Learning and Instruction 39 (2015) 184–193

Contents lists available at ScienceDirect

Learning and Instruction

journal homepage: www.elsevier.com/locate/learninstruc

Relations between classroom disciplinary problems and student motivation: Achievement as a potential mediator?

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ARTICLE INFO

Article history:
Received 26 August 2014
Received in revised form
9 July 2015
Accepted 13 July 2015
Available online 28 July 2015

Keywords:
Classroom management
Motivation
Achievement
Mediation
Gender

ABSTRACT

This study examined the relation between classroom disciplinary problems in language classes, student achievement, and three facets of student motivation: competence self-perceptions, test anxiety, and engagement. The analyses were conducted with the German sample from the Progress in International Reading Literacy Study (PIRLS) 2006 ($N = 7899$). The results demonstrated that discipline problems are directly and negatively related to achievement and to all motivation constructs considered. In most cases, the relation between classroom disciplinary problems and motivation constructs was mediated by verbal achievement. Boys were found to report more frequent discipline problems in classrooms than girls. This study contributes to research by assessing the impact of classroom disciplinary problems using doubly latent multilevel structural equation models in order to properly disaggregate effects occurring at the student, versus classroom level.

Classroom management encompasses actions taken by the teacher to maintain order and maximize on-task time (Evertson & Weinstein, 2006; Kunter, Baumert, & Köller, 2007). Research supports the role of effective classroom management as a key determinant of learning and achievement (Hattie, 2009; Seidel & Shavelson, 2007). Fewer studies have looked at the relations between classroom management and student motivation, yet they confirm the beneficent effects of effective classroom management. For example, Piwowar, Thiel, and Ophardt (2013) evaluated the effectiveness of classroom management training for secondary school teachers. Students of participating teachers showed an increase in their class engagement compared to students taught by control teachers.

Classroom management encompasses different facets that potentially share differential relations with students' outcomes (e.g., Seidel & Shavelson, 2007). For example, the TARGET framework describes six instructional strategies (Task, Authority, Recognition, Grouping, Evaluation, and Time) that have been shown to facilitate the adoption of a mastery goal structure in classrooms, and to help improve student motivation and achievement (Ames, 1992; Bergsmann, Lüftenegger, Jöstl, Schober, & Spiel, 2013; Urdan, 2004). In this study, we focus on classroom disciplinary problems as an indicator of inadequate classroom management. In Seidel and Shavelson's (2007) recent meta-analysis of teacher effects on learning, classroom discipline belonged to an "organization of learning" component of teaching, which was demonstrated to have a substantial impact on student achievement. The related (opposite) construct of classroom chaos has also been shown to have a negative effect on students' achievement in Marsh et al.'s (2012) study. Empirical results suggest that classroom disciplinary problems might also negatively impact student motivation. For instance, rule clarity and teacher monitoring (indicating low levels of classroom disciplinary problems) were found to enhance students' interest in math (Kunter et al., 2007).

In this study, we explore the relations between classroom disciplinary problems and three motivational outcomes (i.e., students' self-perceptions of competence, anxiety, and engagement). Given the consistently found relations between effective classroom management (including classroom discipline) and achievement on the one hand (Seidel & Shavelson, 2007), and between achievement and motivation on the other hand (Hancock, 2001; Marsh &

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http://dx.doi.org/10.1016/j.learninstruc.2015.07.001
0959-4752/

Craven, 2006), we additionally test whether student achievement might mediate the association between classroom disciplinary problems and motivational outcomes. To ensure conceptual clarity in the identification of these relations, we rely on doubly latent multilevel structural equation models (Lüdtke, Marsh, Robitzsch, & Trautwein, 2011; Lüdtke et al., 2008; Marsh et al., 2009) allowing us to locate the effects occurring at the classroom level versus the individual student level.

1. Contextual and climate effects

In research on classroom characteristics, it is important to distinguish between contextual and climate effects (Marsh et al., 2012; Morin, Marsh, Nagengast, & Scalas, 2014). Contextual effects are built from meaningful individual characteristics that are aggregated at the classroom level where they take a different meaning. A simple example is the gender composition of classroom. As both individual and classroom components of variables involved in contextual effects are meaningful in their own right, contextual effects need to be controlled for corresponding individual effects (Marsh et al., 2012; Morin et al., 2014). A well-documented contextual effect of direct relevance here is the big-fish-little-pond effect (BFLPE; Marsh, 1987, 2007; Marsh et al., 2008) according to which students' academic self-concept is positively related to students' individual levels of achievement, but negatively related to class-average achievement when controlling for individual achievement. The BFLPE emerges from social comparison processes involved in the construction of students' self-concept (Möller, Pohlmann, Köller, & Marsh, 2009): Students evaluate their own relative standing in the classroom by comparing their own level of achievement with that of their classmates. Realizing that one's own achievement falls short of the average class achievement yields negative effects on students' self-concept, and these negative effects have been shown to be shared among all students composing the classroom.

Climate effects result from the direct assessment of classroom constructs, i.e., when students are directly asked to rate classroom characteristics. Thus, instead of rating their own characteristics (such as their own discipline in the classroom), students are directly asked to evaluate their classroom (such as their perceptions of disciplinary problems occurring in the classroom) and are thus theoretically interchangeable. Climate effects therefore depict students' shared perceptions of their classroom environment. Given that all students are asked to rate the same objective environment rather than to rate themselves in this environment, residual inter-individual differences (occurring at the student level once shared classroom perceptions are controlled) in ratings of classroom climate are a form of measurement error (related to inter-rater agreement in relation to ratings of classroom characteristics) that needs to be controlled in the model. More precisely, we refer to the student-level component of these climate ratings as "residuals" because, in multilevel models, this component reflects inter-individual deviations from the average rating provided by all students forming the classroom. These student-level residuals of classroom climate ratings may still play a substantive role in the interpretation of the results, yet it is critical for the effects of such residual ratings to be interpreted while keeping in mind their nature (i.e., residualized inter-individual differences in perceptions) (Marsh et al., 2012; Morin et al., 2014).

Of direct relevance to this study, when considered at the classroom level, the effects of disciplinary problems represent climate effects, while those of academic achievement represent contextual effects. The above discussion makes it clear that the effects of classroom disciplinary problems should first and foremost be studied at the classroom level and properly represented as climate effects. Nonetheless, some studies have investigated perceptions of the classroom environment and student outcomes at the individual level only (e.g., Greene, Miller, Crowson, Duke, & Akey, 2004; Patrick, Ryan, & Kaplan, 2007). Other studies have relied on a more proper multilevel approach. For instance, Frenzel, Pekrun, and Goetz (2007) demonstrated positive relations between students' inter-individual deviations in their perceptions of teaching quality and their enjoyment of mathematics lessons, but negative relations between class-average evaluations of teaching quality and class-average levels of students' enjoyment. Kunter et al. (2007) demonstrated that students' inter-individual deviations in their perceptions of their teachers' rule clarity and monitoring were positively related to changes in individual levels of students' interest in math, while the class-average perceptions of rule clarity and monitoring were unrelated to changes in class-average levels of interest in math. Marsh et al. (2012) examined classroom level relations between social comparison focus and classroom chaos on the one hand, and math achievement and math self-concept on the other hand. Their results demonstrated a negative effect of classroom chaos on math achievement. In turn, classrooms characterized by a higher social comparison focus were found to be characterized by higher levels of students' achievement and self-concept. Finally, Morin et al. (2014) documented the direct effect of a composite factor of classroom climate on math achievement as well as its mediated relation through math self-efficacy.

Taken together, these studies demonstrate the importance of relying on models allowing for a proper disaggregation of the individual, versus classroom, components of these relations. So far, these studies have mainly focused on secondary school students' perceptions related to math classrooms. Therefore, it remains an open question whether similar associations between dimensions of classroom management and student outcomes also exist in language classes and for younger students. Furthermore, although some of these studies have focused on motivation constructs besides achievement, they commonly consider only a single component of motivation at a time. Hence, there is a need to extend these studies to examine a broader range of motivational constructs simultaneously.

2. A multidimensional approach to motivation

By examining the relations between classroom disciplinary problems and three motivation outcomes (self-perceptions of competence, test anxiety and engagement), our study is anchored in current conceptions of motivation as a multidimensional construct (e.g., Murphy & Alexander, 2000). For instance, Martin (2007) differentiates between behavioral and cognitive dimensions of motivation, which can manifest themselves in adaptive or maladaptive forms. The constructs considered in this study fit within this framework with self-perceptions of competence describing an adaptive cognition, test anxiety reflecting a maladaptive cognition, and engagement representing an adaptive behavior.

Engagement describes students' observable behaviors in the classroom, including their active participation. Engagement has been shown to be positively related to student achievement (Alexander, Entwisle, & Dauber, 1993; Fredricks, Blumenfeld, & Paris, 2004) and has also been used as a valuable outcome in its own right (Skinner, Wellborn, & Connell, 1990). Importantly, students' level of engagement has previously been found to be influenced by various facets of classroom management. For instance, Skinner and Belmont (1993) showed that students' perceptions of classroom structure predicted behavioral engagement. Likewise, Patrick et al. (2007) showed that students' perceptions of the classroom social environment (teacher support, promotion of