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# Students' problem behaviors and teachers' warmth and demand as predictors of students' classroom instructional experiences in first grade[1]

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ABSTRACT

The present study utilized both classroom- and student-level observation methods to investigate the relations among first grade students' (N = 533) problem behaviors and their classroom instructional experiences. Additionally, the role of teachers' (N = 57) warm demander characteristic, a combination of warmth and responsiveness and classroom control and demand, was considered. Multilevel modeling revealed a positive association between problem behaviors and student time in both teacher-facilitated small-group instruction and off-task, and to less time in types of instruction where students were expected to manage themselves. Interaction effects further indicated that the positive association between problem behaviors and time in teacher-facilitated, small-group instruction only existed when students with more problem behaviors were in classrooms with teachers who were high or average in warm demander characteristic, whereas the opposite pattern existed for students of teachers low in warm demander characteristic. In addition, students of teachers who were high in warm demander characteristic spent less time in disruption/waiting (a main effect), and for these students a positive association between problem behaviors and students' time in disruption/waiting existed (an interaction effect). Implications for policy, practice, and future research are discussed.

## 1. Introduction

Young students' classroom instructional experiences are consistent predictors of their development across multiple domains (Ansari & Purtell, 2017; Connor et al., 2010, 2013; Day, Connor, & McClelland, 2015; McLean, Sparapani, Toste, & Connor, 2016), highlighting the importance of fully understanding the myriad factors that influence how students spend their time in the classroom. Several studies have illustrated the central role that teachers play in determining students' instructional experiences (Connor et al., 2010; Kokkinos, Panayiotou, & Davazoglou, 2005), however it is likely that students' own characteristics play a role as well. Students' characteristics could impact their classroom experiences directly, for example through students' own likelihood of engaging in learning opportunities, or indirectly through teachers' reactions to student characteristics that might affect instructional decisions (Shores et al., 1993; Tournaki & Podell, 2005; Tournaki, 2003; Wehby, Lane, & Falk, 2003). We seek to expand the fields' current understanding of how student characteristics contribute to their instructional experiences by investigating how students' problem behaviors relate to their time in six instructional activities: 1) teacher-facilitated whole-class instruction, 2) teacher-facilitated small-group instruction, 3) student self-managed small-group instruction, 4) student self-managed individual instruction, 5) time off-task and 6) time spent idle due to a disruption of instruction. We also consider teachers' "warm demander" characteristic, a combination of warmth and responsiveness to students, classroom control, and discipline, as a teacher characteristic that might mitigate the influences of problem behaviors on students' time in these instructional experiences. Results can inform systems of training and professional development focused on teachers' considerations their own and their students' characteristics when making decisions about how to apply instruction.

Two founding theories inform our approach to this investigation. First, the Bio-Ecological Model of Human Development (Bronfenbrenner & Morris, 2006) illustrates the importance of the contexts children participate in regularly (here, the classroom) as primary contributors to their development. This model also highlights the

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potential for individuals' personal characteristics, in this case students' problem behaviors and teachers' warm demander characteristic, to impact how participants experience, and what they take away from, their time in a given developmental context. Second, Dynamic Systems Theory (Thelen & Smith, 1998; Yoshikawa & Hsueh, 2001) posits that multiple systems exist within a developmental context which interact with each other to shape participants' outcomes. In regard to the present study, we anticipate that student and teacher characteristics interact with each one another to determine students' experiences in the classroom. For example, a student with a high instance of problem behaviors may be more likely to become off-task, and a teacher low in warm demander characteristic may be less able to effectively re-engage that student in meaningful instruction, resulting in lost instructional time for that student.

First grade is a particularly important context of study as it is typically the first year U.S. students are introduced to extended periods of instruction (Spira, Bracken, & Fischel, 2005). Students who are unable to adapt to the increased demands of first grade are more likely to struggle throughout schooling and beyond (Alexander & Entwisle, 1988; Alexander, Entwisle, & Dauber, 1993). In addition, most children in the U.S. attend public schools and so conducting investigations in these settings has the potential to generalize on a large scale. As such, we chose to investigate the relations of interest within the context of first grade, public school U.S. classrooms.

### 1.1. Students' problem behaviors as predictors of instructional experiences

Students' problem behaviors are consistent predictors of important outcomes including academic achievement, school adjustment, high school graduation, and postsecondary school attendance (Bullis & Cheney, 1999; Kauffman, 2001; Ladd & Dinella, 2009; Nelson, Benner, Lane, & Smith, 2004; Wanzek, Roberts, & Al Otaiba, 2014). In addition, students' classroom instructional experiences have been found to contribute to their outcomes: Foorman and Torgesen (2001) described the positive effects of small-group instruction for literacy achievement. More recently, McLean et al. (2016) found that first graders who spent more time off-task and in transitions demonstrated weaker literacy achievement, and Ansari and Purtell (2017) reported that kindergarteners who experienced more whole-class instruction demonstrated greater gains in literacy, and that more whole-class and small-group instruction was related to greater gains in math. As such, reduced time in learning opportunities may be one mechanism through which problem behaviors impact students' academic outcomes.

The majority of related empirical work has focused on how students' classroom experiences might impact their behavioral (and other) outcomes (for examples see Broekhuizen, Mokrova, Burchinal, & Garrett-Peters, 2016; Reinke, Lewis-Palmer, & Merrell, 2008). However, there is potential for this relation to operate in the opposite direction, with students' behaviors predicting their classroom experiences. Carr, Taylor, and Robinson (1991) observed that teachers spent less time instructing students who exhibited aggressive behaviors, and Wehby et al. (2003) reported that teachers spent only about 30% of the school day engaged in academic instruction with students who had emotional and behavioral disorders, which was less time than they spent engaged with typically-behaving students. These studies illustrate the potential for students' own characteristics to play a role in what they experience in the classroom. A clear next step is to expand upon these exploratory findings using larger samples and more rigorous methodologies. Importantly, some in the field have already made progress along this vein: Day et al. (2015), found that weaker self-regulation skills were associated with more time in unproductive non-instructional activities such as off-task and in disruptions among a large sample of 500 students in 51 first grade classrooms. We build upon this work by first exploring the directionality of relations between variables in the interest of confirming that students' behaviors can be conceptualized as drivers of their instructional experiences, then by examining how students' behavior influences their time spent in a wider variety of classroom instructional experiences than have previously been considered. Finally, we consider the added role of the teacher in these relations.

### 1.2. The role of the student

Engagement in learning opportunities requires students to stay on-task, attend to learning goals and regulate behaviors (Cameron, Connor, Morrison, & Jewkes, 2008; DiPerna, Lei, & Reid, 2007; Fredricks, Blumenfeld, & Paris, 2004). Students with frequent problem behaviors often exhibit increased hyperactivity, distractedness, and withdrawal which interfere with their ability to engage in classroom learning opportunities (Barriga et al., 2002; DiPerna et al., 2007; Lewis, Newcomer, Trussell, & Richter, 2013). Importantly, past work suggests that internalizing, externalizing, and hyperactive problem behaviors, though characteristically different, relate to students' classroom experiences in similar ways. Students who exhibit externalizing and/or hyperactive behaviors disengage from learning opportunities due to distraction or disruption, whereas students with internalizing behaviors tend to withdraw from these opportunities (Buhs & Ladd, 2001; Keiley, Bates, Dodge, & Pettit, 2000; Ostrander, Herman, Sikorski, Mascendaro, & Lambert, 2008). While the mechanisms behind this disengagement may be different, the result appears to be the same: less time in learning opportunities. Thus, while we recognize that externalizing, hyperactive, and internalizing behaviors are unique from each other, we investigate them in combination as more general 'problem behaviors'.

### 1.3. The role of the teacher

The teacher is the leader of the classroom and is responsible for ensuring that all students spend as much time as possible engaged in learning opportunities. Ideally, teachers plan and facilitate the instruction their students participate in, directly engage students, dictate when students should work independently, and monitor and redirect students so that time spent away from learning is minimal. Not surprisingly, teachers have consistently been identified as a primary source of influence on students' instructional experiences, with Intra-Class Correlations (ICCs) indicating that a large portion of the variance in students' instructional experiences exists at the classroom/teacher level (McLean & Connor, 2018; McLean, Abry, Taylor, & Connor, 2018).

Despite findings suggesting that teachers tend to apply instruction fairly similarly across students, past work utilizing in-depth student observation methods have found that students within the same classroom can and do have different instructional experiences from each other (Connor, Morrison, et al., 2009; Connor, Piasta, et al., 2009). We anticipate that some of these differences are likely due to students' behavioral characteristics making them more or less likely to directly engage with various types of instruction. In addition, we anticipate that some of this variance also stems from teachers' reactions to their students' behaviors that may then manifest in their instructional decisions. For example, students with frequent problem behaviors may be more taxing for the teacher to interact with during direct instruction and may also require closer monitoring and redirection from the teacher during self-directed learning opportunities (Graziano, Garb, Ros, Hart, & Garcia, 2016; Skalická, Stenseng, & Wichstrøm, 2015). As a result, a teacher may shy away from engaging these students in direct (teacher-facilitated as opposed to student self-managed) instruction, and may be less likely to redirect or re-engage these students.

Research has generally supported the potential for teacher characteristics to influence the instruction students experience, though prior work investigating teachers' warm demander characteristic is sparse. In a recent example investigating the contributions of teachers' mental health characteristics to students' experiences, McLean et al. (2018) found that students of teachers who reported more negative mental health symptoms experienced less time in teacher-facilitated academic instruction applied to the whole class, as well as less time in teacher-

facilitated planning and organizing instruction. While this study examines teachers' mental health rather than warm demander characteristic, it provides foundational evidence that teachers' personal characteristics likely do influence the types and amounts of instruction they apply in the classroom. In addition, past work investigating the potential for teacher and student characteristics to interact in ways similar to what we are expecting in the present study has yielded relevant findings: Hoglund, Klingle, and Hosan (2015) found that burnout among elementary teachers interacted with students' externalizing/hyperactive behaviors to negatively impact change in the teacher-student relationship across the school year.

### 1.4. Teachers' warm demander characteristic

We examine teachers' warm demander characteristic as a factor that may interact with students' problem behaviors to impact instructional experiences. Teachers' warm demander characteristic is a simultaneous consideration of their warmth and responsiveness in teacher-student interactions, their level of classroom control, and their approaches to discipline. Considering these together as a single characteristic offers a unique perspective as these factors have traditionally been measured separately in past literature. Our conceptualization is in response to a large body of research demonstrating that the most optimal child outcomes are observed when the significant adults in children's lives display high levels of both support and demand simultaneously. In the parenting literature, this is labeled "authoritative parenting" (Baumrind, 1971, 1978, 1991), while in the field of education teachers who display both qualities simultaneously are labeled "warm demanders" (Sandilos, Rimm-Kaufman, & Cohen, 2017; Vasquez, 1989). In this study, we anticipate that first grade students will experience the most optimal instructional outcomes when they are in classrooms with teachers who are high in this warm demander characteristic.

Indicators of a warm demander teacher as conceptualized in the present study include an ability to secure and maintain student attention, proactively address student behavior, effectively and respectfully redirect students, utilize encouraging and respectful talk, engage all students in learning opportunities, and encourage positive peer interactions (Connor et al., 2014). Related studies have revealed important relations among teachers' warmth and control/demand (examined separately) and student experiences. De Jong et al. (2014) found that when teachers used warmer, more supportive approaches to discipline they had more positive relationships with students, (also see Murray & Murray, 2004; Henricsson & Rydell, 2004), and Buyse, Verschueren, Doumen, Van Damme, and Maes (2008) found that teachers' emotional support acted as a protective factor in a negative relation between students' problem behaviors and the teacher/student relationship. We expect that the results of the present study, especially those pertaining to teachers' warm demander characteristic, will be useful to the creation of teacher training and professional development programs meant to support teacher characteristics that have been found to be particularly beneficial to students in the classroom.

### 1.5. Research questions and hypotheses

We examined the direct relations between students' problem behaviors and their instructional experiences, as well as explored the additional role of teachers' warm demander characteristic. To guide this investigation, we posed the following research questions: First, what are the direct relations among students' problem behaviors and their time spent in six instructional experiences? We predicted that more student problem behaviors would be associated with less time spent in teacher-facilitated instruction (both whole-class and small-group) as well as with less time working independently and in small groups without the direct involvement of the teacher. In addition, we predicted that more student problem behaviors would be associated with more time spent off-task and in disruption/waiting. Second, what role does teachers' warm demander characteristic play within these hypothesized direct relations? We predicted that when students with more problem behaviors were in classrooms with teachers high in warm demander characteristic, the hypothesized relations between students' problem behaviors and their time in each of the instructional experiences would not exist or would operate in opposite directions (i.e. buffering effects).

## 2. Methods

### 2.1. Participants

Students and teachers were recruited to participate in a longitudinal study that began in the 2006/2007 academic year (Connor, Morrison, et al., 2009; Connor, Piasta, et al., 2009; Connor et al., 2013) and followed students from first through fifth grade. The present study considers only the first year of this longitudinal study. The overall cohort of participants recruited included 1148 first grade students and their 57 teachers from 18 schools in northern Florida. Of the recruited student sample, 8–10 students per classroom were randomly selected from strata categorized by their academic achievement to be assessed for classroom instructional experiences. These selected students (N = 533) make up the analytic sample for the present study. Fifty-one percent of students in the analytic sample were female and 49% were male. Forty-three percent were African American, 45% Caucasian, 3.8% Asian, 1.3% Hispanic, and the remaining students were Multiracial or indicated another ethnicity. These demographics closely aligned with what was observed in the full recruited longitudinal study sample, and also align with the increasing diversity of the overall population of U.S. public school elementary students (U.S. Census Bureau, 2017). Two of the teachers were male, and the majority were Caucasian (73%); 24% were African American and 3% other ethnicities, ranging in years of teaching experience from 1 to 34 years, with a mean of 16 years (*SD* = 10 years). All teachers had at least a bachelor's degree in Education or a related field (ex. Psychology) and met state mandated teaching licensure requirements, and 36% had a master's degree. These teacher demographics also closely align with what is currently observed among the general population of U.S. elementary teachers (National Center for Education Statistics (2018) ()2018, 2018). Schools reflected a wide range of local socioeconomic status (SES), indicated by the percentages of student enrollment in a school-wide Free and Reduced Lunch (FARL) program, which ranged across schools from 4% (affluent) to 96% (low-SES).

### 2.2. Procedures

Student and teacher participants were recruited in the early fall of 2006 to participate in the longitudinal study. Institutional Review Board (IRB) approval was maintained throughout the study and all parents, teachers, and school administrators provided informed consent to participate after all study procedures were disclosed. Teachers and parents/guardians of students filled out demographic surveys immediately upon providing consent to participate. Data collection began in mid-fall and took place at three time-points across the academic year, in the fall (October/November), winter (January), and spring (April/May). Video recordings of classroom literacy instruction were captured at each of these time points, and all video observations were later assessed in a lab setting by trained project staff utilizing multiple observational tools that assessed both student- and classroom- level instructional features. Teachers completed individual assessments of participating students' behavior patterns in the winter.

### 2.3. Classroom video observations

During taping, two trained research assistants simultaneously managed two cameras, with one camera capturing a wide view of the classroom and the other capturing a closer view of the teacher and

nearby students. Research assistants also wrote detailed descriptions of each child and took written notes throughout the entire observation, which trained coders later used to identify target children and code the amounts and types of instruction that they received. Notes taken by videographers included descriptions of instructional materials being used that might be ambiguous during later viewing, tracking of student movement throughout the room for video raters to later refer to (for example, designating which students are in each group during rotating group stations), and descriptions of student activities when target students were out of view of the camera. While instruction across all content areas was originally recorded, only literacy instruction was considered in the present study; state curricula required teachers to designate at least 120 min of every day to literacy instruction which provided a level of consistency across observations. As well, constraining the content area to literacy strengthens the internal validity of study findings by eliminating differences across content areas as a potential confound (Whittaker, Williford, Carter, Vitiello, & Hatfield, 2018).

Trained research staff coded the literacy instruction blocks for individual students' instructional experiences using the ISI Framework and for overall classroom quality using the Q-CLE rubric (both described in more detail below) using Noldus Observer® Video-Pro Software. Training of ISI and Q-CLE assessors consisted of three weeks of group discussion and guided application of each of the frameworks led by the project manager. Following training, each member of the video assessment team independently assessed the same randomly selected reliability videos and inter-rater reliability (IRR) was assessed using Cohen's kappa (Yoder, Lloyd, & Symons, 2018).

### 2.4. Measures

#### 2.4.1. Dependent variables

***Students' Classroom Instructional Experiences.*** Students' classroom instructional experiences were captured in the present study using the Individualizing Student Instruction framework (ISI; Connor, Morrison, et al., 2009; Connor, Piasta, et al., 2009), a student-level observational tool for tracking the instruction that students experience in the classroom. A decade of rigorous research has established connections among the types of instruction captured by the ISI framework and student outcomes in elementary settings (Connor, Morrison, et al., 2009; Connor, Piasta, et al., 2009; Connor et al., 2010, 2013; McLean et al., 2016). Video assessors tracked the duration of each target student's participation in any activity lasting 15 s or longer and evaluated each of these activities across four dimensions: *content, instruction, management,* and *context.* The *content* dimension denotes which content-area students are receiving instruction in (literacy, math, science), the *instruction* dimension refers to the type of instruction the students are experiencing, the *management* dimension further defines whom in the situation (the teacher or the student/students) is directing the activity, and the *context* dimension denotes the grouping of students. Raters achieved a kappa of 0.76 on a randomly selected 15% of video observations, and kappas of 0.75 or higher were maintained throughout the entire video coding period.

In the present study, six classroom instructional experiences defined by these four dimensions were investigated as outcomes of interest. Regarding the *content* dimension, all instructional experiences investigated in the present study received content codes for "literacy/language arts" as this was the only content area observed. Regarding the *instruction* dimension, we focused on the two broader distinctions of 'academic instruction' vs. 'non-instruction.' Within academic instruction, students' experiences were then further defined by the *management* dimension as either teacher/child-managed or child/peer-managed. Teacher/child-managed academic instruction indicates that the activity is directly facilitated by the teacher while child/peer-managed academic instruction indicates that a student or a group of students are managing themselves without the direct involvement of the teacher (but typically with the teacher monitoring from a distance). The *context* dimension defines student grouping within an activity and includes whole-class, small-group, and individual instruction. Whole-class indicates that all students in the classroom are participating in a single activity and is inherently teacher/child-managed. Small-group indicates that two or more students, but not all students, are involved in an activity and can be either teacher/child-managed or child/peer-managed. Individual instruction indicates that a child is participating in an activity without any other students involved, and can be either teacher/child-managed or child/peer-managed. Of note, we did not investigate students' time spent in teacher/child-managed, individual instruction because this type of instruction was observed very infrequently.

The four types of academic instruction investigated in the present study were 1) Teacher/child-managed whole-class, representing an activity where the entire class of students was receiving academic instruction directly from the teacher. For example, the teacher reading a book to the entire class, 2) Teacher/child-managed small-group, representing an activity where a small group of students was receiving academic instruction directly from the teacher. For example, the teacher working with a group of four students on a reading comprehension activity, 3) Child/peer-managed small-group, representing an activity where a small group of students was participating in an academic learning opportunity without the direct involvement of the teacher. For example, a group of three students completing an idea web worksheet together, 4) Child/peer-managed individual, representing an activity where an individual student was participating in an academic learning opportunity without the direct involvement of the teacher or other students. For example, a child reading independently at their desk.

The remaining two experiences investigated were students' time off-task and time spent waiting for instruction to resume after being interrupted (labeled 'disruption/waiting'). These two experiences were not further defined by the *management* or *context* dimensions. Time off-task was coded any time a student was observed to be engaged in any behavior that was not the intended focus of the activity (for example talking to a classmate instead of completing a worksheet) but excluded teacher-sanctioned deviations such as a trip to the bathroom. Time in disruption/waiting was coded any time an activity was delayed or interrupted but the student(s) remained oriented to the activity, for example waiting while the teacher applies discipline to a peer. Students' time in each instructional experience was summed in minutes for each observation and then averaged across the three seasons for analyses. The majority of students were present for all three observations, however in the case that a student had missing data for a time-point, average scores were calculated based on the available data. All students were present for at least one observation during the year, so there was no missing data on any of the instructional outcome variables.

#### 2.4.2. Independent variables

***Students' Problem Behaviors.*** Teachers reported on each of their student's classroom behaviors in the winter using the Problem Behavior scale of the Social Skills Rating System (SSRS; Gresham & Elliot, 1990). This scale asks teachers to rate the frequency with which they observe a student exhibiting each of 36 problematic behaviors, with ratings ranging from 0 (*never*) to 2 (*very often*). The 36 items are derived from three larger categorizations of problem behaviors: externalizing, internalizing, and hyperactive behaviors. Externalizing behaviors include talking back or displaying overt anger, internalizing behaviors include a student appearing lonely or becoming embarrassed easily, and hyperactive behaviors include excessive fidgeting and tendency to interrupt conversations. While separate scores can be derived for each of these, students' collective problem behaviors were investigated in the present study without differentiating between problem behavior subtype. Bivariate correlations (see Table 1) revealed moderate to large correlations among the three behavior types, and revealed similar patterns of relations among each behavior type and each type of instruction investigated in the present study, providing justification for this approach

**Table 1**
Correlations among behavior types and instructional outcomes variables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. SSRS-PB Int. | 1 | | | | | | | | |
| 2. SSRS-PB Ext. | 0.38** | 1 | | | | | | | |
| 3. SSRS-PB Hyp. | 0.40** | 0.75** | 1 | | | | | | |
| 4. TCM-WC | 0.08 | −0.01 | 0.00 | 1 | | | | | |
| 5. TCM-SG | −0.01 | −0.03 | 0.01 | −0.19** | 1 | | | | |
| 6. CPM-SG | −0.12** | −0.11* | −0.12** | 0.03 | 0.14** | 1 | | | |
| 7. CPM-IND | −0.16** | −0.14** | −0.18** | 0.09* | 0.21** | 0.73** | 1 | | |
| 8. Off-Task | 0.10* | 0.17** | 0.16** | 0.18** | 0.08 | 0.13** | 0.21** | 1 | |
| 9. Disrupt/Wtg. | 0.09* | 0.07 | 0.05 | 0.25** | 0.31** | 0.11* | 0.15** | 0.25** | 1 |

*Note*. SSRS-PB Int. = SSRS Problem Behaviors Scale, Internalizing Behaviors, SSRS-PB Ext. = SSRS Problem Behaviors Scale, Externalizing Behaviors, SSRS-PB Hyp. = SSRS Problem Behaviors Scale, Hyperactive Behaviors, TCM-WC = Teacher/Child Managed-Whole Class; TCM-SG = Teacher/Child Managed-Small Group; CPM-SG; Child/Peer Managed-Small Group; CPM-IND = Child/Peer Managed-Individual, * = correlation is significant at $p < .05$, ** = correlation is significant at $p < .01$.

(Nelson, Benner, & Gonzalez, 2003). The SSRS has displayed excellent internal consistency (alpha = 0.96) and test–retest reliability ($r = 0.90$) in foundational work by scale developers (Elliott, Gresham, Freeman, & McCloskey, 1988; Gresham & Elliot, 1990; Gresham, Elliott, Vance, & Cook, 2011), and high internal consistency was observed in the present study (alpha = 0.87). Standard scores on this measure were used, with higher scores indicating more problem behaviors. Data were missing for 61 students or 11.5% of the student sample.

***Teachers' Warm Demander Characteristic.*** Teachers' warm demander characteristic was assessed using the Quality of the Classroom Learning Environment rubric (Q-CLE; Connor et al., 2014), a classroom-level observational measure that assesses classroom quality across three teacher-focused dimensions: Implementation of Instruction, Orientation and Organization, and Warmth/Responsiveness/Control/Discipline (or warm demander characteristic). This measure has been used previously in elementary settings and is a reliable tool for assessing classroom quality (Connor et al., 2014). Raters watched each classroom's winter video observation and assigned scores to each of the three dimensions on a scale of 1 to 6. The winter videos were selected for assessment with the Q-CLE in an attempt to capture the most stable time point of the year, as in the fall teachers and students are still adjusting to each other and the classroom, and in the spring teachers and students may be facing higher levels of burnout as the year draws to a close. Raters achieved an inter-rater reliability kappa coefficient of 0.89 on the overall Q-CLE measure on a randomly selected 15% of video observations prior to coding all winter observations, and kappa levels of 0.75 or higher were maintained throughout the entire video assessment period. Only observer ratings of teachers' warm demander characteristic were used in the present study.

A score of 1 in the warm demander characteristic dimension designates a teacher who was observed to perform poorly, with indicators of poor performance including applying ineffective and/or punitive discipline techniques, failing to notice and respond to students, and failing to communicate effectively with students. Alternately, a score of 6 in this dimension designates a teacher who was observed to perform excellently, with indicators of excellent performance including a teacher consistently noticing, responding to, and redirecting students, communicating effectively, and providing clear, respectful and effective discipline. While teachers' warmth and responsiveness in interactions with students, classroom control, and approaches to discipline are all considered in this dimension, they are not rated separately and then combined to derive an overall score. Rather, a teachers' success in all of these factors simultaneously is considered by the observer and a single score is assigned. As such, a teacher who displays high warmth towards students but who has poor classroom control and/or ineffective discipline would receive a lower score due to their inability to successfully implement both high warmth and high demand. Total scores for this dimension were used in the present study. Data on this variable were missing for 8 teachers or 14% of the teacher sample.

#### 2.4.3. Control variables

***Teacher Years of Experience.*** Teachers reported their years of previous teaching experience, not including the 06–07 year, in the early fall. This variable was included in all models as a teacher-level covariate. Data were missing for 3 teachers or 5.3% of the teacher sample.

***Student Gender:*** Parents/guardians reported their child's gender in the early fall. This variable was included in all models as a student-level covariate and was coded as 0 = male and 1 = female. Data were missing for 8 students or 1.5% of the student sample.

***Student SES:*** Students' FARL status was used as an indicator of family SES, and this variable was included in all models as a student-level covariate. Higher scores indicated lower SES, specifically FARL status was coded as 0 = not enrolled, 1 = enrolled for reduced lunch and 2 = enrolled for free lunch. Data were missing for 63 students or 11.8% of the student sample.

### 2.5. Analytic approach

Descriptive statistics and zero-order correlations were examined to provide information about variable distributions and baseline relations. Multilevel modeling in the statistical computing program SPSS (IBM version 23, 2015) was then used to investigate each of the research questions and to confirm the directionality of relations between problem behaviors and time in instruction. Two-level random intercept models were used in all primary analyses that accounted for the variance in outcomes attributable to differences between individual students (level 1) as well as differences between classrooms (level 2). While schools represent a third potential level of nesting, calculations of design effects (Peugh, 2010) for each outcome all fell below the threshold of 2, indicating no need to include this level in analyses. All continuous predictor variables were centered prior to analysis, with teacher-level predictors (teacher years of experience, teacher warm demander characteristic) grand-mean centered and the student-level predictor (problem behaviors) group-mean centered in order to account for potential "frog pond effects" (Davis, 1966; Marsh & Hau, 2003). Results of Little's MCAR test performed on all relevant study variables (there were no missing data on instructional outcome variables) indicated that the null hypothesis that data were missing at random could not be rejected, or that data were likely missing at random (chi squared value = 4.13, p = .16 L; Little, 1988). All models were run using a robust maximum likelihood estimator (MLR), which uses each cases' available data to compute estimated values for every instance of missing data and is an appropriate approach when data are missing at random (Hox, 1999).

We used a model-building approach to inform the amount of variance in each instructional experience outcome explained by each of our predictors (problem behaviors, teachers' warm demander characteristics, and the interaction between the two) at each stage of analysis. First, two-level unconditional models which included no

predictors were run for each of the six instructional experience outcomes to provide estimates of the average number of minutes spent by students in each instructional experience as well as to ascertain the amounts of variance at each level of the data, reported as the Intra-Class Correlation (ICC). Next, two-level covariate models were run for each outcome which included students' gender and SES as fixed effects at level 1 and teachers' years of experience at level 2 predicting each instructional experience outcome separately. Main-effects models were then run which introduced students' problem behaviors as an additional fixed effect. The proportions of reduction in unexplained variance comparing the main effects models to the unconditional models, or r-squared estimates, were calculated for level 1 and level 2 separately. Lastly, reverse main-effects models were run with time in each type of instruction predicting students' behaviors in order to confirm that behavior can reliably be conceptualized as a predictor of classroom instructional experiences rather than these effects occurring in bi-directional or reciprocal patterns. Last, two-level interaction models were run which added teachers' warm demander characteristic as a main effect and in a cross-level interaction with the problem behaviors variable as predictors of each instructional experience outcome. For all significant interaction effects detected, simple slopes were tested at low (−1 SD), average, and high (+1 SD) levels of warm demander characteristic. The r-squared estimates comparing the interaction models to the main effects models were calculated for level 1 and level 2 separately.

## 3. Results

### 3.1. Preliminary analyses

Descriptive statistics (see Table 2) indicated that all variables were within acceptable ranges of skewness and kurtosis (acceptable skewness < 2, acceptable kurtosis < 7; Fidell & Tabachnick, 2003), and examinations of histograms and p-plots of standardized residuals suggested no severe departures from normality. Mean levels for the six instructional experiences indicated that students generally spent the most time in teacher/child-managed whole-class instruction and the least time off-task. The ranges and standard deviations observed among instructional experiences suggested considerable variability in students' time spent in each. Teachers reported moderate levels of problem behaviors among students, however considerable variation among students was observed ($M$ = 99.72, $SD$ = 14.77). Teachers were generally observed to display moderate to acceptable levels of warm demander characteristic ($M$ = 3.95, $SD$ = 1.18), and no teachers were observed to display the lowest possible level of warm demander characteristic.

Zero-order correlations (see Table 3) revealed small, positive associations among the six instructional experiences. Specifically, teacher/child-managed whole-class instruction was positively associated with child/peer-managed individual instruction, off-task, and disruption/waiting. Child/peer-managed small-group instruction was positively associated with child/peer-managed small-group instruction, child/peer-managed individual instruction, and disruption/waiting. Finally, child/peer-managed small-group instruction and child/peer-managed individual instruction were positively associated with off-task and disruption/waiting. As well, a small negative association was observed between teacher/child-managed whole-class instruction and teacher/child-managed small-group instruction. Correlations also revealed moderate to large positive relations among the three behavior types ranging from 0.38 ($p$ < .01) to 0.75 ($p$ < .01), providing evidence for the reliable combining of problem behavior types in primary analyses. Students' problem behaviors showed small negative associations with time spent in both child/peer-managed small-group and child/peer-managed individual instruction as well as small positive associations with time off-task. Teachers' warm demander characteristic showed a small negative association with students' time off-task, and a moderately sized negative association with time in disruption/waiting.

### 3.2. Primary analyses

#### 3.2.1. Academic instruction

***Teacher/Child Managed Whole-Class Instruction.*** See Table 4 for all main effect model and interaction model estimates (reverse main effects model estimates available upon request). The unconditional model for teacher/child-managed whole-class instruction revealed an intercept of 83.42, indicating that students spent about 83 min in teacher/child-managed whole class instruction per literacy block. The unconditional model also revealed a level 2 ICC of 0.87, indicating that 87% of the variance in this outcome was attributable to differences between classrooms. The main effects model including students' problem behaviors as a predictor along with the covariates revealed no significant effect of problem behaviors on time in teacher/child-managed whole class instruction. The reverse main effects model testing the predictive nature of students' time in teacher/child-managed whole class instruction on their problem behaviors also revealed no significant main effect of time in instruction, but did reveal main effects of student gender (B = −3.33, p < .01) and SES (B = 3.21, p < .01) on their problem behaviors, effects which were to be expected and which operated similarly in all following reverse models (reverse main effects model estimates not tabeled; available upon request). The interaction model which included teacher warm demander characteristic as a main effect and in an interaction with the student problem behaviors variable revealed no direct or interactive effects of warm demander characteristic on students' time in teacher/child-managed whole class instruction.

***Teacher/Child Managed Small-Group Instruction.*** The unconditional model for teacher/child-managed small-group instruction revealed an intercept of 22.67 and a level 2 ICC of 0.67. The main effects model revealed a significant effect of students' problem behaviors (B = 0.10, $p$ = .01) such that more problem behaviors were associated with more time in teacher/child-managed small-group instruction. The

**Table 2**
Descriptive statistics for all study variables prior to transformation for primary analyses.

| | N | Min | Max | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| TCM-WC | 532 | 0 | 234.26 | 80.74 | 52.01 | 0.57 | −0.06 |
| TCM-SG | 532 | 0 | 98.24 | 22.89 | 18.38 | 1.18 | 1.31 |
| CPM-SG | 532 | 0 | 70.63 | 12.30 | 13.59 | 1.11 | 0.78 |
| CPM-IND | 532 | 0 | 60.09 | 12.41 | 12.18 | 1.35 | 1.50 |
| Off-Task | 532 | 0 | 35.24 | 4.89 | 5.83 | 2.08 | 5.14 |
| Disrupt./Wtg. | 532 | 0 | 26.94 | 6.95 | 5.45 | 1.16 | 0.82 |
| SSRS-PB | 471 | 85 | 141 | 99.72 | 14.77 | 0.64 | −0.68 |
| Warm Demand | 49 teachers | 2 | 6 | 3.95 | 1.18 | −0.19 | −0.73 |

*Note*. TCM-WC = Teacher/Child Managed-Whole Class; TCM-SG = Teacher/Child Managed-Small Group; CPM-SG; Child/Peer Managed-Small Group; CPM-IND = Child/Peer Managed-Individual, SSRS-PB = Social Skills Rating System, Problem Behaviors Scale; Warm Demand = Teachers' Warm Demander Characteristic.

**Table 3**
Correlations among study variables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. T. Yrs. Exp. | 1 | | | | | | | | | | |
| 2. SES | −0.13** | 1 | | | | | | | | | |
| 3. S. Gender | −0.07 | −0.04 | 1 | | | | | | | | |
| 4. SSRS-PB | −0.02 | 0.24** | −0.13** | 1 | | | | | | | |
| 5. Warm Demand | −0.01 | −0.22** | 0.02 | −0.12* | 1 | | | | | | |
| 6. TCM-WC | 0.04 | 0.05 | 0.07 | 0.05 | −0.01 | 1 | | | | | |
| 7. TCM-SG | 0.09* | −0.08 | −0.03 | −0.02 | −0.01 | −0.19** | 1 | | | | |
| 8. CPM-SG | 0.06 | −0.04 | 0.04 | −0.15** | 0.03 | 0.03 | 0.14** | 1 | | | |
| 9. CPM-IND | 0.02 | −0.13** | 0.04 | 0.12** | −0.02 | 0.10* | 0.14** | −0.06 | 1 | | |
| 10. Off-Task | −0.02 | 0.05 | −0.14** | 0.16** | −0.18** | 0.18** | 0.08 | 0.13** | 0.16** | 1 | |
| 11. Disrupt/Wtg. | 0.18** | 0.06 | −0.01 | 0.09 | −0.46** | 0.25** | 0.31** | 0.11* | 0.10* | 0.25** | 1 |

*Note*. Teacher years of experience; S. SES = Student SES; S. Gender = Student gender; TCM-WC = Teacher/Child Managed-Whole Class; TCM-SG = Teacher/Child Managed-Small Group; CPM-SG; Child/Peer Managed-Small Group; CPM-IND = Child/Peer Managed-Individual, SSRS-PB = Social Skills Rating System, Problem Behaviors Scale; Warm Demand = Teachers' Warm Demander Characteristic; * = correlation is significant at $p < .05$, ** = correlation is significant at $p < .01$.

**Table 4**
Main effects model and interaction model estimates for each instructional experience (reverse model estimates available upon request).

| | Main Effects Model | | | Interaction Model | | | | Main Effects Model | | | Interaction Model | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *B* | *SE* | *p* | *B* | *SE* | *p* | | *B* | *SE* | *p* | *B* | *SE* | *p* |
| TCM-WC Instruction | | | | | | | CPM-IND Instruction | | | | | | |
| Intercept | 79.69 | 7.06 | < 0.01 | 75.01 | 7.29 | < 0.01 | Intercept | 12.74 | 1.46 | < 0.01 | 11.49 | 1.47 | < 0.01 |
| S. Gender | 1.41 | 1.95 | 0.47 | 0.78 | 2.17 | 0.72 | S. Gender | 0.87 | 0.77 | 0.26 | 0.76 | 0.82 | 0.35 |
| S. SES | −2.75 | 1.86 | 0.14 | −3.49 | 2.12 | 0.10 | S. SES | −1.38 | 0.73 | 0.06 | −1.17 | 0.79 | 0.14 |
| T. Years Exp. | 0.19 | 0.68 | 0.29 | 0.13 | 0.71 | 0.86 | T. Years Exp. | 0.01 | 0.13 | 0.95 | −0.14 | 0.14 | 0.32 |
| Prob. Behaviors | −0.07 | 0.07 | 0.40 | −0.09 | 0.09 | 0.32 | Prob. Behaviors | −0.10 | 0.03 | < 0.01 | −0.09 | 0.03 | 0.01 |
| Warm Demand | – | – | – | 1.63 | 6.51 | 0.80 | Warm Demand | – | – | – | −0.68 | 1.24 | 0.59 |
| WDxPB | – | – | – | 0.11 | 0.08 | 0.18 | WDxPB | – | – | – | −0.02 | 0.03 | 0.54 |
| TCM-SG Instruction | | | | | | | Off-Task | | | | | | |
| Intercept | 24.27 | 2.41 | < 0.01 | 25.27 | 2.70 | < 0.01 | Intercept | 5.83 | 0.70 | < 0.01 | 5.55 | 0.73 | < 0.01 |
| S. Gender | −0.59 | 1.04 | 0.57 | −0.58 | 1.16 | 0.62 | S. Gender | −1.30 | 0.43 | < 0.01 | −1.35 | 0.44 | < 0.01 |
| S. SES | −0.58 | 0.98 | 0.55 | −0.59 | 1.13 | 0.60 | S. SES | −0.37 | 0.40 | 0.36 | −0.06 | 0.43 | 0.89 |
| T. Years Exp. | 0.13 | 0.23 | 0.56 | 0.06 | 0.26 | 0.80 | T. Years Exp. | −0.02 | 0.06 | 0.79 | −0.04 | 0.07 | 0.52 |
| Prob. Behaviors | 0.10 | 0.04 | 0.01 | 0.11 | 0.05 | 0.02 | Prob. Behaviors | 0.04 | 0.02 | 0.01 | 0.04 | 0.02 | 0.04 |
| Warm Demand | – | – | – | 0.17 | 2.35 | 0.94 | Warm Demand | – | – | – | −0.97 | 0.60 | 0.12 |
| WDxPB | – | – | – | 0.09 | 0.04 | 0.04 | WDxPB | – | – | – | −0.01 | 0.02 | 0.65 |
| CPM-SG Instruction | | | | | | | Disruption/Waiting | | | | | | |
| Intercept | 13.15 | 1.63 | < 0.01 | 14.80 | 1.79 | < 0.01 | Intercept | 6.91 | 0.69 | < 0.01 | 6.43 | 0.64 | < 0.01 |
| S. Gender | 0.31 | 0.81 | 0.70 | 0.31 | 0.93 | 0.74 | S. Gender | 0.12 | 0.29 | 0.69 | 0.09 | 0.32 | 0.78 |
| S. SES | −0.87 | 0.77 | 0.26 | −0.85 | 0.90 | 0.35 | S. SES | −0.01 | 0.28 | 0.98 | 0.02 | 0.31 | 0.96 |
| T. Years Exp. | 0.08 | 0.15 | 0.61 | 0.13 | 0.17 | 0.45 | T. Years Exp. | 0.09 | 0.06 | 0.17 | 0.06 | 0.06 | 0.30 |
| Prob. Behaviors | −0.11 | 0.03 | < 0.01 | −0.12 | 0.04 | < 0.01 | Prob. Behaviors | −0.01 | 0.01 | 0.81 | −0.01 | 0.01 | 0.88 |
| Warm Demand | – | – | – | 0.56 | 1.53 | 0.72 | Warm Demand | – | – | – | −2.04 | 0.56 | < 0.01 |
| WDxPB | – | – | – | 0.06 | 0.03 | 0.09 | WDxPB | – | – | – | 0.04 | 0.01 | < 0.01 |

*Note:* T. Yrs. Exp. = Teacher years of experience; S. SES = Student SES; S. Gender = Student gender; TCM-WC = Teacher/Child Managed-Whole Class; TCM-SG = Teacher/Child Managed-Small Group; CPM-SG; Child/Peer Managed-Small Group; CPM-IND = Child/Peer Managed-Individual, SSRS-PB = Social Skills Rating System, Problem Behaviors Scale; Warm Demand = Teachers' Warm Demander Characteristic; W/DxPB = Warm Demander – by – Problem Behaviors Interaction.

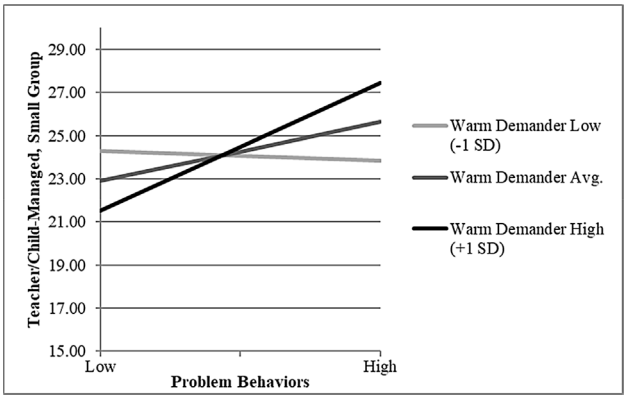


**Fig. 1.** Warm demander-by-problem behaviors interaction effect on TCM-SG instruction. Interaction is significant at high (+1 SD), average, and low (-1SD) levels of warm demander characteristic.

level 1 r-squared estimate comparing the main effects model to the covariates model was 0.12, and the main effects model did not account for any level 2 variance. The reverse main effects model revealed no significant effect of students' time in teacher/child managed small-group instruction on their problem behaviors. The interaction model revealed a significant warm demander-by-problem behaviors interaction effect (B = 0.09, $p = .04$), and tests of simple slopes indicated that this effect was significant at high (+1 SD; B = 0.65, $p < .01$), average (B = 0.52, $p < .01$), and low (−1 SD; B = 0.38, $p < .01$) levels of warm demander characteristic. This interaction effect indicated that for students of teachers who were high and average in warm demander characteristic, positive associations existed between students' problem behaviors and time in teacher/child-managed small-group instruction, with the strongest positive association observed with high warm demander characteristic. Alternately, for students of teachers who were low in warm demander characteristic, a negative association existed between students' problem behaviors and time in teacher/child-

managed small-group instruction (see Fig. 1). The level 1 r-squared estimate comparing the interaction model to the main effects model was 0.06, indicating that the main effect of teachers' warm demander characteristic, along with the warm demander-by-problem-behavior interaction, accounted for 6% of the unexplained student-level variance in teacher/child-managed small-group instruction. The interaction model did not account for any variance at level 2.

***Child/Peer Managed Small-Group Instruction.*** The unconditional model for child/peer-managed small group instruction revealed an intercept of 13.07 and a level 2 ICC of 0.61. The main effects model revealed a significant effect of students' problem behaviors (B = −0.11, $p < .01$) such that more problem behaviors were associated with less time in child/peer-managed small group instruction. The level 1 r-squared estimate comparing the main effects model to the covariates model was 0.13, and the model did not account for any level 2 variance. The reverse main effects model revealed a significant effect of students' time child/peer managed small-group instruction on their problem behaviors (B = −0.10, p < .05) such that more time in this type of instruction was related to fewer problem behaviors. The interaction model revealed no direct or interactive effects of warm demander characteristic on students' time in child/peer-managed – small group instruction.

***Child/Peer Managed Individual Instruction.*** The unconditional model for child/peer-managed individual instruction revealed an intercept of 12.33 and a level 2 ICC of 0.63. The main effects model revealed a significant effect of students' problem behaviors (B = −0.10, $p < .01$) such that more problem behaviors were associated with less time in child/peer-managed individual instruction. The level 1 r-squared estimate comparing the main effects model to the covariates model was 0.01 and the level 2 r-squared estimate comparing the main effects model to the covariates model was 0.04. The reverse main effects model revealed no significant effect of students' time in child/peer managed individual instruction on their problem behaviors. The interaction model revealed no direct or interactive effects of warm demander characteristic on students' time in child/peer-managed individual instruction.

### 3.2.2. Non-Instruction

***Off-Task.*** The unconditional model for time off-task revealed an intercept of 4.86 and a level 2 ICC of 0.49. The main effects model revealed a significant effect of students' problem behaviors (B = 0.04, $p = .01$) such that more problem behaviors were associated with more time off-task. The level 1 r-squared estimate comparing the main effects model to the covariates model was 0.06, and the main effects model did not account for any level 2 variance. The reverse main effects model revealed no significant effect of students' time off-task on their problem behaviors. The interaction model revealed no direct or interactive effects of warm demander characteristic on students' time off-task.

***Disruption/Waiting.*** The unconditional model for disruption/waiting revealed an intercept of 7.16 and a level 2 ICC of 0.73. The main effects model revealed no significant effect of problem behaviors on time in disruption/waiting. The interaction model revealed a significant main effect of warm demander characteristic (B = −2.04, $p < .01$) such that higher warm demander characteristic was associated with less time in disruption/waiting. The level 1 r-squared estimate comparing the main effects model to the covariates model was 0.07, and the main effects model did not account for any level 2 variance. The reverse main effects model revealed no significant effect of students' time in disruption/waiting on their problem behaviors. The interaction model revealed a significant warm demander-by-problem behaviors interaction effect (B = 0.04, $p < .01$) and tests of simple slopes indicated that this effect was significant at high (+1 SD; B = 0.19, p < .01), average (B = 0.14, p < .01), and low (-1SD; B = 0.10, p < .01) levels of warm demander characteristic. This effect indicated that, for students of teachers higher in warm demander characteristic, students generally spent less time in disruption/waiting; in these classrooms, a positive association was found between problem behaviors and time in disruption/waiting. Alternately, for students of teachers low in warm demander characteristic, students generally spent more time in disruption/waiting; in these classrooms, a negative association existed between problem behaviors and time in disruption/waiting. Additionally, students of teachers who were average in warm demander characteristic experienced the same amounts of disruption/waiting regardless of their problem behaviors (see Fig. 2). The level 1 r-squared estimate comparing the interaction model to the main effects model was 0.02, and the level 2 r-squared estimate comparing the interaction model to the main effects model was 0.23.

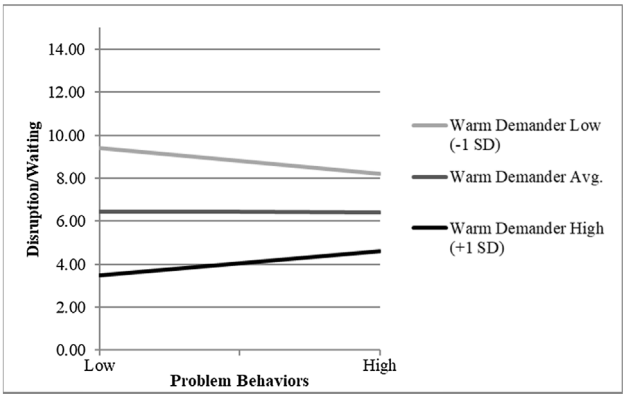


**Fig. 2.** Warm demander-by-problem behaviors interaction effect on Disruption/Waiting. Interaction is significant at high (+1 SD), average, and low (-1 SD) levels of warm demander characteristic.

## 4. Discussion

The present study sought to inform how students' problem behaviors and teachers' warm demander characteristic operate to impact first graders' classroom instructional experiences. We examined students' problem behaviors as direct predictors of their time spent in six classroom instructional experiences, and investigated the additional role of teachers' warm demander characteristic within these relations. Findings were mixed, but generally suggested that students' problem behaviors contribute to less time in academic instruction and more time in unproductive non-instruction, with potential bi-directional effects detected in one case. Further, results suggested that teachers' warm-demander characteristic can, in some cases, mitigate these effects. Following we present a discussion of each of our key findings.

### 4.1. Teacher-facilitated instruction

Results did not reveal any effects of students' problem behaviors or teachers' warm demander characteristic on students' time in teacher-facilitated whole-class instruction, and the reverse model suggested no effects of this type of instruction on students' behaviors. Further, teacher-facilitated whole-class instruction was by far the most heavily utilized by teachers. These patterns are consistent with findings from related studies in which teacher-facilitated whole-class instruction has been observed the most compared to other types of instruction (Ansari & Purtell, 2017; McLean et al., 2018). As such, this type of instruction may not be particularly vulnerable to the student and teacher characteristics investigated here, and may not contribute to students' behavioral functioning in the classroom.

Alternately, students with more problem behaviors spent more time in teacher-facilitated small-group instruction, which was contrary to what we predicted (however later interaction effects provided more insight). The reverse model revealed no effect of students' time in this type of instruction on their behaviors, again suggesting that time in small groups led by the teacher may not have a direct impact on

students' behavioral functioning in the classroom. When considering that students with more problem behaviors tend to also display more academic deficits (Kauffman, 2001; Nelson et al., 2003; Wanzek et al., 2014), it could be that teachers in the present study recognized and responded to these students' needs for more targeted instruction. The reasoning behind our hypothesis that problem behaviors would be related to less time in teacher-facilitated small-group instruction was that teachers might avoid applying more direct (i.e. small-group) instruction to their students whom they perceived as more challenging, as has been theorized by others (Sutherland & Morgan, 2003). If teachers were instead applying more small-group instruction to these students in response to a perceived need, that is encouraging. However, it could also be that it simply takes longer to complete small-group activities with students who display more frequent problem behaviors, or that teachers as a whole group (without considering level of warm demander characteristic) struggled to support their more challenging students in this instructional context (consistent with findings in Lindsay, Proulx, Thomson, & Scott, 2013), though again, the upcoming interaction findings provide additional insight into this.

The positive relation among problem behaviors and teacher-facilitated small-group instruction only existed for students of teachers who were high or average in warm demander characteristic. In contrast, for students of teachers low in warm demander characteristic, the originally hypothesized negative relation between problem behaviors and time in teacher-facilitated small-group instruction did indeed exist. As such, there is likely merit to our initial assumption that teachers may not apply as much teacher-facilitated small-group instruction to students whom they find more challenging; this effect may just depend on the teacher themselves. A teacher scored as 'exemplary' in warm demander characteristic is described as consistently redirecting students in respectful ways, emphasizing student change in behavior through positive and specific praise, communicating clearly what students did correctly or how they can improve, and implementing a behavior management system that is effective. These skills, then, appear to play a role in teachers' likelihood of successfully engaging their more challenging students in small-group instruction.

### 4.2. Self-managed instruction and time off-task

Students with more problem behaviors spent less time in self-managed small-group and self-managed individual instruction and more time off-task, and these findings align well with past studies indicating that students with both internalizing and externalizing/hyperactive behaviors tend to become distracted during and/or withdraw from instruction more often (DiPerna et al., 2007; Lewis et al., 2013; Ostrander et al., 2008). These patterns suggest that self-directed learning opportunities may be "high risk" situations in which students with problem behaviors are more likely to disengage and turn to off-task behaviors. Interestingly, self-managed small-group instruction was the only type of instruction investigated whose reverse model suggested that a bi-directional relation may exist with student behavior. Thus, while students' behavior problems may prevent them from participating in self-managed small-group instruction, this type of instruction may also be important in contributing to students' positive behavioral development. In this instructional context students have opportunities to not only practice regulating themselves but can also help regulate the behavior of their peers, both directly and through peer-to-peer observations, and so we posit that this self- and peer-level regulation may be particularly impactful in promoting positive behavior development.

Finally, while the direct effects detected for self-managed small-group and self-managed individual instruction and off-task behavior aligned with what was expected, what was surprising was that teachers' warm demander characteristic, which in part speaks to a teachers' ability to effectively monitor and redirect students, did not play any additional roles. This suggests that teachers may struggle to effectively monitor and redirect their more challenging students from a distance regardless their level of warm demander characteristic.

### 4.3. Time in disruption/waiting

No direct effects of students' problem behaviors on their time in disruption/waiting were detected, and the reverse model did not suggest that time in disruption/waiting impacted behavior. The interaction model, however, indicated that students of teachers high in warm demander characteristic generally spent less time in disruption/waiting. For these teachers as well, problem-behavior students spent slightly more time in disruption/waiting than their more typically-behaved peers. We reiterate that a considerable portion of student time spent in disruption/waiting was time exposed to discipline, either being disciplined by the teacher or waiting while the teacher disciplined a peer/peers. As such, we posit that teachers who were high in warm demander characteristic may have been more efficient and effective in their discipline, and more broadly may have been more effective in their approaches to classroom management.

### 4.4. Considering effect sizes and variance at each level

The student-level effect sizes detected were small, ranging from 1% to 13%, and this is consistent with effect sizes typically seen in educational research. The majority of the variance in students' instructional experiences existed between teachers/classrooms rather than between students (and this is also consistent with related research; McLean et al., 2016, 2018). However, we assert that there is still merit in identifying factors that contribute to differences in individual students' classroom experiences, as this information can inform how best to aid teachers in individualizing their instruction based on students' unique needs. The student-level effects detected for teacher-facilitated small-group instruction, self-managed small-group and individual instruction, time off-task and time in disruption/waiting indicate that these experiences are likely impacted by teachers' and students' individual characteristics.

Classroom-level effects existed in the case of self-managed individual instruction and time in disruption/waiting, and the classroom-level effect for time in disruption/waiting was larger than was observed in any of the other instructional experience outcomes. The classroom-level effect for self-managed individual instruction was in relation to the main effect of students' problem behaviors on their time in this type of instruction, and while small (4%) serves to suggest that when students in a classroom display more problem behaviors, all students in that classroom may spend less time in self-managed individual instruction compared to students in a different classroom. Alternately, the classroom-level effect on students' time in disruption/waiting was in relation to the introduction of teachers' warm demander characteristic as a predictor. This effect was larger, accounting for 23% of the variance between classrooms in this outcome. This suggests that teachers, rather than individual students, may play a larger role in how much idle time students spend in the classroom, and that teachers' warm demander characteristic (which includes effective approaches to monitoring, redirection, and discipline) likely plays an important role.

### 4.5. Limitations and future directions

Some aspects of this study may limit generalizability of findings. First, this study suffered from low power at the teacher/classroom level and so some effects, especially those pertaining to teachers' warm demander characteristic, may have been underestimated or undetected. Additionally, the teacher sample was not particularly diverse in gender or race and so patterns detected here might not generalize to male teachers and/or teachers that do not identify as Caucasian. As well, due to a lack of temporal precedence in data necessary to infer causal effects, no definitive causal claims can be made (though the inclusion of the reverse main-effects models does provide some additional support for our interpretations of findings). As an extension of the limited

causality in this study, it is likely that teachers' own characteristics impact their judgements of their students' characteristics. In the context of the present study, a teacher who is high in warm demander characteristic may view the same student behaviors differently than would a teacher who is average or low in warm demander characteristic. While it is a strength of our study that mixed methods were utilized in our measurement of variables (outsider observations of teachers/students as well as teacher reports of student behaviors), this should be taken into consideration when making inferences about how teacher and student characteristics might interact.

In addition, these data were collected in 2006/2007 and so findings might not apply as precisely to students/teachers/classrooms who are influenced by more current policies. Regarding our measurement of problem behaviors, it is important to acknowledge that there may be differences in the relations between externalizing, internalizing, and hyperactive behaviors and the other variables of interest that were not captured by the present study. As well, the version of the SSRS used in the present study has since been expanded upon (SSIS-RS; Gresham & Elliott, 2008) and is thus not the most up-to-date measure available. Importantly though, scale authors have performed a thorough comparison of the two versions of the measure and found that they share high convergent validity (Gresham et al., 2011). Lastly, we acknowledge that time spent in instruction was considered in the present study without further assessment of instructional content or quality. While each type of instruction/non-instruction investigated here has been validated in recent research as important to student development, our ability to make inferences about the quality of instruction taking place in the present study is limited – especially given that we did not investigate connections between time in instruction and student academic (or other) outcomes.

We contend that the findings of the present study represent preliminary insights into how students' behaviors might contribute to their classroom experiences, with ample opportunities for elaboration. Future studies can reinforce what was found here by conducting similar investigations among larger, more diverse teacher samples, using more current data, and by relying on measures of student characteristics that are more nuanced and are free from teacher bias. As well, future work could build on these results by examining bi-directional and/or reciprocal relations among variables, how these relations might vary across content areas (math vs. science vs. literacy), teaching structures (how might these relations be different in classrooms where more than one teacher is present?) and/or grade levels. Future work could also look more closely at how internalizing, externalizing, and hyperactive behaviors might operate differently from each other in their influence on students' classroom experiences and outcomes. Lastly, future work could attempt to make connections between the key variables investigated here and students' academic, social/emotional, and other outcomes.

### 4.6. Broader implications

We identify some broader implications of these findings for students' development as well as for teacher professional development programs and instructional interventions. First, while effects on students' academic/social/emotional, etc. outcomes were not directly tested in the present study, the firmly established links between students' classroom instructional experiences and their outcomes (Ansari & Purtell, 2017; Broekhuizen et al., 2016; Connor et al., 2010, 2013; McLean et al., 2016) suggest that lost time in important learning opportunities and increased time off-task may be mechanisms behind the consistently reported negative relations between problem behaviors and student outcomes. Important to note, while the effects on students' time in instruction detected here typically represent increases or decreases of just a few minutes when calculated in terms of standard deviations (for example high, average, and low problem behavior students), when generalized to all literacy instruction across the year these effects equate to hours of time in meaningful instruction either lost or gained by students.

Students' time spent working in small groups both with and without the teacher and their time spent on- and off-task have been found to play important roles in academic achievement (Brophy, 2001; Brophy, Good, & Wittrock, 1986; Foorman & Torgesen, 2001; McLean et al., 2016), and we anticipate that the effects detected in the present study for those types of instructional experiences likely contribute to the academic deficits often observed among problem-behavior students. In addition, self-managed learning opportunities, and especially those where students are working collaboratively with peers, require the abilities to regulate one's behaviors and emotions and utilize social skills as they work with others. We anticipate that lost time in such opportunities may lead to fewer chances for problem-behavior students to develop these social/emotional and self-regulatory skills, resulting in dampened growth in these areas as well (and preliminary evidence for this type of relation was revealed in the reverse main-effects models in the present study).

We also see potential for findings to have implications for other student outcomes such as the quality of relationships in the classroom. Problem-behavior students of teachers high in warm demander characteristic experienced more time with the teacher in small-groups, an instructional context that could play a direct role in shaping the nature of teacher/student (through direct teacher/student interactions) and student/student (through teacher monitoring and feedback on peer interactions) relationships. In addition, results regarding time in disruption/waiting suggested that students of teachers high in warm demander characteristic may have experienced more efficient and effective discipline, and effective discipline characterized by warmth and support has been found to contribute to positive teacher/student relationships (De Jong et al., 2014). Based on these findings, we assert that students, and especially students who exhibit problem behaviors (and who are thus already at higher risk of developing more contentious classroom relationships, Buyse et al., 2008), would likely benefit from increased time in these instructional settings with warm demander teachers. This is supported in past work that has identified teachers' emotional support as an important contributor to students behavioral self-control (Merritt, Wanless, Rimm-Kaufman, Cameron, & Peugh, 2012).

Building from this, the importance of the teachers' abilities to consider both their students' and their own characteristics as they lead the classroom becomes clear, and as such is an important target for teacher professional development programs and instructional interventions. Many programs exist which aim to improve teachers' skills in applying direct instruction, monitoring student behavior, and applying efficient and effective discipline. However, these programs might become even more effective in improving teacher practices if they were to incorporate the findings of the present study. Specifically, instructional interventions may optimize their effectiveness by applying the consideration of these characteristics most purposefully to the instructional contexts where important patterns were observed the most, such as teacher-facilitated small-group instruction. Further, professional development and instructional interventions could use results regarding problem-behavior students' lost time in both types of self-managed learning opportunities and increased time off-task to help teachers recognize which of their students are more likely to turn away from self-directed learning opportunities and alternately towards off-task behavior, and by providing training for teachers on how to more effectively monitor and redirect students from a distance.

Lastly, this study provides added evidence that considering teachers' warmth and responsiveness to students in tandem with their classroom management and discipline is likely a valid and valuable approach to answering important questions about teacher effectiveness. This and other studies are starting to illustrate that the characteristics measured here which together indicate a "warm demander" teacher are important to consider together as a single construct. Practically speaking,

targeting teachers' warm demander characteristic in professional development and intervention may serve to improve the efficiency and effectiveness with which teachers apply discipline, instruction, monitoring, and classroom management techniques. This would not only benefit all students in a classroom but could have particular impact for students with problem behaviors who typically require more (and ideally more effective) guidance in the classroom.

Past research has already illustrated the potential for students' classroom experiences, instructional and other, to impact their behavioral outcomes (Broekhuizen et al., 2016; Reinke et al., 2008), and so in the present study we were most interested in illustrating the other side of this relation; the potential for behavior to influence classroom experiences. In doing this, we sought to provide important elaborations on the practical implications already established by those who have examined instruction as a predictor of behavioral outcomes. An oft-made recommendation in studies that illustrate how instructional experiences can influence students' behavioral outcomes is for teachers to maximize students' time exposed to experiences found to improve behavior, and alternately to minimize time spent away from learning. While such recommendations are indeed valid, they ignore the potential for teachers' attempts at doing this to be either helped or hindered by the characteristics of the individuals involved in every instructional interaction. For example, a teacher following the recommendation to maximize every students' time in highly beneficial instruction may come into a new academic year with the goal of exposing all students to large amounts of focused, small-group instruction. However, if this teacher does not take into consideration the unique characteristics of each individual student, and does not reflect on how his or her own characteristics contribute to the instructional decisions they make, they may not fulfill this goal equally for each student in that class. If, however, this teacher was able to recognize early on which of their students might be more likely to become distracted or to disrupt instruction, and if this teacher had undergone training in how to manage their classroom with a warm demander approach, they may see more success in addressing this effectively. In summation, by more closely considering how student and teacher characteristics relate to what students experience in the classroom, and by incorporating these considerations into models teacher professional development and intervention, the field can move towards ensuring that all students get the most out of the learning opportunities available to them.

## References


Alexander, K. L., & Entwisle, D. R. (1988). Achievement in the first two years of school: Patterns and processes. *Monographs of the Society for Research in Student Development, 53*, 1–57. https://doi.org/10.2307/1166081.

Alexander, K. L., Entwisle, D. R., & Dauber, S. L. (1993). First-grade classroom behavior: Its short-and long-term consequences for school performance. *Child Development, 64*(3), 801–814. https://doi.org/10.1111/j.1467-8624.1993.tb02944.x.

Ansari, A., & Purtell, K. M. (2017). Activity settings in full-day kindergarten classrooms and childern's early learning. *Early Childhood Research Quarterly. 38*, 23–32. https://doi.org/10.1016/j.ecresq.2016.09.003.

Barriga, A. Q., Doran, J. W., Newell, S. B., Morrison, E. M., Barbetti, V., & Robbins, B. D. (2002). Relationships between problem behaviors and academic achievement in adolescents: The unique role of attention problems. *Journal of Emotional and Behavioral Disorders, 10*, 233–240. https://doi.org/10.1177/10634266020100040501.

Baumrind, D. (1971). Current patterns of parental authority. Developmental Psychology Monograph, 4 (1, Pt. 2), http://dx.doi.org/10.1037/h0030372.

Baumrind, D. (1978). Parental disciplinary patterns and social competence in children. *Youth and Society, 9*, 239–276. https://doi.org/10.1177/0044118X7800900302.

Baumrind, D. (1991). Parenting styles and adolescent development. In J. Brooks-Gunn, R. Lerner, & A. C. Petersen (Eds.). *The encyclopedia of adolescence* (pp. 746–758). New York: Garland.

Broekhuizen, M. L., Mokrova, I. L., Burchinal, M. R., Garrett-Peters, P. T., & Family Life Project Key Investigators (2016). Classroom quality at pre-kindergarten and kindergarten and children's social skills and behavior problems. *Early Childhood Research Quarterly, 36*, 212–222. https://doi.org/10.1016/j.ecresq.2016.01.005.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. Handbook of Child Psychology.

Brophy, J., Good, T., & Wittrock, M. C. (1986). Handbook of research on teaching. *Teacher Behavior and Student Achievement,* 328–375.

Brophy, J. (2001). Teacher behavior and student outcomes.

Buhs, E. S., & Ladd, G. W. (2001). Peer rejection as an antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology, 37*(4), 550–560. https://doi.org/10.1037/0012-1649.37.4.550.

Bullis, M., & Cheney, D. (1999). Vocational and transition interventions for adolescents and young adults with emotional or behavioral disorders. *Focus on Exceptional Children, 31*(7), 1.

Buyse, E., Verschueren, K., Doumen, S., Van Damme, J., & Maes, F. (2008). Classroom problem behavior and teacher-child relationships in kindergarten: The moderating role of classroom climate. *Journal of School Psychology, 46*(4), 367–391. https://doi.org/10.1016/j.jsp.2007.06.009.

Cameron, C. E., Connor, C. M., Morrison, F. J., & Jewkes, A. M. (2008). Effects of classroom organization on Letter-Word reading in first grade. *Journal of School Psychology, 46*(2), 173–192. https://doi.org/10.1016/j.jsp.2007.03.002.

Carr, E. G., Taylor, J. C., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis, 24*(3), 523–535. https://doi.org/10.1901/jaba.1991.24-523.

Connor, C. M., Morrison, F. J., Fishman, B. J., Ponitz, C. C., Glasney, S., Underwood, P. S., ... Schatschneider, C. (2009). The ISI classroom observation system: Examining the literacy instruction provided to individual students. *Educational Researcher, 38*(2), 85–99. https://doi.org/10.3102/0013189X09332373.

Connor, C. M., Piasta, S. B., Fishman, B., Glasney, S., Schatschneider, C., Crowe, E., ... Morrison, F. J. (2009). Individualizing student instruction precisely: Effects of child × instruction interactions on first Graders' literacy development. *Child Development, 80*(1), 77–100. https://doi.org/10.1111/j.1467-8624.2008.01247.x.

Connor, C. M., Ponitz, C. C., Phillips, B. M., Travis, Q. M., Glasney, S., & Morrison, F. J. (2010). First graders' literacy and self-regulation gains: The effect of individualizing student instruction. *Journal of School Psychology, 48*(5), 433–455. https://doi.org/10.1016/j.jsp.2010.06.003.

Connor, C. M., Morrison, F. J., Fishman, B., Crowe, E. C., Al Otaiba, S., & Schatschneider, C. (2013). A longitudinal cluster-randomized controlled study on the accumulating effects of individualized literacy instruction on students' reading from first through third grade. *Psychological Science, 24*(8), 1408–1419. https://doi.org/10.1177/0956797612472204.

Connor, C. M., Spencer, M., Day, S. L., Giuliani, S., Ingebrand, S. W., McLean, L., & Morrison, F. J. (2014). Capturing the complexity: Content, type, and amount of instruction and quality of the classroom learning environment synergistically predict third graders' vocabulary and reading comprehension outcomes. *Journal of Educational Psychology, 106*(3), 762. https://doi.org/10.1037/a0035921.

Davis, J. A. (1966). The campus as a frog pond: An application of theory of relative deprivation to career decisions for college men. *American Journal of Sociology, 72*, 17–31.

Day, S. L., Connor, C. M., & McClelland, M. M. (2015). Children's behavioral regulation and literacy: The impact of first grade classroom environment. *Journal of School Psychology, 53*, 409–428. https://doi.org/10.1016/j.jsp.2015.07.004.

De Jong, R., Mainhard, T., Van Tartwijk, J., Veldman, I., Verloop, N., & Wubbels, T. (2014). How pre-service teachers' personality traits, self-efficacy, and discipline strategies contribute to the teacher–student relationship. *British Journal of Educational Psychology, 84*(2), 294–310. https://doi.org/10.1111/bjep.12025.

DiPerna, J. C., Lei, P. W., & Reid, E. E. (2007). Kindergarten predictors of mathematical growth in the primary grades: An investigation using the Early Childhood Longitudinal Study-Kindergarten cohort. *Journal of Educational psychology, 99*(2), 369–379. https://doi.org/10.1037/0022-0663.99.2.369.

Elliott, S. N., Gresham, F. M., Freeman, T., & McCloskey, G. (1988). Teacher and observer ratings of children's social skills: Validation of the social skills rating scales. *Journal of Psychoeducational Assessment, 6*(2), 152–161. https://doi.org/10.1177/073428298800600206.

Fidell, L. S., & Tabachnick, B. G. (2003). Preparatory data analysis. *Handbook of Psychology, 115–141*. https://doi.org/10.1002/0471264385.wei0205.

Foorman, B. R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities Research & Practice, 16*(4), 203–212. https://doi.org/10.1111/0938-8982.00020.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109. https://doi.org/10.3102/00346543074001059.

Graziano, P. A., Garb, L. R., Ros, R., Hart, K., & Garcia, A. (2016). Executive functioning and school readiness among preschoolers with externalizing problems: The moderating role of the student–teacher relationship. *Early Education and Development, 27*(5), 573–589. https://doi.org/10.1080/10409289.2016.1102019.

Gresham, F. M., & Elliot, S. N. (1990). *Social skills rating system manual.* Circle Pines, MN: American Guidance Service.

Gresham, F., & Elliott, S. N. (2008). *Social skills improvement system (SSIS) rating scales.* Bloomington, MN: Pearson Assessments.

Gresham, F. M., Elliott, S. N., Vance, M. J., & Cook, C. R. (2011). Comparability of the social skills rating system to the social skills improvement system: Content and psychometric comparisons across elementary and secondary age levels. *School Psychology Quarterly, 26*(1), 27–44. https://doi.org/10.1037/a0022662.

Henricsson, L., & Rydell, A. (2004). Elementary school children with behavior problems: Teacher-child relations and self-perception. Retrieved from *A Prospective Study. Merrill-Palmer Quarterly, 50*(2), 111–138. http://www.jstor.org/stable/23096137.

Hoglund, W. L., Klingle, K. E., & Hosan, N. E. (2015). Classroom risks and resources: Teacher burnout, classroom quality and children's adjustment in high needs elementary schools. *Journal of School Psychology, 53*(5), 337–357. https://doi.org/10.1016/j.jsp.2015.06.002.

Hox, J. J. (1999). A review of current software for handling missing data. *Kwantitatieve Methoden, 20*, 123–138.

IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.

Kauffman, J. M. (2001). *Characteristics of children's behavior disorders* (7th ed.). Columbus, OH: Merrill.

Keiley, M. K., Bates, J. E., Dodge, K. A., & Pettit, G. S. (2000). A cross-domain growth analysis: Externalizing and internalizing behaviors during 8 years of childhood. *Journal of Abnormal Child Psychology, 28*(2), 161–179. https://doi.org/10.1023/A:1005122814723.

Kokkinos, C. M., Panayiotou, G., & Davazoglou, A. M. (2005). Correlates of teacher appraisals of student behaviors. *Psychology in the Schools, 42*(1), 79–89. https://doi.org/10.1002/pits.20031.

Ladd, G. W., & Dinella, L. M. (2009). Continuity and change in early school engagement: Predictive of children's achievement trajectories from first to eighth grade? *Journal of Educational Psychology, 101*(1), 190–206. https://doi.org/10.1037/a0013153.

Lewis, T. J., Newcomer, L. L., Trussell, R., & Richter, M. (2013). Schoolwide positive behavior support: Building systems to develop and maintain appropriate social behavior. In Handbook of classroom management (pp. 843–864). Routledge.

Lindsay, S., Proulx, M., Thomson, N., & Scott, H. (2013). Educators' challenges of including children with autism spectrum disorder in mainstream classrooms. *International Journal of Disability, Development and Education, 60*(4), 347–362. https://doi.org/10.1080/1034912X.2013.846470.

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*(404), 1198–1202.

Marsh, H. W., & Hau, K.-T. (2003). Big-fish-little-pond effect on academic self-concept: A cross-cultural (26-country) test of the negative effects of academically selective schools. *The American Psychologist, 58*, 364–376. https://doi.org/10.1037/0003-066X.58.5.364.

McLean, L., Sparapani, N., Toste, J., & Connor, C. M. (2016). Classroom quality as a predictor of first grader's time in non-instructional activities and literacy achievement. *Journal of School Psychology, 56*(3), 45–58. https://doi.org/10.1016/j.jsp.2016.03.004.

McLean, L., Abry, T., Taylor, M., & Connor, C. M. (2018). Associations among Teachers' Depressive Symptoms and Students' Classroom Instructional Experiences in Third Grade. *Journal of School Psychology, 69*, 154–168. https://doi.org/10.1016/j.jsp.2018.05.002.

McLean, L., & Connor, C. M. (2018). Relations between third grade teachers' depressive symptoms and their feedback to students, with implications for student mathematics achievement. *School Psychology Quarterly, 33*(2), 272. https://doi.org/10.1037/spq0000225.

Merritt, E. G., Wanless, S. B., Rimm-Kaufman, S. E., Cameron, C., & Peugh, J. L. (2012). The contribution of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychology Review, 41*(2), 141–159.

Murray, C., & Murray, K. M. (2004). Child level correlates of teacher–student relationships: An examination of demographic characteristics, academic orientations, and behavioral orientations. *Psychology in the Schools, 41*(7), 751–762. https://doi.org/10.1002/pits.20015.

National Center for Education Statistics (2018). Schools and Staffing Survey. Retrieved from https://nces.ed.gov/surveys/sass/index.asp.

Nelson, J., Benner, G. J., & Gonzalez, J. (2003). Learner characteristics that influence the treatment effectiveness of early literacy interventions: A meta-analytic review. *Learning Disabilities Research & Practice, 18*(4), 255–267. https://doi.org/10.1111/1540-5826.00080.

Nelson, J. R., Benner, G. J., Lane, K., & Smith, B. W. (2004). Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children, 71*(1), 59–73. https://doi.org/10.1177/001440290407100104.

Ostrander, R., Herman, K., Sikorski, J., Mascendaro, P., & Lambert, S. (2008). Patterns of psychopathology in students with ADHD: A latent profile analysis. *Journal of Clinical Child and Adolescent Psychology, 53*, 833–847. https://doi.org/10.1080/15374410802359668.

Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of School Psychology, 48*(1), 85–112. https://doi.org/10.1016/j.jsp.2009.09.002.

Reinke, W. M., Lewis-Palmer, T., & Merrell, K. (2008). The classroom check-up: A classwide teacher consultation model for increasing praise and decreasing disruptive behavior. *School Psychology Review, 37*(3), 315–332.

Sandilos, L. E., Rimm-Kaufman, S. E., & Cohen, J. J. (2017). Warmth and demand: The relation between students' perceptions of the classroom environment and achievement growth. *Child Development, 88*(4), 1321–1337. https://doi.org/10.1111/cdev.12685.

Shores, R. E., Jack, S. L., Gunter, P. L., Ellis, D. N., DeBriere, T. J., & Wehby, J. H. (1993). Classroom interactions of children with behavior disorders. *Journal of Emotional and Behavioral Disorders, 1*, 27–39. https://doi.org/10.1177/106342669300100106.

Skalická, V., Stenseng, F., & Wichstrøm, L. (2015). Reciprocal relations between student–teacher conflict, children's social skills and externalizing behavior: A three-wave longitudinal study from preschool to third grade. *International Journal of Behavioral Development, 39*(5), 413–425. https://doi.org/10.1177/0165025415584187.

Spira, E. G., Bracken, S. S., & Fischel, J. E. (2005). Predicting improvement after first-grade reading difficulties: The effects of oral language, emergent literacy, and behavior skills. *Developmental Psychology, 41*(1), 225–234. https://doi.org/10.1037/0012-1649.41.1.225.

Sutherland, K. S., & Morgan, P. L. (2003). Implications of transactional processes in classrooms for students with emotional/behavioral disorders. *Preventing School Failure: Alternative Education for Children and Youth. 48*(1), 32–127. https://doi.org/10.1080/1045988X.2003.10871077.

Thelen, E., & Smith, L. B. (1998). Dynamic systems theories. Handbook of child psychology.

Tournaki, N. (2003). Effect of student characteristics on teachers' predictions of student success. *The Journal of Educational Research, 96*, 310–319.

Tournaki, N., & Podell, D. M. (2005). The impact of student characteristics and teacher efficacy on teachers' predictions of student success. *Teaching and Teacher Education, 21*(3), 299–314. https://doi.org/10.1016/j.tate.2005.01.003.

U.S. Census Bureau (2017). Classroom diversity on the rise. Retrieved from https://www.census.gov/library/visualizations/2018/comm/classroom-diversity.html.

Vasquez, J. (1989). Contexts of learning for minority students. *The Education Forum, 52*, 243–253. https://doi.org/10.1080/00131728809335490.

Wanzek, J., Roberts, G., & Al Otaiba, S. (2014). Academic responding during instruction and reading outcomes for kindergarten students at-risk for reading difficulties. *Reading and Writing, 27*(1), 55–78. https://doi.org/10.1007/s11145-013-9433-8.

Wehby, J. H., Lane, K. L., & Falk, K. B. (2003). Academic instruction for students with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 11*(4), 194–197.

Whittaker, J. E. V., Williford, A. P., Carter, L. M., Vitiello, V. E., & Hatfield, B. E. (2018). Using a standardized task to assess the quality of teacher-child dyadic interactions in preschool. *Early Education and Development, 29*(2), 266–287. https://doi.org/10.1080/10409289.2017.1387960.

Yoder, P., Lloyd, B., & Symons, F. (2018). *Observational measurement of behavior.* Springer Publishing Company.

Yoshikawa, H., & Hsueh, J. (2001). Child development and public policy: Toward a dynamic systems perspective. *Child Development, 72*(6), 1887–1903. https://doi.org/10.1111/1467-8624.00384.