Teacher stress, teaching-efficacy, and job satisfaction in response to test-based educational accountability policies

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Abstract: Educator stress has been linked to decreased job satisfaction, negative instructional practices, and poor student outcomes. However, it is unknown whether educators with high teaching efficacy may better cope with the test stress. As such, the primary purpose of the present investigation was to examine the complex relationship between teacher self-efficacy, teacher stress related to testing, and job satisfaction. Structural equation modeling was used to evaluate the hypothesized relationships within a sample of 1,242 teachers in one state in the Southeastern United States. Results indicated a significant influence of self-efficacy in student engagement and self-efficacy in classroom management on the relationship between sources of stress and job satisfaction, as well as efficacy in classroom management on the relationship between manifestations of stress and job satisfaction was also identified. These initial findings underscore the importance of supporting teacher self-efficacy to reduce stress associated with high-stakes accountability policies and increase job satisfaction. Implications and directions for future research will be discussed.

Keywords: *teacher stress, high-stakes test, job satisfaction, teacher self-efficacy*

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1. Introduction.

Test-based accountability policies have fundamentally changed how schools use test performance to determine student achievement and teacher effectiveness. These policies have been associated with increased pressure to teach to the test, reduced instructional depth, and instruction targeted primarily toward students whose test scores are likely to improve in hopes of improving overall test performance – perhaps at the expense of very high or very low performing students (Menken, 2006). In the United States, schools that do not meet annual test performance goals can be subject to whole staff restructuring resulting in administrators and teachers losing their jobs (Cucchiara, Rooney, & Robertson-Kraft, 2014). In addition, some states have eliminated teacher tenure and now place a greater emphasis on student test scores in evaluating teacher effectiveness (Helms, 2013). However, teaching effectiveness may not be accurately reflected in student test performance (Baker et al., 2010) given susceptibility to outside variables such as student attendance and psychosocial variables (Corcoran, 2010). In addition, the increased use of student test performance within evaluations of teacher quality may increase teacher stress (von der Embse, Kilgus, Solomon, Bowler, & Curtis, 2015) leading to counterproductive instructional practices and lower student achievement (Putwain & Best, 2012).

While accountability polices have been associated with a number of positive outcomes for teachers, including improved work conditions and clarity of expectations (Grissom, Kalogrides, & Loeb, 2014), little *empirical* research has examined the influence of test-based accountability policies on teacher stress and instructional practices (Saeki, Pendergast, Segool, & von der Embse, 2015). Stress from test-based accountability policies and subsequent increases

in counterproductive teaching could have unintended and deleterious effects on student achievement on high-stakes tests (Klassen & Chiu, 2010; Putwain & Roberts, 2009). Moreover, teacher stress has been linked to lower job satisfaction over time (Schwarzer & Hallum, 2008). Ingersoll and colleagues (2003) noted that teachers with low job satisfaction are much more likely to leave the profession—a problem with an estimated cost between $2.2 billion and $4.9 billion per year (Kersaint, 2005). However, teacher efficacy may help to explain the link between stress and later job satisfaction (Klassen & Chiu, 2010). Thus, research is necessary to examine the unique stressors brought forth by test-based accountability policies, the resulting influence on overall job satisfaction, and the potential influence of self-efficacy.

1.1 Teacher Stress

Teacher stress has been defined within the literature as a negative affective experience that is related to one's ability to cope with job-related stressors (Kyriacou, 2001). Similar to social-cognitive theories of stress (see Lazarus & Folkman, 1984), teachers experience stress when a situation is appraised as threatening (e.g., job evaluation via student test performance) relative to the ability to change or improve the said situation (e.g., improving student test performance and thus job evaluation). Teacher stress may result from inadequate time and resources to prepare for the annual, high-stakes test (Berryhill, Linney, & Fromewick, 2009), insufficient administrative support (Barksdale-Ladd & Thomas, 2000), and unrealistic expectations of student test performance from parents (von der Embse et al., 2015). Researchers have asserted that teacher stress consists of emotional manifestations, physical manifestations, and work-related pressures (Fimian & Fastenau, 1990). Consequently, teacher stress has been measured in a variety of ways including assessments of "global" teacher stress (e.g., 49 item *Teacher Stress Inventory* [TSI]; Fimian & Fastenau, 1990), uncomfortable subjective

experiences in the workplace (Schwarzer & Hallum, 2008), appraisals of classroom resources and needs (Lambert, McCarthy, & Abbott-Shim, 2001), and physiological symptoms (e.g., cortisol levels and resting heart rate; Roeser et al., 2013). Each of these assessment methods may be limited by usability (e.g., measuring heart rate or salivary cortisol levels with all teachers), or length and time necessary to administer (e.g., TSI). Moreover, a context-specific instrument is advantageous due to the precision of measurement to the presenting situation and stimuli, and targeting of intervention to the source of the stressor (Curby, Rimm-Kaufman, & Abry, 2013). Given the significant changes in teacher expectations and roles linked to test-based accountability policies (Koretz & Hamilton, 2006), it may be beneficial to measure educator stress explicitly tied to high-stakes testing.

1.2 Teacher Job Satisfaction

Although many educators report a high level of job satisfaction, teachers also consistently report relatively high levels of job stress (Chaplain, 2008; Schwarzer & Hallum, 2008). Job-related stressors are the strongest predictor of poor job satisfaction for teachers (Liu & Ramsey, 2008). Job satisfaction, defined as the enjoyment and fulfillment derived from work activities (Locke, 1969), is predictive of higher levels of job performance (Judge, Thoreson, Bono, & Patton, 2001) and a greater commitment to school and students (Jennett, Harris, & Mesibov, 2003; Capara, Barbaranelli, Borgoni, & Steca, 2003). Low job satisfaction is associated with an increased likelihood of absenteeism and illness (Billingsley & Cross, 1992), low morale (Collie, Shapka, & Perry, 2012) and intent to leave the profession (Ingersoll, 2001). Teachers are the greatest human capital resource in a school. However, teacher recruitment and professional development in the early years can be costly, and when teachers leave the profession prematurely, schools are unable to obtain a return on those investments (Perie & Baker, 1997).

Given the high cost of teacher burnout and attrition, it is essential to understand predictors of job satisfaction. A wealth of research has demonstrated that teachers are satisfied with the aspects of their jobs that involve instruction and direct interactions with students. However, teachers often appear to be dissatisfied with other conditions (e.g., poor climate, annual evaluations based upon test performance) and this seems to influence job performance (Crossman & Harris, 2006; von der Embse et al., 2015). High teacher efficacy has been found to be an important link between job-related stressors and job satisfaction (Caprara, Barbaranelli, Steca, & Malone, 2006; Klassen & Chiu, 2010). Yet, additional research is necessary to replicate and extend prior work due to changing work conditions (Grissom et al., 2014) and expectations for student test performance tied to accountability policies.

1.3 Teaching Efficacy

Self-efficacy is defined as the belief of one's capacity to complete a task successfully (Bandura, 1997). Self-efficacy is typically understood to be domain specific, yet is often measured as a general ability applicable across a wide range of situations (Schwarzer & Jerusalem, 1995). Teacher efficacy is a job-specific extension of self-efficacy, and is delineated by the judgment of an ability to "bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). Tschannen-Moran and Woolfolk Hoy (2001) created the *Teachers' Self-Efficacy Scale* (TSES) that adheres closely to the theoretical underpinnings of Bandura (2006) by measuring capabilities rather than global abilities. The authors conceptualized teaching efficacy to consist of *efficacy for student engagement* (i.e., capability to promote student understanding and motivation to learn), *efficacy for classroom management* (i.e., capability to manage disruptive behaviors and encourage following of classroom rules), and *efficacy for*

instructional strategies (i.e., capability to use effective instructional strategies). The three factors of teaching efficacy, as identified by Tschannen-Moran and Woolfolk Hoy, have been linked to a variety of positive outcomes including higher job satisfaction (Klassen & Chiu, 2010), use of effective teaching strategies (Woolfolk Hoy & Burke-Spero, 2005), and greater well-being (Egyed & Short, 2006). Teacher efficacy represents a promising area for new research to guide future intervention selection and support teachers in coping with the demands of high-stakes testing (Curby et al., 2013).

1.4 Theoretical Underpinning and Aims of the Present Study

The *job demands-resources model* purports that stress is a function of the authority and responsibility of a job relative to available resources that are specific to both the job (e.g., autonomy) and individual (e.g., self-efficacy; Bakker & Demerouti, 2007). Thus, jobs that are highly stressful are those with limited decisional opportunity and increased responsibilities (e.g., requiring to prepare students for high-stakes test). The enactment of test-based accountability policies has significantly changed requirements for teachers and schools, by measuring the effectiveness of both based upon student test performance. These external requirements may significantly alter job related stressors (i.e., test stress), and the mechanisms (i.e., self-efficacy of teaching practices) which may then lead to workplace satisfaction (or job satisfaction).

A social-contextual approach is necessary to understand the multifaceted influence of macro level variables (i.e., accountability policy) on individual variables (e.g., instructional practices and teacher stress). Given the significance of teacher effectiveness on student learning (Nye, Konstantopoulos, & Hedges, 2004; Raudenbush, 2004), the increasing reliance on student test performance as a proxy for teacher effectiveness, and the concomitant increases in pressure on educators, there is a clear need for empirical research to examine (1) the nature of stress

related to high stakes testing, (2) the resulting impacts (e.g., job satisfaction), and (3) potential mediating variables. As such, the present investigation builds upon a growing literature (Collie, Shapka, & Perry, 2012; Klassen & Chiu, 2010; Schwarzer & Hallum, 2008) by examining the influence of *test-related* stress on educator job satisfaction, as well as the potential indirect effect of teaching efficacy (test stress → teaching efficacy → job satisfaction). The research questions were twofold. First, does teaching efficacy influence the relationship between test-related stressors and teacher job satisfaction across the school year? Second, how do the aforementioned relationships differ by type of teaching efficacy and test stress?

2. Method

2.1 Participants

Participants in the present study (N = 1,242) were public school teachers from 100 school districts within one state in the southeastern United States. The state's accountability system was one of the first in the United States to evaluate teachers based upon student test performance. School districts must report public "report cards" that are evaluations of effectiveness based upon student test performance, and are subject to government take over if there is continual poor test performance. Additionally, the state government removed teacher tenure protections while increasing the weight of student test performance included in annual teacher evaluations. Demographic characteristics of the sample are presented in Table 1. The sample of teachers was primarily Caucasian (90%) and female (80.1%). Teachers taught kindergarten through twelfth grade. The majority (70.6%) of teachers indicated that their district evaluated annual job performance based upon student test scores.

2.2 Procedures

Participants were recruited from an investigation during the previous academic year (*N* = 8,084; Author, 2015). For the current study, survey data were analyzed during the second year of survey administration. Of the teachers surveyed during the previous year, 3,467 responded to either Fall or Spring email solicitations during the second year of data collection and a total of 1,242 teachers responded to surveys at both Fall and Spring time points, resulting in an overall response rate of approximately 15%. The online survey took 15 minutes to complete and included assessments (see below) of educator test stress, teaching efficacy, overall job satisfaction, other workplace characteristics, and basic demographic information. All procedures were approved by the university institutional review board.

2.3 Measures

2.3.1 Educator Test Stress Inventory

The Educator Test Stress Inventory (ETSI; von der Embse et al., 2015) is a brief, 11-item multidimensional assessment that measures educator stress resulting from high-stakes testing and policies. The ETSI is intended for use in schools from kindergarten through twelfth grade. The ETSI has a bi-factor model consisting of *sources of test stress* (5 items, score range: 5-25, *M* = 17.11, *SD* = 4.59), *manifestations of test stress* (6 items, score range: 6-30, *M* = 15.37, *SD* = 5.17) and a general stress factor. *Sources of test stress* include actions, behaviors, and events that may lead to the manifestation of stress. Example items include “I feel pressure from parents to raise student test scores” and “I feel pressure from administrators to raise student test scores.” *Manifestations of test stress* is defined as physiological and cognitive expressions of stress. Example items include, “I perspire or sweat during standardized test periods” and “I experience a pounding heart/chest pain during standardized test periods.” The *Sources* and *Manifestations* subscales were used in the present manuscript to examine differing aspects of test stress, rather

than the general factor. Convergent validity was supported with high and moderate bivariate correlations with the State-Trait Anxiety Inventory (Speilberger, 1989 von der Embse et al., 2015). With the current sample, omega coefficients supported strong internal consistency for the sources of stress (ω = .83) and manifestation of stress (ω = .84) scores. Sources and manifestations of stress composites were moderately correlated (r = .66).

2.3.2 Teachers' Sense of Self Efficacy Scale

The Teachers' Sense of Self Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) was used to assess teaching efficacy. The TSES is comprised of 12 items and includes three subscales that inquire about a teacher's feeling of efficacy about engaging students in learning, providing varied and high quality instructional practices, and managing the classroom. *The* e*fficacy in student engagement subscale* (4 items, score range: 4-20, M = 13.64, SD = 2.72) included items such as, "How much can you do to motivate students who show low interest in school work?" and "How much can you do to help your students value learning?" The *efficacy in classroom management subscale* (4 items, score range: 4-20, M = 15.91, SD = 2.64) included items such as "How much can you do to control disruptive behavior in the classroom?" and "How much can you do to get children to follow classroom rules?" The *efficacy in instructional practices subscale* (4 items, score range: 9-20, M = 16.68, SD = 2.15) consisted of items such as "To what extent can you craft good questions for your students?" and "How much can you use a variety of assessment strategies?" The TSES has adequate psychometric properties exhibited across multiple studies (Klassen & Chiu, 2010; Klassen et al., 2009; Tschannen-Moran & Woolfolk Hoy, 2001). Omega coefficients revealed adequate internal consistency for *efficacy in student engagement* (ω = .82), *efficacy in classroom management engagement* (ω = .85), and

efficacy in instructional practices (ω = .77). The three efficacy composites were moderately correlated (*r* = .42-.54).

2.3.3 Job satisfaction

Job satisfaction was assessed with the following three items on a five-point Likert scale ranging from strongly agree to strongly disagree: (1) I am satisfied with my job, (2) I worry about losing my job due to student test performance (reverse scored) and (3) I am a valued member of the faculty. Both Fall (3 items, score range: 3-15, *M* = 9.84, *SD* = 2.53), and Spring (3 items, score range: 3-15, *M* = 10.18, *SD* = 2.49) reports of job satisfaction were included in the analyses. The omega coefficient for internal reliability at both Fall and Spring time points was .57, and the two time points exhibited a strong correlation (*r* = .73).

2.3.4 Teacher covariates

Teachers were asked to report on a variety of demographic variables and workplace characteristics, which included gender, age, years of teaching experience, education level, number of test preparation hours teachers had per week, and whether or not teachers' job performance was evaluated based on students' standardized test scores (1 = yes, 0 = no). Prior research has indicated that *perception* rather than the actual practice of being evaluated based upon student test performance is significantly related to the manifestation of stress (Author, 2015). Several demographic and workplace characteristics (i.e., gender, grade level taught, years experiences, test preparation hours) were included as covariates in the hypothesized statistical models based upon prior research (e.g., Collie, Shapka, & Perry, 2012; Klassen & Chiu, 2010; Schwarzer & Hallum, 2008).

2.4 Data analysis

Data preparation and descriptive analyses were conducted in SPSS Statistics version 23. Of the 3,467 total educators surveyed, 64% of teachers (n = 2,225) were missing data at one time point. Given the large amount of missing data, only teachers with complete data on the key variables of interest (stress, efficacy, and job satisfaction) for both Fall and Spring time points were maintained for the analyses. T-tests and chi-square significance tests were used to test for statistically significant differences between teachers with complete data and teachers with missing data on primary variables of interest and demographic data. No differences were identified between the groups based on demographic characteristics (gender, ethnicity, education level, and years of experience). A significant difference between groups was identified for teachers' ratings of Fall satisfaction (t =-2.48, p =.01), such that teachers with complete data had lower satisfaction scores than teachers with incomplete data (M_{Complete} = 9.84, M_{Missing} = 10.09). A significant difference between groups was also found for teachers ratings of whether or not their district evaluated annual job performance based upon student test performance (χ^2 = 7.30, p = .01). A greater percentage of teachers with complete data (70%) indicated that their school used student test performance to evaluate annual job performance, as compared to teachers with incomplete data (66%). Both Fall satisfaction and job performance ratings based on test scores were controlled for within the analyses. Additionally, a significant difference in teachers' ratings of efficacy in student engagement was identified between teachers with complete data and those with incomplete data (t = -2.23, p = .03). Specifically, teachers with complete data had slightly lower efficacy scores (M_{Complete} = 13.65, M_{Missing} = 13.91); however, a small effect size (Cohen's d = .096) indicated that the mean difference in efficacy scores between the two groups was not substantively significant. Other covariates included in the analyses consisted of gender (female), grade level taught, and number of test prep hours per week. These variables were included

because they demonstrated significant correlations with the predictor, mediator, and/or outcome variables.

The hypothesized models were tested using two different approaches for handling missing data, while controlling for covariates. First, full information maximum likelihood (FIML) was used to estimate data on the total sample of teachers who had survey responses at least one time point (Little, Jorgensen, Lang & Moore, 2014). Next, listwise deletion was implemented using only teachers who had complete data on key variables of interest at both time points. Both approaches yielded similar findings. However, findings from the listwise deletion sample (n=1242) are presented in the current paper given that only 36% of the data were present for the FIML analyses.

Structural Equation Modeling (SEM) was used to test the hypothesized models (see Figure 1). All models were analyzed using MPlus version 7.2 (Muthén & Muthén, 1998-2012). Specifically, SEM was used to investigate the relationship between Fall sources and manifestations of stress and Spring job satisfaction, as well as the indirect effect of Spring efficacy in student engagement, classroom management and instructional practice, on the relationship between Fall stress and Spring job satisfaction. Model fit was assessed using absolute fit indices and relative fit indices with a chi-square goodness-of-fit test (χ^2), root-mean-square error of approximation (RMSEA; Steiger & Lind, 1980), the Comparative Fit Index (CFI; Bentler, 1990), and Standardized Root Mean Square Residual (SRMR; Bentler, 1995). Given chi-square is particularly sensitive to sample size (Kline, 2011; Schermelleh-Engel, Moosbrugger, & Muller, 2003), this statistic was de-emphasized when evaluating the fit of each model. Model fit was determined using the following fit criteria RMSEA = mediocre fit (.08 - .10), acceptable fit (.05 - .08), close fit (.01 - .05); SRMR = poor fit (>.10), mediocre fit (.08 -

.10), acceptable fit (<.08), CFI = poor fit (<.85), mediocre fit (.85-.90), acceptable fit (.90-.95), close fit (.95-.99; Kline, 2011; Hu & Bentler, 1995).

The indirect effects of stress on satisfaction via efficacy were tested using a bootstrapping method (i.e. sampling with replacement). The bootstrapping method takes a non-parametric approach and does not assume multivariate normality unlike other estimation methods like maximum likelihood, thus providing a more accurate estimation of model test statistics. The bootstrapping method was justified due to the sample size (N = 1,242; Nevitt & Hancock, 2001).

3. Results

Raw score means, standard deviations, ranges, and correlations are reported for the efficacy, stress, and satisfaction variables (see Table 2). Intraclass correlations (ICC) and design effects were calculated to determine if teachers should be nested within districts (average cluster size per district = 12.42 teachers). ICCs for predictor, mediator, and outcome variables ranged from .01-.05 and design effects were less than two, indicating that most of the variance could be attributed to the individual teacher rather than the district. Thus, it was determined that nesting of teachers within districts was not necessary for the present analyses.

Prior to using both fall and spring job satisfaction constructs in each model, longitudinal invariance was tested using Mplus v. 7.11 (Muthén & Muthén, 1998-2012) to determine the extent to which job satisfaction exhibited measurement invariance over the two time points. Robust maximum likelihood estimation was used for all analyses. First, a configural invariance model was specified with three indicators loading onto one factor at each time point. The first indicator's loading was fixed to one for each factor to identify the model. The configural invariance model exhibited acceptable fit (χ^2=22.41, p<.001; RMSEA =.05; CFI = .99; SRMR = .02). Next, a metric invariance model was estimated to examine the equality of factor loadings

across time points. All factor loadings were constrained to be equal across time, and results indicated that factor loadings were similar across the configural and metric models. Model fit improved slightly with the metric model (χ^2=21.79, p<.01; RMSEA =.04; CFI = .99; SRMR = .02) indicating metric invariance was present. Finally, a scalar model was tested to examine the equality of intercepts across time. Both intercepts and factor loadings were constrained to be equal across the two time points. The fit of the scalar model (χ^2=23.35, p<.01; RMSEA =.04; CFI = .99; SRMR = .02) was comparable to that of the metric model indicating that scalar invariance was established. Thus, measurement invariance analyses indicated that it was appropriate to examine the job satisfaction construct at fall and spring time points.

3.1 Research Question 1: Does teaching efficacy influence the relationship between test-related stressors and teacher job satisfaction across the school year?

To examine the first research question, all stress and efficacy variables were included as Fall predictors and Spring mediators in a complete model with Spring job satisfaction as the outcome. This model exhibited poor fit (RMSEA = .15, SRMR = .08, CFI = .71). Because fit improved with model parsimony and to address the second research question, subsequent models were run separately examining the relation of each type of stress and each type of efficacy to job satisfaction (Kline, 2011) allowing for a more specific depiction of the hypothesized relationships. The complete fit statistics of all tested models are included in Table 3.

3.2.1 Research Question 2: How do the aforementioned relationships differ by type of teaching efficacy and test stress?

A total of six subsequent models were examined with either sources of stress or manifestations of stress as the predictor variables, type of efficacy (student engagement, classroom management, instructional practice) as the mediating variable, and job satisfaction as

the outcome. The results that follow are grouped by the type of teaching efficacy, and then type of test stress.

3.2.2 Efficacy in student engagement—sources of stress

Estimates of indirect effects of Spring efficacy in student engagement on the relation between Fall sources of stress and Spring job satisfaction were significant after accounting for covariates (β = -.007, B = -.004; Figure 1). The model exhibited acceptable fit with the data according to RMSEA = .074, SRMR = .035, CFI = .931. There were significant direct effects of efficacy in student engagement (β = .08, B = .07) and sources of stress (β = -.06, B = .03) on job satisfaction. There was also a significant direct effect of sources of stress on efficacy in student engagement (β = -.09, B = -.05).

3.2.3 Efficacy in student engagement—manifestations of stress

The indirect effect of Spring efficacy in student engagement on the relation between Fall manifestations of stress and Spring job satisfaction was not significant. Overall model fit was acceptable, RMSEA = .069, SRMR = .034, CFI = .933. Regarding direct effects, there were significant relationships between efficacy in student engagement (β = .08, B = .07) and manifestations of stress (β = -.07, B = -.04) on job satisfaction, as well as a direct effect of manifestations of stress on efficacy in student engagement (B = -.07, B = -.04).

3.2.4 Efficacy in classroom management—sources of stress

With the inclusion of covariates, the indirect effect of Spring efficacy in classroom management between Fall sources of stress and Spring job satisfaction was significant (β = -.02, B = -.01; Figure 2). Fit statistics indicated the model was acceptable, RMSEA = .076, SRMR = .039, CFI = .929. There were significant direct effects of efficacy in classroom management (β = .11,

B = .10) and sources of stress (β = -.06, B = -.03) on job satisfaction, and sources of stress on efficacy in classroom management (β = -.14, B = -.08).

3.2.5 Efficacy in classroom management—manifestations of stress

Similarly, estimates of the indirect effect of Spring efficacy in classroom management on the relation between Fall manifestations of stress and Spring job satisfaction was significant after accounting for covariates (β = -.01, B = -.007; Figure 2). The model exhibited acceptable fit, RMSEA = .067, SRMR = .037, CFI = .938. There were significant direct effects of efficacy in classroom management (β = .11, B = .10) and manifestations of stress (β = -.07, B = -.03) on job satisfaction. In addition, there was a significant direct effect of manifestations of stress on efficacy in classroom management (β = -.13, B = -.07).

3.2.6 Efficacy in instructional practice—sources and manifestations of stress

The indirect effects of Spring efficacy in instructional practices on the relation between Fall sources of stress or Fall manifestation of stress with Spring job satisfaction were not significant. Model fit for both the sources of stress model (RMSEA = .047, SRMR = .023, CFI = .969) and manifestations of stress model (RMSEA = .035, SRMR =.019, CFI = .981) was deemed to be acceptable. There were significant direct effects of efficacy in instructional practice (β = .06, B = .07) and sources of stress (β = -.06, B = -.03) on job satisfaction. However, the direct effect of sources of stress on efficacy in instructional practices was not significant. There were significant direct effects of efficacy in instructional practice (β = .06, B = .07) and manifestations of stress (β = -.07, B = -.03) on job satisfaction. There was also a direct effect of manifestations of stress on efficacy in instructional practice (β = -.07, B = -.03).

4. Discussion

Since the implementation of test-based accountability policies, educators have been subject to increasing pressures. These stressors may in turn, negatively influence job satisfaction and lead to teacher turnover. However, teaching efficacy may be an important variable in understanding the link between job stressors and satisfaction. As such, a primary goal of the present investigation was to examine the role of teaching efficacy within the relationship of *test-related* stress and job satisfaction across the academic year (Fall and Spring). A model inclusive of all variables was not viable thus the hypothesized relationships were examined across six statistical models, allowing for a more parsimonious depiction of the variable relationships.

Across all of the tested models, there were significant direct effects from test stress to job satisfaction. This finding builds upon and extends beyond the extant literature in two ways. First, much prior research has suggested a link between teacher stress and job satisfaction (e.g., Berryhill, Linney, & Fromewick, 2009; Roeser et al., 2013; Schwarzer & Hallum, 2008). Given the increased use of tests within important educational decisions (e.g., teacher performance evaluation, student promotion and advancement), results from the present investigation is the first known to link *test specific stress* (rather than teacher stress more generally) to job satisfaction, particularly with the inclusion of important demographic covariates (e.g., years of experience, number of test preparation hours, grade level taught). In other words, the implementation of test-based accountability policies may, in part, be related to greater teacher stress and subsequently lower job satisfaction. Second, many previous studies that examined teacher stress and job satisfaction used a single time point (e.g., Author, 2015; Klassen & Chiu, 2000; Skaalvik & Skaalvik, 2009). Notably, this study examined the influence of test stress in the Fall as related to job satisfaction (and teaching efficacy) in the Spring. Teachers reporting test-related stress in the Fall were more likely to report lower job satisfaction towards the end of the

academic year. Despite annual testing often taking place in the Winter or Spring of the academic year, Fall test stress had a negative relationship to job satisfaction suggesting that test stress may be present (and significant) throughout the entire academic year, and educators may benefit from early and frequent emotional supports (Curby et al., 2013).

Similarly, all three domains of teaching efficacy (classroom management, instructional practices, student engagement) were positively related to job satisfaction. These results are consistent with prior research on the relative importance of teaching efficacy for wellbeing and job satisfaction (Klassen & Chiu, 2010; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfolk Hoy & Burke-Spero, 2005). However, the role of teaching efficacy as an explanatory factor from test stress to job satisfaction was variable, and partially dependent on type of test stress. For example, the indirect effect of efficacy for student engagement was significant between *sources* of test stress and job satisfaction, but not *manifestations* of test stress. Teachers may be more likely to report higher manifestations of stress as the test approaches in the Spring, whereas sources of test stress remain relatively constant throughout the academic year.

The current results suggest differing relationships of test stress with job satisfaction based upon type of perceived capability (i.e., efficacy). For example, data from the current study support the notion that teachers who perceived themselves to be capable of effective classroom management were less likely to report lower job satisfaction as a result of test stress. This is consistent with prior research on the influence of classroom management on teacher wellbeing (Egyed & Short, 2006; Klassen & Chiu, 2010) as classroom management is of particular concern for many teachers. Teachers who may be less effective at classroom management often perceived themselves to be less effective teachers more generally, and may be even more susceptible to the influence of test-related stressors on job satisfaction.

Interestingly, efficacy of instructional practices was not indirectly related to the relationship of either sources or manifestations of test stress with job satisfaction. This was contrary to initial hypotheses. Prior research had identified stress as related to negative instructional practices (Putwain & Best, 2012) and quality of instructional practices with job satisfaction (Crossman & Harris, 2006). One explanation may be due to the measurement of perceived *capability* to utilize effective instructional practices, rather than actual use of instructional practices. Research has suggested that there are few reliable measures of teacher instructional practices (Reddy, Fabiano, Dudek, & Hsu, 2013), and the TSES instead reflects a perception of capability. Moreover, the perception of effective instructional practices may be less salient in the stress-job satisfaction relationship than is capability to manage classroom disruptions and motivate or engage students. However, teachers may be more accurate reporters of perceived efficacy in classroom management and student engagement, than instructional practices.

5. Limitations and Future Research

The present study has several limitations. First, all participants are from one Southeastern state in the United States. Given that the use of standardized test scores in making important educational decisions may vary between states with various accountability policies, further research with a broader sample may increase the generalizability of the findings. The consequences of accountability policies may differentially influence educators that teacher in "tested" grades, such as early elementary (not tested) and later middle school (tested). Likewise, the sample may not be representative to educators outside of the United States. However, it is typical in many European and Asian countries to use student test scores for accountability purposes (Rothberg, 2006), and therefore similar findings may be expected. The generalizability

of the study may also have been limited by the nature of recruiting participants through email solicitation. Approximately 15% of educators in the previous investigation responded to the current survey at both time points. There is a possibility that response bias occurred, as teachers that chose to respond may have differing perceptions than the general population of teachers. Common method variance may also present a potential limitation given the electronic survey design (e.g., job satisfaction measured via three-self report questions).

While the current study built on extant literature by linking teacher test stress, self-efficacy, and job satisfaction across two time points, this methodology did not allow the researchers to infer causality. The examined mediational effects, while significant, were relatively small and caution should be exercised when generalizing conclusions. It should also be noted that efficacy was not examined as a moderator of the hypothesize relationships. For example, it may be the case that differing levels of efficacy result in different relationships between stress and job satisfaction. Additionally, test-related teacher stress, job satisfaction, and teaching efficacy may vary significantly throughout the school year. For instance, test stress may be more salient in the Spring, as testing periods approach. However, given the finding that Fall test stress is negatively related to Spring job satisfaction, the measurement of test stress in the Fall provides important new insight. Nonetheless, future research should consider more frequent measurement of each of the variables. The findings may also be limited by the fact that six models were run separately, as a model that included all variables was not feasible. However, it was found that fit improved with model parsimony, and so these separate analyses provide valuable information surrounding the relation of each form of stress and efficacy to job satisfaction. Lastly, future research should examine the potential moderating influence of

teaching efficacy (e.g., Schwarzer & Hallum, 2008) between stressors and job satisfaction to more specifically target intervention resources.

6. Conclusions

The primary aim of this study was to examine the relationship between teacher test stress and job satisfaction, including the potential influence of teaching efficacy, within a high-stakes, test-based accountability context. Findings underscored the predictive relationship of test stress across the academic year on job satisfaction, and identified efficacy in classroom management and efficacy in student engagement as mediating factors. Strengthening teachers' efficacy may be an important component to helping educators cope with the stressors brought forth by test-based accountability policies.

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Table 1

Descriptive Characteristics for Teacher Sample (N=1,242)

Characteristic	Sample Size (n)	Percentage
Gender	1,239	-
Male	247	19.9%
Female	992	80.1%
Education Level	1,238	-
Bachelor's degree	556	44.9%
Master's degree	638	51.5%
Doctoral degree	15	1.2%
Other degree	29	2.3%
Race/Ethnicity	1,234	-
Caucasian	1,110	90%
African American	71	5.8%
Hispanic/Latino	8	0.6%
Asian/Pacific Islander	4	0.3%
Native American	9	0.7%
Other/Multiracial	32	2.6%
Grades Taught	1,242	-
K-2	183	14.7%
3-5	276	22.2%
6-8	296	23.8%
9-12	487	39.2%
Job performance evaluation based on student test scores	1,236	-
Yes	872	70.6%
No	364	29.4%
Prep hours per week	1,236	-
0 hours	152	12.3%
1-4 hours	549	44.4%
5-9 hours	261	21.1%
10 or more hours	274	22.2%

Table 2

Correlations, Means, Standard Deviations, and Ranges for Stress, Efficacy, and Satisfaction Composites (N=1,242)

	1	2	3	4	5	6	7
1. Fall Sources of Stress	-						
2. Fall Manifestations of Stress	.66**	-					
3. Spring Efficacy in Student Engagement	-.10**	-.07*	-				
4. Spring Efficacy in Classroom Management	-.14**	-.13**	.54**	-			
5. Spring Efficacy in Instructional Practice	.00	-.05	.42**	.44**	-		
6. Spring Job Satisfaction	-.37**	-.36**	.26**	.31**	.13**	-	
7. Fall Job Satisfaction	-.41**	-.40**	.27**	.29**	.09**	.73**	-
Mean (SD)	17.11 (4.59)	15.37 (5.17)	13.64 (2.72)	15.91 (2.64)	15.91 (2.64)	10.18 (2.49)	9.84 (2.53)
Range	5-25	6-30	4-20	4-20	9-20	3-15	3-15

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

Table 3

Fit statistics for the seven models

	χ^2	DF	RMSEA	90% CI	SRMR	CFI	Fit
Total Model	963.33	33	.15	.14-.16	.08	.71	Poor
Student Engagement and Sources of Stress	131.39	17	.07	.06-.09	.04	.93	Acceptable
Student Engagement and Manifestations of Stress	117.00	17	.07	.06-.08	.02	.93	Acceptable
Classroom Management and Sources of Stress	130.93	16	.08	.06-.09	.04	.93	Acceptable
Classroom Management and Manifestations of Stress	106.19	16	.07	.06-.08	.04	.94	Acceptable
Instructional Practice and Sources of Stress	63.91	17	.05	.04-.06	.02	.97	Acceptable
Instructional Practice and Manifestations of Stress	43.02	17	.04	.02-.05	.02	.98	Acceptable

Note. DF = degrees of freedom; RMSEA = root mean square estimate of approximation; CI = confidence interval; SRMR = standardized root mean square residual; CFI = comparative fit index

Table 4

Indirect and direct effects models examining the influence of spring efficacy in student engagement on the relation between fall sources and manifestations of stress and spring job satisfaction

Direct Effects on Job Satisfaction				Direct Effects on Job Satisfaction			
	B	β	95 % CI		B	β	95 % CI
Fall job satisfaction	0.651***	0.674	0.607-0.694	Fall Job Satisfaction	0.657***	0.679	0.613-0.701
Grade level	0.021	0.031	-0.005-0.048	Grade level	0.024	0.035	-0.002-0.05
Years of teaching experience	0.016*	0.054	0.004-0.026	Years of teaching experience	0.016**	0.054	0.004-0.027
Prep hours	-0.069	-0.033	-0.153-0.014	Prep hours	-0.059	-0.029	-0.145-0.026
Job performance evaluation	-0.236*	-0.044	-0.457--0.012	Job performance evaluation	-0.192	-0.036	-0.421-0.037
Efficacy in Student Engagement	0.074***	0.082	0.037-0.111	Efficacy in Student Engagement	0.073***	0.080	0.035-0.11
Manifestations of Stress	-0.035**	-0.074	-0.056--0.014	Sources of Stress	-0.034**	-0.064	-0.059--0.009
Indirect Effect on Job Satisfaction				Indirect Effect on Job Satisfaction			
Manifestations of Stress	-0.003	-.006	-.006-0.000	Sources of Stress	-0.004*	-0.007	-0.008--0.001
Direct Effects on Efficacy in Student Engagement				Direct Effects on Efficacy in Student Engagement			
Grade level	-0.132***	-0.172	-0.177--0.087	Grade level	-0.130***	-0.169	-0.175--0.086
Years of teaching experience	-0.008	-0.025	-0.026-0.009	Years of teaching experience	-0.008	-0.026	-0.026-0.009
Gender (female)	0.432*	0.064	0.024-0.843	Gender (female)	0.417*	0.061	0.013-0.826
Prep hours	-0.006	-0.029	-0.203-0.069	Prep hours	-0.045	-0.020	-0.183-0.09
Job Performance evaluation	-0.460**	-0.077	-0.797--0.114	Job Performance evaluation	-0.377*	-0.063	-0.721--0.019

Manifestations of stress	-0.037*	-0.071	-0.071--0.005
Direct Effects on Fall Manifestations of Stress			
Grade Level	-0.126**	-0.087	-0.206--0.048
Prep Hours	0.837***	0.192	0.579-1.097
Job performance	1.506***	0.133	0.883-2.104
Direct effects on Fall Job Satisfaction			
Grade level	0.013	0.019	-0.026-0.053
Years of teaching experience	0.012	0.040	-0.003-0.027
Prep hours	-0.376***	-0.176	-0.494--0.256
Job performance evaluation	-0.865***	-0.155	-1.178--0.552

Sources of stress	-0.052**	-0.088	-0.088--0.015
Direct Effects on Fall Manifestations of Stress			
Grade Level	-0.059	-0.045	-0.124-0.008
Prep Hours	0.943***	0.244	0.728-1.153
Job performance	3.075***	0.306	2.501-3.647
Direct effects on Fall Job Satisfaction			
Grade level	0.014	0.02	-0.025-0.053
Years of teaching experience	0.011	0.036	-0.004-0.026
Prep hours	-0.377***	-0.176	-0.495--0.257
Job performance evaluation	-0.862***	-0.155	-1.175--0.55

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

Table 5

Indirect and direct effects models examining the influence of spring efficacy in classroom management on the relation between fall sources and manifestations of stress and spring job satisfaction

Direct Effects on Job Satisfaction			
	B	β	95 % CI
Fall job satisfaction	0.641***	0.667	0.596-0.686
Grade level	0.010	0.014	-0.016-0.036
Years of teaching experience	0.015**	0.052	0.004-0.026
Prep hours	-0.079	-0.038	-0.163-0.004
Job performance evaluation	-0.251*	-0.047	-0.472--0.027
Efficacy in Classroom Management	0.102***	0.110	0.063-0.14
Manifestations of Stress	-0.033**	-0.07	-0.053--0.012
Indirect Effect on Job Satisfaction			
Manifestations of Stress	-0.007**	-0.014	-0.011--0.003
Direct Effects on Efficacy in Classroom Management			
Grade level	0.004	0.005	-0.037-0.045
Years of teaching experience	0.003	0.010	-0.013-0.02
Job Performance evaluation			
Manifestations of stress	-0.066***	-0.129	-0.096--0.036
Direct Effects on Fall Manifestations of Stress			

Direct Effects on Job Satisfaction			
	B	β	95 % CI
Fall Job Satisfaction	0.647***	0.673	0.603-0.692
Grade level	0.012	0.018	-0.013-0.038
Years of teaching experience	0.015**	0.052	0.004-0.026
Prep hours	-0.070	-0.034	-0.157-0.015
Job performance evaluation	-0.211	-0.039	-0.438-0.016
Efficacy in Classroom Management	0.101***	0.109	0.063-0.14
Sources of Stress	-0.031*	-0.058	-0.056--0.006
Indirect Effect on Job Satisfaction			
Sources of Stress	-0.008**	-0.150	-0.013--0.004
Direct Effects on Efficacy in Classroom Management			
Grade level	0.009	0.011	-0.033-0.050
Years of teaching experience	0.002	0.008	-0.014-0.019
Job Performance evaluation			
Sources of stress	-0.08***	-0.139	-0.113--0.049
Direct Effects on Fall Manifestations of Stress			

Grade Level	-0.127**	-0.087	-0.206--0.048
Prep Hours	0.837***	0.192	0.579-1.096
Job performance	1.501***	0.132	0.879-2.099
Direct effects on Fall Job Satisfaction			
Grade level	0.013	0.019	-0.026-0.053
Years of teaching experience	0.012	0.04	-0.003-0.027
Prep hours	-0.376***	-0.176	-0.494--0.257
Job performance evaluation	-0.865***	-0.155	-1.178--0.552

Grade Level	-0.059	-0.045	-0.123-0.008
Prep Hours	0.941***	0.243	0.726-1.151
Job performance	3.076***	0.306	2.505-3.647
Direct effects on Fall Job Satisfaction			
Grade level	0.014	0.02	-0.025-0.053
Years of teaching experience	0.011	0.036	-0.004-0.026
Prep hours	-0.377***	-0.176	-0.495--0.257
Job performance evaluation	-0.862***	-0.155	-1.175--0.55

Note. *$p < .05$. **$p < .01$. ***$p < .001$. Tables on the left side address manifestations of stress. Tables on the right side address sources of stress.

Table 6

Indirect and direct effects models examining the influence of spring efficacy in instructional support on the relation between fall sources and manifestations of stress and spring job satisfaction

Direct Effects on Job Satisfaction			
	B	β	95 % CI
Fall job satisfaction	0.667***	0.684	0.623-0.709
Grade level	0.010	0.014	-0.016-0.035
Years of teaching experience	0.014*	0.048	0.003-0.025
Prep hours	-0.071	-0.034	-0.154-0.012
Job performance evaluation	-0.276*	-0.051	-0.498--0.053
Efficacy in Instructional Support	0.067**	0.058	0.022-0.112
Manifestations of Stress	-0.033**	-0.069	-0.054--0.012
Indirect Effect on Job Satisfaction			
Manifestations of Stress	-0.002	-0.004	-0.004-0.000
Direct Effects on Efficacy in Instructional Support			
Grade level	0.039*	0.064	0.003-0.075
Years of teaching experience	0.011	0.042	-0.004-0.025
Gender (female)	0.584***	0.109	0.251-0.911
Prep hours	0.022	0.012	-0.089-0.132
Job Performance evaluation	0.191	0.041	-0.09-0.469

Direct Effects on Job Satisfaction			
	B	β	95 % CI
Fall Job Satisfaction	0.670***	0.688	0.627-0.714
Grade level	0.012	0.017	-0.013-0.038
Years of teaching experience	0.014*	0.048	0.003-0.025
Prep hours	-0.060	-0.029	-0.145-0.024
Job performance evaluation	-0.230*	-0.043	-0.461--0.003
Efficacy in Instructional Support	0.071**	0.061	0.026-0.115
Sources of Stress	-0.034**	-0.064	-0.059--0.010
Indirect Effect on Job Satisfaction			
Sources of Stress	-0.001	-0.001	-0.003-0.002
Direct Effects on Efficacy in Instructional Support			
Grade level	0.041*	0.067	0.005-0.077
Years of teaching experience	0.011	0.042	-0.004-0.025
Gender (female)	0.551**	0.102	0.221-0.88
Prep hours	0.01	0.006	-0.101-0.122
Job Performance evaluation	0.173	0.037	-0.118-0.464

Manifestations of stress	-0.029*	-0.070	-0.054--0.004
Direct Effects on Fall Manifestations of Stress			
Grade Level	-0.127**	-0.087	-0.206--0.048
Prep Hours	0.837***	0.192	0.579-1.097
Job performance	1.504***	0.133	0.881-2.102
Direct effects on Fall Job Satisfaction			
Grade level	0.014	0.020	-0.025-0.054
Years of teaching experience	0.012	0.040	-0.003-0.027
Prep hours	-0.376***	-0.176	-0.494--0.256
Job performance evaluation	-0.866***	-0.155	-1.178--0.554

Sources of stress	-0.008	-0.017	-0.038-0.020
Direct Effects on Fall Manifestations of Stress			
Grade Level	-0.059	-0.045	-0.123-0.008
Prep Hours	0.943***	0.244	0.727-1.153
Job performance	3.077***	0.306	2.505-3.649
Direct effects on Fall Job Satisfaction			
Grade level	0.015	0.021	-0.024-0.054
Years of teaching experience	0.011	0.036	-0.004-0.026
Prep hours	-0.377***	-0.176	-0.495--0.257
Job performance evaluation	-0.863***	-0.155	-1.176--0.551

Note. *$p < .05$. **$p < .01$. ***$p < .001$. Tables on the left side address manifestations of stress. Tables on the right side address sources of stress.

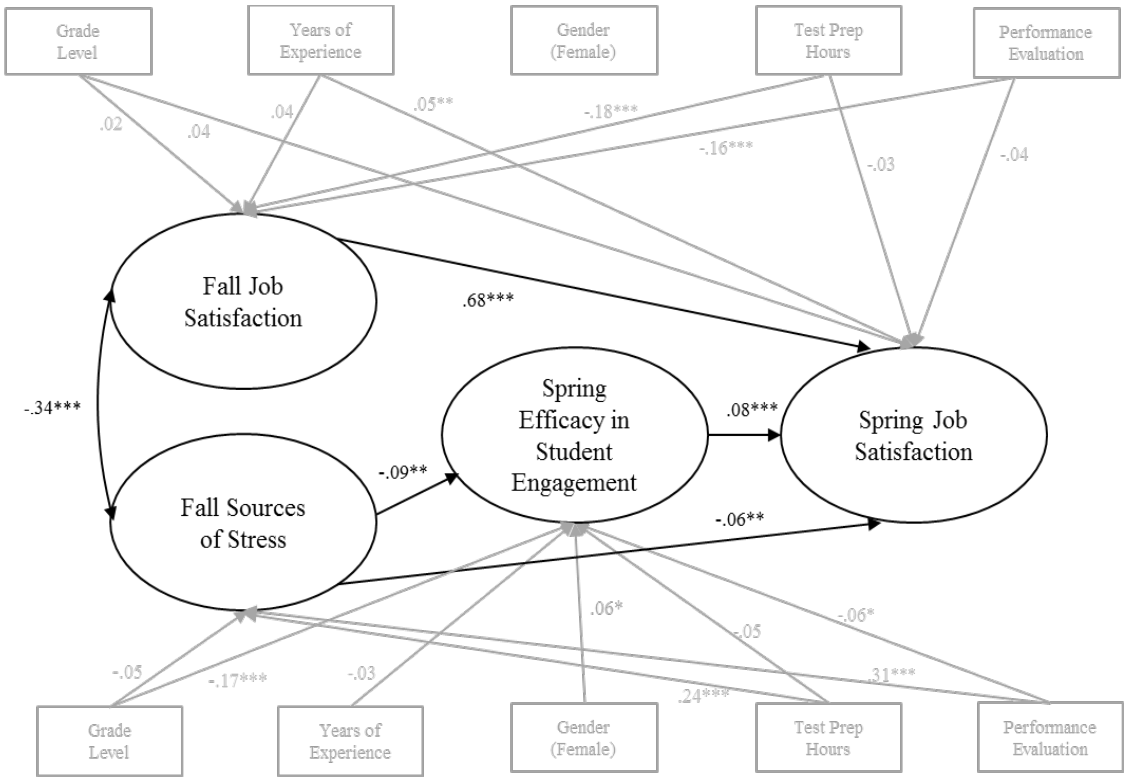

Figure 1. Indirect effect of efficacy in student engagement on the relation between sources of stress and job satisfaction. Standardized beta estimates are reported. The following covariates were used in the model: fall sources of stress, grade level, years of experience, gender, number of test prep hours, and performance evaluation. Covariates were allowed to covary (not shown in figure). Model fit: χ^2 (17) = 131.39, p < .01, RMSEA = .074, SRMR = .035, CFI=.931.

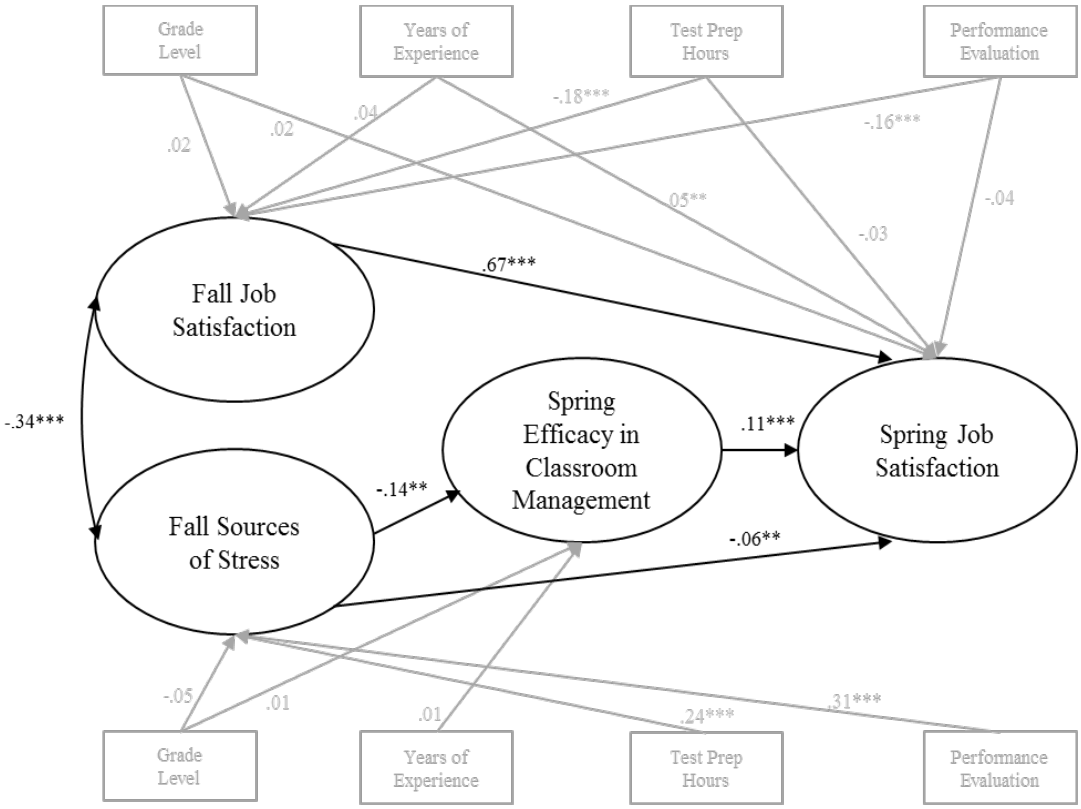

Figure 2. Indirect effect of efficacy in classroom management on the relation between sources of stress and job satisfaction. Standardized beta estimates and *p*-values are reported. The following covariates were used in the model: fall sources of stress, grade level, years of experience, number of test prep hours, and performance evaluation. Covariates were allowed to covary (not shown in figure). Model fit: χ^2 (16) = 130.93, $p < .01$, RMSEA = .076, SRMR=.039, CFI = .929.

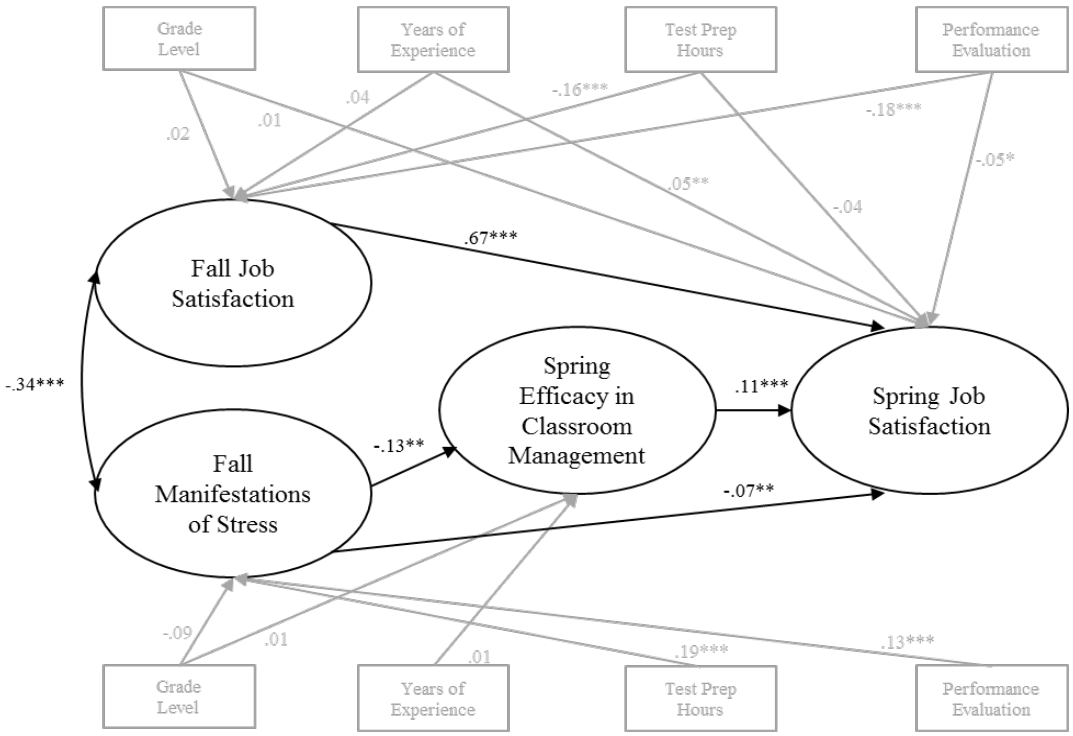

Figure 3. Indirect effect of efficacy in classroom management on the relation between manifestations of stress and job satisfaction. Standardized beta estimates and *p*-values are reported. The following covariates were used in the model: fall sources of stress, grade level, years of experience, number of test prep hours, and performance evaluation. Covariates were allowed to covary (not shown in figure). Model fit: χ^2 (16) = 106.19, $p < .01$, RMSEA = .067, SRMR = .037, CFI = .938.