

TEACHER BURNOUT AND STUDENT MISBEHAVIOR:
An Exploration of the Underlying Mechanisms

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Abstract

Teacher burnout is associated with a number of adverse student outcomes including increased incidence of student misbehavior (Aloe, Shisler, Norris, Nickerson, & Rinker, 2014). Although many studies have demonstrated a relation between burnout and misbehavior, nearly all have relied on teacher reports of both burnout and misbehavior making it difficult to disentangle whether burnout is associated with an observable increase in misbehavior or whether teachers experiencing burnout perceive student behavior more negatively. Furthermore, the underlying classroom processes driving the relation between burnout and misbehavior remain unclear (Aloe et al., 2014). Using Jennings and Greenberg's (2009) theory of burnout, the present study examined whether classroom management practices and classroom peer ecology are two pathways through which teacher reported burnout and observed rates of misbehavior relate with sample of 211 elementary school classrooms. There were no significant total or direct effects between the dimensions of burnout (emotional exhaustion, depersonalization, and decreased personal accomplishment) and student misbehavior; however, a significant indirect effect was observed wherein emotional exhaustion was associated with a smaller ratio of proactive-to-reactive classroom management strategies, which in turn, was associated with increased rates of misbehavior. Findings support the proposal that the relation between burnout and misbehavior is conferred through the use of less effective classroom management strategies. Additionally, several unique patterns of simple effects emerged in the models that offer insight into the classroom processes related to burnout, classroom management practices, classroom peer ecology, and student misbehavior. Recommendations are made for future research and classroom interventions.

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APPROVAL OF THE DISSERTATION

This dissertation, (“Teacher Burnout and Student Misbehavior: An Exploration of the Underlying Mechanisms”), has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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CHAPTER I

Statement of the Problem

Teaching is considered a particularly stressful profession due to the extensive demands and expectations placed upon teachers (Montgomery & Rupp, 2005). Teachers are responsible for instructional organization and implementation including lesson planning, lesson delivery, tailoring lessons to address diverse individual student needs, and adhering to state and federal mandates. Additionally, teachers must prepare students for standardized tests and are evaluated, in part, based on their students' performance. Furthermore, teachers must engage with parents, manage student behavior, and enforce discipline practices (Marzano, Marzano, & Pickering, 2003). Teaching-related stress is widespread; nearly 51% of teachers report feeling under a great deal of stress several days per week (Metlife, 2012). The high level of stress associated with teaching has been linked to job burnout (De Heus & Diekstra, 1999; Jennings & Greenberg, 2009). Job burnout is defined as "a prolonged response to chronic emotional and interpersonal stressors on the job" that occurs when individuals are no longer able to effectively cope with persistently stressful work conditions (Maslach, Schaufeli, & Leiter, 2001, p. 397). It is estimated that approximately 30% of teachers experience burnout at some point in their careers (Bauer et al., 2006; Gil-Monte, Carlotto, & Gonçalves Câmara, 2011). Burnout is thought to have significant and far-reaching consequences for teachers and their students. Burnout is associated with poor physical and mental health outcomes

among teachers, and students in classrooms with teachers experiencing burnout demonstrate worse academic, behavioral, and social/emotional outcomes (Herman, Hickmon-Rosa, & Reinke, 2018; Skaalvik & Skaalvik, 2017; Zhong et al., 2009). Furthermore, teacher burnout is believed to be one of the leading causes for the high attrition rate among teachers which is estimated to cost the United States \$2.2 billion annually (Haynes, 2014; O'Brien, Goddard, & Keeffe, 2008).

The present study examined the relation between teacher burnout and student misbehavior. Although no study to date has examined temporal precedence, the relation between student misbehavior and teacher burnout appears to be cyclical, with student misbehavior functioning as both a contributor to and outcome of teacher burnout. Teachers cite student misbehavior as one of the most significant sources of stress, and it is theorized that chronic exposure to misbehavior contributes to burnout (Ingersoll, 2001; McCormick & Barnett, 2011). In turn, teacher burnout is theorized to increase rates of student misbehavior, as teachers experiencing burnout may lack the emotional resources to employ effective behavior management strategies, resulting in a classroom climate that promotes problem behavior (Jennings & Greenberg, 2009).

The purpose of the present study was to examine the mechanisms through which teacher burnout and student misbehavior relate. First, this study sought to replicate findings demonstrating a relation between teacher burnout and increased rates of student misbehavior using an observational measure of student behavior (Aloe et al., 2014). Second, this study sought to expand the extant literature by clarifying the pathways through which this relation might occur. Specifically, the current study examined whether

teacher burnout relates to student misbehavior through differences in classroom management practices and classroom peer ecology. By clarifying the role of potential pathways linking teacher burnout to student misbehavior, interventions can be designed to prevent or disrupt the cycle of burnout

CHAPTER II

Review of the Literature

Overview of Teacher Burnout

Burnout was first identified in the 1970's by Herbert Freudenberger who observed changes in attitude, motivation, and behavior among individuals volunteering at a free health clinic (Freudenberger, 1974). Burnout has been shown to disproportionately affect professionals in education due to the emotional challenges of interacting with others in a caregiving or teaching role (De Heus & Diekstra, 1999; Maslach et al., 2001).

Exploratory research with individuals in health and service occupations suggested there are three dimensions of burnout: emotional exhaustion, depersonalization, and lack of personal accomplishment (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 1986). The three dimensional model was tested using the Maslach Burnout Inventory (MBI; Maslach et al., 1986) and was confirmed by exploratory and confirmatory factor analyses with a sample of 1,159 elementary teachers (CFI = .85; Byrne, 1993).

Maslach et al. (2001) defined emotional exhaustion as a state of chronic physical and emotional depletion that results from overwhelming job demands and limited emotional or logistical support. Teachers experiencing emotional exhaustion may find it more difficult to regulate their emotions in the classroom, resulting in emotional intrusion into instruction and interactions with students. For example, teachers experiencing emotional exhaustion may lack the energy to recognize and reinforce positive student

behaviors in the classroom (Jennings & Greenberg, 2009). Depersonalization refers to an attitude of cynicism and disengagement towards others (Maslach et al., 2001). Teachers may employ depersonalization as a strategy for coping with emotional fatigue or feelings of incompetency in the classroom. Teachers experiencing depersonalization may struggle to deliver engaging lessons or form positive relationships with students due to disengaged and cynical attitudes (Ladd & Burgess, 1999). The final element of burnout, lack of personal accomplishment, refers to a sense of ineffectiveness in the workplace (Maslach et al., 2001). Teachers lacking personal accomplishment may feel that they are unable to influence students' academic and developmental trajectories.

The three dimensions of burnout are interrelated yet distinct from one another, and the manifestation of burnout symptoms appears to differ among individuals (Leiter & Maslach, 2016). For example, one teacher may experience emotional exhaustion as the primary element of burnout, whereas another teacher may primarily experience depersonalization. Using latent profile analysis, Leiter and Maslach (2016) identified four possible burnout profiles: high on all three dimensions, high on emotional exhaustion only, high on depersonalization only, and high on reduced personal accomplishment only. Given these findings, it is recommended that the three dimensions of burnout be examined individually (Leiter & Maslach, 2016).

A number of studies have examined whether burnout is merely a proxy for situational stress (McManus, Winder, & Gordon, 2002; Schaufeli, Maassen, Bakker, & Sixma, 2011). Unlike situational stress, which fluctuates in response to changing environmental demands, burnout develops gradually in response to chronic, long-term,

work-related stressors and is robust to changing environmental demands (Hoglund, Klingle, & Hosan, 2015; McManus et al., 2002; Pas, Bradshaw, & Hershfeldt, 2012; Schaufeli et al., 2011). To explore the short-term stability of burnout, Hoglund et al. (2015) measured burnout at three time periods during the school year using a sample of 65 kindergarten through third grade teachers. All three dimensions of burnout (emotional exhaustion, personal accomplishment, and depersonalization) remained stable across the school year, supporting the theory that burnout remains stable over relatively short periods of time. However, burnout does appear to increase over longer periods of time. With a sample of 600 elementary school teachers, Pas et al. (2012) measured burnout at three time points over the course of two years and found a significant increase in burnout over time. These studies suggest that teacher burnout reflects the culmination of past and present stressors.

Studies have also examined whether burnout is a proxy for depression (Bakker et al., 2000; McManus et al., 2002). Although associated with depression, findings have demonstrated that burnout differs in etiology and symptomatology. Bakker et al. (2000) examined the difference between burnout and depression using a sample of 154 Dutch teachers. Confirmatory factor analysis differentiated burnout from depression and showed burnout was specifically related to work conditions whereas depression was not limited in that way. Burnout was predicted by work dissatisfaction, while depression was predicted by work and private life dissatisfaction.

The value of burnout as a concept and phenomenon affecting teaching is supported by findings that burnout has significant relations to physical and psychological

wellbeing (Ahola, 2007; Shin, Noh, Jang, Park, & Lee, 2013). For example, a study using a representative sample of more than 3,000 employees in Finland between ages 30-64 found that burnout was associated with health problems after controlling for demographic factors, health behaviors, and depression (Ahola, 2007). Burnout was associated with depression, anxiety, and substance abuse in both men and women. Burnout was also associated with cardiovascular disease in men and musculoskeletal disorders in women. Furthermore, the severity of health problems increased with the severity of burnout (Ahola, 2007). Additionally, a study of 499 middle and high school teachers found that burnout predicted depressive symptoms 18 months later (Shin et al., 2013).

Teacher, Classroom, and School Associations with Burnout

A number of individual, classroom, school, and societal factors have been associated with teacher burnout (Anderson & Iwanicki, 1984; Skaalvik & Skaalvik, 2011, 2016). First, burnout appears to be related to teacher age. Several studies have demonstrated that younger teachers experience higher rates of burnout compared to older teachers (Antoniou, Polychroni, & Vlachakis, 2006; Fisher, 2011). It is theorized that younger teachers are more idealistic and have less experience in the classroom, which is thought to make them more vulnerable to the disappointments and challenges that arise in managing classrooms of students. These disappointments may lead to negative emotions, which can lead to burnout (Antoniou et al., 2006). The relatively higher rate of burnout among younger teachers may contribute to the high attrition rate observed among teachers in their first five years of teaching (Ingersoll, 2001; O'Brien et al., 2008). Rates of burnout do not appear to vary by gender, though several studies have demonstrated

gender differences with regard to burnout symptoms. Female teachers report slightly higher emotional exhaustion compared to male teachers, while male teachers report higher levels of depersonalization (Schwab & Iwanicki, 1982; Skaalvik & Skaalvik, 2016). Race and ethnicity do not appear to be associated with burnout; however, few studies have included representative samples of non-White and non-Female teachers (Pas et al., 2012).

Teachers' social emotional competence (SEC), specifically their ability to cope with stress, also appears to be related to burnout. Mindfulness, one aspect of SEC that is characterized by self-awareness, self-compassion, and self-regulation, has been associated with decreased rates of burnout. Abenavoli, Jennings, Greenberg, Harris, and Katz (2013) explored the relation between mindfulness and burnout with a sample of 64 educators. Results indicated that mindfulness was associated with increased personal accomplishment and decreased emotional exhaustion and depersonalization. Although the study design was cross-sectional, limiting the ability to establish causality, the researchers theorized that teachers with more mindful attitudes experience fewer symptoms of burnout due to their ability to manage work-related stress by acknowledging emotions and employing effective coping strategies (Abenavoli et al., 2013).

Several studies have also linked teacher perceptions of workload, alternatively referred to as time pressure, to burnout (Betoret & Artiga, 2010; Skaalvik & Skaalvik, 2011, 2017). Using a sample of 1145 Norwegian teachers, Skaalvik and Skaalvik (2017) found a significant relation between perceived workload and emotional exhaustion; however, perceived workload was not related to the other dimensions of burnout

(depersonalization and personal accomplishment). It is theorized that teachers who feel overworked do not have adequate time to rest and recover, which results in emotional exhaustion over time. Due to the use of cross-sectional data, causality cannot be inferred; however, it is most likely that a bidirectional relation exists wherein workload contributes to burnout, and burnout makes workloads feel less manageable. Additionally, burnout and workload were both reported by teachers, making it possible that the symptoms associated with burnout altered teachers' perceptions of their workload. Other school-level characteristics associated with burnout include parent-teacher involvement, value dissonance (defined by the teacher's feeling that their personal values are inconsistent with the values of the school), and level of administrative support (Skaalvik & Skaalvik, 2011, 2017).

Teacher Burnout and Student Outcomes

In addition to the adverse teacher outcomes associated with burnout, multiple studies have demonstrated a relation between teacher burnout and poor behavioral, academic, social-emotional, and physiological student outcomes (Herman et al., 2018; Oberle & Schonert-Reichl, 2016; Skaalvik & Skaalvik, 2017). For example, teacher burnout has been associated with students' stress levels. Oberle and Schonert-Reichl (2016) collected morning and afternoon salivary cortisol samples from 406 students in Grades 4 through 7. Students' morning cortisol levels were significantly associated with teacher ratings of depersonalization and emotional accomplishment. This suggests that students in classrooms with teachers experiencing burnout displayed elevated morning stress responses. The cross-sectional nature of the study limits the ability to determine

directionality; however, because the data was collected within the first two months of the school year, researchers inferred that teacher burnout led to increased cortisol levels, noting that burnout occurs gradually in response to current and past stressors (Pas et al., 2012). As such, it is unlikely that two months of exposure to student characteristics associated with elevated cortisol led to teacher burnout. In contrast, the researchers noted that cortisol fluctuates in response to short-term stressors, making it more likely that having a teacher who is experiencing burnout leads to elevated cortisol levels (Jessop & Turner-Cobb, 2008; Maslach et al., 2001; Schaufeli et al., 2011). While providing important evidence of a link between teacher burnout and student stress, the study did not examine the mechanisms underlying that linkage, such as whether teachers experiencing burnout used different teaching practices that result in increased student stress.

Herman et al. (2018) also explored the association between teacher burnout and adverse student outcomes using a sample of 121 elementary teachers and 1,817 students in kindergarten through fourth grade. Teachers completed a self-report measure of burnout as well as measures of prosocial behavior, concentration problems, and disruptive behavior among their students. Students completed math and reading achievement tasks from the Woodcock Johnson III Tests of Achievement (Woodcock, McGrew, & Mather, 2001). Teacher burnout was associated with decreased performance on the math achievement tasks, increased teacher-reported concentration problems, and decreased teacher-reported prosocial behavior. Importantly, causality and directionality were not inferred due to the cross-sectional design; however, the relation is believed to be bidirectional in that teacher burnout leads to adverse academic, academic, behavioral, and

social outcomes which, in turn, further exacerbates burnout (Jennings & Greenberg, 2009). What remains unclear; however, are the mechanisms through which teacher burnout and student misbehavior relate.

Teacher burnout and student misbehavior. Although a number of adverse student outcomes are associated with teacher burnout, the present study focuses student misbehavior due to its theorized role in perpetuating the cycle of burnout (Jennings & Greenberg, 2009). Student misbehavior refers to behaviors that interrupt the process of learning including student disruptions (e.g., talking during instruction), non-compliance, disrespectful behavior directed towards peers or teacher (e.g., bullying, verbal harassment), and other off-task behaviors (Aloe et al., 2014). Classroom misbehavior makes it difficult for teachers to deliver lessons and for students to learn (Granström, 2014). Additionally, managing misbehavior requires significant time, effort, and emotional energy from the teacher (Aloe et al., 2014; Betoret & Artiga, 2010; Ingersoll, 2001).

Teachers often identify student misbehavior as one of the most stressful aspects of teaching, and student misbehavior has been shown to provoke intense negative emotions such as anger, frustration, fear, guilt, and shame (Emmer & Stough, 2001; Ingersoll, 2001). It is theorized that chronic exposure to the negative emotions associated with student misbehavior may overwhelm teachers' coping abilities and result in burnout (Emmer & Stough, 2001; Jennings & Greenberg, 2009). In turn, changes in the attitudes, beliefs, and behaviors that are associated with burnout may make it difficult for teachers to manage the classroom, resulting in increased rates of student misbehavior (Jennings &

Greenberg, 2009). In sum, student misbehavior appears to both contribute to and perpetuate teacher burnout.

A number of studies have demonstrated a relation between teacher burnout and student misbehavior (Aloe et al., 2014; Betoret & Artiga, 2010; Skaalvik & Skaalvik, 2017). For example, Skaalvik and Skaalvik (2017) explored the relation with a sample of 1,145 elementary, middle, and high school teachers. Teachers completed ratings on burnout and student misbehavior. Each of the three dimensions of burnout, depersonalization ($b = 0.66$), decreased personal accomplishment ($b = 0.58$), and emotional exhaustion ($b = 0.30$), was associated with greater perceived misbehavior. Several limitations were present in the study, the first being that student misbehavior and teacher burnout were both reported by teachers, making it difficult to disentangle whether there was an observable increase in misbehavior or whether teachers experiencing burnout interpret student behavior more negatively. Additionally, the cross-sectional design of the study limits the ability to infer directionality, though the relation is theorized to be bidirectional (Jennings & Greenberg, 2009).

Furthermore, Aloe et al. (2014) utilized multivariate metanalytic techniques to explore the relation between teacher burnout and student misbehavior. Nineteen studies met the criteria to be included in the analysis. These studies included measures of misbehavior and burnout, included kindergarten through 12th grade teachers, and reported Pearson correlations. Teachers self-reported burnout and were the primary reporters of student misbehavior. Results indicated moderate to strong correlations, on average,

between student misbehavior and emotional exhaustion ($r = .44$), depersonalization ($r = .35$), and personal accomplishment ($r = -.29$).

Although the relation between teacher burnout and student misbehavior has been established in a number of studies, there are several important gaps in the existing literature. First, nearly all studies relied on teacher reports of student behavior, making it possible that the association between misbehavior and burnout is based on teacher perception rather than observed student behaviors (Betoret & Artiga, 2010; Skaalvik & Skaalvik, 2017). The symptoms associated with burnout may distort perceptions of student behavior or may result in greater sensitivity to perceived misbehavior. As such, the associations between teacher burnout and student misbehavior may be inflated due to common method variance. Studies using observational techniques are needed to disentangle teacher perceptions of misbehavior from observed rates of misbehavior. The present study addresses this limitation by using an observational measure of student and teacher classroom behavior. Second, the classroom processes driving the relation between teacher burnout and student misbehavior remain unclear. A strength of the current study is that it explores whether classroom management strategies and the peer ecology are two underlying mechanisms through which teacher burnout and student misbehavior relate. By clarifying these mechanisms, the present study seeks to inform interventions targeted at preventing and reducing teacher burnout.

Classroom Processes Associated with Burnout and Misbehavior

The Prosocial Classroom Model developed by Jennings and Greenberg (2009) provides insight into the classroom processes that may drive the relation between teacher

burnout and student misbehavior. The model proposes that teachers' social and emotional competence and wellbeing plays a critical role in promoting positive social, emotional, behavioral, and academic student outcomes by facilitating strong teacher-student relationships, effective classroom management, and the successful implementation of social and emotional learning (SEL). These factors, in turn, contribute to a positive classroom climate that promotes positive student outcomes. Jennings and Greenberg (2009) propose that teachers experiencing burnout may lack the wellbeing and social and emotional competence to develop positive teacher-student relationships, employ effective classroom management strategies, and effectively implement SEL. It is theorized that disruptions in these classroom processes cultivates a negative classroom climate that results in adverse academic, behavioral, and social-emotional student outcomes.

In sum, Jennings and Greenberg (2009) theorize that student-teacher relationships, classroom management strategies, SEL implementation, and classroom climate are pathways through which burnout affects student outcomes (Jennings & Greenberg, 2009). The present study examines a subset of these proposed mechanisms and their relation to burnout and misbehavior. The current study focuses on classroom management practices and classroom peer ecology (a component of classroom climate) as mediating variables due to prior research demonstrating relations with burnout and misbehavior (Battistich, Solomon, Watson, & Schaps, 1997; Clunies-Ross, Little, & Kienhuis, 2008; Kim, Solomon, & Roberts, 1995; Reinke, Herman, & Stormont, 2013).

Classroom management practices. Previous research has demonstrated that burnout relates to teachers' classroom management practices and that classroom

management practices, in turn, relate to student misbehavior (Clunies-Ross et al., 2008; Reinke et al., 2013). Classroom management refers to strategies used by teachers to organize, manage, and discipline students. These strategies can be broadly categorized into proactive and reactive strategies (Farmer, Reinke, & Brooks, 2014). Proactive strategies seek to prevent problem behaviors from occurring by reinforcing appropriate behavior and preventatively altering the classroom environment. These strategies include praise, strategic seating plans, and setting clear classroom rules and expectations (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008; Farmer et al., 2014). Proactive strategies encourage appropriate classroom behavior through the use of differential attention; teachers shape student behaviors to be more appropriate by attending to positive behaviors and ignoring negative behaviors (Epstein et al., 2008). Additionally, by reinforcing appropriate behaviors, teachers provide students with information about which behaviors are appropriate.

In contrast, reactive strategies are teacher behaviors that occur immediately following a problem behavior. These strategies include prompts, reprimands, and consequences (e.g., removal from classroom, loss of privileges). Reactive strategies discourage disruptive behavior from occurring by applying adverse consequences (punishment) or by removing positive consequences (negative reinforcement); however, research suggests that an overreliance on reactive strategies may inadvertently increase rates of misbehavior (Battistich et al., 1997; Caldarella et al., 2020; Clunies-Ross et al., 2008; Pas, Cash, O'Brennan, Debnam, & Bradshaw, 2015). For example, Pas et al. (2015) explored the relation between classroom management practices and student

misbehavior using observational data from 1,262 high school classrooms. Results indicated that the use of reactive classroom management practices was significantly associated with increased rates of student misbehavior; teachers who used reactive management strategies the most frequently also had the highest incidences of student misbehavior. It is theorized that reactive strategies corrode student-teacher relationships and elicit feelings of resentment and resistance among students, which cultivates a classroom climate that encourages misbehavior (Epstein et al., 2008; Jennings & Greenberg, 2009).

In response to the growing body of research demonstrating the adverse behavioral student outcomes associated with an over-reliance on reactive classroom management practices, educators have begun to favor proactive strategies. Despite this paradigm shift, research on the efficacy of proactive management practices in reducing student misbehavior is mixed (Lassen, Steele, & Sailor, 2006; Luiselli, Putnam, Handler, & Feinberg, 2005; Owens et al., 2018; Pas et al., 2015). For example, although Pas et al. (2015) observed a relation between reactive strategies and increased rates of misbehavior, proactive management practices were not related to decreased rates of misbehavior. Additionally, Pfiffner, Rosén, and O'Leary (1985) found that students spent less time on-task when teachers exclusively used proactive strategies to manage behavior compared to when teachers used both proactive and reactive strategies, suggesting that reactive management practices remain an essential and necessary tool for managing disruptive classroom behavior (Caldarella et al., 2020; Pfiffner et al., 1985). Overall, research suggests that the most effective classroom management occurs when teachers maintain a

high proactive-to-reactive ratio (PRR), alternatively referred to as praise-to-reprimand ratio or positive-to-negative ratio, by primarily relying on proactive strategies and using reactive strategies sparingly (Caldarella et al., 2020; Epstein et al., 2008). Many behavior management training programs encourage teachers to maintain a 5:1 ratio; however, improvements in student behavior have been found for ratios as low as 1:1 and as high as 10:1 (for review, see Sabey, Charlton, & Charlton, 2019).

Caldarella et al. (2020) explored the relation between teachers' PRR and rates of student misbehavior with a sample of 151 elementary school classrooms. Teachers in the experimental condition received an intervention aimed at increasing PRR, while teachers in the control condition continued to use their typical classroom management practices. Frequency counts were obtained for student misbehavior and teachers' use of praise (a specific proactive strategy) and reprimands (a specific reactive strategy) at baseline and at four to six months post-intervention. Results revealed a negative relation between PRR and student misbehavior; rates of student misbehavior declined as teachers made more praise statements per every reprimand. Additionally, results indicated that there was not a PRR threshold at which misbehavior drastically reduced. Instead, misbehavior decreased linearly as PRR increased. In sum, it appears that optimal classroom management is characterized by maximizing proactive strategies and minimizing reactive strategies.

Burnout and classroom management practices. Jennings and Greenberg's (2009) theory proposes that teachers experiencing burnout may lack the social emotional competence and wellbeing to employ effective classroom management practices, resulting in a negative classroom climate and increased rates of misbehavior. Managing

and disciplining students requires a significant amount of mental and emotional energy, and it is theorized that teachers experiencing emotional exhaustion may lack the energy to use proactive practices (Jennings & Greenberg, 2009; Reinke et al., 2013).

Furthermore, teachers experiencing depersonalization may be more likely to use reactive management strategies such as punishment, while teachers experiencing decreased personal accomplishment may lack the motivation to proactively manage the classroom.

To explore the relation between teacher burnout, classroom management practices, and student misbehavior, Reinke et al. (2013) conducted observations of 33 elementary teachers and their students. Teachers completed the emotional exhaustion subscale from the MBI-ES (Maslach et al., 1986) to measure burnout, while frequency counts were obtained for teachers' use of praise and reprimands. Results indicated that emotional exhaustion was associated with a lower praise-to-reprimand ratio and more frequent student misbehavior. Although the researchers did not explicitly test whether the praise-to-reprimand ratio mediated the relation between burnout and student misbehavior, the findings provide initial support to the theory that suboptimal classroom management strategies may be one pathway through which teacher burnout and student misbehavior are related (Jennings & Greenberg, 2009).

Similarly, Clunies-Ross et al. (2008) conducted observations of 20 Australian primary school classrooms. Student misbehavior and frequency counts of reactive and proactive classroom management strategies were recorded by third party observers, while teachers self-reported their stress level. Results indicated that teacher stress was associated with greater use of reactive classroom management strategies including

threats, punishments, and student removals from the classroom. Reactive classroom management strategies, in turn, were associated with decreased on-task student behavior ($r = -.53$). Interestingly, proactive classroom management strategies were not associated with teacher stress or student misbehavior. Overall, these findings further demonstrate that teacher burnout, reactive classroom management practices, and student misbehavior are related. Consistent with other studies exploring these relations, causality could not be established due to the cross-sectional nature of the study. An additional limitation is that Clunies-Ross et al. (2008) measured teacher stress rather than teacher burnout. Although stress is an important precursor and correlate to burnout, stress differs in that it does not capture the depersonalization and lack of personal accomplishment components of burnout (Maslach et al., 2001; McManus et al., 2002).

In summary, there is promising empirical support for the model of burnout proposed by Jennings and Greenberg (2009) that identifies classroom management practices, specifically an overreliance on reactive strategies relative to proactive strategies, as one pathway through which burnout relates to student misbehavior. Jennings and Greenberg (2009) further theorize that the relation between classroom management practices and rates of student misbehavior is conferred through the deterioration of the classroom climate. The following section reviews the literature exploring the relation between classroom management practices, classroom climate, and student misbehavior.

Peer ecology. The model of burnout proposed by Jennings and Greenberg (2009) theorizes that teachers experiencing burnout may employ classroom management

strategies that cultivate a negative classroom climate. A negative classroom climate, in turn, increases rates of student misbehavior, which further exacerbates teachers' feelings of burnout (Jennings & Greenberg, 2009). Thus, classroom climate is thought to play an important mediating role, as it is one theorized pathway through which negative classroom management strategies are associated with student misbehavior (Jennings & Greenberg, 2009).

Classroom climate refers to the emotional tone, sense of community, and shared values and norms of a classroom (Battistich et al., 1997). Classroom peer ecology is a component of classroom climate that refers to the influencing, interacting, and socialization that occurs between students (Gest & Rodkin, 2011). The present study focuses specifically on peer ecology, as previous studies have demonstrated links between classroom management practices, classroom peer ecology, and student misbehavior (Battistich et al., 1997; Buyse, Verschueren, Verachtert, & Van Damme, 2009; Kim et al., 1995). Furthermore, there is a large body of literature relating antisocial behavior to peer influence, making peer ecology a particularly important component of classroom climate when exploring the mechanisms underlying student misbehavior (for an overview, see Dishion & Tipsord, 2011).

Classrooms with positive peer ecologies tend to be egalitarian, value academic achievement and prosocial behaviors, and discourage aggression (Gest & Rodkin, 2011). Positive peer ecologies are characterized by positive, helpful, and supportive student interactions. As such, classrooms with positive peer ecologies are associated with decreased rates of student misbehavior (Battistich et al., 1997). In contrast, classrooms

with negative peer ecologies are characterized by hierarchical peer relations with several students holding higher status' compared to their peers. Additionally, higher status students tend to be more disruptive and aggressive in classrooms with negative peer ecologies. Negative peer ecologies are associated with aggressive, disrespectful, and harsh peer interactions (Gest & Rodkin, 2011). As such, rates of misbehavior tend to be higher in classrooms with negative peer ecologies (Battistich et al., 1997).

Several studies have demonstrated that teacher behaviors can influence the peer ecology of a classroom. It is theorized that students behave in accordance with the social values and norms communicated by their teachers (Gest & Rodkin, 2011). Students are more likely to engage in positive peer interactions when teachers model and promote prosocial behaviors in the classroom (Hendrickx, Mainhard, Boor-Klip, Cillessen, & Brekelmans, 2016). Additionally, students are more likely to engage in disruptive and aggressive peer interactions when teachers model harsh and critical social behaviors in the classrooms (Hendrickx et al., 2016). Jennings and Greenberg (2009) theorize that teachers experiencing burnout may struggle to develop a positive classroom climate as teachers feeling emotionally exhausted, disengaged, or ineffective may be less likely to model and promote prosocial behavior in the classroom.

Classroom management strategies are one set of teacher behaviors that are associated with the quality of the classroom peer ecology (Battistich et al., 1997; Kim et al., 1995). It is theorized that an overreliance on reactive strategies cultivates a negative peer ecology that promotes disruptive and disrespectful behavior by modeling potentially harsh and critical interactions (Gest & Rodkin, 2011; Hendrickx et al., 2016). In contrast,

the use of proactive strategies promotes the development of a positive peer ecology by modeling supportive and prosocial behavior, ultimately discouraging student misbehavior (Battistich et al., 1997; Kim et al., 1995).

Several studies have explored the linkages between classroom management strategies, peer ecology, and student misbehavior (Battistich et al., 1997; Buyse et al., 2009; Kim et al., 1995). Kim et al. (1995) examined these relations with a sample of 232 elementary school classrooms. Teacher classroom management practices and student classroom behaviors were assessed using classroom observations. Classroom peer ecology was assessed using a questionnaire in which students were asked about the quality of student interactions (e.g., kids in my class help each other; kids in my classroom work together to solve problems). Results indicated that the use of proactive classroom management strategies (e.g., praise, positive reinforcement, and support) was associated with more positive student perceptions of the peer ecology. Additionally, student perceptions of a negative peer ecology were associated with the use of reactive classroom management strategies such as threats, demands, and extrinsic control. Finally, classroom peer ecology was associated with student classroom behavior; students in classrooms with more positive peer ecologies were observed to be more on-task, focused, and engaged compared to students in classrooms with negative peer ecologies. Although these findings suggest that classroom management strategies are associated with the classroom peer ecology, directionality cannot be established due to the cross-sectional nature of the design.

An experiment conducted by Battistich and colleagues (1997) explored the causal influence of classroom management practices on classroom peer ecology and student classroom behaviors. Teachers in the experimental condition participated in an intervention designed to increase the use of proactive strategies (e.g., praise and emotional support) and decrease the use of reactive strategies (e.g., punishment). Classroom observations confirmed that teachers in the intervention condition used more proactive and fewer reactive strategies compared to teachers in the control condition. Additionally, students in intervention classrooms reported more positive peer ecologies characterized by feelings of respect, kindness, and support from peers. These findings support the theory that teacher's classroom management practices shape the peer ecology of a classroom.

When considered along with the body of literature linking teacher burnout, classroom management strategies, and student misbehavior, the reviewed studies support the importance of considering peer ecology as a potential pathway through which teacher burnout and student misbehavior relate. Although Jennings and Greenberg (2009) theorize such a set of relations, no empirical test has been undertaken about the validity of these specified predictors and mediators.

Aims and Hypotheses

Given the important role that teacher burnout appears to play in student misbehavior, there is value in identifying and testing potential pathways through which burnout relates to student misbehavior for the purpose of developing interventions aimed

at preventing or reducing teacher burnout. Using a sample of 211 elementary teachers, the present study addresses two central aims:

Aim 1: To evaluate the relation between teacher burnout and student misbehavior. The first aim is to replicate previous findings demonstrating a relation between teacher burnout and student misbehavior (Aloe et al., 2014). Furthermore, the study seeks to expand upon previous findings by using an observational measure of student misbehavior rather than teacher-report. With the exception of one study conducted in New Zealand that relied on a small sample of teachers ($n = 20$), studies suggesting relations among burnout and student misbehavior have been limited to teacher-reported data (Clunies-Ross et al., 2008; Reinke et al., 2013). The use of classroom observations of student behavior helps limit the influence of perceptual bias when exploring the relation between teacher burnout and student misbehavior.

Using the burnout framework proposed by Maslach et al. (2001), the relations between the three burnout dimensions (emotional exhaustion, depersonalization, and reduced personal accomplishment) and student misbehavior were examined to clarify the specific burnout features associated with student misbehavior. The present study tests the following hypothesis:

Hypothesis 1: Emotional exhaustion and depersonalization will positively relate to student misbehavior; personal accomplishment will negatively relate to student misbehavior (c').

Aim 2: To identify pathways driving the relation between teacher burnout and student misbehavior. The second aim of the study is to clarify the classroom

processes driving the relation between teacher burnout and student misbehavior. Specifically, the study tests the hypothesis that classroom management strategies, measured using PRR, and classroom peer ecology are two pathways through which burnout and student misbehavior relate (Clunies-Ross et al., 2008; Jennings & Greenberg, 2009; Reinke et al., 2013). The theorized model of classroom processes is presented in Figure 1. This is the first study to test the linkage of teacher burnout to student misbehavior through two theorized mediators. The present study tests the following hypotheses:

Hypothesis 2: Emotional exhaustion and depersonalization will negatively relate to PRR; personal accomplishment will positively relate to PRR (a_1).

Hypothesis 3: Emotional exhaustion and depersonalization will negatively relate to the classroom peer ecology; personal accomplishment will positively relate to the classroom peer ecology (a_2).

Hypothesis 4: PRR will positively relate to student perceptions of the peer ecology (d_1).

Hypothesis 5: PRR will negatively relate to rates of student misbehavior (b_1).

Hypothesis 6: Positive student perceptions of the classroom peer ecology will negatively relate to student misbehavior (b_2).

Hypothesis 7: Classroom management practices will mediate the relation between teacher burnout and student misbehavior. Teacher burnout will be associated with a smaller PRR, which in turn, will be associated with greater student misbehavior ($a_1 b_1$).

Hypothesis 8: Classroom peer ecology will mediate the relation between teacher burnout and student misbehavior. Teacher burnout will be associated with a more negative peer ecology, which in turn will be associated with increased student misbehavior ($a_2 b_2$).

Hypothesis 9: Classroom management practices and classroom peer ecology will sequentially mediate the relation between teacher burnout and student misbehavior. Teacher burnout will be associated with a smaller PRR, which in turn will be associated with more negative peer ecology, which in turn will be associated with greater student misbehavior ($a_1 d_1 b_2$).

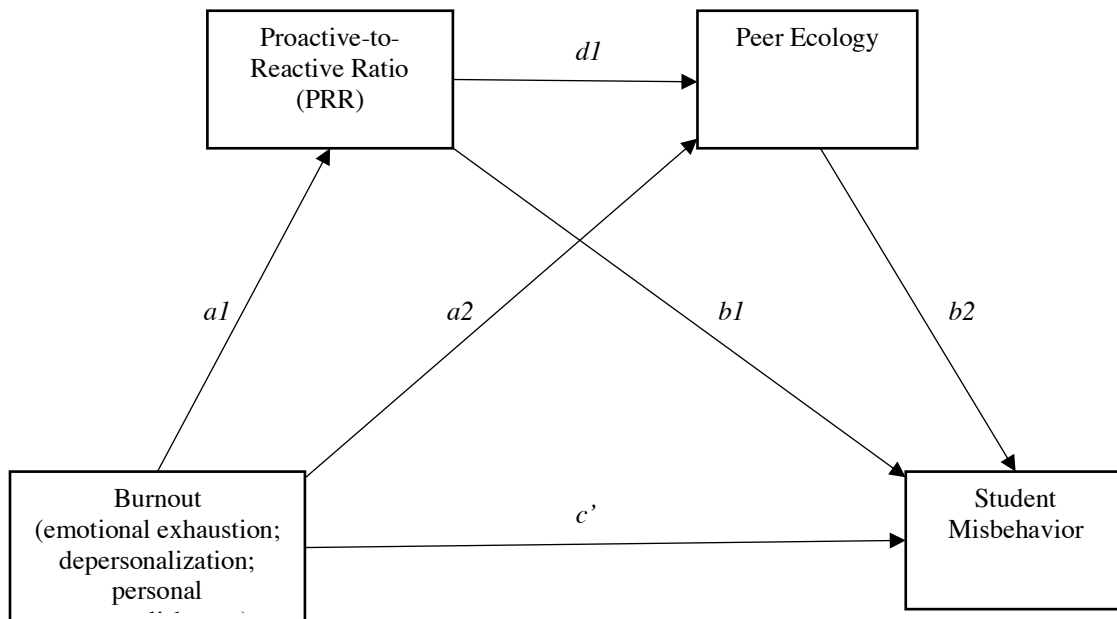


Figure 1. Proposed model of the relation of teacher burnout to student misbehavior.

CHAPTER III

Method

Recruitment

Data was collected as part of the Compassionate Schools Project (CSP), a large group randomized controlled trial (RCT; school level assignment) of a health curriculum for students in kindergarten through Grade 5. The curriculum integrates nutrition, social and emotional learning, mindfulness, and yoga to improve mental, physical, and academic student outcomes. The effects of the RCT are not the focus of this study.

Forty-eight elementary schools were recruited from the Jefferson County Public School District (JCPS) in Louisville, KY. Of those, 45 participated in the lottery for random assignment. Schools were blocked based on ethnic distribution and rate of free and reduced lunch and then randomly assigned to control or intervention conditions in two cohorts. To explore whether JCPS schools selected for CSP ($N = 45$) differed from non-participating JCPS schools ($N = 47$), an independent-samples t-test was conducted to compare the proportion of students receiving free and reduced priced meals (FRPM), the proportion of teachers with Master's degrees or higher, and the proportion of White students. Compared to non-participating schools, CSP schools had a higher proportion of students received FRPM, fewer teachers with Master's degrees or higher, and proportionately fewer White students (all $ps < .05$; see Table 1). The first cohort of schools ($N = 25$) started the study during the 2016-2017 school year. A second cohort of

schools ($N = 20$) started the study during the 2017-2018 academic year. Data was collected during Spring 2018, meaning Cohort 1 schools were in their second year of the RCT while Cohort 2 schools were in the first year. Across both cohorts, twenty-one schools were assigned to the control condition and 24 schools were assigned to the intervention condition. All classrooms at intervention schools received the CSP curriculum, while control schools received the standard health curriculum.

At the beginning of the CSP Study, two classrooms per grade were randomly selected to be evaluated in intervention and control schools. Within each of the two classrooms, the teacher and approximately 10 randomly selected students (half male, half female) were solicited to be assessed. Each following year, participating students dispersed into a wider range of classrooms and continued to be evaluated. Each participating student's subsequent teacher was invited to participate in the study. Additionally, each teacher from the first year of data collection continued to be evaluated unless they changed grade levels, at which point a new teacher was randomly selected. The current study involves teachers and students from Cohort 1 and Cohort 2 control and intervention schools; however, experimental condition and cohort were included as covariates in the analyses to prevent intervention and dosing effects from influencing the findings.

Sample

Of the 627 teachers selected to participate in the study, 250 completed self-report surveys during the time of this study (40%). Observational classroom data was available for 211 of the 250 teachers who completed self-report surveys. Additionally, data was

available from 860 students in classrooms of participating teachers; however, student data was aggregated to the classroom level by averaging student scores across classrooms.

Thus, the final sample consisted of 211 teachers and classrooms (comprised of 860 students) from 41 schools. Four CSP schools were not included in the sample because all sample teachers did not complete self-report surveys. Within the sample, the average number of teachers per school was 5.15 and the average number of students per classroom was 5.97.

Due to concerns of possible nonresponse bias with the teacher self-report surveys, schools with high teacher participation rates were compared to schools with low teacher participation rates to explore whether school characteristics may have influenced teacher participation rates. School characteristics examined included the proportion of students receiving free and reduced priced meals, the proportion of teachers with a master's degree or higher, and the proportion of White students. High respondent schools were defined as schools with teacher participation rates in the top 16% of CSP schools ($N = 7$) while low respondent schools were those with teacher participation rates in the bottom 25% of CSP schools ($N = 11$). Results from an independent-samples t-test did not reveal any significant differences between high respondent schools and low respondent schools (all $ps > .05$, see Table 2), which suggests that the sample is not biased based upon school characteristics.

The sample of teachers was overwhelmingly female (94.8%). The racial and ethnic composition of teachers was 85.78% White, 9.95% Black, and 1.42% Latinx (2.84% of teachers chose not to respond). Kindergarten through fifth grade teachers were

evenly represented in the sample and the average number of years of teaching experience was 11.67 ($SD = 8.45$). Within classrooms, the average percentage of White students was 35.18% ($SD = 21.46$), the average percentage of male students was 49.62% ($SD = 10.06$), and the average number of students per classroom was 20.52 ($SD = 3.75$). Demographic data is presented in Table 3.

Table 3
Classroom Demographics

		<i>n</i>	<i>%</i>
Teacher Gender	Male (0)	11	5.21
	Female (1)	199	94.31
	Missing	1	0.47
Teacher Race/Ethnicity	White	181	85.78
	Black	21	9.95
	Latinx	3	1.42
	Missing	6	2.84
Grade	Kindergarten	30	14.20
	1st	33	15.60
	2nd	34	16.10
	3rd	36	17.10
	4th	43	20.40
	5th	35	16.60
Intervention	Control Classrooms(0)	92	43.60
	Intervention Classrooms (1)	119	56.40
Cohort	Cohort 1 Classrooms(0)	122	57.82
	Cohort 2 Classrooms(1)	89	42.18
		<i>M</i>	<i>SD</i>
Years of Teaching Experience		11.67	8.45
Number of Students in Classroom		20.52	3.75
Percent White		35.18	21.46
Percent Male		49.62	10.06

Procedure

Teacher self-report survey. The teacher survey was administered online through the Qualtrics platform for online surveys (Qualtrics, 2019). Teacher data was collected between January and March of 2018.

Student self-report survey. Randomly selected students from participating classrooms completed surveys at school with trained data collectors. Students in Grades 4 and 5 were administered the survey through Qualtrics (Qualtrics, 2019), while students in kindergarten through Grade 3 were administered the survey through SELweb, a web-based tool used to assess social and emotional skills (McKown, Russo-Ponsaran, Johnson, Russo, & Allen, 2016). Student data was collected between March and May of 2018.

Classroom Observations. The Assessing School Settings: Interactions of Students and Teachers observation tool (ASSIST; Debnam, Bottiani, Rusby, & Bradshaw, 2017; Rusby, Crowley, Sprague, & Biglan, 2011) was used to collect classroom observations. The ASSIST observers received training in three stages: (1) A daylong didactic session, (2) on-site practice and interobserver reliability assessment and (3) video recalibration. During the didactic session, observers received a copy of the ASSIST Training Manual (Debnam et al., 2017) that reviewed coding and observation procedures as well as operational definitions of tally and global ratings codes. Observers also watched a series of videos that demonstrated coded behaviors and global ratings. Finally, observers coded and rated a 15-minute practice video that was followed by a reliability assessment. Observers then completed an on-site practice observation with

expert observer. The expert observer provided feedback and answered questions during the practice session.

Observers were assessed for reliability during three classroom observations. Observers and expert observers stood approximately 1 meter apart during observations. Feedback was not provided during the reliability observations. Interobserver agreement was calculated by dividing the total number of agreements by the total number of agreements and disagreements (Barlow & Hersen, 1984; Pas et al., 2015). Observers were expected to achieve and maintain a reliability of 80% or higher across the 3 classroom observations, and if an inter-rater reliability of 80% was not achieved, additional observations were completed. The observer achieved reliability when inter-rater reliability was 80% across three consecutive observations. Observers also completed a live recalibration task during active data collection for the purpose of avoiding observer drift and were required to achieve a reliability of 80% or higher. Additional live recalibration sessions were completed if reliability was not achieved.

Classroom observations were completed by twelve trained observers following the guidelines of Debnam et al. (2017). Teachers were informed in advance that observations would be occurring in their classroom. Observers entered the room quietly and placed themselves in an area with a view of the classroom teacher and all students. Before beginning the assessment, observers waited 3 minutes to familiarize themselves with the classroom. After 3 minutes, the observer completed demographic information about the classroom, then activated a timer to initiate the 15-minute observation. During the observation, specific teacher and student behaviors were coded. Data from the

ASSIST was collected on electronic tablets and transferred remotely for analysis. The observations took place between March and May of 2018.

Measures

Control variables. Teacher gender (male, female), race (White, non-White), and years of teaching experience were included as control variables in the model. The number of students in the classroom, classroom racial composition (measured by the proportion of White students present during the ASSIST observation), and classroom gender composition (measured by the proportion of male students present during the ASSIST observation) were also included as control variables. Gender composition was included as a covariate as previous literature has demonstrated that males typically engage in higher rates of misbehavior (Pas et al., 2015). Racial composition was also included as a covariate given findings that exclusionary disciplinary practices are more common in diverse classrooms (Skiba et al., 2011). Finally, to control for possible intervention effects from CSP, the present study also controlled for the number of years involved in the CSP study (cohort), and whether a school was assigned to the control or intervention condition (intervention).

Teacher burnout. Teacher burnout was measured using the Maslach Burnout Inventory: Educators Survey (MBI-ES; Maslach et al., 1986). The survey contains 22-items that load onto three subscales: emotional exhaustion (9 items, $\alpha = .90$), depersonalization (5 items, $\alpha = .77$), and personal accomplishment (8 items, $\alpha = .71$; Maslach et al., 1986). Each item was rated using a 7-point Likert scale ranging from 0 (never) to 6 (everyday). Teachers also had the option of responding “prefer not to

respond.” Subscales were constructed by averaging responses across items. Low scores on the personal accomplishment subscale and high scores on the emotional exhaustion and depersonalization subscales reflect greater burnout. To gain a more detailed and nuanced understanding of the relation between burnout and student misbehavior, the subscales were examined separately, and an overall burnout score was not computed. Additionally, due to convergence issues when including all dimensions simultaneously in the same model, the subscales were analyzed individually (see Figures 2-4).

The MBI is the most widely used measure of burnout (Maslach et al., 1986). There are currently three versions of the MBI: MBI-Humans Services Survey (MBI-HSS), MBI-General Survey (MBI-GS), and MBI-ES. According to Maslach et al. (1986), the only difference between the surveys is that the other forms use the term “recipient” to refer to clients, while the MBI-ES uses “student.” The reliability and validity of the MBI-ES has been well established in a number of studies (Byrne, 1993; Maslach et al., 1986). The MBI-ES has demonstrated acceptable internal consistency, test-retest reliability, convergent validity, and discriminant validity (Maslach et al., 1986). Additionally, Byrne (1993) confirmed the three factor model of burnout ($CFI = .85$) using a sample of 1159 elementary teachers. Two items, one from the personal accomplishment subscale and the other from the emotional exhaustion subscale, have been observed to cross load on the emotional exhaustion and depersonalization subscales, respectively; however, the relatively strong factor structure of the instrument indicates that the MBI is still a reliable and valid measure of burnout (Byrne, 1993).

Classroom management strategies. The proactive-to-reactive ratio (PRR) was used to measure teachers' classroom management practices. PRR was calculated by dividing the total number of proactive strategies observed by the sum of the total number of reactive strategies observed plus the total number of proactive strategies observed, resulting in a scaled coefficient ranging from 0 to 1, with 0 representing the exclusive use of reactive strategies and 1 representing the exclusive use of proactive strategies. This method is consistent with the methodologies from previous studies examining classroom management strategies (Caldarella et al., 2020).

Frequency counts of proactive and reactive classroom management practices were measured using event-based tallies from the ASSIST, an observational measure that assesses social processes in the classroom using event-based tallies and global ratings of teacher and student behaviors (Debnam et al., 2017; Rusby et al., 2011). Reactive management practices were measured by tallying occurrences of teacher behaviors (e.g., comments and gestures) used to redirect misbehavior, including the use of prompting, verbal reprimands, and criticism. Proactive management practices were measured by tallying occurrences of verbal (e.g., reminding, explaining, praising) and nonverbal (e.g., modeling behavior, giving student thumbs up or pat on the back) demonstrations of behavioral expectations that occur prior to a behavioral disturbance. These tallies have been used previously to measure classroom management practices (Bottiani, Duran, Pas, & Bradshaw, 2019; Pas et al., 2015).

Classroom peer ecology. Classroom peer ecology was reported by students using a modified version of the Classroom Community Scale (Battistich et al, 1997). The

measure was validated in a sample of students in Grades 3 to 6 and demonstrated strong internal consistency (Cronbach's $\alpha = .78$; Battistich et al, 1997). Additionally, it demonstrated convergent validity with classroom observations of supportive and friendly behavior, prosocial behavior, frequency of cooperative activities, and student autonomy and influence (Battistich et al, 1997).

The scale was comprised of five items that included, "My classmates treat each other with respect" and "Kids in my classroom work together to solve problems." For students in Grades 4 and 5, the items were scored using a five-point Likert scale ranging from 1 (never) to 5 (always). For students in kindergarten through Grade 3, the items were scored from 1 (very not true) to 4 (very true). For each respondent, an overall peer ecology score was calculated by averaging the responses, with high scores reflecting a more positive peer ecology. Scores were then transformed and standardized by computing z-scores to account for the different scoring systems used to measure students in kindergarten through Grade 3 and students in Grades 4 and 5 (4-point versus 5-point Likert scale). These individual student scores were then aggregated at the classroom-level by averaging the standardized composite score of each student in a classroom.

Student misbehavior. Student misbehavior was measured using the ASSIST and events-based tallies of noncompliance, disruptive behavior, use of profanity, verbal aggression, and physical aggression (Debnam et al., 2017). Student noncompliance was defined by students failing to respond to a teacher's directive within five seconds. For example, noncompliance was tallied if students did not take out their books five second after being asked to do so by the teacher. Disruptive behavior included any student

behavior that interfered with classroom activities, such as talking out of turn or pounding on a desk. Profanity was defined by the use of abusive, offensive, and inappropriate language or gestures by students. Verbal aggression was defined as judgement or negative emotion communicated verbally to a peer. Physical aggression included aversive physical contact between peers or the damage of another student's property. An overall misbehavior score was computed by summing individual tallies. High scores on the composite variable reflect greater rates of student misbehavior.

Analytical Procedure

Multilevel serial mediation analyses were conducted in Mplus Version 7.4 (Muthén & Muthén, 1998-2017) to test the relations between teacher burnout, classroom management strategies, classroom peer ecology, and student misbehavior (Preacher, Zyphur, & Zhang, 2010; Stride, Gardner, Catley, & Thomas, 2015). The present study used hierarchical data in which teachers and classrooms were nested within schools. Multilevel modeling (MLM) was used to account for the violation of independence that occurs when using nested data. Analyzing nested data using traditional methods may cause biased estimates of parameters and standard errors, resulting in inflated levels of statistical significance (Maas & Hox, 2005). Furthermore, by employing MLM, the model accounted for school-level characteristics that may have influenced the theorized relations between variables.

Within the MLM, Level 1 represented the within-school level for modeling the relation between individual teacher characteristics on burnout, classroom management practices, classroom peer ecology, and student misbehaviors. Level 2, the between-school

level, controlled for school-level factors that may contribute to between-school differences in burnout, classroom management practices, classroom peer ecology, and student misbehavior. Predictor, mediator, and outcome variables were all measured at Level 1. Level 1 covariates included teacher gender, race/ethnicity, and years of teaching experience. Classroom racial and gender composition were also included as Level 1 covariates, as was the number of students in the classroom. Level 2 covariates included cohort and intervention condition.

Mplus 7.4 was used to estimate the significance of direct and indirect influences within the multilevel model using a Bayesian estimator to account for sample size and multivariate non-normality (Bhattacharya, Clarke, & Datta, 2008; McNeish, 2016; Muthén & Muthén, 1998-2017). Assumptions of linearity, homogeneity of variance, and multicollinearity were tested using scatter plots, residual plots, histograms, and assessment of variance inflation factors. Indirect effects were calculated using the product of coefficients methodology and asymmetric confidence intervals were used to test for significance of the indirect effects (MacKinnon & Fairchild, 2009; Preacher & Selig, 2012). Full mediation is indicated by significant indirect effects and non-significant direct effects while partial mediation is indicated by significant direct and indirect effects (Kline, 2015).

Three different models were tested, as the burnout subscales (emotional exhaustion, depersonalization, personal accomplishment) were analyzed separately. One direct effect, two specific indirect effects, one total indirect effect, and a total effect were calculated for each model (See Figures 2-4). As shown in Figure 1, path *a1* represents the

relation between the independent variable (IV; emotional exhaustion, depersonalization, or personal accomplishment) on the first mediator (M1; PRR). Path a_2 represents the relation between the IV and the second mediator (M2; peer ecology). Path b_1 represented the relation between M1 and the dependent variable (DV; student misbehavior) Path b_2 represented the relation between M2 and the DV. Path d_1 represented the relation between M1 and M2. Finally, path c' represented the direct effect of the IV on the DV and path c represents the total effect of the IV on the DV. Two simple indirect effects were also represented in each model (Indirect path 1: burnout IV \rightarrow PRR \rightarrow student misbehavior; Indirect path 2: burnout IV \rightarrow peer ecology \rightarrow student misbehavior), as was one total indirect effect (burnout IV \rightarrow PRR \rightarrow peer ecology \rightarrow student misbehavior).

Classroom racial and gender composition were included as within-group covariates, as was the number of students in the classroom. Teacher gender, race/ethnicity, and years of teaching experience were also included as within-group covariates. Intervention condition and cohort condition were included as between-group covariates to control for intervention effects from CSP. Emotional exhaustion, depersonalization, personal accomplishment, PRR, and classroom peer ecology were included as between and within-level variables.

CHAPTER IV

Results

Descriptive Statistics and Bivariate Correlations

Descriptive statistics for the variables used in the analyses are presented in Table 4. Among teachers, emotional exhaustion was the most commonly reported symptom of burnout ($M = 2.56$, $SD = 1.13$), followed by depersonalization ($M = 0.87$, $SD = 0.82$) then personal accomplishment ($M = 5.29$, $SD = 0.55$). On average, teachers used 17 proactive strategies and 9 reactive strategies per 15-minute observation, and the average PRR score was 0.64. Student misbehavior was positively skewed (1.76 , $SD = 0.17$), with frequency counts ranging from 0 to 38 per 15-minute observation. The median frequency count for student misbehavior was 5. Bayesian estimates were used to account for the non-normal distribution of student misbehavior.

Bivariate correlations among variables are presented in Table 5. With regard to individual teacher characteristics, teacher gender was significantly correlated with classroom peer ecology ($r = .27$, $p < .01$). Having a female teacher was associated with more positive student perceptions of the classroom peer ecology. Additionally, the number of years employed as a teacher was significantly correlated with depersonalization ($r = -.18$, $p < .05$), classroom peer ecology ($r = .27$, $p < .01$) and student misbehavior ($r = -.16$, $p < .05$). Greater teaching experience was associated with more positive student perceptions of the peer ecology and decreased symptoms of

depersonalization and rates of student misbehavior. With regard to classroom characteristics, emotional exhaustion was negatively correlated with percentage of White students in the classroom ($r = -.18, p < .01$). Percent of White students was also positively correlated with PRR and classroom peer ecology ($r = .23, p < .01$; $r = .33, p < .01$, respectively). As classrooms became more ethnically diverse, PRR decreased and student perceptions of the peer ecology became less positive. Finally, there was a negative correlation between the percent of White students in the classroom and student misbehavior ($r = -.20, p < .01$). Student misbehavior increased as classrooms became proportionately less White.

As expected, the three burnout subscales were significantly correlated with each other in the expected directions; however, the burnout subscales did not correlate with student misbehavior (all $ps > .05$). Of the burnout subscales, only emotional exhaustion was correlated with PRR ($r = -.18, p < .05$). Two burnout subscales, emotional exhaustion and depersonalization, were negatively correlated with classroom peer ecology ($r = -.31, p < .01$; $r = -.30, p < .01$, respectively). Student perceptions of the peer ecology were worse in classrooms where teachers reported greater symptoms of emotional exhaustion and depersonalization.

With regard to the mediating variables, PRR negatively correlated with student misbehavior ($r = -.46, p < .01$); however, the correlation between classroom peer ecology and student misbehavior was non-significant ($p > .05$). PRR was positively correlated with classroom peer ecology ($r = .22, p < .01$). Despite the lack of preliminary support underlying the relations between variables, the product of coefficients methodology does

not require a relationship between the predictor and outcome variables to establish mediation (MacKinnon & Fairchild, 2009) and the pattern of results suggested that mediation testing was useful.

Total and Direct Effects Between Variables

To test the hypothesis that teacher burnout is associated with student misbehavior, the total effects of emotional exhaustion, depersonalization, and personal accomplishment on student misbehavior were estimated. Contrary to Hypothesis 1, the total effect estimate coefficients were not significant in Models 1-3, indicating that there was not an overall relation between the three burnout subscales and student misbehavior (all $ps > .05$).

Next, the direct effects between the burnout subscales and mediating variables were explored. Hypothesis 2 was partially supported, in that emotional exhaustion was negatively associated with PRR in Model 1 ($b = -0.03, p < .05$). Teachers who reported higher levels of emotional exhaustion used fewer proactive management practices relative to reactive strategies. However, no relation was observed for depersonalization and personal accomplishment (all $ps > .05$). Hypothesis 3 was also partially supported by results from Models 1 and 2, in that emotional exhaustion and depersonalization were negatively associated with classroom peer ecology ($b = -0.12, p < .01$; $b = -0.14, p < .01$, respectively). Personal accomplishment was not associated with classroom peer ecology ($p > .05$). The relation between the two mediating variables was also examined. Hypothesis 4 was not supported, as PRR was not associated with classroom peer ecology in Models 1-3 (all $ps > .05$).

Finally, the direct effects between the mediating variables and student misbehavior were explored. In support of Hypothesis 5, there was a significant negative relation between PRR and student misbehavior in Models 1-3 with beta coefficients ranging from -14.03 to -14.36 (all $ps < .001$). However, Hypothesis 6 was not supported, as the relation between classroom peer ecology and student misbehavior was non-significant in Models 1-3 (all $ps > .05$).

Indirect Effects of Burnout on Student Behavior

PRR and peer ecology were analyzed as potential individual and sequential mediators. As predicted in Hypothesis 7, there was a significant indirect effect of emotional exhaustion on student misbehavior through PRR ($b = 0.39$, $CI = 0.01, 0.84$), though no significant indirect effects were observed for depersonalization and personal accomplishment. Hypothesis 8 was not supported, as the indirect effect of burnout on student misbehavior through classroom peer ecology were non-significant for each of the burnout subscales. Finally, the total indirect effects of teacher burnout on student misbehavior via classroom management strategies and classroom peer ecology were also not significant in Models 1-3. A summary of path coefficients for each model is presented in Table 6.

CHAPTER V

Discussion

Teachers experience a multitude of chronic and acute stressors on a daily basis (Ingersoll, 2001). While most cope effectively with teaching related stress, a subset of teachers become overwhelmed by the emotional demands and eventually experience burnout (Bauer et al., 2006; Gil-Monte et al., 2011). Teacher burnout has been linked to a number of adverse student outcomes, including increased incidences of student misbehavior (Aloe et al., 2014). Jennings and Greenberg (2009) theorize that a bidirectional relation exists between teacher burnout and student misbehavior, wherein misbehavior functions as both a contributor and outcome of teacher burnout. The present study sought to expand the literature by clarifying the mechanisms through which teacher burnout and student misbehavior relate. Specifically, this study tested a portion of the burnout model proposed by Jennings and Greenberg (2009) by examining whether teacher burnout relates to student misbehavior through changes in classroom management practices and the classroom peer ecology. Given the deleterious effects of burnout on both teacher and student wellbeing, it is critical to understand the mechanisms through which teacher burnout and student misbehavior relate to prevent or disrupt the cycle of burnout. Findings from the present study are discussed in detail below.

Teacher and Classroom Correlates of Burnout

Consistent with prior research investigating base rates of burnout, teachers in the current sample reported predominately low scores (Bauer et al., 2006; Gil-Monte et al., 2011). On average, teachers reported experiencing emotional exhaustion symptoms “a few times a month,” depersonalization symptoms “a few times a year or less,” and feelings of personal accomplishment “a few times per week.” However, 12% of teachers endorsed experiencing emotional exhaustion *at least* “a few times a week.” Fortunately, these findings suggest that most teachers effectively cope with teaching-related stress, though a substantial minority experience burnout-related symptoms on a weekly or daily basis.

The present study also clarifies individual, classroom, and school characteristics associated with burnout. Although previous studies demonstrated gender differences in rates and presentation of burnout symptoms, with females reporting higher emotional exhaustion and males reporting higher depersonalization, the three dimensions of burnout were not significantly related to teacher gender in the present study (Schwab & Iwanicki, 1982; Skaalvik & Skaalvik, 2016). This discrepancy may be attributable to insufficient power needed to detect gender differences, given the small number of male teachers included in the sample ($n = 11$). Additionally, teacher race and ethnicity was also not related to burnout in the present study, which is consistent with findings reported by Pas et al. (2012). This finding is significant, as previous studies have theorized that minority teachers may experience higher levels of burnout due to increased work-related stress associated with being a member of an ethnic or racial minority group (Pas et al., 2012).

There was a significant negative association between depersonalization and years of teaching experience, which suggests that less experienced teachers may have more cynical and disengaged attitudes towards students. This finding replicates and expands upon the literature, as previous studies demonstrating a relation between burnout and teaching experience employed a unidimensional measure of burnout and thus did not examine the relation between teaching experience and the individual burnout dimensions (Fisher, 2011). This study clarifies that less teaching experience is specifically associated with depersonalization, but not emotional exhaustion or decreased personal accomplishment. One possible explanation for this pattern of findings is that novice teachers may be less prepared to manage challenging student behaviors, and as a result, may be more likely to adopt disengaged and cynical attitudes towards students as a strategy for coping with negative emotions that arise from behavior problems.

Findings from the present study also suggest that the racial and ethnic composition of the classroom is correlated with emotional exhaustion, as rates of emotional exhaustion increased as classrooms became proportionately less White. A number of factors may be driving this relation. First, it is possible that some teachers may lack the knowledge or skills to manage classrooms that are culturally, linguistically, and ethnically diverse (Lopes-Murphy & Murphy, 2016). This may contribute to feelings of stress, which may evolve into burnout over time. Second, schools with a greater proportion of minority students tend to be under-resourced, which may also contribute to emotional exhaustion (Baker, Sciarra, & Farrie, 2014).

The correlation between the ethnic and racial classroom composition and teacher emotional exhaustion is troubling, as it is theorized that burnout may exacerbate implicit or explicit biases and lead teachers to employ less effective classroom management strategies with children of color which, in turn, may contribute to racial gaps in discipline practices and academic achievement (McIntosh, Girvan, Horner, & Smolkowski, 2014). Findings from the present study offer initial support for this theory, as the proportion of non-White students in the classroom negatively correlated with PRR and positively correlated with rates of student misbehavior.

Aim 1: Testing the Relation Between Burnout and Misbehavior

The first aim of the present study was to replicate findings that teacher burnout is associated with increased rates of student misbehavior using an observational measure of misbehavior (Aloe et al., 2014). Contrary to expectations, there were no significant correlations among the burnout subscales (emotional exhaustion, depersonalization, and personal accomplishment) and observed rates of student misbehavior. Furthermore, there were no significant total or direct effects when classroom management practices and peer ecology were added to the models. This finding was quite surprising given the large body of research that established a relation between teacher burnout and student misbehavior (Aloe et al., 2014); however, the pattern of simple and indirect effects provides clarification.

Aim 2. Testing the Classroom Processes Driving the Relation Between Teacher Burnout and Student Misbehavior

The second aim of the present study was to examine whether classroom management practices and classroom peer ecology are two mechanisms that link teacher burnout to student misbehavior. Although no significant relations were observed between the burnout subscales and student misbehavior, a significant indirect effect was observed for emotional exhaustion and student misbehavior through PRR in Model 1. Teachers experiencing emotional exhaustion employed fewer proactive management strategies relative to reactive strategies, which in turn, was associated with increased rates of misbehavior. However, the indirect pathway through PRR was not significant for depersonalization and personal accomplishment, as shown in Models 2 and 3. Additionally, the indirect pathway linking teacher burnout to student misbehavior through classroom peer ecology was not supported in Models 1-3, nor was the sequential indirect pathway through PRR and classroom peer ecology.

The present study is the first to identify classroom management strategies as one pathway through which teacher burnout relates to student misbehavior. The study clarifies that teachers experiencing emotional exhaustion employ a smaller proportion of proactive strategies relative to reactive strategies, which in turn, is associated with increased rates of student misbehavior. Although previous studies have demonstrated significant relations among teacher burnout, classroom management practices, and student misbehavior, no study to date has formally tested mediation (Battistich et al., 1997; Reinke et al., 2013). The non-significant direct relation between emotional exhaustion and student misbehavior suggests full mediation through classroom management practices.

In summary, the present study confirms that emotional exhaustion is associated with increased student misbehavior; however, the relation is driven by the use ineffective classroom management practices. Unlike previous studies that explored the relation using teacher reports of burnout and student misbehavior, a strength of the present study is that classroom observations were used to measure student misbehavior, making it possible to disentangle whether burnout is associated with a true increase in student misbehavior or whether burnout alters teachers' appraisals and perceptions of misbehavior. Findings from the present study clarify that teacher burnout is associated with an observable increase in misbehavior through the use of ineffective classroom management practices.

Contrary to expectations, the indirect effects through classroom peer ecology were non-significant and the full sequential mediation model was not supported. However, findings from the present study reveal a number of interesting relations among variables that clarify the classroom processes influencing classroom management practices, classroom peer ecology, and student misbehavior. These relations are discussed below.

Classroom Processes Associated with Burnout

Classroom management practices. The present study helps clarify the relation between teacher burnout and classroom management practices. First, as predicted, emotional exhaustion was negatively related to PRR; the ratio of proactive-to-reactive strategies grew smaller as teachers endorsed greater emotional exhaustion. In other words, teachers experiencing emotional exhaustion employed relatively fewer proactive strategies intended to prevent misbehavior from occurring in the first place, and relatively

more reactive strategies intended to prevent misbehavior from reoccurring. This replicates findings from Reinke et al. (2013) linking emotional exhaustion to a smaller praise-to-reprimand ratio. The present study also expands the existing literature on burnout and classroom management by clarifying that among the features of burnout, only emotional exhaustion was associated with the use of classroom management practices whereas no relation was observed for depersonalization and personal accomplishment. Emotional exhaustion may make it particularly difficult for teachers to implement effective classroom management strategies due to the additional cognitive resources, emotional energy, and motivation required to employ proactive strategies. For example, proactive classroom management requires planning, self-monitoring, and social awareness from teachers. Teachers experiencing emotional exhaustion may lack the emotional and cognitive resources to utilize preventative strategies, and instead rely on remedial strategies that occur more automatically following instances of misbehavior.

Overall, the present study demonstrates that reactive strategies comprise a greater proportion of the classroom management practices when teachers are emotionally exhausted. This finding supports the model of burnout developed by Jennings and Greenberg (2009), and suggests that the symptoms associated with burnout may make it difficult for teachers to employ effective classroom management strategies. This finding is troubling, given the importance of maximizing proactive strategies and minimizing reactive strategies to prevent and reduce student misbehavior (Caldarella et al., 2020; Owens et al., 2018).

Peer ecology. The present study also contributes to the literature by being the first to identify a relation between teacher burnout and classroom peer ecology. Students in classrooms with teachers who reported greater rates of emotional exhaustion and depersonalization reported less positive, helpful, and supportive peer interactions. Although directionality cannot be established due to the cross-sectional nature of the present study, several longitudinal studies have demonstrated a causal influence of teacher behaviors on the classroom peer ecology (Battistich et al., 1997; Kim et al., 1995). As such, findings from the present study findings support the theory posited by Jennings and Greenberg (2009) that teacher burnout disrupts classroom processes, including the peer ecology.

Importantly, the specific way in which emotional exhaustion and depersonalization influence the classroom peer ecology remains unclear. The present study hypothesized that the relation is conferred through ineffective classroom management strategies, as prior studies linked ineffective management practices to both burnout and negative peer ecology (Battistich et al., 1997; Kim et al., 1995; Reinke et al., 2013). Although a weak positive correlation was observed between PRR and classroom peer ecology ($r = .22$), the direct effects were non-significant in Models 1-3 after accounting for teacher burnout and student misbehavior.

The lack of relation between classroom management strategies and peer ecology complicates the body of research indicating that peer interactions are modeled after teacher-student interactions (Gest & Rodkin, 2011; Hendrickx et al., 2016; Jennings & Greenberg, 2009). The discrepant findings may be attributable to the way in which

classroom management practices were defined in the present study. By definition, reactive management strategies include any teacher behaviors used to correct student behavior problems; however, these strategies can be further classified into harsh (e.g., use of sarcasm, yelling) or neutral (e.g., calm prompting) reactive strategies (Farmer et al., 2014). The present study combined neutral and harsh reactive management strategies into one composite variable; however, it is possible that only harsh reactive strategies negatively influence peer interactions. As such, the relation between PRR and classroom climate may not have been detected in the present study due to the inclusion of neutral reactive strategies.

In sum, the present study provides evidence that teacher burnout is associated with poorer student perceptions of the peer ecology, though the mechanism driving the relation remains unclear. Future studies are needed to explore whether the emotional tone (e.g., harsh, positive, or neutral) of teacher-student interactions serves as alternative pathway through which teacher burnout and the classroom peer ecology relate. Regardless, the link between teacher burnout and negative peer ecology is troubling given that the classroom peer ecology influences students' academic engagement, academic achievement, and prosocial behavior (Kindermann, 2007; Roseth, Johnson, & Johnson, 2008; Wentzel & Caldwell, 1997).

Classroom Processes Associated with Student Misbehavior

Classroom management strategies. The present study also builds upon the body of literature demonstrating that proactive strategies are more effective than reactive strategies in managing student behavior, as PRR negatively related to rates of student

misbehavior (Caldarella et al., 2020; Clunies-Ross et al., 2008; Epstein et al., 2008). This finding suggests that the most effective classroom management approach for reducing student misbehavior is to maximize proactive strategies and minimize reactive strategies. Students engaged in significantly less misbehavior when teachers employed proportionately more proactive strategies, such as praise or support. In contrast, students engaged in greater rates of student misbehavior when teachers employed relatively more reactive strategies, such as reprimands and loss of privileges. (Caldarella et al., 2020; Clunies-Ross et al., 2008). It is theorized that proactive strategies are more effective than reactive strategies in discouraging misbehavior because reactive strategies provide students with information about which behaviors are inappropriate, while proactive strategies provide information about which behaviors are appropriate. Acknowledging appropriate behaviors may be particularly important for elementary students who may be less aware of behavior expectations compared to students in middle or high school.

In a promising finding, teachers in the current study were observed used more proactive strategies than reactive strategies. The average PRR in the current study was approximately 2:1 and nearly 80% of teachers had a PRR of at least 1:1. Significant improvements in student behavior have been observed when teachers achieve a 1:1 ratio, which suggests that most teachers in sample were employing effective classroom management strategies (Pisacreta, Tincani, Connell, & Axelrod, 2011). Despite this positive finding, nearly 20% of the sample employed fewer proactive strategies relative to reactive strategies, and PRRs as low as 1:13 were observed, emphasizing the continued

need for interventions aimed at increasing teachers' PRR (Caldarella et al., 2020; Pisacreta et al., 2011).

In a surprising finding, the relation between PRR and student misbehavior was not conferred through the classroom peer ecology. It was theorized that a greater reliance on reactive classroom management strategies would contribute development of a negative peer ecology, which in turn would increase rates of misbehavior by normalizing and valuing antisocial behavior (Battistich et al., 1997; Kim et al., 1995). As discussed earlier, although a weak positive correlation was observed between PRR and peer ecology ($r = .22$), the direct effects were non-significant after accounting for teacher burnout and student misbehavior. In other words, students' perceptions of the peer ecology were not associated with their teachers' use of reactive management strategies. Additionally, student perceptions of the peer ecology were not associated with rates of student misbehavior, as only a small negative correlation was observed between classroom peer ecology and rates of student misbehavior ($r = -.15$) and no direct effects were observed when classroom management practices were included in the model.

In summary, findings from present study suggest that students engage in higher rates of misbehavior when teachers employ relatively more reactive classroom management strategies. The cross-sectional nature of the study limits the ability to infer causality, making it possible that teachers employ relatively more reactive strategies in response to greater misbehavior. However, several studies with randomized controlled designs established the causal influences of PRR on student behavior (Caldarella et al., 2020; Pisacreta et al., 2011). The present study also suggests that classroom peer ecology

does not play a significant role in the relation between classroom management practices and student misbehavior. The role of classroom peer ecology is discussed in greater detail below.

Classroom peer ecology. The present study hypothesized that the quality of the classroom peer ecology would negatively relate to student misbehavior, as previous studies found that student behaviors tend to mirror the perceived social norms and values of the classroom (Battistich et al., 1997; Gest & Rodkin, 2011; Kim et al., 1995). Researchers theorize that positive peer ecologies discourage misbehavior by creating a sense of belonging among students that increases students' intrinsic motivation to behave pro-socially (Gest & Rodkin, 2011). In contrast, negative peer ecologies may promote disruptive behavior by normalizing and valuing antisocial behavior (Barth, Dunlap, Dane, Lochman, & Wells, 2004).

Although a weak negative correlation was observed between classroom peer ecology and rates of student misbehavior ($r = -.15$), the direct effects between classroom peer ecology and student misbehavior were non-significant when teacher burnout and classroom management practices were added to Models 1-3. This suggests that the amount of variance in student misbehavior explained by the classroom peer ecology is negligible, and that students engaged in similar rates of misbehavior regardless of whether the peer environment was perceived as helpful and supportive or disrespectful at harsh. Instead, student misbehavior appears to be most strongly influenced by classroom management strategies.

Limitations and Future Directions

While this study makes important contributions to the literature, the findings should be interpreted within the context of several limitations. Foremost, the cross-sectional design of the study limits the ability to establish causality or directionality among the variables of interest. For example, the present study is unable to determine whether a small PRR increases rates of misbehavior, or whether teachers employ more reactive strategies when rates of misbehavior are high. However, inferences about directionality were made based on findings from previous experimental or longitudinal studies.

There were also several limitations related to measurement. First, classroom management strategies and student misbehavior were measured using frequency counts, and all observed behaviors carried a weight of 1. This methodology is consistent with a number of previous studies utilizing data obtained through classroom observations (Bottiani et al., 2019; Pas et al., 2015). The present study did not account behaviors that rarely occur but may have a significant impact on teachers and students, such as physical aggression. As a result, the results may not capture the influence of high impact, low frequency classroom behaviors on outcome variables. However, to account for low occurring behaviors that resulted in positively skewed composite variables, the present study employed a Bayesian estimator that is robust to non-normality (Bhattacharya et al., 2008).

An second limitation related to measurement is the broad definition of reactive and proactive strategies, making it is unclear whether specific proactive or reactive strategies are particularly beneficial or detrimental. For example, reactive management

practices included both neutral and harsh reactive strategies because previous studies that found that all remedial management strategies, regardless of the tone with which they are delivered, are associated with increased rates of student misbehavior (Pas et al., 2015). However, it is possible that those strategies had differential effects on classroom peer ecology.

The use of a ratio to measure classroom management strategies represents a third measurement-related limitation. PRR was used to measure classroom management strategies because previous studies found that the ratio of proactive-to-reactive strategies is more predictive of student misbehavior rather than the overall frequency with which both strategies are used independently (Caldarella et al., 2020; Pfiffner et al., 1985). Although the present study found that that rates of student misbehavior are lowest when teachers maintain a high PRR, the optimal frequency with which teachers must employ classroom management strategies to discourage misbehavior remains unclear. Future studies should explore the interaction between PRR and the total number of classroom management strategies to identify the optimal number and ratio of strategies needed to reduce rates of misbehavior.

Finally, there were several limitations related to the sample. First, only 40% of teachers included in the sample completed the self-reported measure of burnout. The relatively low response rate makes the findings susceptible to non-response bias. It is possible that teachers experiencing the most severe burnout were less likely to complete surveys, given the time and energy demands. As such, the sample may be biased towards teachers experiencing less burnout. A second limitation related to the sample is that the

teacher sample was overwhelmingly White and female, limiting the generalizability of the findings to that demographic. Future studies should use a demographically diverse sample of teachers, as previous studies have found that teacher-student demographic alignment may impact teacher burnout, classroom management practices, and student misbehavior (for review, see Bottiani et al., 2019).

Implications for Intervention

The present study demonstrates that teacher burnout continues to be significant problem for teachers and their students. It is important to develop interventions to prevent the development and maintenance of burnout given its impact on teachers' psychosocial functioning, use of classroom management strategies, classroom peer ecology, and, indirectly, student misbehavior. Findings from the present study can be applied to interventions aimed at preventing or reducing burnout among teachers.

First, the current study emphasizes the utility in targeting teachers' PRR as a means to reduce rates of student misbehavior and disrupt the cycle of burnout. Findings indicate that emotional exhaustion is associated with a smaller PRR, which in turn, is associated with higher rates of misbehavior. Given that student misbehavior is a significant source of teacher stress, it is likely that the increase in student misbehavior further perpetuates feelings of burnout (Jennings & Greenberg, 2009). Thus, interventions designed to increase teachers' PRR may disrupt the cycle of burnout by reducing misbehavior. Although no intervention, to date, has explicitly explored using PRR to reduce teacher burnout, a number of interventions have demonstrated the effectiveness in using PRR to

decrease student misbehavior (Caldarella et al., 2020; Cook et al., 2017; Wills et al., 2009).

Cook et al. (2017) examined the efficacy of a PRR intervention in a quasi-experimental study with elementary and middle school teachers. Teachers ($n = 6$) were assigned to either the intervention condition or control condition. The intervention consisted of two 45-minute education sessions during which teachers were taught strategies to maintain a 5:1 PRR. Teachers also wore a device for two hours each day that signaled them to positively reinforce students engaging in appropriate behaviors approximately every five minutes. Finally, teachers were asked to self-monitor their PRR for 30 minutes per day. Trained observers measured teachers' PRRs, as well as students' on-task and disruptive behavior at baseline, after one month of receiving the intervention, and after two months of receiving the intervention. Results revealed a significant increase in PRR for teachers in the intervention condition; however, no increase was observed for teachers in the control condition. Additionally, the average PRR for intervention teachers at the 2-month time point was 4.7:1. Furthermore, compared to students in control classrooms, students in intervention classrooms demonstrated significant declines in disruptive behavior and increases in on-task behavior. Despite these promising findings, the results should be interpreted cautiously in light of several limitations. First, it remains unclear whether the increase in PRR persists after teachers stop wearing the monitoring device. Second, the small sample size limits the generalizability of the findings. Finally, and most importantly, it remains unclear whether the intervention is feasible and effective for teachers who are already experiencing burnout.

While findings from the present study suggest that interventions targeting classroom management practices may disrupt the cycle of burnout, the efficacy of mindfulness-based interventions in reducing and preventing burnout has been well established (Iancu, Rusu, Măroiu, Păcurar, & Maricuțoiu, 2018). It is theorized that mindfulness-based interventions provide a set of skills that allow teachers to cope with work-related stressors more effectively. More effective coping, in turn, is associated with reductions in stress and burnout which allows teachers to allocate more emotional and cognitive resources towards effective teaching (Roeser et al., 2013). The Mindfulness Training (MT) program is one such intervention that was developed to prevent and reduce burnout by promoting mindfulness and occupational self-compassion (Roeser et al., 2013). The 8-week, 11-session program consists of mindfulness and yoga activities, group discussions, and homework assignments. A randomized controlled trial found that teachers who completed MT reported significantly fewer burnout symptoms compared to teachers assigned to the control condition immediately following the program and three months post-program (Roeser et al., 2013). Additionally, teachers in the MT condition reported significant reductions in anxiety and depression immediately post-program and three months post-program. In sum, there are ample opportunities to prevent or disrupt the cycle of burnout and improve the outcomes and wellbeing of students and teachers alike.

Conclusion

Taken together, findings from the present study contribute to the body of literature linking teacher burnout to student misbehavior by clarifying the classroom

processes driving the relation. The results demonstrate that emotional exhaustion indirectly relates to increased rates of student misbehavior through the use of ineffective classroom management practices. Teachers experiencing emotional exhaustion were observed employing a smaller ratio of proactive-to-reactive strategies which, in turn, was associated with increased rates of student misbehavior.

The lack of significant total and direct effects between teacher burnout and student misbehavior suggests that the relation may be more tenuous than previously reported (Aloe et al., 2014). Unlike previous studies that relied on teacher reports of student misbehavior, the present study used classroom observations to measure student misbehavior. As such, it is possible that findings from previous studies reflect the tendency for teachers to interpret student behavior more negatively when experiencing burnout. Future studies that examine the relation between burnout and student misbehavior should explore the role of interpretation biases by including subjective and objective measures of misbehavior (Bianchi, Laurent, Schonfeld, Verkuilen, & Berna, 2018). However, the present study confirms that emotional exhaustion is associated with an observed increase in misbehavior due to the use of ineffective classroom management practices.

In summary, the burnout model proposed by Jennings and Greenberg (2009) was partially supported in that teacher burnout was associated with disruptions in classroom management practices and the classroom peer ecology. The use of ineffective management practices, in turn, was associated with increased rates of misbehavior. Despite several limitations, the present study clarifies the classroom processes driving the

relation between teacher burnout, classroom management practices, classroom peer ecology, and student misbehavior. Knowledge of these relations can be used to develop interventions aimed at disrupting the cycle of burnout for the purpose of improving teacher and student outcomes.

REFERENCES

- Abenavoli, R. M., Jennings, P. A., Greenberg, M. T., Harris, A. R., & Katz, D. A. (2013). The protective effects of mindfulness against burnout among educators. *Psychology of Education Review, 37*(2), 57–69.
- Ahola, K. (2007). *Occupational burnout and health* (People and Work Research Reports No. 81). Helsinki: Finnish Institute of Occupational Health.
- Aloe, A. M., Shisler, S. M., Norris, B. D., Nickerson, A. B., & Rinker, T. W. (2014). A multivariate meta-analysis of student misbehavior and teacher burnout. *Educational Research Review, 12*, 30–44.
- Anderson, M. B. G., & Iwanicki, E. F. (1984). Teacher motivation and its relationship to burnout. *Educational Administration Quarterly, 20*(2), 109–132.
- Antoniou, A.-S., Polychroni, F., & Vlachakis, A.-N. (2006). Gender and age differences in occupational stress and professional burnout between primary and high-school teachers in Greece. *Journal of Managerial Psychology, 21*(7), 682–690.
- Baker, B. D., Sciarra, D. G., & Farrie, D. (2014). Is School Funding Fair? A National Report Card. Third Edition. In *Education Law Center*. Retrieved from <https://eric.ed.gov/?id=ED570455>
- Bakker, A. B., Schaufeli, W. B., Demerouti, E., Janssen, P. P. M., Van Der Hulst, R., & Brouwer, J. (2000). Using equity theory to examine the difference between burnout and depression. *Anxiety, Stress & Coping, 13*(3), 247–268.
- Barlow, D. H., & Hersen, M. (1984). *Single case experimental designs: Strategies for studying behavior change*. New York, NY: Pergamon Press.

- Barth, J. M., Dunlap, S. T., Dane, H., Lochman, J. E., & Wells, K. C. (2004). Classroom environment influences on aggression, peer relations, and academic focus. *Journal of School Psychology, 42*(2), 115–133.
- Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities. *Educational Psychologist, 32*(3), 137–151.
- Bauer, J., Stamm, A., Virnich, K., Wissing, K., Müller, U., Wirsching, M., & Schaarschmidt, U. (2006). Correlation between burnout syndrome and psychological and psychosomatic symptoms among teachers. *International Archives of Occupational and Environmental Health, 79*(3), 199–204.
- Betoret, F. D., & Artiga, A. G. (2010). Barriers perceived by teachers at work, coping strategies, self-efficacy and burnout. *The Spanish Journal of Psychology, 13*(2), 637–654.
- Bhattacharya, A., Clarke, B. S., & Datta, G. S. (2008). A Bayesian test for excess zeros in a zero-inflated power series distribution. In *Beyond Parametrics in Interdisciplinary Research: Festschrift in Honor of Professor Pranab K. Sen* (pp. 89–104).
- Bianchi, R., Laurent, E., Schonfeld, I. S., Verkuilen, J., & Berna, C. (2018). Interpretation bias toward ambiguous information in burnout and depression. *Personality and Individual Differences, 135*, 216–221.
- Bottiani, J. H., Duran, C. A. K., Pas, E. T., & Bradshaw, C. P. (2019). Teacher stress and burnout in urban middle schools: Associations with job demands, resources, and effective classroom practices. *Journal of School Psychology, 77*, 36–51.

- Buyse, E., Verschueren, K., Verachtert, P., & Van Damme, J. (2009). Predicting school adjustment in early elementary school: Impact of teacher-child relationship quality and relational classroom climate. *The Elementary School Journal, 110*(2), 119–141.
- Byrne, B. M. (1993). The Maslach Burnout Inventory: Testing for factorial validity and invariance across elementary, intermediate and secondary teachers. *Journal of Occupational and Organizational Psychology, 66*(3), 197–212.
- Caldarella, P., Larsen, R. A. A., Williams, L., Downs, K. R., Wills, H. P., & Wehby, J. H. (2020). Effects of teachers' praise-to-reprimand ratios on elementary students' on-task behaviour. *Educational Psychology, 1*–17.
- Clunies-Ross, P., Little, E., & Kienhuis, M. (2008). Self-reported and actual use of proactive and reactive classroom management strategies and their relationship with teacher stress and student behaviour. *Educational Psychology, 28*(6), 693–710.
- Cook, C. R., Grady, E. A., Long, A. C., Renshaw, T., Coddling, R. S., Fiat, A., & Larson, M. (2017). Evaluating the impact of increasing general education teachers' ratio of positive-to-negative interactions on students' classroom behavior. *Journal of Positive Behavior Interventions, 19*(2), 67–77.
- De Heus, P., & Diekstra, R. F. (1999). Do teachers burn out more easily? A comparison of teachers with other social professions on work stress and burnout symptoms. In *Understanding and preventing teacher burnout: A sourcebook of international*

research and practice (pp. 269–284). Cambridge, England: Cambridge University Press.

Debnam, K. D., Bottiani, J. H., Rusby, J., & Bradshaw, C. P. (2017). Spring 2017 Middle School ASSIST Manual for the Compassionate Schools Project. *Unpublished training manual*. University of Virginia, Charlottesville, VA.

Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology, 62*, 189–214.

Emmer, E. T., & Stough, L. M. (2001). Classroom management: A critical part of educational psychology, with implications for teacher education. *Educational Psychologist, 36*(2), 103–112.

Epstein, M., Atkins, M., Cullinan, D., Kutash, K., & Weaver, R. (2008). Reducing behavior problems in the elementary school classroom. *IES Practice Guide. NCEE 2008-012*. Retrieved from What Works Clearinghouse website: <https://eric.ed.gov/?id=ED502720>

Farmer, T. W., Reinke, W. M., & Brooks, D. S. (2014). Managing classrooms and challenging behavior: Theoretical considerations and critical issues. *Journal of Emotional and Behavioral Disorders, 22*(2), 67–73.

Fisher, M. H. (2011). Factors influencing stress, burnout, and retention of secondary teachers. *Current Issues in Education, 14*(1).

Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues, 30*(1), 159–165.

Gest, S. D., & Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *Journal of Applied Developmental Psychology, 32*(5), 288–296.

- Gil-Monte, P. R., Carlotto, M. S., & Gonçalves Câmara, S. (2011). Prevalence of burnout in a sample of Brazilian teachers. *The European Journal of Psychiatry, 25*(4), 205–212.
- Granström, K. (2014). Group phenomena and classroom management in Sweden. In C.M. Evertson & C.S. Weinstein (Eds.), *Handbook of Classroom Management*. Abingdon: Routledge.
- Haynes, M. (2014). *On the Path to Equity: Improving the Effectiveness of Beginning Teachers*. Alliance for Excellent Education. Retrieved from <https://all4ed.org/wp-content/uploads/2014/07/PathToEquity.pdf>
- Hendrickx, M. M. H. G., Mainhard, M. T., Boor-Klip, H. J., Cillessen, A. H. M., & Brekelmans, M. (2016). Social dynamics in the classroom: Teacher support and conflict and the peer ecology. *Teaching and Teacher Education, 53*, 30–40.
- Herman, K. C., Hickmon-Rosa, J., & Reinke, W. M. (2018). Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. *Journal of Positive Behavior Interventions, 20*(2), 90–100.
- Hoglund, W. L., Klinge, 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.
- Iancu, A. E., Rusu, A., Măroiu, C., Păcurar, R., & Maricuțoiu, L. P. (2018). The effectiveness of interventions aimed at reducing teacher burnout: A meta-analysis. *Educational Psychology Review, 30*(2), 373–396.

- Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499–534.
- Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*, 79(1), 491–525.
- Jessop, D. S., & Turner-Cobb, J. M. (2008). Measurement and meaning of salivary cortisol: A focus on health and disease in children. *Stress*, 11(1), 1–14.
- Kim, D., Solomon, D., & Roberts, W. (1995). *Classroom practices that enhance students' sense of community*. Paper presented at the Annual Meeting of the American Educational Research Association: San Francisco, CA. Retrieved from <https://files.eric.ed.gov/fulltext/ED385514.pdf>
- Kindermann, T. A. (2007). Effects of naturally existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development*, 78(4), 1186–1203.
- Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling, Fourth Edition*. Guilford Publications.
- Ladd, G. W., & Burgess, K. B. (1999). Charting the relationship trajectories of aggressive, withdrawn, and aggressive/withdrawn children during early grade school. *Child Development*, 70(4), 910–929.
- Lassen, S. R., Steele, M. M., & Sailor, W. (2006). The relationship of school-wide Positive Behavior Support to academic achievement in an urban middle school. *Psychology in the Schools*, 43(6), 701–712.

- Leiter, M. P., & Maslach, C. (2016). Latent burnout profiles: A new approach to understanding the burnout experience. *Burnout Research*, 3(4), 89–100.
- Lopes-Murphy, S. A., & Murphy, C. G. (2016). The Influence of Cross-Cultural Experiences & Location on Teachers' Perceptions of Cultural Competence. *Journal of the Scholarship of Teaching and Learning*, 16(3), 57–71.
- Luiselli, J. K., Putnam, R. F., Handler, M. W., & Feinberg, A. B. (2005). Whole-school positive behaviour support: Effects on student discipline problems and academic performance. *Educational Psychology*, 25(2–3), 183–198.
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient Sample Sizes for Multilevel Modeling. *Methodology*, 1(3), 86–92.
- MacKinnon, D. P., & Fairchild, A. J. (2009). Current Directions in Mediation Analysis. *Current Directions in Psychological Science*, 18(1), 16–20.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual Review of Psychology*, 58, 593.
- Marzano, R. J., Marzano, J. S., & Pickering, D. (2003). *Classroom management that works: Research-based strategies for every teacher*. ASCD.
- Maslach, C., Jackson, S. E., Leiter, M. P., Schaufeli, W. B., & Schwab, R. L. (1986). *Maslach burnout inventory* (Vol. 21). Consulting Psychologists Press: Palo Alto, CA.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422.

- McCormick, J., & Barnett, K. (2011). Teachers' attributions for stress and their relationships with burnout. *International Journal of Educational Management*, 25(3), 278–293.
- McIntosh, K., Girvan, E. J., Horner, R. H., & Smolkowski, K. (2014). Education not incarceration: A conceptual model for reducing racial and ethnic disproportionality in school discipline. *Journal of Applied Research on Children*, 5(2), 1–22.
- McKown, C., Russo-Ponsaran, N. M., Johnson, J. K., Russo, J., & Allen, A. (2016). Web-Based Assessment of Children's Social-Emotional Comprehension. *Journal of Psychoeducational Assessment*, 34(4), 322–338.
- McManus, I., Winder, B., & Gordon, D. (2002). The causal links between stress and burnout in a longitudinal study of UK doctors. *The Lancet*, 359(9323), 2089–2090.
- McNeish, D. (2016). On Using Bayesian Methods to Address Small Sample Problems. *Structural Equation Modeling: A Multidisciplinary Journal*, 23(5), 750–773.
- Metlife. (2012). *The Metlife survey of the American teacher*. Retrieved from <https://eric.ed.gov/?id=ED542202>
- Montgomery, C., & Rupp, A. A. (2005). A meta-analysis for exploring the diverse causes and effects of stress in teachers. *Canadian Journal of Education/Revue Canadienne de l'éducation*, 458–486.
- Muthén, L. K., & Muthén, B. O. (1998). *Mplus User's Guide. Eighth Edition*. Los Angeles, CA: Muthén & Muthén.

- Oberle, E., & Schonert-Reichl, K. A. (2016). Stress contagion in the classroom? The link between classroom teacher burnout and morning cortisol in elementary school students. *Social Science & Medicine*, *159*, 30–37.
- O'Brien, P., Goddard, R., & Keeffe, M. (2008). Burnout confirmed as a viable explanation for beginning teacher attrition. In P. L. Jeffery (Ed.), *Proceedings of Australian Association for Research in Education Annual Conference (AARE 2007)*. Retrieved from <http://www.aare.edu.au/07pap/obr07567.pdf>
- Owens, J. S., Holdaway, A. S., Smith, J., Evans, S. W., Himawan, L. K., Coles, E. K., ... Dawson, A. E. (2018). Rates of Common Classroom Behavior Management Strategies and Their Associations With Challenging Student Behavior in Elementary School. *Journal of Emotional and Behavioral Disorders*, *26*(3), 156–169.
- Pas, E. T., Bradshaw, C. P., & Hershfeldt, P. A. (2012). Teacher-and school-level predictors of teacher efficacy and burnout: Identifying potential areas for support. *Journal of School Psychology*, *50*(1), 129–145.
- Pas, E. T., Cash, A. H., O'Brennan, L., Debnam, K. J., & Bradshaw, C. P. (2015). Profiles of classroom behavior in high schools: Associations with teacher behavior management strategies and classroom composition. *Journal of School Psychology*, *53*(2), 137–148.
- Pfiffner, L. J., Rosén, L. A., & O'Leary, S. G. (1985). The efficacy of an all-positive approach to classroom management. *Journal of Applied Behavior Analysis*, *18*(3), 257–261.

- Pisacreta, J., Tincani, M., Connell, J. E., & Axelrod, S. (2011). Increasing Teachers' Use of a 1:1 Praise-to-Behavior Correction Ratio to Decrease Student Disruption in General Education Classrooms. *Behavioral Interventions*, 26(4), 243–260.
- Preacher, K. J., & Selig, J. P. (2012). Advantages of Monte Carlo Confidence Intervals for Indirect Effects. *Communication Methods and Measures*, 6(2), 77–98.
- Qualtrics. 2019. Provo, UT. Available at <https://www.qualtrics.com>
- Reinke, W. M., Herman, K. C., & Stormont, M. (2013). Classroom-level positive behavior supports in schools implementing SW-PBIS: Identifying areas for enhancement. *Journal of Positive Behavior Interventions*, 15(1), 39–50.
- Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., ... Harrison, J. (2013). Mindfulness training and reductions in teacher stress and burnout: Results from two randomized, waitlist-control field trials. *Journal of Educational Psychology*, 105(3), 787–804.
- Roseth, C. J., Johnson, D. W., & Johnson, R. T. (2008). Promoting early adolescents' achievement and peer relationships: The effects of cooperative, competitive, and individualistic goal structures. *Psychological Bulletin*, 134(2), 223.
- Rusby, J. C., Crowley, R., Sprague, J., & Biglan, A. (2011). Observations of the middle school environment: The context for student behavior beyond the classroom. *Psychology in the Schools*, 48(4), 400–415.
- Sabey, C. V., Charlton, C., & Charlton, S. R. (2019). The “Magic” Positive-to-Negative Interaction Ratio: Benefits, Applications, Cautions, and Recommendations. *Journal of Emotional and Behavioral Disorders*, 27(3), 154–164.

- Schaufeli, W. B., Maassen, G. H., Bakker, A. B., & Sixma, H. J. (2011). Stability and change in burnout: A 10-year follow-up study among primary care physicians. *Journal of Occupational and Organizational Psychology, 84*(2), 248–267.
- Schwab, R. L., & Iwanicki, E. F. (1982). Who are our burned out teachers? *Educational Research Quarterly.*
- Shin, H., Noh, H., Jang, Y., Park, Y. M., & Lee, S. M. (2013). A longitudinal examination of the relationship between teacher burnout and depression. *Journal of Employment Counseling, 50*(3), 124–137.
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education, 27*(6), 1029–1038.
- Skaalvik, E. M., & Skaalvik, S. (2016). Teacher stress and teacher self-efficacy as predictors of engagement, emotional exhaustion, and motivation to leave the teaching profession. *Creative Education, 7*(13), 1785.
- Skaalvik, E. M., & Skaalvik, S. (2017). Dimensions of teacher burnout: Relations with potential stressors at school. *Social Psychology of Education, 20*(4), 775–790.
- Skiba, R. J., Horner, R. H., Chung, C.-G., Rausch, M. K., May, S. L., & Tobin, T. (2011). Race Is Not Neutral: A National Investigation of African American and Latino Disproportionality in School Discipline. *School Psychology Review, 40*(1), 23.
- Sokka, L., Huotilainen, M., Leinikka, M., Korpela, J., Henelius, A., Alain, C., ... Pakarinen, S. (2014). Alterations in attention capture to auditory emotional

- stimuli in job burnout: An event-related potential study. *International Journal of Psychophysiology*, 94(3), 427–436.
- Sullivan, K., Cleary, M., & Sullivan, G. (2005). *Bullying in Secondary Schools: What it Looks Like and How to Manage it*.
- Wentzel, K. R., & Caldwell, K. (1997). Friendships, Peer Acceptance, and Group Membership: Reactions to Academic Achievement in Middle School. *Child Development*, 68(6), 1198–1209.
- Wills, H. P., Kamps, D., Hansen, B., Conklin, C., Bellinger, S., Neaderhiser, J., & Nsubuga, B. (2009). The Classwide Function-Based Intervention Team Program. *Preventing School Failure: Alternative Education for Children and Youth*, 54(3), 164–171.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). WJIII tests of cognitive abilities and achievement. *Itasca, IL: Riverside Publishing*.
- Zhong, J., You, J., Gan, Y., Zhang, Y., Lu, C., & Wang, H. (2009). Job Stress, Burnout, Depression Symptoms, and Physical Health among Chinese University Teachers. *Psychological Reports*, 105(3), 1248–1254.

Table 1

Comparing Characteristics of CSP Schools vs. non-CSP Schools Using t-test for Equality of Means

	CSP Schools (<i>M, SD</i>)	Non-CSP Schools (<i>M, SD</i>)	<i>t</i> - statistic	<i>p</i> - value
% FRPL	72.00(15.41)	59.84(24.34)	-1.33	.01
% Teachers with Master's degree or higher	79.98(10.43)	85.27(11.28)	1.71	.02
% Students White	36.68(18.61)	45.03(21.19)	1.27	.05

Note: CSP school $N = 45$, non-CSP school $N = 47$.

Table 2

*Comparing Characteristics of High Respondent Schools vs. Low Respondent Schools
Using t-test for Equality of Means*

	High Participation (<i>M, SD</i>)	Low Participation (<i>M, SD</i>)	<i>t</i> -statistic	<i>p</i> -value
% FRPL	74.65 (13.99)	74.40 (20.47)	0.03	.98
% Teachers with Master's degree or higher	75.44 (9.25)	76.57 (12.54)	-0.22	.83
% Students White	29.67 (21.73)	38.88 (20.42)	-0.90	.38

Note: High participation refers to schools with teacher participation rates in the top 16% ($N = 7$); low participation refers to schools with teacher participation rates in the bottom 25% ($N = 11$).

Table 4
Descriptive Statistics

	<i>M</i>	<i>SD</i>	Median	Min	Max	Skewness Statistic	Skewness SD
Emotional Exhaustion	2.56	1.13	2.56	0.01	5.89	0.17	0.17
Depersonalization	0.87	0.82	0.60	0.00	3.60	1.07	0.17
Personal Accomplishment	5.29	0.55	5.50	3.63	6.00	-0.87	0.17
Proactive Strategies	17.03	10.80	14.62	0.14	50.54	0.99	0.17
Reactive Strategies	9.35	7.27	7.69	0.00	39.52	1.32	0.17
Proactive-to-Reactive Ratio (PRR)	0.64	0.20	0.65	0.07	1.00	-0.38	0.17
Classroom Peer Ecology	0.01	0.60	0.12	-2.20	1.96	-0.24	0.21
Student Misbehavior	7.99	6.99	5.89	0.00	38.40	1.76	0.17

Table 5

Intercorrelations for all Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Teacher Gender	1.00	-.06	.11	.10	-.07	-.05	.05	.07	.04	.02	-.08	.04	.27**	-.13
2 Teacher Race/Ethnicity	-.06	1.00	.07	-.19**	.07	-.07	-.22**	-.05	.07	.03	-.10	-.06	-.13	-.02
3 Years Teaching	.11	.07	1.00	.00	-.04	.11	.24**	.09	-.12	-.18*	.05	.06	.27**	-.16*
4 Intervention	.10	-.19**	.00	1.00	-.06	.03	.13	.02	.11	.07	-.12	.05	-.04	.00
5 Cohort	-.07	.07	-.04	-.06	1.00	-.19**	-.02	-.03	-.07	.05	.00	.04	.03	.08
6 Class Size	-.05	-.07	.11	.03	-.19**	1.00	.18*	.10	-.01	-.13	.09	.05	.14	-.05
7 Percent White	.05	-.22**	.24**	.13	-.02	.18*	1.00	.14	-.18**	-.11	.06	.23**	.33**	-.20**
8 Percent Male	.07	-.05	.09	.02	-.03	.10	.14	1.00	-.09	-.09	.08	.05	.00	.02
9 Emotional Exhaustion	.04	.07	-.12	.11	-.07	-.01	-.18**	-.09	1.00	.54**	-.35**	-.18*	-.31**	.07
10 Depersonalization	.02	.03	-.18*	.07	.05	-.13	-.11	-.09	.54**	1.00	-.34**	-.06	-.30**	-.06
11 Personal Accomplishment	-.08	-.10	.05	-.12	.00	.09	.06	.08	-.35**	-.34**	1.00	.04	.13	.05
12 PRR	.04	-.06	.06	.05	.04	.05	.23**	.05	-.18*	-.06	.04	1.00	.22**	-.46**
13 Peer Ecology	.27**	-.13	.27**	-.04	.03	.14	.33**	.00	-.31**	-.30**	.13	.22**	1.00	-.15
14 Student Misbehavior	-.13	-.02	-.16*	.00	.08	-.05	-.20**	.02	.07	-.06	.05	-.46**	-.15	1.00

** $p < .01$; * $p < .05$

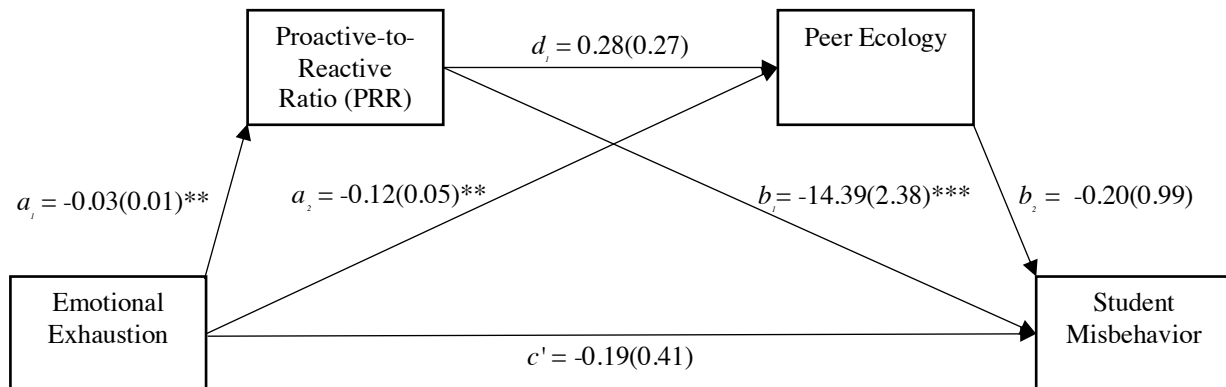
Table 6

Summary of Total and Indirect Effects

Path	Estimate	Posterior SD	P Value	Lower Limit CI	Upper Limit CI
Model 1					
(Ind 1) Emotional Exhaustion > PRR > Student Misbehavior	0.39	0.21	.02	0.01	0.84
(Ind 2) Emotional Exhaustion > Peer Ecology > Student Misbehavior	0.02	0.13	.43	-0.25	0.30
(Ind 3) Emotional Exhaustion > PRR > Peer Ecology > Student Misbehavior	0.001	0.01	.45	-0.02	0.03
Total Indirect Effect	0.42	0.25	.04	-0.05	0.91
Total	0.23	0.44	.29	-0.65	1.08
Model 2					
(Ind 1) Depersonalization > PRR > Student Misbehavior	0.17	0.28	.23	-0.34	0.76
(Ind 2) Depersonalization > Peer Ecology > Student Misbehavior	0.10	0.19	.25	-0.27	0.50
(Ind 3) Depersonalization > PRR > Peer Ecology > Student Misbehavior	0.00	0.01	.39	-0.02	0.03
Total Indirect Effect	0.28	0.33	.16	-0.35	0.89
Total	-0.57	0.64	.21	-1.88	0.79
Model 3					
(Ind 1) Personal Accomplishment > PRR > Student Misbehavior	-0.30	0.44	.23	-1.27	0.45
(Ind 2) Personal Accomplishment > Peer Ecology > Student Misbehavior	-0.01	0.19	.42	-0.50	0.32
(Ind 3) Personal Accomplishment > PRR > Peer Ecology > Student Misbehavior	0.00	0.02	.46	-0.05	0.03
Total Indirect Effect	-0.35	0.48	.22	-1.38	0.49
Total	1.35	1.08	.10	-0.79	3.50

Figure 2

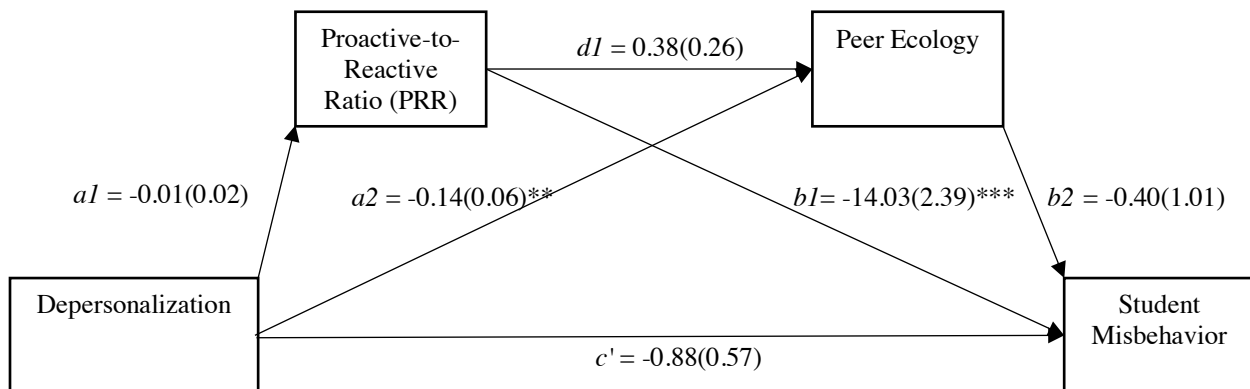
Model 1, unstandardized estimates and standard errors).



*** $p < .001$, ** $p < .01$, * $p < .05$

Figure 3

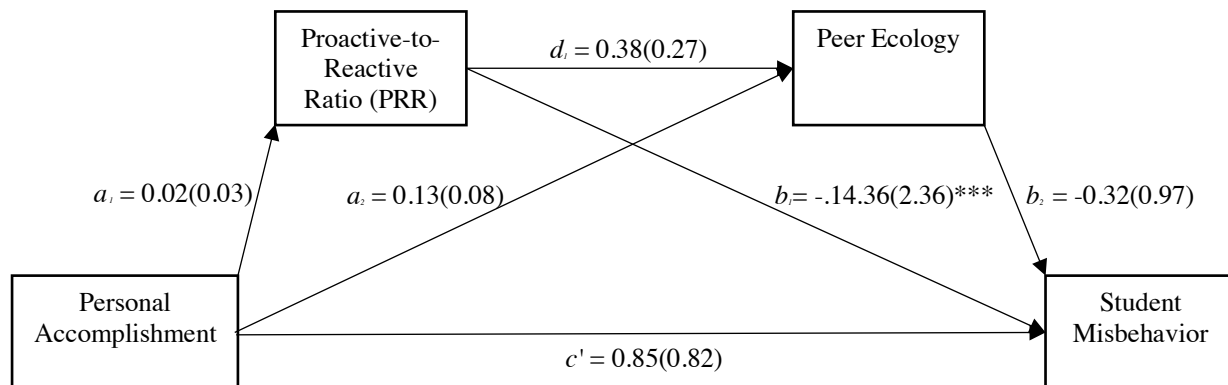
Model 2, unstandardized estimates and standard errors



*** $p < .001$, ** $p < .01$, * $p < .05$

Figure 4

Model 3, unstandardized estimates and standard errors



*** $p < .001$, ** $p < .01$, * $p < .05$