RESEARCH ARTICLE

WILEY

The relationship between teacher stress and job satisfaction as moderated by coping

Seth Woods | James Sebastian | Keith C. Herman |
Francis L. Huang | Wendy M. Reinke | Aaron M. Thompson

Department of Educational Leadership and Policy Analysis, University of Missouri-Columbia, Missouri, Columbia, USA

Correspondence
Seth Woods, Educational Leadership and Policy Analysis, University of Missouri-Columbia, 202 Hill Hall, Columbia, MO 65211, USA.
Email: woodsst@gmail.com

Abstract

The present study investigated the relationship between teacher stress and job satisfaction, and examined the role of coping as a moderator. Based on the transactional and Coping-Competence-Context models of stress we expected that coping would serve as a protective factor in the relationship between teacher stress and their job satisfaction. Stress, coping, and satisfaction were measured using single-item scales which are cost-effective and practical instruments for measuring and monitoring teacher stress. A total of 2347 teachers from 93 schools formed the sample for this study. Regression analysis with job satisfaction as the outcome, and stress, coping, and their interaction entered separately were used to test the primary hypothesis. Results showed that there was a negative correlation between stress and job satisfaction, and coping had a significant moderating effect. Increasing levels of stress had less of a negative impact on job satisfaction for teachers with high coping ratings compared to those with average or low coping ratings. Overall, our results suggest that the development of coping skills could be beneficial for mitigating the effects of stress on job satisfaction.

KEYWORDS
moderation, single-item measures, teacher coping, teacher job satisfaction, teacher stress

1 | INTRODUCTION

Teacher retention is a significant problem in K-12 education (Mack et al., 2019; Dunn, 2018; Goldring et al., 2014; Inman & Marlow, 2004). Many studies suggest that between 25% and 50% of teachers do not continue to teach beyond their first 3 years (Boe et al., 2008; Inman & Marlow, 2004). Amos (2008) estimated that recruitment, hiring, and training new teachers costs the US education system about $7 billion annually. In addition to the financial repercussions, teachers high in stress and burnout and low in coping skills are associated with poor student performance (Herman et al., 2018).

One important influencer of teacher retention is job satisfaction. Teachers' job satisfaction has been directly connected to teacher retention (Skaalvik & Skaalvik, 2011) and has also been tied to teachers' decisions about whether or not to stay in the teaching profession at all (Klassen & Chiu, 2011; McCarthy et al., 2010). Besides being a key determinant of teacher retention, job satisfaction also influences other aspects of teachers' work. It has been shown to have a positive effect on overall job performance (Wolomasi et al., 2019), effective use of classroom management (Kaya & Selvitopu, 2019), teacher subjective well-being (Judge & Watanabe, 1993), and teacher self-concept (Skaalvik & Skaalvik, 2017). In sum, existing research makes it clear that job satisfaction is an integral part of not only retaining teachers, but also in helping teachers be successful.

Research shows that stress and burnout are negatively related to job satisfaction (Avanzi et al., 2018; Domitrovich et al., 2016) and teacher turnover intention (Hultell et al., 2013; Kyriacou, 2001; Skaalvik & Skaalvik, 2010, 2015). Unfortunately, consistent evidence shows that nearly all teachers experience high levels of stress (Herman et al., 2018; Herman, Prewett, et al. 2020); in fact, teacher stress levels are similar to those levels experienced by ambulance workers, police, and prison officers (Johnson et al., 2005). Stress for teachers can come from a multitude of sources. Demands on time, increasing class sizes, student behavior problems, conflicts with other staff, and inadequate resources can all be contributors to teacher stress (Wiley, 2000). Not surprisingly, stressors for teachers also have a significant negative effect on job satisfaction (Shen et al., 2012). These sources of stress closely align with Herzberg's (1966) list of factors that influence both job dissatisfaction and job stress.

The question, then, is what do teachers do about stress? The way teachers manage their stress is called coping. Coping is defined as "all of the cognitive and behavioral efforts, constantly changing, expended (by one person) to manage the internal and/or external demands perceived as consuming or exceeding his resources" (Lazarus & Folkman, 1984; p. 141). One teacher may have high stress but also high coping strength, whereas another teacher may also have high stress but inadequate coping strength. These two teachers will likely experience very different outcomes because of the differences in their coping capacity (Herman et al., 2018; Richards, 2012). Coping has been described as a moderator in the transactional model of stress put forth by Lazarus and Folkman (1984). Although there is theoretical support for coping acting as a moderator between stress and satisfaction, we could not identify a prior study that has empirically examined this among school teachers. Prior studies have examined coping as a moderator in how stress affects other outcomes such as student achievement (Herman et al., 2018 Herman, Prewett, et al. 2020), student behavior issues (Herman et al., 2018; Herman, Prewett, et al. 2020), burnout (Antoniou et al., 2013), and physical symptoms (Skaalvik & Skaalvik, 2015). Further, studies by McCarthy et al. (2014, 2010) provide indirect support for coping acting as a moderator in how stress affect job satisfaction. These studies found that teachers' coping was positively related to satisfaction, whereas stress was negatively related to satisfaction. However, they did not conduct moderation analyses to examine the interaction of stress and coping on satisfaction. Further, they did not include direct measures of stress and coping. They utilized a measurement scale called the Classroom Appraisal of Demands and Resources (CARD) as a way to measure demands and resources. The authors described the CARD as "a measure of teacher stress that is grounded in transactional models of stress and coping in that it measures teacher's perceptions of both classroom resources and demands" (McCarthy et al., 2010; p. 311). McCarthy et al. (2014) used CARD to measure teacher perceptions of their demands and resources, and to classify the teachers into three groups (demands equal to resources, demands exceeding resources, and demands less than resources). Those in the under-resourced group experienced more burnout symptoms and

statistically significantly lower job satisfaction scores than those teachers in the other two groups. The three groups also differed on an outcome measure of preventive coping resources. These findings provide some indirect support for the moderating role of coping, given that resources and demands have some conceptual overlap with coping and stress, and yet are distinct constructs. Overall, although there is theoretical support and some indirect support in the empirical literature for coping acting as a moderator between stress and satisfaction, there are no studies that directly examine this relationship.

2 | SINGLE-ITEM MEASURES OF STRESS AND COPING

Studies that have separately examined the topics of stress, coping, and job satisfaction have utilized a variety of measurement tools (see, e.g., Antoniou et al., 2013; Foley & Murphy, 2015; Liu & Ramsey, 2008; Ouellette et al., 2018). Their research designs have typically required participants to complete surveys consisting of dozens of items in total. For example, the data collection tools from the McCarthy et al. (2010) study included the CARD instrument itself (64 items) and the Job Satisfaction Scale (14 items), making a total of 78 items to examine the topics of interest for that study. Multiple studies have shown that perceived survey burden can cause lower response rates (Crawford et al., 2001; Woods & Hampson, 2005). Shortening surveys can improve response rates and minimize nonresponse bias (Rogelberg & Stanton, 2007; Stanton et al., 2002), making single-item measures particularly advantageous. In addition, Scarpello and Campbell (1983) explained that sometimes, the use of multi-item scales may not be ideal because they can either include items that are not relevant to the construct being measured, or they could omit items that are relevant. This means single-item measures can, in some cases, be more practical than multiple-item scales (Scarpello & Campbell, 1983), could improve response rates, and provide valuable information (McCarty et al., 2006).

Equally important, abundant evidence supports the technical adequacy of many single-item measures. Several recent papers have highlighted the historical neglect of single-item measures in psychological and educational research (Allen et al., in press; Verster et al., 2021). In their comprehensive review, Verster et al. (2021) concluded that many single-item ratings of health and emotions, "adequately represent the outcomes of traditional multi-item assessments (p. 196)." Moreover, many studies in education have provided compelling evidence in support of the psychometric properties of single-item scales. For instance, in a series of studies, (Lewis et al., 2017; Stormont et al., 2015, 2019) it was found that single-item ratings of student readiness predicted 6- and 18-month outcomes comparable to or better than multi-item measures. As one example, they reported that beginning-of-year single-item ratings of readiness predicted end-of-year behavior and academic performance outcomes with overall classification rates of 0.82–0.87. In contrast, prior research with the Behavior and Emotion Screening System (Kamphaus & Reynolds, 2007), a 23-item behavior screener, reported an overall classification rate of only 0.62 for behavior outcomes measured at the same timepoint (Distefano & Kamphaus, 2007).

Given this promising literature, many prior studies have successfully used single-item measures of educator stress, coping, and job satisfaction (Elo et al., 2003; Herman et al., 2018, Herman, Prewett, et al., 2020, Herman, et al., 2021; Houdmont et al., 2021; Okeke et al., 2021). For instance, one study found that single-item ratings of teacher stress had higher correlations with measures of health and well-being than the multi-item burnout scale ratings (Elo et al., 2003). Similarly, Wanous et al. (1997) conducted a meta-analysis of studies that examined the correlation of single-item measures of job satisfaction with scales of overall job satisfaction and found the average correlation to be 0.63 (SD = 0.09). Their study also estimated minimum reliability scores for single-item measures using the formula for correction of attenuation. Using this approach, which utilized information on observed correlations between single-item and overall scale measures of satisfaction, and the reliabilities of overall scale measures, they estimated the minimum estimated reliability of such measures to be close to 0.70. Therefore, well-constructed single-item ratings of stress, coping, and job satisfaction provide technically adequate measures of the

constructs of interest and could be efficient in helping teachers and school leaders get a clear picture of staff members' well-being at relatively low cost.

3 | THEORETICAL FRAMEWORKS

The theoretical frameworks that guided the present study are the transactional model of stress (Lazarus & Folkman, 1984) and the Coping-Competence-Context (3C) Theory from Herman, Reinke, et al. (2020). Herman, Reinke, et al. (2020) posited a theory regarding teacher stress called the 3C of Teacher Stress. The 3C Theory says that coping, competence, and context make up three interconnected pathways of teacher stress development and intervention. The Competence pathway explains how stress and classroom practices (particularly classroom management skills) are related. The Context pathway explains that school and educational system policies and practices contribute to teacher stress. The Coping pathway consists of those individual characteristics of a teacher, such as mindset, interpersonal qualities, and coping, that directly influence stress responses (Herman, Reinke, et al., 2020). The 3C Theory of teacher stress posits that teacher coping can have direct and indirect links with stress; prior work by the authors (see Herman, Prewitt et al. 2020), found that only teachers with high levels of stress and low levels of coping experienced negative outcomes, thus providing support for a "moderation coping pathway where stress only has negative outcomes for a subset of teachers, those who report lower coping levels" (Herman, Reinke, et al., 2020; p. 71).

Lazarus and Folkman's (1984) transactional model of stress proposes that any time an individual encounters a life demand, a cognitive process is begun in which the individual weighs the demands of the task against his or her perceived ability to cope with the demand. This demand is appraised in two phases, primary and secondary. The primary appraisal consists of a determination of whether the individual believes the event affects his or her well-being (Lazarus & Folkman, 1987). The secondary appraisal is when the individual decides whether or not they have sufficient coping resources to deal with the event (Lazarus & Folkman, 1987). If the demands of the tasks are perceived to be greater than the ability to deal with the demand, the stress response is triggered. If the individual believes his or her ability to deal with, the event will resolve the issue at hand, then stress is absent or lessened (Lazarus & Folkman, 1987). This theory provides strong direct support for the hypothesis that better coping skills will reduce negative effects of stress. The transactional model of stress also posits a moderating role for coping (Cohen & Wills, 1985), where it can act as a buffer of stress against negative outcomes, whereas poor coping can exacerbate those effects (Herman, Prewett, et al. 2020).

3.1 | Present study

The present study will add to the empirical research base using single-item measures to examine teacher coping as a moderator of the relations between stress and job satisfaction. Even though there are studies that examine different combinations of the relationships between stress, coping, and/or job satisfaction, no prior study has empirically examined whether coping moderates the relationship between teachers' stress and their job satisfaction.

Based upon the transactional and 3C theories of stress, it is reasonable to expect that coping would moderate the relationship between stress and job satisfaction. Teachers with higher coping levels could experience a weaker relationship between stress levels and job satisfaction compared to peers with lower coping skills. We began with the research question, "Does teacher coping buffer the negative effects of stress on job satisfaction?" We hypothesized that teacher coping would moderate the relations between teacher stress and job satisfaction. Despite there being many studies examining stress, coping, and job satisfaction among teachers as mentioned above, none of these studies have utilized coping as a moderator in the relationship between stress and job satisfaction. The gap in the research combined with the theoretical support for such a moderating effect combine to motivate the present study.

4 | METHOD

4.1 | Participants and setting

The data for this study comes from two randomized controlled trials (RCTs) of a school leadership training program, Leadership in Behavior Support (LBS; Sprick et al., 2016), one based in Oklahoma, the other based in Missouri. LBS attempts to bolster school leadership skills in using data to improve school organizational climate and student behavior. Teachers were eligible to participate in the study if their building principal opted to participate in the study. As part of the broader study, all teachers in participating buildings were encouraged to complete climate surveys which included the items in the present study. Table 1 shows the descriptive statistics for the final sample included in the study, which consisted of 2347 teachers from 93 schools. Teacher participants included 531 males and 1816 females. Most study participants identified as White (89.96%). Others identified as American Indian/ Alaskan Native (1.41%), Asian (0.34%), Black or African American (4.77%), Native Hawaiian or Pacific Islander (0.04%), and two or more races (3.88%); 2.43% of the sample identified as Hispanic or Latino. In terms of teacher experience, about 9% of teachers had 1–2 years of experience, about 16% had 3–5 years of experience, about 19% had 6–10 years of experience, and about 55% had more than 10 years of experience.

4.2 | Procedures

All study procedures were approved by the University of Missouri Institutional Review Board. The study design involved recruiting four annual cohorts of schools and principals who were randomly assigned to study condition within cohort. As part of the efficacy study, surveys were collected from teachers on many aspects of school organizational health and climate to examine school context and the changes caused by the LBS training program. The same surveys were distributed to both treatment and control schools participating in the LBS schools in the fall and spring semesters each year. Although the RCT study was focused on leadership training and evaluating the effects of LBS training on student outcomes, survey reports on teacher stress coping, and satisfaction were collected as contextual information from both treatment and control schools. The present study utilized this teacher survey data to examine relations between teacher stress, coping, and job satisfaction.

One key difference between the two studies was the timing of baseline assessment. In the Oklahoma-based study, baseline assessment occurred during the spring semester, whereas baseline was in the fall semester for the Missouri study. For the present study, to reduce potential seasonality response effects, we used data for each cohort from their first fall semester in the study. As a sensitivity analysis, we also used an alternative criterion, using the first timepoint of data collection (baseline), regardless of which study respondents originated from. Both approaches yielded similar results. The present manuscript presents the results from the first approach. The methods details and results from using the alternate criterion are available on request. Notably, the teacher data at each time point was anonymous, and therefore could not be linked across time points. Therefore, longitudinal analysis of teacher stress, coping, and satisfaction at the teacher level, was not possible. Table 2 shows the number of teachers by cohort/study for which data on stress, coping, and satisfaction were available, as well as the corresponding response rates.

4.3 | Measures

4.3.1 | Demographics

The teacher survey included an opening question about their position in the school, with the response options: (1) Teacher (General), (2) Teacher (Special Education), (3) Other. Only respondents who indicated their position as

TABLE 1 Descriptive statistics

Variable	N	Mean	SD	Min	Max
Stress	2347	6.86	2.23	1	10
Coping	2347	6.75	2.25	1	10
Satisfaction	2347	4.72	1.16	1	6
Teaches Grade PK	2347	0.01	–	0	1
Teaches Grade K	2347	0.11	–	0	1
Teaches Grade–Other	2347	0.03	–	0	1
Teaches Grade 1	2347	0.11	–	0	1
Teaches Grade 2	2347	0.11	–	0	1
Teaches Grade 3	2347	0.13	–	0	1
Teaches Grade 4	2347	0.13	–	0	1
Teaches Grade 5	2347	0.16	–	0	1
Teaches Grade 6	2347	0.23	–	0	1
Teaches Grade 7	2347	0.21	–	0	1
Teaches Grade 8	2347	0.21	–	0	1
Teaches Grade 9	2347	0.21	–	0	1
Teaches Grade 10	2347	0.23	–	0	1
Teaches Grade 11	2347	0.24	–	0	1
Teaches Grade 12	2347	0.23	–	0	1
Teacher is female	2347	0.77	–	0	1
Teacher is White	2347	0.90	–	0	1
Experience (1–2 years)	2347	0.09	–	0	1
Experience (3–5 years)	2347	0.16	–	0	1
Experience (6–10 years)	2347	0.19	–	0	1
Experience (>10 years)	2347	0.55	–	0	1
Missouri schools (Safe and Civil Schools Leadership)	2347	0.72	–	0	1
Treatment schools	2347	0.49	–	0	1
Survey year 2017	2347	0.37	–	0	1
Survey year 2018	2347	0.21	–	0	1
Survey year 2019	2347	0.35	–	0	1
Survey year 2020	2347	0.07	–	0	1

Teacher (General) or Teacher (Special Education) were selected for this study. Teachers were also asked to provide their gender and race and ethnicity identities. For grade level, teachers were asked the question: What grade level do you currently teach? (Check all that apply). Teachers were allowed to report teaching multiple grades (e.g., secondary teachers often teach across grade levels), which is why the totals in Table 1 add to >100%.

TABLE 2 Number of teachers surveyed (and response rates) by cohort

	Oklahoma study N (%)	Missouri study N (%)
Cohort 1	368/463 (79.48%)	581/738 (78.73%)
Cohort 2	64/64 (100.00%)	490/717 (68.34%)
Cohort 3	190/226 (84.07%)	804/1020 (78.82%)
Cohort 4	159/213 (74.65%)	54/56 (96.43%)

The LBS studies collected single-item measures of stress, coping, and job satisfaction. The technical adequacy of the single-item stress and coping measures have been previously reported; in particular, these items have comparable correlations and predictive value as longer scales of the same construct (Eddy et al., 2019). Specifically, Eddy et al. (2019) tested the concurrent and predictive validity and sensitivity to change of single-item teacher stress and coping measures. They found that the single-item measures predicted validated concurrent and prospective measures of emotional exhaustion, personal accomplishment, depersonalization, and self-efficacy with a high level of precision (Eddy et al., 2019). In particular, single-item ratings of stress and coping accounted for half the variance of teacher burnout ratings collected 6 and 18 months later, which is similar to or more than the predictive value of the full multi-item burnout subscales themselves (see Taris et al., 2005 for comparison). We used the same single-item ratings of stress and coping used in the Eddy et al. (2019) validation paper as well as in three other studies that provided further evidence of their technical adequacy (Herman et al., 2018; Herman, Prewett, et al., 2020; Herman et al., 2021). Herman et al. (2018) reported the 6-month test–retest reliability for these same stress and coping items to be 0.58 and 0.70, respectively. These levels of stability compare favorably to the 6-month reliability, 0.62, of a multi-item measure of burnout (see Herman et al., 2020). The measure for teacher stress asked: How stressful is your job? The measure for stress has a 10-point scale with 1 indicating "*not stressful*" to 10 indicating "*very stressful.*" Coping was assessed with the question: How well are you coping with the stress of your job? Coping is also measured on a 10-point scale with 1 indicating "*not well*" and 10 indicating "*very well.*" The job satisfaction scale (Overall, how satisfied are you with your job at this school?), was measured on a 6-point scale with 1 indicating "*very dissatisfied*" to 6 indicating "*very satisfied.*"

4.4 | Data analysis

The analyses for this study consisted of simple descriptive analyses, regression analysis with job satisfaction as the outcome, and stress, coping, and their interaction entered separately to answer our research question. Moderation analysis is designed to determine whether a moderating variable (coping in the present study) affects the strength and/or direction of the relationship between an independent variable (stress) and dependent variable (job satisfaction; Field, 2018).

The moderation analysis included several teacher-level covariates with school fixed-effects. The school fixed-effects approach controls for nonobserved school-level characteristics by using dummy variables for each school included in the studies. All outcome variables were treated as continuous for this process. Johnson and Creech (1983) showed the treatment of Likert-style data as continuous is supported when scales contain >5 response categories. Other studies have also noted that it is acceptable to utilize parametric tests (such as regression) with Likert-style variable when they contain at least five response categories (see, e.g., Norman [2010], Sullivan and Artino [2013], and Zumbo and Zimmerman [1993]). Before performing the moderation analyses, the variables for stress and coping were centered. The following regression equation describes the moderation analysis:

$$Y_i = \beta_0 + \beta_1(\text{Stress}) + \beta_2(\text{Coping}) + \beta_3(\text{Stress*Coping}) + b_x \mathbf{X}_i + r_{ij} \tag{1}$$

In formula (1), Y_i denotes the outcome—teacher job satisfaction for teacher i. The slope β_1 represents the average expected change in job satisfaction when the stress score increases by one unit and coping is at its average value. The slope β_2 represents the average expected change in job satisfaction when the coping score is increased by one unit holding everything else constant. The variable Stress*Coping is the interaction term. The variables for stress, coping, and satisfaction were standardized before calculating the interaction term and running the models. $\mathbf{X}_i$ represents a vector of the teacher level covariates, which include experience, gender, grade-level taught, White or non-White race, treatment condition, and school fixed effects. The data preparation for analyses, analyses for descriptive statistics, and moderation analyses were conducted in SAS 9.4, PROC surveyreg was used for the regression and moderation analysis to include school fixed effects and to cluster the SEs at the school level. The PROCESS plugin for SPSS by Hayes (2013) was also utilized to conduct the moderation analyses. PROCESS is a versatile modeling tool that provides templates for multiple mediation and moderation models. PROCESS provides bootstrap confidence intervals (CIs) for mediation and moderation analyses, and incorporates the Johnson–Neyman technique to examine whether there are values of the moderator at which the predictor slope transitions from significant to nonsignificant. The results are also displayed in a convenient format that allow for straightforward interpretation of complex interactions in moderation models.

4.5 | Control variables

Prior studies suggest that stress varies across different points in a teacher's career (Harmsen et al., 2019; Huberman, 1993; Ingersoll, 2001; Lauermann & König, 2016; Prilleltensky et al., 2016). Some research has also shown that stress levels vary by grade levels the teacher teaches (Antoniou et al., 2013). In addition, Antoniou et al. (2006) found that females experience more occupational stress than their male counterparts. Therefore, the following variables were included as covariates in the study: years of teaching experience, grade-level taught, gender, and White or non-White race. School-level factors were accounted for by including school fixed effects. The intra-class correlation coefficient (ICC) estimates for job satisfaction, teacher stress, and teacher coping are provided in Table 3. Grade-level taught, from Grades 1 through 12th, Grade Pre-K, Grade K, and Grade–Other were dummy coded. Similarly, years of teaching experience was dummy coded into four variables, one for each category: 1–2 years of experience, 3–5 years, 6–10 years, and >10 years. Race was dummy coded into a single variable in which each participant was identified as either White or non-White. Although the survey collected race data for many races, the number of responses in most of the race categories were small. This study utilized listwise deletion; any teacher who did not respond to all the questions of interest (stress, coping, job satisfaction, and all covariates) was not included in the analysis. Including school-fixed effects meant that the coefficients for several school-level variables—Missouri Schools, Treatment to LBS, and survey year—could not be estimated.

TABLE 3 Correlations between stress, coping, and teacher job satisfaction

Variable	Mean	ICC	Stress	Coping	Job satisfaction
Stress	6.86	0.08	–		
Coping	6.75	0.05	−0.54***	–	
Job satisfaction	4.72	0.11	−0.50***	0.55***	–

Abbreviation: ICC, intra-class correlation coefficient.

***p < .001.

5 | RESULTS

5.1 | Descriptive statistics

The present study focused on three variables (stress, coping, and job satisfaction) to examine whether coping moderates the relationship between stress and job satisfaction. In addition, several covariates were included in the analysis: gender, whether the participant is White or non-White, years of teaching experience, grade-level taught, and school fixed effects.

The average teacher stress rating was 6.86 (on a 10-point scale). There was also wide variation in self-reported stress scores (SD = 2.23). Figure 1 shows a histogram of teacher responses to the single-item measures of stress, coping, and satisfaction; 76.44% of teachers rated their stress level at a 6 or higher on the 10-point scale. The data indicates that most teachers felt that they were coping reasonably well (M = 6.75, SD = 2.25), with 70.64% of teachers rating their coping level at a 6 or higher on the 10-point scale. Despite high levels of stress, teachers in this study showed high ratings of job satisfaction (M = 4.72, SD = 1.16), with 86.61% of teachers rating themselves as either slightly satisfied, satisfied, or very satisfied (see Figure 1). However, only 23.43% of teachers rated themselves as "*very satisfied*," which is lower than the 39% of teachers found to be very satisfied in a 2012 Met Life survey, which was the lowest proportion in the 25 years prior to the study (MetLife, 2012).

Table 3 shows the correlations between stress, coping, and satisfaction. A significant and positive correlation of 0.55 ($p < .001$) was found between coping and job satisfaction. Stress had signification negative correlations with both job satisfaction, −0.50 ($p < .001$), and coping, −0.54 ($p < .001$). Table 3 also shows the ICC values for stress, coping, and satisfaction; most of the variance in teacher self-ratings of stress, coping, and satisfaction is within-school variation.
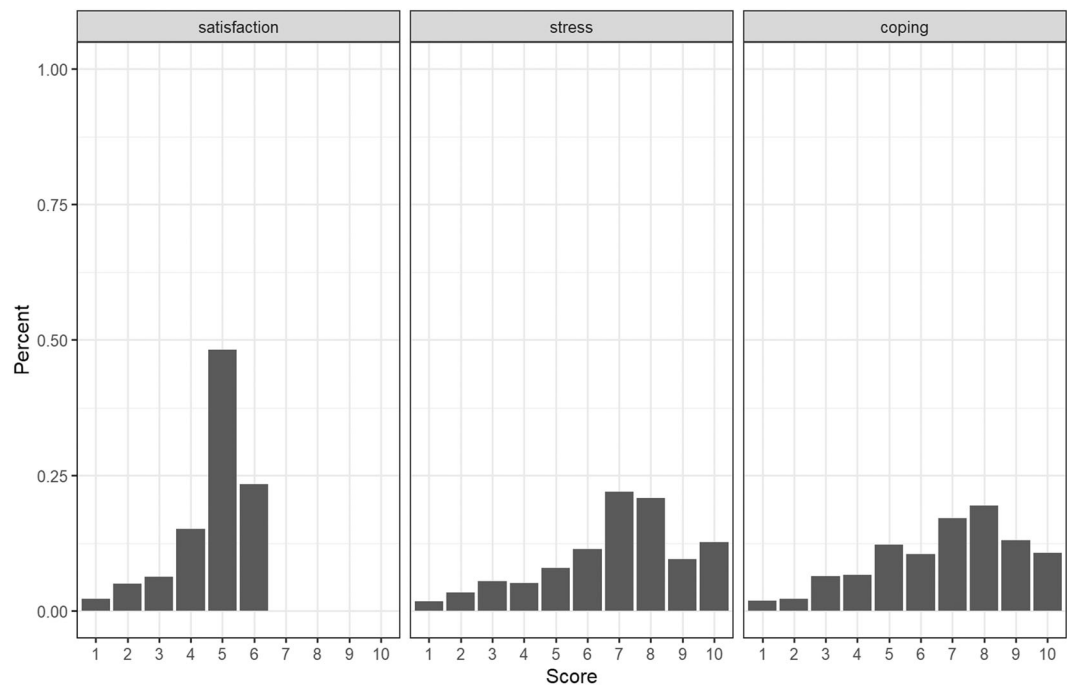

FIGURE 1 Teacher ratings of satisfaction, stress, and coping using single-item measures

5.2 | Moderation analysis

Table 4 displays the results for regression analysis with teacher job satisfaction as the outcome and both coping and stress included as independent variables along with teacher demographic covariates and school fixed effects. The resulting model explained 37.17% of the variance in job satisfaction. Stress was significantly associated with satisfaction ($\beta = -0.29$, $p < .001$, 95% CI [−0.35, −0.23]) as did coping ($\beta = .40$, $p < .001$, 95% CI [0.36, 0.45]). The variables for stress, coping, and job satisfaction had been standardized; therefore, the coefficient estimates can be interpreted as effect sizes. Table 5 displays the results for the moderation analysis of the relationship between stress, coping, and job satisfaction with stress. This model additionally included a variable that was product of stress and coping.

The moderation results (see Table 5) from using SAS PROC surveyreg show that teacher stress was negatively related to job satisfaction ($\beta = -0.37$, $p < .001$, 95% CI [−0.44, −0.31]), whereas coping was positively related to

TABLE 4 Regression results

Parameter	Estimate	SE	95% CI Lower Limit	Upper Limit	p
Intercept	−0.16	0.11	−0.38	0.06	.15
Stress	−0.29	0.03	−0.35	−0.23	<.001
Coping	0.40	0.02	0.36	0.45	<.001
Teaches Grade PK	−0.28	0.15	−0.57	0.01	.06
Teaches Grade K	0.08	0.07	−0.05	0.22	.20
Teaches Grade 1	−0.03	0.08	−0.19	0.13	.72
Teaches Grade 2	0.04	0.07	−0.11	0.19	.57
Teaches Grade 3	0.00	0.06	−0.12	0.12	.99
Teaches Grade 4	0.00	0.06	−0.13	0.13	.98
Teaches Grade 5	0.06	0.05	−0.04	0.17	.22
Teaches Grade 6	0.06	0.05	−0.03	0.16	.21
Teaches Grade 7	0.01	0.05	−0.09	0.12	.78
Teaches Grade 8	0.00	0.07	−0.13	0.13	.97
Teaches Grade 9	0.03	0.09	−0.14	0.21	.70
Teaches Grade 10	−0.04	0.12	−0.29	0.20	.73
Teaches Grade 11	−0.12	0.16	−0.43	0.20	.47
Teaches Grade 12	0.22	0.15	−0.08	0.51	.15
Teacher is female	0.21	0.04	0.13	0.29	<.001
Teacher is White	0.05	0.06	−0.07	0.17	.40
Experience (3–5 years)	−0.05	0.07	−0.20	0.10	.51
Experience (6–10 years)	−0.15	0.07	−0.28	−0.02	.03
Experience (>10 years)	−0.12	0.06	−0.23	−0.01	.03

Note: Experience (1–2 years), Teaches Grade (Other) were the reference categories. Model $R^2 = .37$.

Abbreviation: CI, confidence interval.

TABLE 5 Moderation analysis results

Parameter	Estimate	SE	95% CI Lower Limit	Upper Limit	p
Intercept	−0.06	0.10	−0.26	0.15	.58
Stress	−0.37	0.03	−0.44	−0.31	<.001
Coping	0.33	0.02	0.30	0.37	<.001
Stress*Coping	0.16	0.02	0.13	0.20	<.001
Teaches Grade PK	−0.32	0.14	−0.60	−0.04	.03
Teaches Grade K	0.07	0.06	−0.05	0.19	.25
Teaches Grade 1	−0.02	0.07	−0.17	0.12	.76
Teaches Grade 2	0.07	0.07	−0.08	0.21	.38
Teaches Grade 3	−0.01	0.06	−0.12	0.10	.86
Teaches Grade 4	0.00	0.07	−0.13	0.14	.95
Teaches Grade 5	0.05	0.05	−0.04	0.15	.28
Teaches Grade 6	0.06	0.05	−0.04	0.16	.22
Teaches Grade 7	0.01	0.05	−0.09	0.11	.84
Teaches Grade 8	−0.01	0.06	−0.14	0.11	.84
Teaches Grade 9	0.01	0.09	−0.17	0.19	.88
Teaches Grade 10	−0.06	0.12	−0.30	0.18	.62
Teaches Grade 11	−0.11	0.16	−0.43	0.22	.51
Teaches Grade 12	0.22	0.15	−0.07	0.51	.14
Teacher is female	0.19	0.04	0.11	0.27	<.001
Teacher is White	0.06	0.06	−0.06	0.18	.34
Experience (3–5 years)	−0.05	0.07	−0.19	0.09	.50
Experience (6–10 years)	−0.14	0.06	−0.27	−0.02	.03
Experience (>10 years)	−0.11	0.05	−0.21	−0.01	.04

Note: Experience (1–2 years), Teaches Grade (Other) were the reference/left-out categories. Model R^2 = .40.
Abbreviation: CI, confidence interval.

satisfaction (β = .33, p < .001, 95% CI [0.30, 0.37]). The interaction term between coping and stress was positively related to satisfaction (β = .16, p < .001, 95% CI [0.13, 0.20]), which confirmed our hypothesis that coping moderates the relationship between stress and job satisfaction. The results from PROCESS (see Table 6) show similar results. PROCESS provides additional output that is useful to visualize the moderating effect of coping in this relationship between stress and job satisfaction. The Johnson–Neyman method used in PROCESS showed that stress had a negative relationship with job satisfaction at all levels of coping. As coping increased, the magnitude of the correlation between stress and satisfaction decreased. The regression coefficients for stress (regressed on job satisfaction) were −0.49, −0.34, and −0.19, when coping levels were −1 SD, mean value, and +1 SD, respectively. PROCESS also provides estimates for the outcome (job satisfaction) at different points of stress and coping (1 SD below the mean, at the mean, and 1 SD above the mean). This information is presented as a graph in Figure 2.

TABLE 6 Bootstrap results for regression model parameters (from PROCESS)

Parameter	Coeff	BootMean	BootSE	BootLLCI	BootULCI
Intercept	0.19	0.20	0.34	−0.52	0.81
stress	−0.34	−0.34	0.02	−0.39	−0.30
coping	0.32	0.32	0.02	0.28	0.36
stress*coping	0.15	0.15	0.02	0.12	0.18
Teaches Grade PK	−0.23	−0.23	0.19	−0.61	0.14
Teaches Grade K	0.03	0.03	0.07	−0.10	0.16
Teaches Grade 1	0.01	0.01	0.06	−0.12	0.14
Teaches Grade 2	0.03	0.03	0.07	−0.12	0.17
Teaches Grade 3	−0.09	−0.09	0.06	−0.21	0.04
Teaches Grade 4	−0.02	−0.02	0.06	−0.14	0.09
Teaches Grade 5	0.01	0.01	0.05	−0.09	0.11
Teaches Grade 6	0.07	0.07	0.05	−0.02	0.17
Teaches Grade 7	0.06	0.06	0.06	−0.05	0.17
Teaches Grade 8	0.02	0.02	0.06	−0.10	0.13
Teaches Grade 9	0.02	0.02	0.07	−0.12	0.17
Teaches Grade 10	−0.05	−0.05	0.10	−0.25	0.15
Teaches Grade 11	−0.03	−0.03	0.14	−0.31	0.25
Teaches Grade 12	0.17	0.16	0.14	−0.09	0.43
Teacher is female	0.15	0.15	0.04	0.07	0.23
Teacher is White	−0.07	−0.08	0.05	−0.18	0.03
Experience (3–5 years)	−0.06	−0.06	0.07	−0.19	0.07
Experience (6–10 years)	−0.16	−0.16	0.06	−0.29	−0.03
Experience (>10 years)	−0.10	−0.11	0.06	−0.22	0.01

Note: R^2 = .46. Level of confidence for all confidence intervals in output = 95. There were no statistical significance transition points within the observed range of the moderator found using the Johnson–Neyman method.

Teachers with low coping skills (1 SD below the mean) had lower job satisfaction ratings across all the levels of stress. Further, the drop in job satisfaction from the lowest level of stress to the highest level of stress was greater as coping decreases. High coping teachers (1 SD above mean) see the smallest decline in satisfaction as stress went from low to high, losing ~0.39 of SDs in job satisfaction, teachers with average coping had a loss of ~0.69 of SDs, whereas teachers with low coping had a drop of 0.99 SDs.

6 | DISCUSSION

The present study examined whether teacher coping moderated the relationship between teacher stress and job satisfaction. As hypothesized, the results revealed coping as a statistically significant moderating influence on the relationship between teacher stress and job satisfaction. Many studies conclude that stress and coping are part of
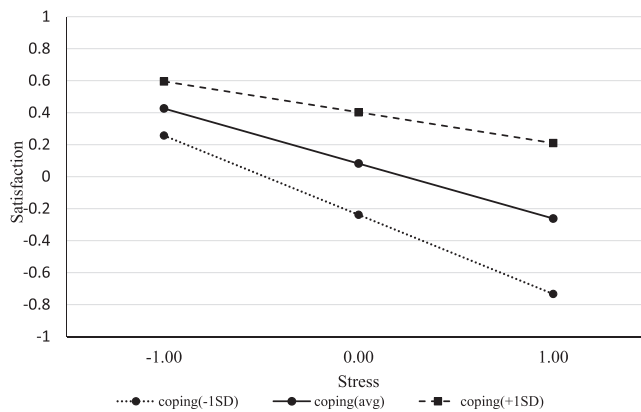
FIGURE 2 Simple slopes graphs of the relationship between stress, coping and job satisfaction

every teacher's job and that the two constructs are linked together in determining a host of outcomes (Herman et al., 2018; Herman, Prewett, et al., 2020; Kyriacou, 2001; McCarthy et al., 2014). Prior studies have examined the effects of teacher stress and coping on many outcomes such as student achievement and behavior (Herman et al., 2018; Herman, Prewett, et al., 2020), teacher attrition (Huberman, 1993; Kyriacou, 2001), and teacher burnout (Antoniou et al., 2013). The present study adds to this literature base by showing that coping moderates the effect of stress on job satisfaction. In addition, this study adds to the evidence-base of using single-item measures to measure stress, coping, and job satisfaction. The use of single-items for the central constructs examined in this study makes surveying teachers less stressful for respondents and efficient for practitioners who may want to utilize or replicate these methods.

The participants for this study were similar to those involved in prior research in terms of stress and job satisfaction levels. Approximately 87% of the participants rated themselves as slightly to very satisfied with their jobs, which is near the 90% that the 2018 OECD study found (Schleicher, 2018). The 2012 Met Life survey, though, found that 39% of teachers rated themselves as very satisfied, but the present study found that just close to 23% of the participants felt that way. This could be attributable to the increasing amount of stress that teachers are facing (von der Embse et al., 2019), and that could be eroding teacher job satisfaction based on the stress and job satisfaction regression results of the present study. However, comparisons across these various samples of teachers are only offered tentatively given other factors that may have accounted for these differences. The present study was limited to areas in Missouri and Oklahoma, so we do not know if these findings generalize to the national population of teachers.

The results of the present study provide support for the transactional model of stress which suggests that stress and coping interact to determine health outcomes. Recall that the transactional model posits that events are first filtered through a primary appraisal that determines whether the event is something that will influence the individual's well-being. If that event is deemed to be something that influences the individual's well-being, it is then put through a secondary appraisal of how much the individual believes he or she can control the outcome of the event, which is dependent upon the coping resources that a person can muster (Lazarus & Folkman, 1987). The significant moderating influence of coping in the stress and job satisfaction relationship is consistent with this secondary appraisal role of coping in shaping health outcomes as predicted by the transactional model. In other words, the results of this study show that stress disproportionately affects outcomes for teachers who do not cope well. Teachers with strong coping scores saw smaller decreases in job satisfaction as stress levels increased, relative to teachers with medium or low coping scores.

Although we did not measure specific coping strategies that teachers used in the present study, the transactional theory would suggest that teachers who reported higher levels of coping were using more proactive

problem-focused (e.g., changing aspects of the stressful situation) or emotion-focused strategies (e.g., changing one's relationship with the stressful situation). More adaptive coping includes changing behaviors—such as through effective communication or assertiveness skills—or changing interpretations of stressful events—such as positive reappraisals. Although work-related stress can lower job satisfaction, adaptive coping can lessen the harmful effects of stress on satisfaction.

The findings are also consistent with prior studies, which found that teachers displayed differences in well-being depending on their coping capacities (Herman et al., 2018; Herman, Prewett, et al. 2020; Richards, 2012). Moreover, the present study aligns with the work of McCarthy et al. (2014) who used CARD as a measure of demands and resources and used that tool to examine job satisfaction scores among teachers. They found that teachers who had demands exceeding their resources reported statistically significant lower job satisfaction ratings than those who were neutral on demands and resources, or those whose resources exceeded their demands. In brief, their findings suggested that demands, a type of stressor, and resources, an aspect of coping, interact with each other in how they affect outcomes such as job satisfaction, thus supporting a moderational relationship.

Last, the present study also supports aspects of the 3C theory. The Coping pathway in the 3C theory consists of those individual characteristics of a teacher, such as mindset, interpersonal qualities, and coping, which directly influence stress responses (Herman et al., 2020). Specifically, this study supports the part of this pathway that includes teachers' coping skills and the effects they have on teacher outcomes. According to the 3C Theory, coping can buffer the effects of stress on both teacher performance/well-being (including job satisfaction) and also student outcomes (including achievement). Future studies will need to evaluate whether the coping buffer effects on teacher wellbeing also extend to students. Additionally, the 3C theory also identifies the importance of context and teacher competence in shaping the effects of teacher stress on attrition and wellbeing. Future studies will need to examine the comparative roles of coping, context, and competence in reducing teacher stress and/or mitigating the damaging consequences of stress.

Although the present study reinforces findings from previous research regarding stress and coping among teachers, it is worth noting that, in some ways, the present study expands on that work on the measurement side. The majority of previous studies that examined these constructs did so with surveys that utilized scales based on multiple questions (sometimes many dozens) to measure stress, coping, and/or job satisfaction. The use of single-item measures reduces survey burden and improves response rates (Rogelberg & Stanton, 2007; Stanton et al., 2002), which makes this methodology more practical for practitioners. The present study adds to the evidence-base of research utilizing single-item measures of teacher well-being.

6.1 | Limitations

The present study has several limitations. The first of these limitations is that the data was cross-sectional. Field (2018) explains that cross-sectional research can only explain what is occurring in the moment the data were collected. As the present study is not a longitudinal or experimental design, claims about causality are not warranted (Field, 2018). In the present study, longitudinal data at the teacher level was not available, as there was no data identifying particular teachers to track their responses across time. A cross-sectional design made sense for the present study, because it is exploratory in nature and examining a relationship (stress and job satisfaction as moderated by coping) that has not been thoroughly explored in previous studies (Spector, 2019).

Similarly, the primary variables in the present study were all measured by a single informant. Although self-report is the gold standard for measuring self-perceptions of stress, coping, and satisfaction, this does introduce the potential for source bias as an explanation for the study findings. To mitigate the likelihood of source bias, all regressions included multiple self-reported items as covariates including both stress and coping, as well as self-reported demographic characteristics, thus effectively controlling for source. Moreover, the primary research question focused on whether coping moderated the relation between stress and job satisfaction. Although source

bias can inflate univariate correlations it is unlikely to influence moderation outcomes (e.g., respondents are unlikely to have shaped their responses to support or refute moderation hypotheses, especially as they had no way of knowing this was a research question).

Another limitation of this study is that it does not specify what types of coping the teachers surveyed are using. Kyriacou (2001) explained that coping techniques are either direct action or palliative. Direct action techniques are those that directly address the problem (e.g., by learning a new teaching technique or speaking directly to the person who is a source of stress), whereas palliative techniques are those that a teacher may use to lessen the feeling of stress without resolving the source of the stress (Kyriacou, 2001). Multiple studies have demonstrated that the use of negative or ineffective coping strategies only serve to increase teacher burnout levels (Austin et al., 2005; Marroquín et al., 2010; Shin et al., 2014). Austin et al. (2005) showed that teachers that use problem-centered coping strategies experience lower levels of burnout. The survey item used in the present study simply read, "How well are you coping with the stress of your job?" but did not ask for further explanation, so we do not have a way to know whether teachers are employing positive coping techniques or negative techniques. This information could be particularly useful to practitioners to help guide any potential interventions.

Last, the data for the study came from the first fall of data collection in RCT evaluation studies of a leadership training program conducted in Missouri and Oklahoma. Although 77% of the teachers in our sample identified as female, national survey data from 2016 (Snyder et al., 2019) shows that 77% of all teachers from public schools were female. In terms of race/ethnicity, while 90% of the teachers in our sample identified as White, 80% of all teachers from all public schools were White. Of the teachers in our sample, 9% had <3 years of experience and 55% had >10 years of experience, compared with national data, which showed that 10% of public-school teachers had <3 years of experience and 62% had >10 years of experience (Snyder et al., 2019). These differences show that the results from the study can only be generalized to schools from similar contexts, thus limiting the generalizability of the findings. Nevertheless, as an exploratory study our study made use of a unique data set that collected information on teacher stress, coping, and job satisfaction. The relationships observed between these variables of teacher well-being follow expectations based on theories of stress and motivate replication studies based on more generalizable data.

6.2 | Implications for practice

One implication from the present study for practice would be for principals, teachers, and others concerned about these issues to consider the simplicity with which the current study measures stress, coping, and job satisfaction. The single items used in this study can be easily collected in a school building with little burden—even using survey tools now that will ping phones and email to capturing ongoing data will help to capture useful data to direct interventions. Intermittent data collection of teachers will help building administrators monitor teacher attitudes towards their work—an important job of a building leader when prior studies reveal that poor coping and job satisfaction are related to poor student performance (Herman et al., 2018). Furthermore, frequent data collection using brief items can provide information overtime to see if selected interventions have any effect on the overall ratings of teachers in a school and whether those ratings predict improvements in student performance.

Next, and perhaps the most important implication of the present study for practitioners is that coping levels may reduce the negative influence of stress on satisfaction. This would imply that school leaders should prioritize ways to support the development of effective coping skills among their teachers. With job satisfaction being directly related to teacher retention (Skaalvik & Skaalvik, 2015) and whether teachers stay in the profession (Klassen & Chiu, 2011; McCarthy et al., 2010), investment in professional development addressing coping strategies for teachers could be critical for the job satisfaction of teachers. This could be particularly true for those teachers who have low coping skill, as the results of this study showed that increases in stress negatively affected job satisfaction more severely for this group in comparison to teachers who have better coping.

Because of the importance of coping, practitioners might consider effective methods for developing the coping skills of teachers. One approach to doing so is implementing programs such as Cultivating Awareness and Resilience in Education (CARE). CARE is a mindfulness-based program that is designed to help teachers reduce stress and improve their classroom outcomes (Jennings et al., 2013). In a RCT, those teachers that were in the CARE group saw improvements in well-being, self-efficacy, stress, and mindfulness. In addition, the teachers themselves believed the CARE program was effective (Jennings et al., 2013). Another RCT study showed that, over time, teachers who received the CARE intervention showed significantly lowered levels of psychological distress and increased capacity for emotion regulation when compared with the control group (Jennings et al., 2019).

Bibliotherapy and online programs based on cognitive-behavioral theories provide another alternative to support teacher coping. In a recent RCT, Eddy et al. (in press) found that a brief bibliotherapy program using the book Stress Management for Teachers (Herman & Reinke, 2015) plus four weekly webinars significantly reduced teacher stress, depression, and anxiety, and increased coping. Similarly, Ansley et al. (2021) found that the use of an online stress intervention (consisting of eight modules to be completed over 4 weeks) resulted in increased use of coping strategies, increased teacher efficacy, and decreased emotional exhaustion and depersonalization (two main components of burnout) after just 4 weeks. Ansley et al.'s (2021) modules consisted of work related to mindfulness, relaxation, cognitive restructuring, social support, and physical exercise—approaches recently supported by a thorough meta-analysis of interventions aimed at reducing burnout among teachers (Iancu et al., 2018). Another option would be interventions targeted at teaching teachers to activate their relaxation response. Kaspereen (2012) found that a group of high school teachers who used a facilitator-guided visualization technique with a musical accompaniment reported lower levels of stress and greater levels of life satisfaction. Anderson et al. (1999) studied the effects of a meditation program on primary and secondary teachers. The participants in that program reported decreases in stress, burnout, and anxiety.

The findings from Eddy et al. (2019) suggest that improving coping by itself may improve outcomes for teachers and students, regardless of whether stress levels are improved or not. School leaders could enact some of these programs, given the growing number of stressors that teachers are facing and the potential negative effects of those stressors for both the teacher and for students. Preservice teacher preparation programs could also examine how to prepare future teachers to cope with the inevitable stressors of the teaching profession. It is clear that there are a number of viable options that can improve teachers' coping skills and the outcomes they experience.

In addition to the importance of taking action to build coping capacity among teachers, school leaders can also actively monitor the stress, coping, and satisfaction levels of their staff. The work of Eddy et al. (2019) established the validity and reliability of single-item measures of both stress and coping. Wanous et al. (1997) have previously established the reliability of single-item measures of job satisfaction. The utility and ease of use of these single-item measures should make it easy for school leaders to survey their staffs with high response rates, particularly given the low survey burden (Rogelberg & Stanton, 2007; Stanton et al., 2002). School leaders could gain valuable information about whether their staff as a whole or certain subsegments of their staff could benefit from professional development around coping strategies.

It is important to note here that coping is not the only important component of the teacher stress equation. As noted, the 3C Theory (Herman et al., 2020) also includes competence and context as fundamental aspects of teacher stress responses. The competence pathway of this theory explains the link between stress and classroom practices, and emphasizes the importance of classroom management in teacher stress levels. The context pathway focuses on school and system policies and practices that can also influence teacher stress levels. Thus, although coping is an important component of the teacher stress problem, it is not the only important component. Focusing on interventions for coping and measurement of stress, coping and job satisfaction can be meaningful practices and should positively influence teacher job satisfaction, but school leaders still need to attend to the other two pathways described by the 3C Theory.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

Allen, M. S., Iliescu, D., & Greiff, S. (in press). Single item measures in psychological science: A call to action. *European Journal of Psychological Assessment*.

Amos, J. (2008). "What keeps good teachers in the classroom?" New alliance issue brief examines which teachers leave and why, *Alliance for Excellent Education* (Vol. 8, pp. 5). http://all4ed.org

Anderson, V. L., Levinson, E. M., Barker, W., & Kiewra, K. R. (1999). The effects of meditation on teacher perceived occupational stress, state and trait anxiety, and burnout. *School Psychology Quarterly*, 14(1), 3–25.

Ansley, B. M., Houchins, D. E., Varjas, K., Roach, A., Patterson, D., & Hendrick, R. (2021). The impact of an online stress intervention on burnout and teacher efficacy. *Teaching and Teacher Education*, 98, 103251.

Antoniou, A. S., Ploumpi, A., & Ntalla, M. (2013). Occupational stress and professional burnout in teachers of primary and secondary education: The role of coping strategies. *Psychology*, 4(3), 349–355.

Antoniou, A. S., Polychroni, F., & Vlachakis, A. N. (2006). Gender and age differences in occupational stress and professional burnout between primary and high school teachers in Greece. *Journal of Managerial Psychology*, 21, 682–690.

Austin, V., Shah, S., & Muncer, S. (2005). Teacher stress and coping strategies used to reduce stress. *Occupational Therapy International*, 12, 63–80.

Avanzi, L., Fraccaroli, F., Castelli, L., Marcionetti, J., Crescentini, A., Balducci, C., & van Dick, R. (2018). How to mobilize social support against workload and burnout: The role of organizational identification. *Teaching and Teacher Education*, 69, 154–167.

Boe, E. E., Cook, L. H., & Sunderland, R. J. (2008). Teacher turnover: Examining exit attrition, teaching area transfer, and school migration. *Exceptional Children*, 75(1), 7–31.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357.

Crawford, S. D., Couper, M. P., & Lamias, M. J. (2001). Web surveys: Perceptions of burden. *Social Science Computer Review*, 19, 146–162.

Distefano, C. A., & Kamphaus, R. W. (2007). Development and validation of a behavioral screener for preschool-age children. *Journal of Emotional and Behavioral Disorders*, 15, 93–102.

Domitrovich, C. E., Bradshaw, C. P., Berg, J. K., Pas, E. T., Becker, K. D., Musci, R., Embry, D. D., & Ialongo, N. (2016). How do school-based prevention programs impact teachers? Findings from a randomized trial of an integrated classroom management and social-emotional program. *Prevention Science*, 17(3), 325–337.

Dunn, A. H. (2018). Leaving a profession after it's left you: Teachers' public resignation letters as resistance amidst neoliberalism. *Teachers College Record: The Voice of Scholarship in Education*, 120(9), 1–34.

Eddy, C., Herman, K. C., Huang, F., & Reinke, W. M. (in press). Evaluation of a bibliotherapy-based stress intervention for teachers. Teaching and Teacher Education.

Eddy, C. L., Herman, K. C., & Reinke, W. M. (2019). Single-item teacher stress and coping measures: Concurrent and predictive validity and sensitivity to change. *Journal of School Psychology*, 76(2019), 17–32.

Elo, A. L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. *Scandinavian Journal of Work, Environment & Health*, 29(6), 444–451.

von der Embse, N. P., Ryan, S. V., Gibbs, T., & Mankin, A. (2019). Teacher stress interventions: A systematic review. *Psychology in the Schools*, 56(8), 1328–1343.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics*. Sage.

Foley, C., & Murphy, M. (2015). Burnout in Irish teachers: Investigating the role of individual differences, work environment and coping factors. *Teaching and Teacher Education*, 50, 46–55.

Goldring, R., Taie, S., and Riddles, M. (2014). Teacher attrition and mobility: Results from the 2012–13 teacher follow-up survey (NCES 2014-077). *U.S. Department of Education*. National Center for Education Statistics.

Harmsen, R., Helms-Lorenz, M., Maulana, R., & Veen, K. (2019). The longitudinal effects of induction on beginning teachers' stress. *British Journal of Educational Psychology*, 89, 259–287.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Herman, K. C., Hickmon-Rosa, J., & Reinke, W. M. (2018). Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. *Journal of Positive Behavior Interventions*, 20(2), 90–100.

Herman, K. C., Prewett, S. L., Eddy, C. L., Savala, A., & Reinke, W. M. (2020). Profiles of middle school teacher stress and coping: Concurrent and prospective correlates. *Journal of School Psychology*, 78, 54–68.

Herman, K. C., & Reinke, W. (2015). *Stress management for teachers: A proactive guide*. Guilford Press.

Herman, K. C., Reinke, W. M., & Eddy, C. L. (2020). Advances in understanding and intervening in teacher stress and coping: The Coping-Competence-Context theory. *Journal of School Psychology*, 78, 69–74.

Herman, K. C., Sebastian, J., Reinke, W. M., & Huang, F. L. (2021). Individual and school predictors of teacher stress, coping, and wellness during the COVID-19 pandemic. *School Psychology*, 36(6), 483–493.

Herzberg, F. (1966). *Work and the nature of man*. The World Publishing Company.

Houdmont, J., Randall, R., Kinman, G., Colwell, J., Kerr, R., & Addley, K. (2021). Can a single-item measure of job stressfulness identify common mental disorder? *International Journal of Stress Management*, 28(4), 305–313.

Huberman, M. (1993). Burnout in teaching careers. *European Education*, 25(3), 47–69.

Hultell, D., Melin, B., & Gustavsson, J. P. (2013). Getting personal with teacher burnout: A longitudinal study on the development of burnout using a person-based approach. *Teaching and Teacher Education*, 32, 75–86.

Iancu, A. E., Rusu, A., Măroiu, C., Păcurar, R., & Maricuțoiu, P. (2018). The effectiveness of interventions aimed at reducing teacher burnout: A meta-analysis. *Educational Psychology Review*, 30(2), 373–396.

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499–534.

Inman, D., & Marlow, L. (2004). Teacher retention: Why do beginning teachers remain in the profession? *Education*, 124(4), 605–614.

Jennings, P. A., Doyle, S., Oh, Y., Rasheed, D., Frank, J. L., & Brown, J. L. (2019). Long-term impacts of the CARE program on teachers' self-reported social and emotional competence and well-being. *Journal of School Psychology*, 76, 186–202.

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(4), 374–390.

Johnson, D. R., & Creech, J. C. (1983). Ordinal measures in multiple indicator models: A simulation study of categorization error. *American Sociological Review*, 48, 398–407.

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.

Judge, T. A., & Watanabe, S. (1993). Another look at the job satisfaction-life satisfaction relationship. *Journal of Applied Psychology*, 78(6), 939–948.

Kamphaus, R. W., & Reynolds, C. R. (2007). *Behavioral & Emotional Screening System*. NCS Pearson.

Kaspereen, D. (2012). Relaxation intervention for stress reduction among teachers and staff. *International Journal of Stress Management*, 19(3), 238–250.

Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context. *Contemporary Educational Psychology*, 36, 114–129.

Kaya, M., & Selvitopu, A. (2019). A meta-analysis of the effects of some factors on teachers' classroom management skills. *International Journal of Contemporary Educational Research*, 6(2), 409–425.

Kyriacou, C. (2001). Teacher stress: Directions for future research. *Educational Review*, 53(1), 27–35.

Lauermann, F., & König, J. (2016). Teachers' professional competence and wellbeing: Understanding the links between general pedagogical knowledge, self-efficacy and burnout. *Learning and Instruction*, 45, 9–19.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality*, 1, 141–169.

Lewis, C. G., Herman, K. C., Huang, F. L., Stormont, M., Grossman, C., Eddy, C., & Reinke, W. M. (2017). The utility of single-item readiness screeners in middle school. *Journal of School Psychology*, 64, 1–16.

Liu, X. S., & Ramsey, J. (2008). Teachers' job satisfaction: Analyses of the teacher follow-up survey in the United States for 2000–2001. *Teaching and Teacher Education*, 24(5), 1173–1184.

Mack, J. C., Johnson, A., Jones-Rincon, A., Tsatenawa, V., & Howard, K. (2019). Why do teachers leave? A comprehensive occupational health study evaluating intent-to-quit in public school teachers. *Journal of Applied Biobehavioral Research*, 24(1), e12160.

Marroquín, B. M., Fontes, M., Scilletta, A., & Miranda, R. (2010). Ruminative subtypes and coping responses: Active and passive pathways to depressive symptoms. *Cognition & emotion*, 24(8), 1446–1455.

McCarthy, C. J., Lambert, R. G., Crowe, E. W., & McCarthy, C. J. (2010). Coping, stress, and job satisfaction as predictors of advanced placement statistics teachers' intention to leave the field. *NASSP Bulletin*, *94*(4), 306–326.

McCarthy, C. J., Lambert, R. G., & Reiser, J. (2014). Vocational concerns of elementary teachers: Stress, job satisfaction, and occupational commitment. *Journal of Employment Counseling*, *51*, 59–74.

McCarty, C., House, M., Harman, J., & Richards, S. (2006). Effort in phone survey response rates: The effects of vendor and client-controlled factors. *Field Methods*, *18*(2), 172–188.

MetLife. (2012). *The MetLife survey of the American teacher: Teachers, parents and the economy*.

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education*, *15*(5), 625–632.

Okeke, F. C., Onyishi, C. N., Nwankwor, P. P., & Ekwueme, S. C. (2021). A blended rational emotive occupational health coaching for job-stress among teachers of children with special education needs. *Internet Interventions*, *26*, 100482.

Ouellette, R. R., Frazier, S. L., Shernoff, E. S., Cappella, E., Mehta, T. G., Maríñez-Lora, A., Cua, G., & Atkins, M. S. (2018). Teacher job stress and satisfaction in urban schools: Disentangling individual-, classroom-, and Organizational-Level influences. *Behavior Therapy*, *49*, 494–508.

Prilleltensky, I., Neff, M., & Bessell, A. (2016). Teacher stress: What it is, why it's important, how it can be alleviated. *Theory Into Practice*, *55*, 104–111.

Richards, J. (2012). Teacher stress and coping strategies: A national snapshot. *The Educational Forum*, *76*(3), 299–316.

Rogelberg, S. G., & Stanton, J. M. (2007). Introduction: Understanding and dealing with organizational survey nonresponse. *Organizational Research Methods*, *10*, 195–209.

Scarpello, V., & Campbell, J. P. (1983). Job satisfaction: Are all the parts there? *Personnel Psychology*, *36*, 577–600.

Schleicher, A. (2018). TALIS 2018 insights and interpretations. Retrieved from: http://www.oecd.org/education/talis/TALIS2018_insights_and_interpretations.pdf

Shen, J., Leslie, J. M., Spybrook, J. K., & Ma, X. (2012). Are principal background and school processes related to teacher job satisfaction? A multilevel study using schools and staffing survey 2003– 04. *American Educational Research Journal*, *49*, 200–230.

Shin, H., Park, Y. M., Ying, J. Y., Kim, B., Noh, H., & Lee, S. M. (2014). Relationships between coping strategies and burnout symptoms: A meta-analytic approach. *Professional Psychology: Research and Practice*, *45*, 44–56.

Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, *26*, 1059–1069.

Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, *27*, 1029–1038.

Skaalvik, E. M., & Skaalvik, S. (2015). Job satisfaction, stress, and coping strategies in the teaching profession – what do teachers say? *International Education Studies*, *8*(3), 181–192.

Skaalvik, E. M., & Skaalvik, S. (2017). Still motivated to teach? A study of school context variables, stress and job satisfaction among teachers in senior high school. *Social Psychology of Education*, *20*(1), 15–37.

Snyder, T. D., de Brey, C., & Dillow, S. A. (2019). *Digest of education statistics 2017 (NCES 2018-070)*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology*, *34*(2), 125–137.

Sprick, R., Wise, B. J., Marcum, K., Haykin, M., McLaughlin, B., & Hays, S. (2016). *Leadership in behavior support*. Ancora Publishing.

Stanton, J. M., Sinar, E. F., Balzer, W. K., & Smith, P. C. (2002). Issues and strategies for reducing the length of self-report scales. *Personnel Psychology*, *55*, 167–194.

Stormont, M., Cohen, D. R., Herman, K. C., & Reinke, W. M. (2019). Teacher-rated school readiness items in a kindergarten sample: Outcomes in first grade. *School Psychology*, *34*, 612–621.

Stormont, M., Herman, K. C., Reinke, W. M., King, K. R., & Owens, S. (2015). The kindergarten academic and behavior readiness screener: The utility of single-item teacher ratings of kindergarten readiness. *School Psychology Quarterly*, *30*, 212–228.

Sullivan, G. M., & Artino, A. R., Jr. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, *5*(4), 541–542.

Taris, T. W., Le Blanc, P. M., Schaufeli, W. B., & Schreurs, P. J. (2005). Are there causal relationships between the dimensions of the maslach burnout inventory? A review and two longitudinal tests. *Work & Stress*, *19*(3), 238–255.

Verster, J. C., Sandalova, E., Garssen, J., & Bruce, G. (2021). The use of single-item ratings versus traditional multiple-item questionnaires to assess mood and health. *European Journal of Investigation in Health, Psychology and Education*, *11*(1), 183–198.

Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, *82*(2), 247–252.

Wiley, C. (2000). A synthesis of the research on the causes, effects, and reduction strategies of teacher stress. *Journal of Instructional Psychology*, *27*(2), 80–87.

Wolomasi, A. K., Asaloei, S. I., & Werang, B. R. (2019). Job satisfaction and performance of elementary school teachers. *International Journal of Evaluation and Research in Education (IJERE)*, *8*(4), 575–580.

Woods, S. A., & Hampson, S. E. (2005). Measuring the big five with single items using a bipolar response scale. *European Journal of Personality*, *19*, 373–390.

Zumbo, B. D., & Zimmerman, D. W. (1993). Is the selection of statistical methods governed by level of measurement? *Canadian Psychology/Psychologie canadienne*, *34*, 390–400.