Single-item teacher stress and coping measures: Concurrent and predictive validity and sensitivity to change☆

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ABSTRACT

This study examined the concurrent and predictive validity of single-item scales for assessing teacher stress and coping. Correlations between the stress and coping items and present and end-of-year teacher-reported burnout and self-efficacy generally aligned with hypotheses, with stronger associations between coping and burnout and self-efficacy in comparison to the associations between stress and burnout and self-efficacy. Stress and coping items also predicted concurrent and future emotional exhaustion controlling for covariates; however, only coping consistently predicted additional variance in future emotional exhaustion with both stress and coping items in the model. Further, the coping item, not the stress item, demonstrated sensitivity to detect intervention effects; that is, teachers randomly assigned to receive a classroom management intervention (the Incredible Years Teacher Classroom Management program) had significantly higher coping scores compared to a wait-list comparison group. The results of this study provide support for the continued use of single-item stress and coping measures of teacher well-being, and areas for further research and potential use of these measures are discussed.

1. Introduction

Teachers play a critical role in child development, and recent research suggests that when a teacher experiences stress this can impact the students in his or her classroom (Herman, Hickmon-Rosa, & Reinke, 2018; Oberle & Schonert-Reichl, 2016). Teacher stress and burnout can also contribute to teacher attrition which is costly to the educational system and detrimental to school climate (Ingersoll, 2001; Macdonald, 1999). Identifying innovative time and cost-efficient methods to measure teacher stress could help identify teachers in need of support and also guide research for reducing the personal and economic costs associated with teacher stress and burnout (McIntyre, McIntyre, & Francis, 2017).

Single-item stress and coping measures may provide a sensitive and efficient way to measure these constructs over time. Multiple studies have used single-item overall measures of teacher stress (Boyle, Borg, Falzon, & Baglioni, 1995; Chaplain, 2008; Klassen & Chiu, 2010; Kyriacou, 2001; Kyriacou & Sutcliffe, 1978); however, to date, there has been limited reported empirical justification for the use of these teacher stress items. Additionally, prior studies of single-item stress indicators have neglected to measure coping, an important corollary of stress (Lazarus, 2000). The transactional theory of stress, often used to conceptualize teacher stress,

emphasizes the importance of considering coping at the same time as environmental stressors (Lazarus, 1990; Lazarus & Folkman, 1984). With this theory in mind, we examined the concurrent, divergent, and predictive validity of single-item measures of stress and coping in assessing teacher wellness as well as their sensitivity to change in response to intervention.

1.1. Teacher stress

1.1.1. Prevalence

In comparison with other occupations, teaching is a particularly stressful and demanding profession (Johnson et al., 2005). Teachers bear the responsibility for the academic instruction, behavior management, and social and emotional well-being of an entire classroom of students (Jennings & Greenberg, 2009). Teacher stress is a widespread problem, and teachers consistently report the occupation is stressful, with around 25% typically reporting that teaching is "highly" or "extremely" stressful (Kyriacou, 2011). A recent study in the United States found that reports of high stress were even higher; 93% of teachers were characterized as experiencing high stress (Herman et al., 2018). Statistics like these have led some scientists to argue that one of the most pressing matters in education research and practice is the need for better measures, conceptual models, and interventions to address educator stress (McIntyre, McIntyre, Barr, Francis, & Durand, 2017; McIntyre, McIntyre, & Francis, 2017).

1.1.2. Transactional theory of stress

Teacher stress is often conceptualized using the transactional theory of stress by Lazarus and Folkman (1984) (see Lambert, McCarthy, O'Donnell, & Wang, 2009). In this model, stress is defined as an imbalance that occurs when a person perceives that the demands in the environment are greater than the resources a person has to meet those demands. The first step in the model is the primary appraisal when a person evaluates the demands of the environment and determines if there is a threat to a goal or commitment (Lazarus & Folkman, 1987). The second step is the secondary appraisal process when a person evaluates his or her coping capacity to change or adapt to the perceived demands in the environment. The third and final step is a person's cognitive or behavioral response.

1.1.3. Common sources of stress

Teachers report varied sources of stress including (a) administrative expectations, (b) challenging colleagues, (c) time demands and limited resources, (d) diverse student needs and differentiating instruction, (e) student behaviors and attitudes, (f) lack of preparation, (g) working with parents, and (h) life stress (Herman & Reinke, 2015). In addition to chronic stress resulting from consistently high demands over a period of time; teachers are also at risk for experiencing acute stress, especially related to behavior management and victimization from students. The nationally representative Schools and Staffing Survey (SASS) in 2012, found 10% of teachers reported receiving a threat of injury from a student in the past year, and 6% reported a physical attack from a student (Zhang, Musu-Gillette, & Oudekerk, 2016). A recent meta-analysis found overall prevalence of teacher victimization was higher ranging from 20 to 75% in a two-year period (Longobardi, Badenes-Ribera, Fabris, Martinez, & McMahon, 2018). In addition to these diverse demands and risks, stress likely results from a complex combination and interaction of these factors and varies depending on the (a) context of the overarching educational system, (b) school climate, (c) students, and (d) personality of the individual teacher (Kyriacou, 2001, 2011).

1.2. Consequences of stress

1.2.1. Teacher burnout

When teachers experience prolonged stress and are not sufficiently coping, this may lead to negative teacher and student outcomes and can be costly for the educational system (Travers, 2017). Persistent teacher stress is associated with professional burnout, which consists of emotional exhaustion, depersonalization, and diminished personal accomplishment (Maslach, Schaufeli, & Leiter, 2001). Emotional exhaustion is fatigue from the experience of high stress over time with low coping; depersonalization is a feeling of disconnection with the profession and emotional distancing from students; and personal accomplishment is having a sense of meaning in the work and finding it to be rewarding (Maslach, 2003). As a person experiences professional burnout, emotional exhaustion and depersonalization increase and personal accomplishment decreases; taken together this can have negative effects. Burnout in teachers is associated with absenteeism, depression, disengagement from the profession and leaving the field (Kyriacou, 2001; Shin, Noh, Jang, Park, & Lee, 2013). Teacher attrition is costly to the educational system with the need to hire and retrain new employees, in addition to impacting the school climate (Barnes, Crowe, & Schaefer, 2007; Ingersoll, 2001).

1.2.2. Student outcomes

Teacher stress and burnout not only impact the well-being of the individual teacher but also students in the classroom (Herman et al., 2018; Jennings & Greenberg, 2009; Oberle & Schonert-Reichl, 2016). A recent study by Oberle and Schonert-Reichl (2016) found higher salivary cortisol levels, a stress hormone that is a physiological indicator of stress, in students with teachers who reported higher levels of burnout. Jennings and Greenberg (2009) describe a cycle in which a teacher may use ineffective classroom management and become stressed and exhausted because of student behaviors. Over time this may lead the teacher to experience burnout and further increase the use of harsh and ineffective forms of behavior management, which in turn may cascade into a cycle of worsening student behaviors, teacher frustration, and harsh ineffective behavior management (Reinke, Herman, & Stormont, 2013). Consistent with these predictions, Herman et al. (2018) recently found that students in classrooms with teachers who reported

high stress and low coping had significantly higher rates of disruptive behaviors and lower prosocial behaviors and academic performance compared to students in classrooms with adaptive teachers. Teacher burnout also has a positive association with student disruptive behaviors (Aloe, Shisler, Norris, Nickerson, & Rinker, 2014), as well as student suspensions (O'Brennan, Pas, & Bradshaw, 2017). Further, teachers who are experiencing high stress and burnout may be less likely to use evidence-based behavioral practices in the classrooms (Domitrovich et al., 2008). From a preventative perspective, it is important to reduce burnout so that teachers can be more effective in creating positive learning environments for students.

1.3. Teacher coping

Improving teacher coping may be a means to prevent these negative outcomes of stress and burnout for teacher and students (Griffith, Steptoe, & Cropley, 1999). The transactional theory of stress implies that coping, or the perceptions of personal capacity to meet the demands of the environment, is critical to the experience of stress (Lazarus, 1990). Two teachers may perceive the same environmental demands; however, differences in their beliefs about their capacities to adapt to those challenges may lead to different experiences of stress and ultimately different outcomes (Travers, 2017).

1.3.1. Types of coping

Lazarus and Folkman (1987) described two types of coping: problem-focused coping and emotion-focused coping. Problem-focused coping strategies are efforts to reduce, adapt to, or change the environmental demands, thus changing the sources of stress (Carver, Scheier, & Weintraub, 1989). Emotion-focused coping strategies are efforts to lessen or tolerate the emotional experience of stress and strain such as seeking out emotional support or positive reappraisal (Lazarus, 2000). Kyriacou (2001) used different terms to describe these two coping processes for teachers: direct action techniques (corresponding to problem-focused coping) and palliative techniques (corresponding to emotion-focused coping). We use the terms defined by Kyriacou (2001) as they describe coping for teachers. Direct action techniques aim to eliminate or reduce the source of stress. An example of a direct action coping technique may be talking to a challenging parent to reduce conflict, as this would address the source of stress in the present and may prevent the stressful situation from occurring again in the future (Herman & Reinke, 2015). Palliative techniques are learned behaviors that help an individual to calm down after experiencing stress; for example, a teacher may use slow and controlled breathing as a relaxation technique to calm down following a stressful interaction with a student (Jennings & DeMauro, 2017).

1.3.2. Results of coping

Direct action techniques and palliative techniques are often used together in response to stressful events, depending on the environmental demands (Lazarus & Folkman, 1987). The efficacy of coping strategies is determined by both immediate and long-term outcomes. In the short term, coping processes can result in the demand being met or not; the situation improving, worsening, or staying the same; and the individual experiencing no change or a change in emotional state, such as increased anxiety or relief. In the long term, coping processes can influence physical health, psychological well-being, the attainment of goals, and social outcomes (Lazarus & Folkman, 1987). Some coping strategies may be more adaptive and helpful relative to these short-term and long-term outcomes. In a study of coping and stress in teachers in the United Kingdom, Griffith et al. (1999) found disengaging from students and putting off works tasks as coping mechanisms predicted higher levels of stress, whereas social support predicted lower stress. Teacher coping is important to consider from a prevention perspective, as both direct action and palliative coping strategies are potentially modifiable through interventions (as reviewed below i.e., Roeser et al., 2013). It may be easier to change the ways teachers adapt to demands in their environments and their resilience than is it to change the occupational demands teachers face every day (Kyriacou, 2011).

1.3.3. Interventions to improve teacher coping

Teacher coping can be supported through individual stress management programs for teachers (Jennings & DeMauro, 2017). Cognitive-behavioral programs as well as mindfulness-based programs have been evaluated through randomized control trials and have demonstrated positive effects on teacher reported stress, anxiety, and burnout (Forman, 1982; Roeser et al., 2013) as well as improved positive interactions with students (Jennings et al., 2017). Though there are some differences among these types of programs, generally they involve education about stress and include direct action and palliative coping techniques. For example, the cognitive-behavioral stress management programs involve addressing maladaptive thinking patterns that may contribute to stress, which is a direct action technique (Herman & Reinke, 2015). Mindfulness programs emphasize emotional awareness and regulation through relaxation strategies (Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Roeser et al., 2013), which are forms of palliative coping strategies.

In addition to programs specifically designed to improve stress management for teachers, classroom management trainings can also reduce stress and burnout by addressing a commonly cited source of teacher stress from student disruptive behaviors (Dicke, Elling, Schmeck, & Leutner, 2015; Sharp & Forman, 1985), and by providing teachers with social support in individual coaching models (Wehby, Maggin, Partin, & Robertson, 2012). Classroom management programs, like the Incredible Years Teacher Classroom Management program (IY TCM), may reduce teacher stress by equipping teachers with a structured method to prevent behaviors from escalating and a clear plan to manage behaviors (Dicke et al., 2015). Additionally, IY TCM includes explicit instruction and activities to bolster teacher use of active coping strategies such as cognitive restructuring. The IY TCM program also includes individualized teacher coaching, which may provide additional social support that can be protective against teacher stress and burnout (Griffith et al., 1999; Wehby et al., 2012). A recent study comparing the effects of an individual stress management program and a

classroom management intervention showed comparable effects of both programs, with additional reductions in burnout and rumination as a result of the classroom management intervention beyond the improvements from the stress management intervention (Dicke et al., 2015). These results may suggest that directly addressing classroom management could be as effective as specific stress management programs for teachers, even though a classroom management intervention may not directly address all of the sources of stress.

1.3.4. Association with self-efficacy

The coping process is also related to the construct of self-efficacy (Lazarus & Folkman, 1987), which is an important aspect of teacher functioning in the classroom. Self-efficacy, first defined by Bandura (1977), is based in social cognitive theory and is defined as the perceived capacity to be effective in a particular role. In the transactional theory of stress, self-efficacy is specifically related to the secondary appraisal process, or the perceptions of one's coping capacity (Lazarus & Folkman, 1987); thus, if self-efficacy is perceived to be high, then individuals may experience less stress because they feel confident that they can handle the environmental demands. For teachers, self-efficacy represents confidence in engaging students in instruction, behavior management, and supporting their emotional well-being (Tschannen-Moran & Hoy, 2001). When teachers perceive themselves to have greater capabilities to respond to the demands of teaching, this is associated with less stress (Skaalvik & Skaalvik, 2017). Self-efficacy is often also studied when examining stress and coping because of the similar associations with long-term outcomes including reduced burnout and attrition and increased job satisfaction (Betoret, 2009; Skaalvik & Skaalvik, 2007). For the present study, we focused on self-efficacy specifically related to classroom management, as the IY TCM intervention in our study was designed to improve teachers' behavioral practices in the classroom. Classroom management self-efficacy is a malleable construct, and can be enhanced by modeling effective practices for teachers and through teachers having vicarious learning experiences (Skaalvik & Skaalvik, 2017).

1.4. Measures of teacher stress

1.4.1. Rationale for single-item measures

To determine the efficacy of interventions and to measure the relationship of teacher stress and coping with other important classroom variables, tools that are efficient and effective to measure these constructs for both research and intervention purposes are needed. Two common approaches to measuring teacher stress include multi-item scales about the sources and effects of stress and single-item questions about the global experience of stress (Chaplain, 2008; Kyriacou, 2001). The rationale for using a single-item measure of teacher stress is to obtain a measure of teachers' overall perceptions of stress (Kyriacou, 2001). Other measures that are commonly used to measure stress, including the Teacher Stress Inventory, ask teachers to identify the frequency of experiencing specific environmental demands and physical and emotional effects of the stress, thus assessing for the sources and symptoms of stress (Fimian, 1984). The single-item rating provides additional information by also assessing a separate question of overall perceptions of global stress. Sources of teacher stress and individual responses to stress may vary greatly (Kyriacou, 2011), and multi-item inventories may not fully represent all of the possible sources and responses to stress, so a single-item measure is useful to obtain a measure of a teacher's broader perception of stress. Single-item measures of stress are also similar to Subjective Units of Distress scales (SUDS; e.g., a self-report measure of distress ranging from 0 (*no distress*) to 10 (*extremely high distress*)), which are commonly used to measure individuals' perceptions of well-being and to monitor changes over time (Wolpe, 1990).

1.4.2. History of single-item measures of teacher stress

Although often discouraged in traditional psychometric theory because of the inability to calculate traditional internal consistency reliability and the possibility of subjectivity (Loo, 2002), single-item measures have been used to assess teacher stress since the 1970's. Kyriacou and Sutcliffe, early researchers on the topic of teacher stress, conducted a study in 1978 with teachers in the United Kingdom to examine the prevalence and sources of teacher stress. The researchers used a single-item measure to examine the prevalence of teacher stress by asking: "How stressful do you find being a teacher?" (p. 160) on a five-point Likert scale ranging from 1 (*not at all stressful*) to 5 (*extremely stressful*). They found 20% of teachers reported teaching was very or extremely stressful (Kyriacou & Sutcliffe, 1978). In addition to using the single-item measure for stress, the researchers also included an inventory of many sources and symptoms of stress the researchers developed through their work with teachers and then conducted factor analyses with these items. The Kyriacou and Sutcliffe (1978) study provided the foundation for using a single-item to measure teachers' self-reported stress and was often cited in future studies as the only justification for using single-item measures; however other than correlations between items related to sources and symptoms of stress, which varied from $r = 0.12$ to $r = 0.61$, this study did not include empirical support for the use of this item to measure teacher stress.

Following the work of Kyriacou and Sutcliffe, Boyle et al. (1995) also used a similar single-item measure of stress when examining teacher stress in a population of teachers in Malta. The item asked teachers "In general, how stressful do you find being a teacher?" (p. 54) and also had a five-point Likert scale ranging from 0 (*not at all stressful*) to 4 (*extremely stressful*). They conducted an exploratory factor analysis with items on a teacher stress scale to explore the underlying factors that contribute to teacher stress, and also did not report validity data for the use of this overall measure. More recently, researchers have continued to use single-item overall measures of teacher stress in their work and cited previous articles as the sole justification for their use (Chaplain, 2008; Klassen & Chiu, 2010). Chaplain (2008) had secondary teacher participants and asked teachers "How stressful do you consider the job of a secondary teacher to be?" (p. 128) also with a 5-point Likert scale with responses ranging from 1 (*not at all stressful*) to 5 (*extremely stressful*). The item used by Klassen and Chiu (2010) was slightly different from previous overall measures and as teachers were asked to respond with their agreement to the statement of "I find teaching to be very stressful" (p.744) on a 9-point Likert scale,

with the anchors not reported.

Although these studies have not provided compelling psychometric evidence for the use of the single-item measures for self-reported teacher stress, single-item measures of stress have been validated for use in identifying wellness in other occupational contexts. Elo, Leppanen, and Jahkola (2003) examined content, concurrent, and construct validity of a single-item measure of stress included in the Occupational Stress Questionnaire with Finnish worker populations, and found the item accurately discriminated between groups and was associated with theoretically related constructs, including the emotional exhaustion scale on the Maslach Burnout Inventory. The wording for this stress item was "Stress means a situation in which a person feels tense, restless, nervous, or anxious, or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of stress these days?" (p. 446) and participants responded on a 5-point Likert scale from 1 (*not at all*) to 5 (*very much*).

In addition to the need for psychometric evidence for the use of the single-item stress measure for teachers, there is an additional need to examine teacher coping simultaneously. None of the prior studies that examined teacher stress with single-items included a measure of teacher coping. Simply stated by Lazarus (1990) "it is artificial to measure stress independent of coping"(p.11).

1.5. Present study

The purpose of the study was to provide initial validity evidence for single-item measures of teacher stress and coping and to examine the sensitivity to change of these items in response to intervention. This study expands upon existing research by exploring the evidence for use of a single-item measure of teacher stress and by also including a single-item measure of coping (Lazarus, 1990). Supporting teacher coping habits may be an effective way to intervene to reduce stress and the negative long-term effects of professional burnout.

We examined three main hypotheses. First, we hypothesized the stress item would be positively associated with the emotional exhaustion and depersonalization subscales from the Maslach Burnout Inventory – Educator's Survey (MBI-ES) and negatively associated with the classroom management subscale from the Teacher Sense of Self-Efficacy scale and the personal accomplishment subscale from the MBI-ES. Likewise, we hypothesized the coping item would be negatively associated with the emotional exhaustion and depersonalization subscales from the MBI-ES and positively associated with the classroom management self-efficacy scale and the personal accomplishment subscale from the MBI-ES. Second, we predicted the stress and coping items would demonstrate concurrent and predictive validity in predicting teacher burnout (specifically emotional exhaustion), while controlling for other factors (i.e., intervention status, years teaching). Third, we hypothesized the stress and coping items and the emotional exhaustion subscale of the MBI-ES would be sensitive to changes in response to a classroom management training program. We predicted the teachers who received the intervention in classroom management training would report lower stress and burnout and higher coping as a result of the intervention compared to a wait-list control group.

2. Methods

2.1. Participants

Data were collected as part of a large group randomized evaluation of the Incredible Years Teacher Classroom Management (IY TCM) program (Reinke, Herman, & Dong, 2018). Teachers were from nine elementary schools in a large urban district in the Midwest. The total number of teachers in the intervention study was 105 with 52 in the intervention and 53 in the waitlist control condition. An additional 61 teachers who were in neither the intervention nor control conditions participated in the follow-up year of the study because students from the intervention or control classrooms transitioned to their classrooms; these teachers provided the same data as teachers in the intervention conditions. Thus, the total number of teachers including the follow-up teachers was 166. Of the teachers in the study, 97% were female; 75% of the teachers identified as White, 22% identified as African American, 1% identified as Asian, and 1% identified as Hispanic (see Table 1). Teachers in the study taught Kindergarten, 1st, 2nd, or 3rd grade with 22% to 28% of teachers in each grade level. Of the additional follow-up teachers 15% taught 1st grade, 22% taught 2nd grade, 15% taught 3rd grade and 48% taught 4th grade. Most teachers in the study were between 31 and 40 years old and had an average of 11 years of experience (SD = 8.08). There were 1817 students who participated in the study. In the student sample, 51.5% of the students identified as male, students predominately identified as Black (76%), the average age of the students was 7.1 (SD = 1.15), and 61% of the students were eligible for a free or reduce priced lunch (FRPL). These demographics of the students in the sample were similar to the demographics of the schools' populations in the years of the study with 70.8% students who identified as Black, 22.8% who identified as White and 63.4% of students who were eligible for a FRPL (Missouri Department of Elementary and Secondary School Education, 2018).

2.2. Measures

2.2.1. Teacher stress and coping items

The brief teacher stress and coping measure consists of two items asking about overall ratings of teacher stress and coping. The measure is similar to simple measures of stress used in previous studies on teacher stress (Boyle et al., 1995; Chaplain, 2008; Klassen & Chiu, 2010; Kyriacou, 2001; Kyriacou & Sutcliffe, 1978) and also included a coping item. The items were developed through an iterative process involving feedback from teachers. The initial items were drafted during a training with teachers in which they talked about their experiences with occupational stress and coping. These items were piloted with three additional teachers who in turn

Table 1
Descriptive statistics.

	%
Teachers ($n = 105$)[a]	
Gender	
Female	93%
Male	7%
Race	
White	76%
Black	22%
Asian	1%
Other race	1%
Grade level	
Kindergarten	26%
1st Grade	28%
2nd Grade	24%
3rd Grade	22%
Age	
20–30	28%
31–40	48%
41–50	15%
51–60	7%
61 or older	2%
Students (n = 1817)	
Gender	
Male	51.5%
Female	48.5%
Race	
Black	76%
White	21%
Hispanic	2%
Asian/Pacific Islander	1%
Eligible for free/reduced price lunch	61%

Notes.
[a] Teachers in the follow up time point did not report their race, grade level, or years of experience.

provided feedback about their interpretation of each item and their ease of completing the task. The final stress item based on this feedback asks, "How stressful is your job?" with an 11-point rating scale ranging from 0 (*not stressful*) to 10 (*very stressful*). An 11-point scale was used to detect smaller magnitudes of changes in stress throughout the intervention. The lowest point on the scale was 0 to indicate the presence of no stress and 10 to indicate extreme stress, and this design was similar to widely used SUDS in cognitive-behavioral therapy (Wolpe, 1990). The coping item asks "How well are you coping with the stress of your job right now?" with an 11-point rating scale ranging from 0 (*not well*) to 10 (*very well*). The decision to leave the stress item broad and the coping item specific to the present moment was also informed by teacher feedback; we began without a specific timeframe for either item but received consistent feedback that it would be easier to rate the coping item anchoring it to the present moment. We did not offer any additional definitions of stress or coping or anchors.

2.2.2. Maslach Burnout Inventory – Educators Survey (MBI-ES; Maslach & Jackson, 1981; Maslach, Jackson, & Schwab, 1996)

The MBI-ES measures the three constructs that define burnout: emotional exhaustion, depersonalization, and personal accomplishment (; Maslach et al., 1996). The measure includes 22 items with a seven-point frequency scale ranging from 0 (*never)* to 6 (*every day*). Sample items of this measure include: "I feel used up at the end of the workday," and "I don't really care what happens to some students." Independent studies provided evidence for multiple types of validity for this measure and evidence for its use with elementary school teachers in the United States (Gold, 1984). Notably, Byrne (1993) tested for factorial validity in a population of 1159 elementary school teachers through exploratory and confirmatory factor analyses, which supported the model and the inclusion of the items on the inventory. Maslach et al. (1996) reported the reliability estimates of 0.9 for the emotional exhaustion subscale, 0.76 for the depersonalization subscale, and 0.76 for the personal accomplishment subscale (p. 206). In this study, the alpha reliability estimates ranged from 0.91 to 0.93 for the emotional exhaustion subscale, from 0.67 to 0.78 for the personal accomplishment subscale, and ranged from 0.62 to 0.72 for the depersonalization subscale, which is lower than reported in the MBI-ES manual.

2.2.3. Teacher Sense of Self-Efficacy Scale (TSES: Tschannen-Moran & Hoy, 2001)

The TSES classroom management subscale was used in the study (Tschannen-Moran & Hoy, 2001). This scale was developed to improve upon prior measures of teacher self-efficacy, notably by adding additional items to measure classroom management efficacy (Tschannen-Moran & Hoy, 2001). Construct validity was examined by correlating this measure with prior measures of teacher self-efficacy (Armor et al., 1976; Hoy & Woolfolk, 1993) with positive correlations to these measures (ranging from $r = 0.28$ to $r = 0.48$,

p < .05); and discriminant validity was also examined with a measure of work alienation (Forsyth & Hoy, 1978), which demonstrated a negative association of $r = -0.31$ (Tschannen-Moran & Hoy, 2001). Confirmatory and exploratory factor analyses were completed to inform the scale development process, and items with the highest factor loadings were retained (Tschannen-Moran & Hoy, 2001). The resulting subscale includes 8 items with a Likert scale ranging from 1 (*none at all*) to 9 (*a great deal*) about confidence in managing child behaviors. Sample items include: "How well can you establish a classroom management system with a group of students?" and "How well can you respond to defiant students?" The reliability coefficient of the initial examination of the scale was 0.90 for the classroom management subscale, and in this study, the alpha coefficients ranged from 0.93 to 0.94.

As previously discussed, self-efficacy is considered a possible protective factor for burnout, and a meta-analysis of 16 studies examined the associations between classroom management self-efficacy and the three dimensions of burnout from the MBI (Aloe, Amo, & Shanahan, 2013). Personal accomplishment had the strongest association with classroom management self-efficacy ($r = 0.43$), and emotional exhaustion and depersonalization had negative associations with classroom management self-efficacy ($r = -0.27$, and $r = -0.32$ respectively; Aloe et al., 2013).

2.2.4. Demographic information

Teachers were asked to self-report demographic information, including race, gender, and years of experience in teaching. Follow-up teachers did not provide this information.

2.3. Procedures

2.3.1. Recruitment

School districts were recruited for the study by the Principal Investigators and in partnership with community members in the area. Teachers were recruited through the school district with the assistance of the on-site coach. Students in classrooms of teachers involved in the study also completed the recruitment and consenting process with permission from their parents or guardians to enroll in the study. Teachers received compensation for their time to complete self and student evaluations as part of the project.

2.3.2. Design

This study took place in school districts in a large Midwestern city. The block randomized control trial examined the effectiveness of the Incredible Years Teacher Classroom Management (IY TCM) Program in classroom behavior management training for kindergarten through third grade elementary school teachers. There were three phases of intervention in the study in three years, with one additional year to collect follow up data (Year 1, Year 2, Year 3 and Follow up Year 4). Each year of the study a new cohort of teachers received the training. In the first two years of the program a total of 34 teachers were enrolled with 17 in the intervention condition each year. In the third year of the program 37 teachers participated with 19 in the intervention condition. Six full day professional development trainings were provided to teachers in the treatment group. Two days of training occurred in October, November, and January. Teachers who were in the control group were provided the opportunity to receive the intervention the following year.

Pre-intervention assessments and observations were conducted in October of the school year (Time 1). Post intervention assessments and observations occurred at the end of the academic year (Time 2). A final follow-up was also completed in April or May of the next academic year (Time 3).

2.3.3. Incredible years teacher classroom management program

The IY TCM training is a part of the full Incredible Years program, which is a wraparound intervention to support positive youth development with child, parent, and teacher components (Webster-Stratton, 1994). Since its development, the Incredible Years program has been supported empirically in numerous studies in the United States and in other countries (Hutchings, Martin-Forbes, Daley, & Williams, 2013; Webster-Stratton, Reinke, Herman, & Newcomer, 2011). The intervention is characterized as an evidence-based prevention program to support youth mental health (Freiberg & Lapointe, 2006). The teacher component consisted of six full day trainings using video-based modeling and opportunities for discussion, role-playing, and individualized feedback. The major goal of the intervention was to coach teachers in effective classroom management strategies including using praise and reinforcement, improving relationship with students, teaching students' behavior expectations, and appropriate limit setting. In addition to its focus on improving classroom management, IY TCM also has content focused on cognitive coping strategies for teachers including increasing positive interpretations of events and positive self-talk. During an early workshop session, teachers are introduced to the idea that stress can interfere with their classroom management plans. Strategies to cope with challenging student and parent behaviors are taught and practiced in each session, particularly during sessions focused on decreasing inappropriate student behaviors. For instance, teachers are given a worksheet with common maladaptive beliefs (e.g., "I'll never be a good teacher," "It's awful to let him disrespect me," "It's not fair, this student should not be in my classroom.") and asked to change them into positive coping thoughts. Additionally, during role plays, a teacher partner is often assigned to play the role of a coping angel who stands beside the teacher whispering positive thoughts to get through challenging encounters with students.

The on-site coach was available for additional support and coaching in between trainings. The on-site coach generally provided extra support to the teachers they otherwise would not have received, and this social support component of the intervention may also have bolstered teacher coping (Griffith et al., 1999). The coach also reviewed content from each training session during these visits including content related to cognitive coping strategies. Thus, the intervention was hypothesized to reduce teacher stress and improve coping by reducing a known teacher stressor (disruptive student behaviors and unpleasant classroom environments) and also

Table 2
Descriptive information stress and coping items.

	n	Minimum	Maximum	Mean	Standard deviation
Stress time 1	36	1	10	8.06	1.80
Stress time 2[a]	71	2	10	7.73	1.66
Stress time 3[b]	155	0	10	7.34	2.15
Coping time 1	36	1	10	6.58	2.34
Coping time 2[a]	71	0	10	7.32	2.00
Coping time 3[b]	155	2	10	7.31	2.05

[a] The stress and coping items were added to the study protocol in Year 2, time point 2; therefore, only teachers in the third year of the study completed measures at Times 1, 2, and 3. Teachers in the second year of the study completed the items at time 2 and 3, and teachers in the first year of the study completed the items at time 3 only.

[b] An additional 59 participated only at Time 3 of the study. They were participated in the study because they had students in their classrooms who participated in the study the previous year.

by direct instruction in stress management and coping skills.

2.4. Data analysis

There were two main reasons for missing cases in the study. The first was due to the fact that the stress and coping items were first administered and collected in the spring of the second year of the study. As a result, all teachers in the first year of the study at time points 1 and 2 and in the second year of the study time point 1 did not have stress and coping ratings. Notably, only the final cohort ($n = 36$), which was recruited in year 3, had baseline and follow-up stress and coping scores and thus could be included in the sensitivity to change analyses. In addition to these missing cases, there were 11 teachers in the sample that did not complete all measures, due to dropping out of the study or incomplete surveys, and these cases were also excluded using listwise deletion. The final sample included an uneven number of participants at each time point (Time 1 $n = 36$; Time 2 $n = 71$; Time 3 $n = 155$). Teachers who did not complete the measures at every time point were still included in the correlation and regression analyses to maximize the number of cases. The proportion of the sample included in each step is noted throughout.

First, descriptive statistics were used to examine the means, standard deviations, and overall distributions of the data (Table 2). Results from the Shapiro-Wilks tests for normality for all time points suggested non-normality in the distribution for the stress item ($p < .05$ at every time point), the coping item ($p < .05$), and the MBI-ES depersonalization subscale ($p < .05$ at every time point). From visual analyses, the stress and coping items both appeared to be negatively skewed at every time point. To account for the skew in the data, Kendall's tau (τ) rank-order correlation test was used as opposed to the Pearson product-moment correlation (r), which assumes the distribution of the responses to the items is normally distributed. Kendall's tau correlation statistic accounts for skew because it is based on the ranking of the order of responses and the probabilities of two responses being associated based on that ranking, so this non-parametric test was more appropriate to consider for these correlations (Tables 3, 4, and 5).

For the regression analyses, first assumptions of regression were checked. Homoscedasticity was examined by plotting the residual versus predicted values and all plots presented homoscedastic data (i.e., the residual values were within 3). The Q-Q plots were also examined for the normality of the residuals, and the residuals for the regression equations appeared to be normal. The Durbin-Watson statistic for correlation in residuals ranged from 1.80 to 1.96 and this is within the recommended ranges to meet the assumption of independent error terms. Multicollinearity did not seem to be present since the correlations were not considered high, but multi-collinearity was also examined though variance inflation factor (VIF) statistics. For the first regression, the value of VIF ranged from 1 to 1.4; the VIF for the second model ranged from 1 to 1.15; the third model VIF ranged from 1 to 1.3; and all of these estimates were below the value of 10, which indicate multicollinearity was not a concern.

As a result of the multiple planned regressions, alpha values were adjusted using the family-wise Bonferroni correction. For the

Table 3
Correlations among study variables at baseline (time 1).

		1	2	3	4	5	6
1	T1 stress item	–					
	How stressful is your job?						
2	T1 coping item	−0.44	–				
	How well are you coping with the stress of your job right now?	$n = 36$					
3	T1 efficacy scale	−0.22	0.43	–			
	Classroom management sum	$n = 36$	$n = 36$				
4	T1 MBI emotional exhaustion subscale	0.45	−0.56	−0.27	–		
		$n = 35$	$n = 35$	$n = 103$			
5	T1 MBI depersonalization subscale	0.19	−0.44	−0.11	0.45	–	
		$n = 36$	$n = 36$	$n = 104$	$n = 103$		
6	T1 MBI personal accomplishment subscale	−0.13	0.39	0.33	−0.26	−0.18	–
		$n = 36$	$n = 36$	$n = 103$	$n = 102$	$n = 103$	

Table 4

Correlations among study variables at the end of the study year (time 2).

		1	2	3	4	5	6
1	T2 stress item	–					
	How stressful is your job?						
2	T2 coping item	−0.22	–				
	How well are you coping with the stress of your job right now?	$n = 71$					
3	T2 efficacy scale	−0.01	0.28	–			
	Classroom management sum	$n = 71$	$n = 71$				
4	T2 MBI Emotional Exhaustion subscale	0.31	−0.46	−0.22	–		
		$n = 71$	$n = 71$	$n = 105$			
5	T2 MBI depersonalization subscale	0.25	−0.29	−0.15	0.53	–	
		$n = 71$	$n = 71$	$n = 105$	$n = 105$		
6	T2 MBI personal accomplishment subscale	−0.16	0.29	0.34	−0.39	−0.35	–
		$n = 71$	$n = 71$	$n = 105$	$n = 105$	$n = 105$	

Table 5

Correlations among study variables at the follow up (time 3).

		1	2	3	4	5	6
1	T3 stress item	–					
	How stressful is your job?						
2	T3 coping item	−0.33	–				
	How well are you coping with the stress of your job right now?	$n = 155$					
3	T3 efficacy scale	−0.08	0.22	–			
	Classroom Management Sum	$n = 154$	$n = 154$				
4	T3 MBI emotional exhaustion subscale	0.42	−0.47	−0.15	–		
		$n = 155$	$n = 155$	$n = 154$			
5	T3 MBI depersonalization subscale	0.32	−0.34	−0.13	0.54	–	
		$n = 153$	$n = 153$	$n = 152$	$n = 153$		
6	T3 MBI personal accomplishment subscale	−0.17	0.27	0.36	−0.26	−0.26	–
		$n = 155$	$n = 155$	$n = 154$	$n = 155$	$n = 153$	

concurrent and predictive validity regressions the alpha values were adjusted to $p = .01$ for models using the same predictors of stress and coping to predict emotional exhaustion (0.05 /5 = 0.01). Intervention effects were also examined through multiple regression models and assumptions of regressions were examined. To examine the intervention effect, the Time 2 outcome (stress, burnout, or coping) was regressed on the baseline measure and the intervention status. Alpha values were also adjusted for the three intervention comparisons (0.05/3 = 0.017). Effect sizes were calculated to determine the effect of the intervention on the change in stress and coping through the course of the intervention using the effect size recommendations from Morris (2008). The results of the Shapiro-Wilks test for normality suggested the distribution of the difference between baseline and follow up scores were normally distributed ($p < .05$).

3. Results

3.1. Descriptive statistics

The overall means and standard deviations of the stress and coping items were examined (Table 2). The overall means for teacher reported stress for Time 1 was ($M = 8.06$, $SD = 1.80$, $n = 36$); for Time 2 was ($M = 7.73$, $SD = 1.66$, $n = 71$); and for Time 3 was ($M = 7.34$, $SD = 2.15$, $n = 155$).

3.2. Correlations

The interpretation of Kendall's tau is similar to the interpretation of Pearson's correlation in that the estimate represents the strength of the association between the two variables with a value between −1 to 1; the closer the absolute value is to 1, the stronger the association. Kendall's tau is generally a more conservative measure of association, and in converting tau estimates to r, a τ of 0.1 corresponds to $r = 0.16$; a τ of 0.3 corresponds to $r = 0.45$; and a τ of 0.5 corresponds to $r = 0.71$ (Gilpin, 1993). The correlations of the stress items with other study variables were generally as expected (see Tables 3–5). At every time point, the stress item had a positive association with the emotional exhaustion subscale (τ ranged from 0.31 to 0.45). The association with the depersonalization subscale ranged from 0.19 to 0.35. The stress item had negative associations with the personal accomplishment subscale ranging from −0.13 to −0.17.

The coping item was also associated with study variables as expected. There were negative associations between the coping item and the emotional exhaustion subscale, even larger in comparison to the associations between the stress item and the emotional

Table 6

Regression analyses predicting same time point emotional exhaustion.

Outcome - predictor	Models with covariates	R^2 (ΔR^2)	Unstandardized		β	t	95% Confidence Interval for B	
			B	SE			Lower	Upper
Time 1	Model 1[a]:	0.06 (0.06)						
Emotional Exhaustion -	(Constant)		28.53	2.9		9.77*	22.59	34.47
Time 1 Stress and Coping	Years Teaching		-0.28	0.20	-0.24	-1.4	-0.69	0.13
+ Covariates	Model 2:	0.53 (.47)						
($n = 36$)	(Constant)		290.06	12.21		2.38	4.16	53.96
	Years Teaching		-0.05	0.15	-0.04	-0.31	-0.36	0.27
	Stress		1.93	10.03	0.28	1.87	-0.17	40.03
	Coping		-2.80	0.78	-0.52*	-3.57*	-4.40	-1.20
Time 2 Emotional Exhaustion -	Model 1:	0.06 (0.06)						
Time 2 Stress and Coping + Covariates	(Constant)		20.95	2.71		7.74*	15.55	26.35
($n = 71$)	Intervention Status		5.54	2.91	0.22	1.90	-0.27	11.34
	Years Teaching		-0.12	0.17	-0.08	-0.71	-0.46	0.22
	Model 2:	0.49 (.43)						
	(Constant)		32.84	7.62		4.31*	17.62	480.06
	Intervention Status		5.79	20.07	0.24*	2.80*	1.67	9.91
	Years Teaching		-0.03	0.12	-0.02	-0.21	-0.26	0.22
	Stress		1.76	0.66	0.24	2.65	0.43	30.08
	Coping		-3.63	0.56	-0.58*	-6.54*	-4.74	-2.52
Time 3 Emotional Exhaustion -	Model 1:	0.00 (0.00)						
Time 3 Stress and Coping + Covariates	(Constant)		20.88	2.61		80.02*	15.71	260.05
($n = 95$)	Intervention Status		10.02	2.51	0.04	0.41	-3.97	60.01
	Years Teaching		-0.04	0.16	-0.03	-0.24	-0.355	0.28
	Model 2:	0.44 (.44)						
	(Constant)		200.04	6.12		3.28*	7.88	32.20
	Intervention Status		2.71	1.92	0.11	1.41	-1.11	6.53
	Years Teaching		0.07	0.12	0.04	0.53	-0.18	0.31
	Stress		20.05	0.47	0.39*	4.35*	1.11	2.99
	Coping		-2.24	0.52	-0.39*	-4.35*	-3.26	-1.22

[a] Intervention status was not included in the Time 1 model because the data was collected at baseline, prior to the intervention.

* indicates statistical significant with p < 0.01 for the Bonferroni adjustment.

exhaustion subscale (τ ranged from -0.47 to -0.56). The associations between the depersonalization subscale and the coping item ranged from -0.29 to -0.44. The personal accomplishment subscale and the coping item had positive associations at every time point (τ ranged from 0.27 to 0.39). The associations between the coping item and the self-efficacy scale were also positive (τ ranged from 0.22 to 0.43).

In addition to examining the correlations with other scales, we also examined the test-retest reliability of the stress and coping items, by examining the correlations between the stress and coping items at Time 1 and Time 2. The teacher reported stress at Time 1 had a positive association with teacher reported stress at Time 2 ($\tau = 0.58$). The teacher reported coping at Time 1 had a positive association with coping at Time 2 ($\tau = 0.46$). The stress and coping items also had a negative association to each other ranging from -0.22 to -0.44.

3.3. Concurrent validity

Three multiple hierarchical regressions were completed to examine the relationship between the stress and coping items predicting emotional exhaustion at the same time point, while controlling for factors related to teacher stress and burnout. The first model in each hierarchical regression contained variables associated with teacher burnout from previous research, including years of teaching experience (Griffith et al., 1999; Klassen & Chiu, 2010) and intervention status; however, results of the regressions suggested that years of teaching experience and intervention status were not statistically significant covariates in these models. Results from each of these regression models are presented in Table 6.

The first model examined Time 1 stress and coping items predicting Time 1 emotional exhaustion. This model was statistically significant (F (3, 31) = 11.66, $p < .01$) with an R^2 of 0.53. Of the predictors in the model, the coping item was the only statistically significant predictor with a standardized beta value of -0.52. The second model examined Time 2 stress and coping predicting Time 2 emotional exhaustion and was also statistically significant (F (4, 66) = 19.52, $p < .01$) with an R^2 of 0.49. In this model again, the coping item was a statistically significant predictor of emotional exhaustions ($\beta = -0.58$), as well as the intervention status. The third model examined Time 3 stress and coping predicting Time 3 emotional exhaustion and was also statistically significant (F (4,

Table 7

Regression analyses predicting future point emotional exhaustion.

Outcome - predictor	Models with covariates	R² (Δ R²)	Unstandardized		β	t	95% Confidence Interval for B	
			B	SE			Lower	Upper
Time 2 Emotional Exhaustion -	Model 1:	0.03 (.03)						
Time 1 Stress and Coping + Covariates	(Constant)		24.66	4.20		5.87*	16.11	33.20
(n = 36)	Intervention Status		0.58	4.68	0.02	0.12	-8.95	10.10
	Years Teaching		-0.22	0.23	-0.17	-0.98	-0.68	0.24
	Model 2:	0.33 (.30)						
	(Constant)		39.93	18.93		2.11	1.32	78.54
	Intervention Status		0.18	4.58	0.01	0.04	-9.16	9.53
	Years Teaching		-0.04	0.21	-0.03	-0.19	-0.46	0.38
	Stress		0.44	1.51	0.06	0.29	-2.63	3.52
	Coping		-3.11	1.07	-0.53*	-2.90*	-5.29	-0.92
Time 3 Emotional Exhaustion -	Model 1:	0.04 (.04)						
Time 2 Stress and Coping + Covariates	(Constant)		19.18	2.88		6.65*	13.41	24.94
(n = 63)	Intervention Status		4.88	3.04	0.20	1.61	-1.20	10.96
	Years Teaching		0.03	0.18	0.02	0.17	-0.33	0.39
	Model 2:	0.27 (.23)						
	(Constant)		18.46	10.13		1.82	-1.83	38.74
	Intervention Status		5.94	2.72	0.25	2.19	0.50	11.38
	Years Teaching		0.14	0.16	0.10	0.86	-0.18	0.46
	Stress		1.9	0.88	0.25	2.15	0.13	3.67
	Coping		-2.10	0.73	-0.34*	-2.86*	-3.57	-0.63

* indicates statistical significant with p < .01 for the Bonferroni adjustment.

90) = 17.34, $p < .01$) with an R² of 0.44. In the third model both the stress and the coping items were statistically significant predictors of emotional exhaustion (p's < 0.01).

The results from these concurrent regression analyses suggest that the models with stress and coping at the same time point accounted for about 44 to 53% of the variance in emotional exhaustion at the same time point. The coping item accounted for a statistically significant amount of variance in emotional exhaustion at every time point, and the stress item was statistically significant at the final time point. For every one-point increase in coping, these models suggest emotional exhaustion scores were likely to decrease by about 2.24 to 3.63 points.

3.4. Predictive validity

In addition to examining prediction at the same time point, we also examined the stress and coping items predicting emotional exhaustion at the end of the academic year and one year later (Table 7). Time 2 (spring) emotional exhaustion was regressed on Time 1 (fall) stress and coping items, controlling for intervention status and years of teaching experience. The coping item was a statistically significant predictor of end of the year emotional exhaustion, while controlling for years of teaching experience and the intervention status ($p < .01$; $\beta = -0.53$). The stress item was not a statistically significant predictor in this model. In this model, for every 1-point increase in reported coping, the emotional exhaustion score decreased by 3.11 points.

Predictive validity was also examined by predicting the emotional exhaustion one year later. Time 3 (follow up spring) emotional exhaustion was regressed on Time 2 stress and coping items, while controlling for other factors. Again, the coping item predicted additional variance in future emotional exhaustion ($p < .01$; $\beta = -0.34$), while the stress item did not.

3.5. Sensitivity to change

Regression analyses were used to examine effects of the IY TCM intervention on teacher reported stress, burnout, specifically emotional exhaustion, and coping as reported in Table 8. In each model, baseline (Time 1) reported stress, emotional exhaustion or coping and intervention status predicted post-intervention stress, emotional exhaustion or coping (Time 2). Intervention status was not a statistically significant predictor of stress or emotional exhaustion at the end of the year, but intervention status was a statistically significant predictor of end of the year coping ($p < .017$).

Post analysis, the effect size of the difference in teacher reported coping between baseline (Time 1) and follow up (Time 2) was calculated using the suggested method from Morris (2008) to account for the pre-post and control group design. On average, the control group did not change in their self-reported coping (*mean difference* = 0.00, SD = 1.97, n = 18); whereas the teachers in the intervention reported an average coping score 1.6 points higher (*mean difference* = 1.61, SD = 1.69, n = 18), see Fig. 1. The estimated effect size comparing the change in coping over time is moderate ($d_{ppc2} = 0.70$), using the suggested method to account for pre and post measurement (Morris, 2008); Cohen's d effect size of the mean difference in stress and coping between groups is large ($d = 0.88$, 95% confidence intervals 0.20–1.56).

Table 8

Regression analyses examining intervention effects.

Outcome - predictors	Models with covariates	R^2	Unstandardized		β	t	95% Confidence Interval for B	
			B	SE			Lower	Upper
Time 2 Stress -		0.64						
Time 1 Stress + Intervention Status	(Constant)		2.24	1.32		1.70	-0.45	4.93
(n = 36)	Time 1 Stress		0.68	0.15	0.64*	4.57*	0.37	0.98
	Intervention Status		0.03	0.53	0.01	0.05	-1.04	1.04
Time 2 Coping -		0.69						
Time 1 Coping + Intervention Status	(Constant)		3.14	0.83		3.80*	1.46	4.82
(n = 36)	Time 1 Coping		0.54	0.11	0.63*	4.94*	0.36	2.41
	Intervention Status		1.38	0.50	0.35*	2.74*	0.32	0.76
Time 2 Burnout (Emotional Exhaustion) -		0.68						
Time 1 Burnout (Emotional Exhaustion) +	(Constant)		3.05	4.36		0.70	-5.83	11.93
Intervention Status	Time 1 Burnout		0.73	0.14	0.68*	5.23*	0.45	1.01
(n = 36)	Intervention Status		3.01	3.45	0.11	0.87	-4.02	10.04

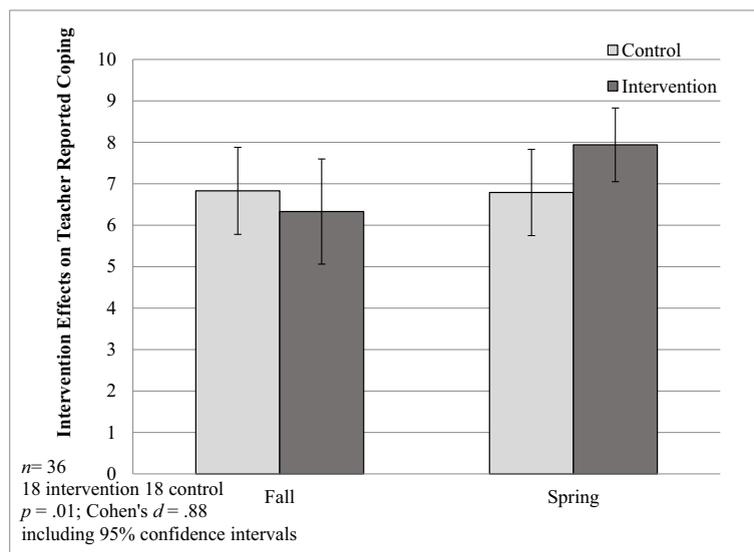* indicates statistical significant with p < .017 for the Bonferroni adjustment.

Fig. 1. Intervention effects on teacher reported coping: comparing Time 1 (Fall) to Time 2 (Spring).

4. Discussion

Single-item ratings of teacher stress and coping may be technically adequate to screen for teacher stress and burnout concerns and predict their future occurrence. The stress and coping items had concurrent and predictive associations with emotional exhaustion (τ ranging from 0.31 to 0.45 and −0.46 to −0.57, respectively) and had smaller degrees of association with depersonalization and personal accomplishment. The relations between stress and coping and emotional exhaustion were in line with other studies using single-item measures. For instance, in a similar study across many occupational settings, Elo et al. (2003) reported a concurrent Pearson's correlation of 0.51 between a single-item stress rating and emotional exhaustion. Equally important, these authors found that the single stress item had higher correlations with other measures of emotional and behavior health than the full MBI emotional exhaustion scale. Similarly, in the present study we found that the single coping item had comparable correlations with self-efficacy (τ ranged from 0.22 to 0.43) as the longer emotional exhaustion scale (τ ranged from −0.15 to −0.27).

Likewise, a meta-analysis examining single-item measures of job satisfaction and multi-item measures of the same construct, found an average correlation between single-item measures and multi-item measures was $r = 0.63$ (SD = 0.09) (Wanous, Reichers, & Hudy, 1997). The correlations observed here were similar when the tau estimates are converted to Pearson's r correlation (a τ of 0.44 corresponds to $r = 0.63$) (Gilpin, 1993). However, unlike the findings from the meta-analysis, the present study did not have measures of the same construct (e.g., we did not have a full-scale measure of coping or stress) and instead relied on related constructs (burnout and self-efficacy). In general, the correlations between the stress and coping items with the burnout subscales and self-efficacy were consistent with a nomological network in which they have higher correlations with measures of more overlapping constructs (emotional exhaustion) than with measures of related constructs (self-efficacy, personal accomplishment). To increase confidence in the use of coping and stress items, future research is needed that examines the items' intercorrelations with measures of

the same construct.

Given that emotional exhaustion is the component of burnout most linked to negative teacher outcomes over time, the stronger associations between the single-items and emotional exhaustion compared to other aspects of burnout is promising (Elo et al., 2003; Maslach, Jackson, & Leiter, 1986). The strength of these associations also aligns with burnout theory. Stress and coping are related to aspects of burnout, most closely to emotional exhaustion, but are not conceptually identical. As previously reviewed, burnout is defined as fatigue, disconnection, and diminished job satisfaction as a result of prolonged stress over time (Maslach et al., 1996); in comparison, stress and coping may be more dynamic and temporal (Lazarus, 2000).

The findings also provide further support for assessing teacher coping whenever studies examine teacher stress. Notably, the associations between the burnout subscales and self-efficacy subscale with the coping item were consistently greater than the associations between the stress item at every time point. Although unexpected, the finding of weaker relations between stress and burnout (versus coping and burnout) may be related to the overall high levels of stress experienced by teachers and the limited variation observed in self-reported stress in school settings. The mean scores on the stress item in this study ($M = 7.34$–8.06; $SD = 1.80$–2.15) were visually higher (adjusted to a common 10-point scale) than one prior study but comparable to a second study. In the Chaplain (2008) study, the mean reported rescaled stress score was 6.59 with a standard deviation of 1.63 in a sample of teachers in England. In a sample of 1430 teachers in western Canada, the rescaled mean stress in the sample was 7.32 with a standard deviation of 2.5 (Klassen & Chiu, 2010). In contrast to stress, targeting coping may provide a more malleable and direct method for improving teacher well-being and in turn, be more effective in preventing the long-term effects of burnout (Kyriacou, 2011).

The regression analyses also provide initial concurrent and predictive validity evidence for the use of these single-item measures in assessing teacher well-being and risk for future burnout. Together the stress and coping items predicted the same time point and future time point emotional exhaustion. The coping item accounted for additional variance in the model, beyond the individual stress item. In addition to predicting a unique proportion of variance in emotional exhaustion, the coping item was also sensitive to change in response to the IY TCM intervention. Although teachers in the intervention did not report lower stress or burnout, on average, they did report higher coping. The difference between the control and intervention groups was statistically significant and the estimated effect of the intervention on coping was medium to large. Though we did not find reductions in teacher stress as a result of the classroom management intervention, like the study by Dicke et al. (2015), the intervention may have supported teacher coping by providing teachers with specific strategies for handling stress and for managing student behaviors, making them feel more equipped to address the demands of their classrooms. The intervention also included individualized support from a coach who provided ongoing consultation which may have further bolstered teacher coping.

It is unclear why the stress item and the emotional exhaustion subscale were not sensitive to intervention effects. One possibility is the difference in the wording between the stress and coping items. The coping item asks about coping in the present ("How well are you coping with the stress of your job *right now*"), whereas the stress item asks for an overall rating (i.e., "How stressful is your job?"). Another consideration is that the intervention was designed to improve classroom management and thus reduce sources of teacher stress related to student behaviors, but the intervention was not specifically designed to reduce all factors that may contribute to teacher stress and burnout. It is possible that other sources of stress, such as workload and limited resources, were not alleviated through the intervention resulting in similar levels of teacher reported stress and burnout. Consistent with this explanation, a recent theory about educator stress notes that interventions to reduce teacher stress and burnout may need to target more than one of three levels: individual, individual-organization interface, and organizational (McIntyre, McIntyre, Barr, et al., 2017;). Here we examined the effects of an individual (teacher) focused intervention. Simply increasing teacher skills and coping may not be enough to reduce their experience of stress without also altering the organizational context of schools that contribute to their stress (e.g., excessive workload, limited resources, unsupportive administrators). Nevertheless, even if situational stressors do not decrease when teachers perceive themselves as more capable of handling the stressors, this may still be protective against the negative impact of burnout over time. A future study would need to examine this possibility.

Regardless, the results suggest that teacher coping may be a more malleable target of a classroom management intervention than stress. The RCT research design allows for the conclusion that IY TCM caused improvements in teacher coping. Thus, the results provide support for the use of the IY TCM program in supporting teachers to cope with stress. Moreover, this evidence could be used to increase teacher and administrator buy-in to adopt and implement this evidenced-based program for improving student outcomes.

4.1. Limitations

One possible limitation of the study, or at least a notable artifact, is the inconsistent sample size across time points. Because the stress and coping items were not added to the study protocol until the spring of the second year of the study, only one of the study cohorts was asked to complete the stress and coping items at every time point. The impetus for adding the stress and coping items was the anecdotal observation by intervention trainers that teachers were highly responsive to the stress and coping aspects of the intervention. We had included a measure of burnout in the original study design with the intention of capturing any potential intervention benefit on burnout. However, the observations of the trainers led the research team to add the stress and coping items to the assessment battery for the final cohort of participants to capture possible proximal benefits of the program on teacher well-being. Future studies will use the stress and coping items as a standard part of the protocol at the outset of the study. Although it would have been optimal to include the items for all cohorts, the primary limitation that this represents is only as a potential power issue in the analyses focused on IY TCM's effects on stress. The significant benefit of IY TCM on teacher coping is both a credible and persuasive finding given the rigorous research study design (RCT) for this effect.

Another limitation of the study is that although validity for use of teacher self-report was considered in this study, internal-

consistency reliability could not be examined given the single-item nature of the stress and coping measures. Traditional internal-consistency measurements for reliability cannot be calculated with single-item scales, but there are other possible ways to calculate reliability, such as using generalizability theory as applied in behavioral research, or the correction for attenuation equation, as applied in a previous study of single-item measures of job satisfaction (Briesch, Swaminathan, Welsh, & Chafouleas, 2014; Wanous et al., 1997). Understanding the reliability of these stress and coping items is recommended for further research. Further, there could be individual differences and subjectivity in the definitions of stress and coping, and the teachers in this study were not given operational definitions of these terms.

An additional consideration in the measurement of these constructs is the dynamic nature of stress which may vary across time and context. A recent study by (McIntyre, McIntyre, Barr, et al., 2017) examined the use of Ecological Momentary Assessment for teachers to report their working conditions and well-being through the work day. They found that individual reports of teacher stress varied by time of day and day of the week. This is an important consideration and a possible limitation in this current study, as teachers were not instructed to complete the measures during specific time periods. Examining individual changes in teacher stress may be particularly valuable for supporting teachers to cope with stress (McIntyre, McIntyre, Barr, et al., 2017), and repeated measures with brief self-monitoring tools may be a potential way to assess for changes over time. Although McIntyre and colleagues (2017) found individual teacher stress levels vary within a day (typically increasing as the day progresses), they also found that stress levels were fairly stable when considered across longer time intervals (seasonally, annually). Thus, the stress and coping items used in the present study may be capturing the stable aspects of these constructs over time. For instance, even with the potential error of not accounting for within day variations in stress levels, these items still predicted 44–47% of variance in emotional exhaustion at the same time point and 23–30% of emotional exhaustion six months and one year later. These findings suggest that measuring stress and coping at single time-points may capture some stable and enduring attributes of stress and coping in addition to their temporal and dynamic aspects. Future research will need to explore the benefits of repeated administration of single-items, or the use of ongoing stress diaries (as in McIntyre, McIntyre, Barr, et al., 2017), in predicting outcomes or guiding screening and intervention relative to the costs and burdens of measurement.

One final limitation, a subset of teachers (those not in the intervention trial but asked to complete an assessment at follow-up) did not provide information on their race, gender, or years teaching. Therefore, we are not able to fully report these data in this manuscript.

4.2. Implications

With these limitations in mind, it is important to consider potential implications of the present findings. First, the present findings suggest that single-items of teacher stress and coping may provide useful data in the context of large intervention or developmental studies. Teachers are already overburdened with paperwork (Mehrenberg, 2013), thus data collection in large school-based studies must be sensitive to these demands. As an example, in the present trial we had no room to add entire coping or stress scales to an already lengthy teacher survey. Yet the addition of these single-items yielded important information, including potential intervention effects that would not have been captured without their addition to the study.

Second, these single-item measures may prove useful in daily practices in school. For instance, teachers may be more willing to complete single-item ratings of stress and coping with an easily understandable and immediate feedback than 20 or 30 item scales that must be scored. Although this proposition requires confirmation in subsequent studies, it is a tenable hypothesis given the well-documented teacher workload burden and its association with low job satisfaction and teacher burnout (Mehrenberg, 2013; Van Droogenbroeck, Spruyt, & Vanroelen, 2014). Given the high levels of stress reported by nearly all teachers (Herman et al., 2018), it is incumbent upon school psychologists to find ways to reduce the burden of paperwork, much of which requires time outside of their workday to complete. Single-item measures are one way to minimize such burden, and if so, it would make it easier to screen all teachers for stress and coping concerns, with fewer opting out.

Third, in a similar way, single-item measures hold promise for progress monitoring purposes. We could find no examples of stress and coping measures for teachers that are designed and validated for daily or weekly progress monitoring. The present findings demonstrating predictive utility and sensitivity to change (of the coping item) suggest the need for more research to examine the use of these items for this purpose. Here again the brevity of the items makes them more practical for ongoing administration than longer scales.

Finally, single-item stress and coping measures may be useful supplements to widely administered school climate surveys (e.g., Huang et al., 2015). These surveys can help guide school decision making to improve school climate for teachers and students. Adding single-item stress and coping indicators would provide useful information to school leadership teams about the need for strategies to support teacher stress and coping as well as the effects of any implemented strategies without creating excessive burden to these already lengthy surveys.

4.3. Areas for future research

The results from this study suggest that measures of teacher coping should be included whenever there is an interest in examining teacher stress. In line with the transactional theory of stress, the results suggest caution should be taken in interpreting stress measurements independent of coping (Lazarus, 1990). One possible improvement of the stress item used in the present study, which ask about stress without specifying a timeframe, would be to ask about stress in the present. A future study could use two items (present and overall) to determine if these wording differences matter for improving the predictive power or sensitivity to change of

these items.

The items have potential for use in intervention studies to understand differences in stress and coping between teachers. For instance, these tools may be particularly valuable in large studies examining a wide range of teacher and student outcomes. However, it is recommended that if teacher stress and coping are examined as main outcomes in the study, researchers also include longer measures of stress and coping as well. We are not suggesting that single-item measures of stress and coping are equivalent to and should always be used in place of validated multiple-item scales. Using these items to get a global rating is useful, but in studies specific to teacher stress and coping further information is needed to have a better idea of the particular coping strategies that improved or the types of stress reduced as a result of the intervention. An example of a measure of teacher stress and coping based in the transactional theory of stress is the Classroom Appraisal of Resources and Demands Inventory (Lambert et al., 2009).

A future area of teacher stress and coping research is the possibility to use similar tools as screeners to identify teachers who may be at risk for developing professional burnout, as together the items demonstrated adequate concurrent and predictive validity for identifying emotional exhaustion. In this study, we used a variable-centered approach, but it may be worthwhile to use a person-centered approach to examine the patterns of stress and coping in teachers. For example, a recent study used these items to identify three main groups of teachers using latent profile analysis. Some teachers reported high stress and high coping, some teachers reported high stress and low coping, and a third group of teachers reported low stress and moderate coping. The stress and coping profiles were then associated with student outcomes, and the group of teachers who reported high stress and low coping were associated with students' outcomes of lower achievement and higher disruptive behaviors (Herman et al., 2018). Identifying teachers with high stress and low coping could be a way to target interventions for teachers most at risk for emotional exhaustion, which may also negatively impact students in their classrooms.

SummarySingle-item measures of stress are often included in studies of teacher stress, and our findings suggest that adding a measure of teacher coping is well-advised. Together these items demonstrated initial concurrent and predictive validity for teacher self-report. The coping item also demonstrated sensitivity to intervention effects of the Incredible Years Teacher Classroom Management program. The findings suggest promise both for the future study of teacher stress and coping using single-item scales and also for the ongoing evaluation of the benefits of IY TCM program for teachers and for students.

References

Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2013). Classroom management self-efficacy and burnout: A multivariate meta-analysis. *Educational Psychology Review, 26*, 101–126. https://doi.org/10.1007/s10648-013-9244-0.

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. https://doi.org/10.1016/j.edurev.2014.05.003.

Armor, D., Conroy-Oseguera, P., Cox, M., King, N., McDonnell, L., Pascal, A., … Zellman, G. (1976). Analysis of the school preferred reading programs in selected Los Angeles minority schools. Santa Monica, CA: Rand Corporation.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215. https://doi.org/10.1037/0033-295X.84.2.191.

Barnes, G., Crowe, E., & Schaefer, B. (2007). The cost of teacher turnover in five school districts: A pilot study. Washington, DC: National Commission on Teaching and America's Future. Retrieved from https://edsource.org/wp-content/uploads/old/NCTAF-Cost-of-Teacher-Turnover-2007-full-report.pdf.

Betoret, F. D. (2009). Self-efficacy, school resources, job stressors and burnout among Spanish primary and secondary school teachers: A structural equation approach. *Educational Psychology, 29*, 45–68. https://doi.org/10.1080/01443410802459234.

Boyle, G. J., Borg, M. G., Falzon, J. M., & Baglioni, A. J. (1995). A structural model of the dimensions of teacher stress. *British Journal of Educational Psychology, 65*, 49–67. https://doi.org/10.1111/j.2044-8279.1995.tb01130.x.

Briesch, A. M., Swaminathan, H., Welsh, M., & Chafouleas, S. M. (2014). Generalizability theory: A practical guide to study design, implementation, and interpretation. *Journal of School Psychology, 52*, 13–35. https://doi.org/10.1016/j.jsp.2013.11.008.

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*, 197–212. https://doi.org/10.1111/j.2044-8325.1993.tb00532.x.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267–283. https://doi.org/10.1037/0022-3514.56.2.267.

Chaplain, R. P. (2008). Stress and psychological distress among trainee secondary teachers in England. *Educational Psychology, 28*, 195–209. https://doi.org/10.1080/01443410701491858.

Dicke, T., Elling, J., Schmeck, A., & Leutner, D. (2015). Reducing reality shock: The effects of classroom management skills training on beginning teachers. *Teaching and Teacher Education, 48*, 1–12. https://doi.org/10.1016/j.tate.2015.01.013.

Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckley, J. A., Olin, S., & Ialongo, N. S. (2008). Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework. *Advances in School Mental Health Promotion, 1*, 6–28. https://doi.org/10.1080/1754730X.2008.9715730.

Elo, A. L., Leppanen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. *Scandinavian Journal of Work, Environment & Health, 29*, 444–451. https://doi.org/10.5271/sjweh.752.

Fimian, M. J. (1984). The development of an instrument to measure occupational stress in teachers: The teacher stress inventory. *Journal of Occupational Psychology, 57*, 277–293. https://doi.org/10.1111/j.2044-8325.1984.tb00169.x.

Forman, S. G. (1982). Stress management for teachers: A cognitive-behavioral program. *Journal of School Psychology, 20*(3), 180–187. https://doi.org/10.1016/0022-4405(82)90047-4.

Forsyth, P. B., & Hoy, W. K. (1978). Isolation and alienation in educational organizations. *Educational Administration Quarterly, 14*, 80–96. https://doi.org/10.1177/0013161X7801400109.

Freiberg, J. H., & Lapointe, J. M. (2006). Research-based programs for preventing and solving discipline problems. *Handbook of classroom management.* Routledge.

Gilpin, A. R. (1993). Table for conversion of Kendall's tau to Spearman's rho within the context of measures of magnitude of effect for meta-analysis. *Educational and Psychological Measurement, 53*, 87–92. https://doi.org/10.1177/0013164493053001007.

Gold, Y. (1984). The factorial validity of the Maslach burnout inventory in a sample of California elementary and junior high school classroom teachers. *Educational and Psychological Measurement, 44*, 1009–1016. https://doi.org/10.1177/0013164484444024.

Griffith, J., Steptoe, A., & Cropley, M. (1999). An investigation of coping strategies associated with job stress in teachers. *British Journal of Educational Psychology, 69*, 517–531. https://doi.org/10.1348/000709991157879.

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*, 90–100. https://doi.org/10.1177/1098300717732066.

Herman, K. C., & Reinke, W. M. (2015). *Stress management training for teachers: A proactive guide.* New York, NY: Guilford.

Hoy, W. K., & Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. *The Elementary School Journal, 93*, 355–372. https://doi.org/10.1086/461729.

Huang, F. L., Cornell, D. G., Konold, T., Meyer, J. P., Lacey, A., Nekvasil, E. K., & Shukla, K. D. (2015). Multilevel factor structure and concurrent validity of the teacher version of

the Authoritative School Climate Survey. *Journal of School Health, 85,* 843–851. https://doi.org/10.1111/josh.12340.

Hutchings, J., Martin-Forbes, P., Daley, D., & Williams, M. E. (2013). A randomized controlled trial of the impact of a teacher classroom management program on the classroom behavior of children with and without behavior problems. *Journal of School Psychology, 51,* 571–585. https://doi.org/10.1016/j.jsp.2013.08.001.

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38,* 499–534. https://doi.org/10.3102/00028312038003499.

Jennings, P. A., Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., & Greenberg, M. T. (2017). Impacts of the CARE for teachers program on teachers' social and emotional competence and classroom interactions. *Journal of Educational Psychology, 109,* 1010–1028. https://doi.org/10.1037/edu0000187.

Jennings, P. A., & DeMauro, A. A. (2017). Individual-level interventions: Mindfulness-based approaches to reducing stress and improving performance among teachers. In T. M. McIntyre, S. E. McIntyre, & D. J. Francis (Eds.). *Educator stress: An occupational health perspective* (pp. 319–346). Cham, Switzerland: Springer International Publishing.

Jennings, P. A., Frank, J. L., Snowberg, K. E., Coccia, M. A., & Greenberg, M. T. (2013). Improving classroom learning environments by Cultivating Awareness and Resilience in Education (CARE): Results of a randomized controlled trial. *School Psychology Quarterly, 28,* 374–390. https://doi.org/10.1037/spq0000035.

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,* 491–525. https://doi.org/10.3102/0034654308325693.

Johnson, S., Cooper, C., Cartwright, S., Donald, I., Taylor, P., & Millet, C. (2005). The experience of work-related stress across occupations. *Journal of Managerial Psychology, 20,* 178–187. https://doi.org/10.1108/02683940510579803.

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102,* 741–756. https://doi.org/10.1037/a0019237.

Kyriacou, C. (2001). Teacher stress: Directions for future research. *Educational Review, 53,* 27–35. https://doi.org/10.1080/0013191012003362.

Kyriacou, C. (2011). Teacher stress: From prevalence to resilience. *Handbook of stress in the occupations* (pp. 161–173). Northampton, MA, US: Edward Elgar Publishing.

Kyriacou, C., & Sutcliffe, J. (1978). A model of teacher stress. *Educational Studies, 4,* 1–6. https://doi.org/10.1080/0305569780040101.

Lambert, R. G., McCarthy, C., O'Donnell, M., & Wang, C. (2009). Measuring elementary teacher stress and coping in the classroom: Validity evidence for the classroom appraisal of resources and demands. *Psychology in the Schools, 46,* 973–988. https://doi.org/10.1002/pits.20438.

Lazarus, R. S. (1990). Theory-based stress measurement. *Psychological Inquiry, 1,* 3–13. https://doi.org/10.1207/s15327965pli0101_1.

Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist, 55*(6), 665–673. https://doi.org/10.1037/0003-066X.55.6.665.

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. *The handbook of behavioral medicine* (pp. 282–325). New York, NY: Guilford.

Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality, 1,* 141–169. https://doi.org/10.1002/per.2410010304.

Longobardi, C., Badenes-Ribera, L., Fabris, M. A., Martinez, A., & McMahon, S. D. (2018). Prevalence of student violence against teachers: A meta-analysis. *Psychology of Violence.* https://doi.org/10.1037/vio0000202 Advance online publication.

Loo, R. (2002). A caveat on using single-item versus multiple-item scales. *Journal of Managerial Psychology, 17,* 68–75. https://doi.org/10.1108/02683940210415933.

Macdonald, D. (1999). Teacher attrition: A review of literature. *Teaching and Teacher Education, 15,* 835–848. https://doi.org/10.1016/S0742-051X(99)00031-1.

Maslach, C. (2003). Job burnout: New directions in research and intervention. *Current Directions in Psychological Science, 12,* 189–192. https://doi.org/10.1111/1467-8721.01258.

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior, 2,* 99–113. https://doi.org/10.1002/job.4030020205.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1986). *Maslach burnout inventory - manual.* Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Jackson, S. E., & Schwab, R. L. (1996). Maslach burnout inventory - educators survey (MBI-ES). In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.). *MBI Manual*(3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*(1), 397–422. https://doi.org/10.1146/annurev.psych.52.1.397.

McIntyre, T. M., McIntyre, S. E., Barr, C. D., Francis, D. J., & Durand, A. (2017). Towards a dynamic integrative theory of educator stress. In T. M. McIntyre, S. E. McIntyre, & D. J. Francis (Eds.). *Educator stress: An occupational health perspective* (pp. 261–289). Cham, Switzerland: Springer.

McIntyre, T. M., McIntyre, S. E., & Francis, D. J. (2017). *Educator stress: An occupational health perspective.* Cham, Switzerland: Springer.

Mehrenberg, R. L. (2013). Red tape and green teachers: The impact of paperwork on novice special education teachers. *International Journal of Special Education, 28,* 80–87.

Missouri Department of Elementary and Secondary Education (2018). Missouri comprehensive data system: Student characteristics. Retrieved August, 2018, from https://mcds.dese.mo.gov/quickfacts/Pages/Student-Characteristics.aspx.

Morris, S. B. (2008). Estimating effect sizes from pretest-posttest-control group designs. *Organizational Research Methods, 11,* 364–386. https://doi.org/10.1177/1094428106291059.

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. https://doi.org/10.1016/j.socscimed.2016.04.031.

O'Brennan, L., Pas, E., & Bradshaw, C. (2017). Multilevel examination of burnout among high school staff: Importance of staff and school factors. *School Psychology Review, 46,* 165–176. https://doi.org/10.17105/spr-2015-0019.V46-2.

Reinke, W. M., Herman, K. C., & Dong, N. (2018). The Incredible Years teacher classroom management program: Initial findings from a group randomized control trial. *Prevention Science, 19,* 1043–1054. https://doi.org/10.1007/s11121-018-0932-3.

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,* 39–50. https://doi.org/10.1177/1098300712459079.

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,* 787–804. https://doi.org/10.1037/a0032093.

Sharp, J. J., & Forman, S. G. (1985). A comparison of two approaches to anxiety management for teachers. *Behavior Therapy, 16,* 370–383. https://doi.org/10.1016/s0005-7894(85)80004-6.

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,* 124–137. https://doi.org/10.1002/j.2161-1920.2013.00031.x.

Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology, 99,* 611–625. https://doi.org/10.1037/0022-0663.99.3.611.

Skaalvik, E. M., & Skaalvik, S. (2017). Teacher stress and teacher self-efficacy: Relations and consequences. In T. M. McIntyre, S. E. McIntyre, & D. J. Francis (Eds.). *Educator stress: An occupational health perspective* (pp. 101–125). Cham, Switzerland: Springer International Publishing.

Travers, C. (2017). Current knowledge on the nature, prevalence, sources and potential impact of teacher stress. In T. M. McIntyre, S. E. McIntyre, & D. J. Francis (Eds.). *Educator stress: An occupational health perspective* (pp. 23–54). Cham, Switzerland: Springer International Publishing.

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17,* 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1.

Van Droogenbroeck, F., Spruyt, B., & Vanroelen, C. (2014). Burnout among senior teachers: Investigating the role of workload and interpersonal relationships at work. *Teaching and Teacher Education, 43,* 99–109. https://doi.org/10.1016/j.tate.2014.07.005.

Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology, 82,* 247–252. https://doi.org/10.1037/0021-9010.82.2.247.

Webster-Stratton, C. (1994). *The incredible years teacher training series.* Seattle, WA: Incredible Years.

Webster-Stratton, C., Reinke, W. M., Herman, K. C., & Newcomer, L. L. (2011). The Incredible Years Teacher Classroom Management training: The methods and principles that support fidelity of training delivery. *School Psychology Review, 40,* 509–529. https://doi.org/10.1002/pits.21608.

Wehby, J. H., Maggin, D. M., Partin, T. C. M., & Robertson, R. (2012). The impact of working alliance, social validity, and teacher burnout on implementation fidelity of the good behavior game. *School Mental Health, 4,* 22–33. https://doi.org/10.1007/s12310-011-9067-4.

Wolpe, J. (1990). *The practice of behaviour therapy* (4 ed.). New York, NY: Pergamon Press.

Zhang, A., Musu-Gillette, L., & Oudekerk, B. (2016). Indicators of school crime and safety: 2015. Washington, DC: National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. Retrieved from http://nces.ed.gov/pubs2016/2016079.pdf Z.