS, 2012) to gauge initial risk for behavioral difficulties.

Procedures

Multilevel growth models were run to measure initial status, the shift in initial status, the growth rate of change over time, and the shape of the trajectory. A piecewise linear growth curve was modeled allowing slopes and intercepts to vary for the three data collection periods. Separate models were run for three grade groups: lower elementary, grades 1 and 2, (LE), upper elementary, grades 4 and 5, (UE) and middle school (MS), grades 7 and 8. Student characteristics of grade, gender, minority, special education, and behavioral risk were treated as fixed and random effects in the model.
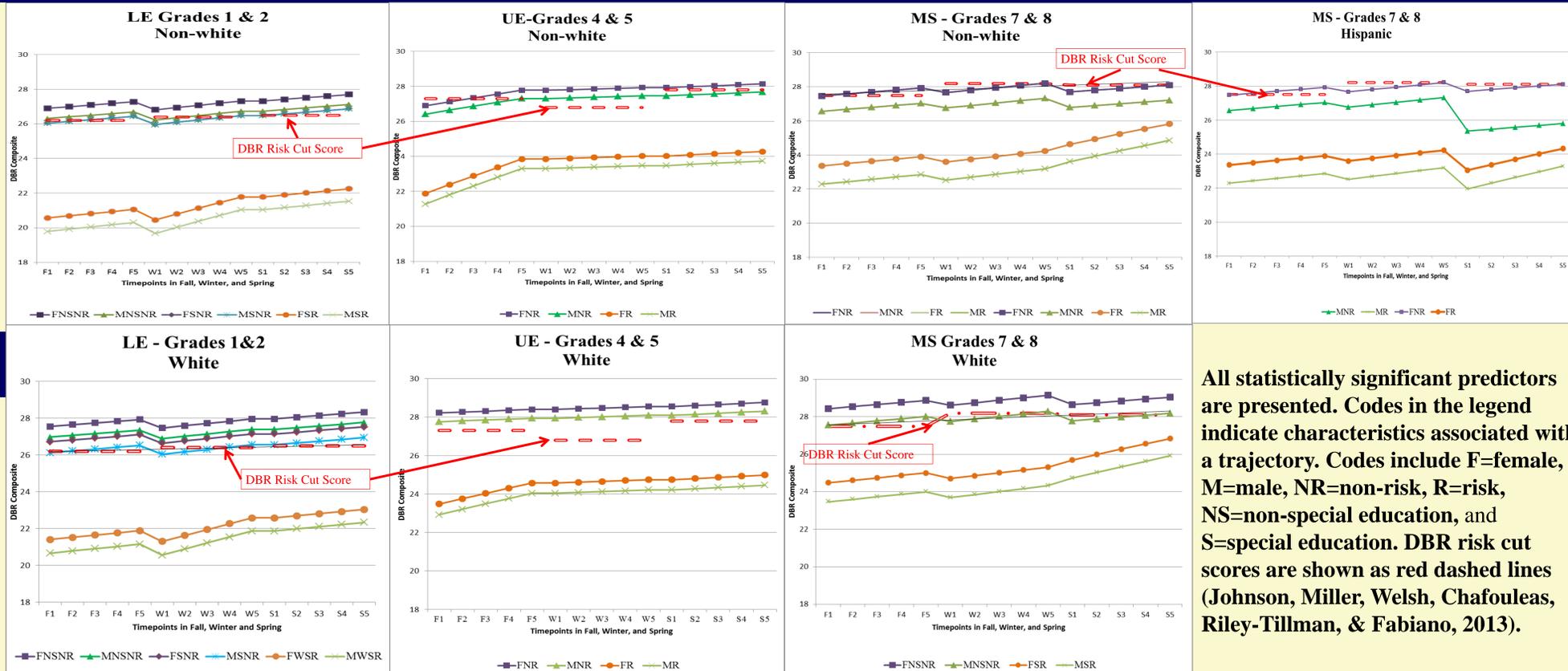
The level 1 model is as follows:

$$DBR_{ti} = \pi_{0i} + \pi_{1i}*(SHIFT1_{ti}) + \pi_{2i}*(SHIFT2_{ti}) + \pi_{3i}*(Fall_{ti}) + \pi_{4i}*(Winter_i) + \pi_{5i}*(Spring_{ti}) + e_{ti}$$

The level 2 model for the intercept random effects is as follows:

$$\pi_{0i} = \beta_{00} + \beta_{01}*(MALE_i) + \beta_{02}*(WHITE_i) + \beta_{03}*(SPED_i) + \beta_{04}*(RISK_i) + \beta_{05}*(GRADE_i) + r_0$$

Results

All statistically significant predictors are presented. Codes in the legend indicate characteristics associated with a trajectory. Codes include F=female, M=male, NR=non-risk, R=risk, NS=non-special education, and S=special education. DBR risk cut scores are shown as red dashed lines (Johnson, Miller, Welsh, Chafouleas, Riley-Tillman, & Fabiano, 2013).

Summary

RQ1: Do levels of the DBR-SIS vary between grade levels?
Predicted initial status for females in lower and upper elementary are similar, while middle school initial status is higher. Minority status, risk, male, and special education all reduce initial status. There are no significant differences between grade levels within each grade group.

RQ2: Does behavior change over the course of the school year?
The change in DBR-SIS is significant and positive for all grade groups for the piecewise linear models in the fall, winter and spring. This slope is greatest for upper elementary in the fall. In addition to change as depicted by slope, a significant downward shift between fall and winter for LE and MS and between winter and spring for MS indicates that student DBR-SIS ratings drop during the gap between assessments, suggesting either deterioration of student behavior or teacher perception of behavior.

RQ3: Do behavioral trajectories systematically differ by grade level?
There are significant variations in initial status, change over time, and shift between ratings, which can be seen in the charts for LE, UE, and MS above. There are no significant differences between grade levels within each grade group.

RQ4: Can variations in behavior trajectories be explained by student characteristics, including gender, minority status, special education status and initial level of behavioral risk?
The models predict that initial status of students at all grade levels varies by gender, minority status, and risk. Males have a lower initial status for LE, UE, and MS, but their change over time does not vary from females. Students who are white have a higher initial status, but white versus non-white slopes do not vary except in UE where non-white students show greater improvement in behavior over time than white students. For Hispanic students, there are no differences in the initial status or trajectory; however, in MS the model indicates a large deterioration between winter and spring ratings. When a student is at risk based upon the initial screening, the initial status is lower for all grade groups; however, students at risk show greater improvement over time, as indicated by an increase in slope. For MS students at risk there is a shift in the favorable direction between winter and spring, while for students not at risk, the shift is downward.