Elementary Teachers' Self-Efficacy During Initial Implementation of Comprehensive, Integrated, Three-Tiered Models of Prevention

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Abstract

In this article, we examined educators' efficacy and burnout within Comprehensive, Integrated, Three-tiered (Ci3T) models of prevention, as implemented in 14 elementary schools in a Midwestern state. Participating schools completed a year-long training series to design their Ci3T plans and were in their second year of implementation as part of a districtwide initiative. We examined educators' year-end self-ratings to describe how teachers in schools with prevention models were faring, exploring three sets of variables (a) self-reported Ci3T treatment integrity, (b) social validity ratings of their Ci3T model of prevention, and (c) educators' sense of efficacy and burnout. Results indicated educators experienced emotional exhaustion; however, depersonalization and personal accomplishment scores revealed positive and large magnitude differences compared with a national sample. Moreover, educators reported higher levels of efficacy related to instructional strategies and classroom management than a national sample. Higher self-reported levels of Ci3T treatment integrity were associated with increased levels of efficacy related to student engagement. We discuss limitations and future directions.

Contemporary educators face many pressures including increased accountability for student achievement (Ryan et al., 2017), decreased funding (Lambert & McCarthy, 2006), and challenging working conditions (Goldring et al., 2014). Perhaps most substantial is the charge to provide rigorous learning experiences to students exhibiting a wide range of academic, behavioral, and social-emotional needs. To meet this challenge, schools have begun to adopt tiered prevention models, such as School-Wide Positive Behavior Interventions and Supports (SWPBIS; Sugai & Horner, 2002), Response to Intervention (RTI; Fuchs & Fuchs, 2006), Multi-Tiered System of Supports (MTSS), Interconnected Systems Framework (ISF; Barrett et al., 2013), and Comprehensive, Integrated, Three-tiered models of prevention (Ci3T; Lane, Oakes, & Menzies, 2014). These models provide a framework in which educators can proactively employ evidence-based practices to promote the learning of all students, identify students who exhibit additional needs, and provide targeted interventions

according to students' individual needs (Lane, Oakes, & Menzies, 2014; Sugai et al., 2000).

Tiered systems may hold promise for supporting educators by offering a consistent, clear, and collaborative structure for general and special education communities to

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Action Editor: Lee Kern

support students *and* educators' well-being (Lane et al., 2013). For example, evidence suggests implementation of SWPBIS is associated with improvements in school climate and staff affiliation (e.g., commitment to students; positive feelings toward colleagues; Bradshaw et al., 2009), and may facilitate improved teacher efficacy while decreasing risk for burnout (Kelm & McIntosh, 2012; Ross et al., 2012). As district and school leaders adopt these models, continued study of the relation between implementation and educator outcomes is critical for identifying how such school-wide efforts may support educators in meeting students' multiple needs. In this study, we examined two critical educator outcomes—efficacy and burnout—in the context of schools implementing Ci3T models of prevention.

Comprehensive, Integrated, Three-Tiered Models of Prevention

Recent calls for integrating tiered prevention models to meet students' multiple needs recognize educators cannot address students' needs in isolation (Institute of Education Sciences, 2018; Lewis et al., 2017). The Ci3T model features a single, unified framework for addressing academic, behavioral, and social-emotional learning domains in an integrated fashion. Tier 1 (primary) prevention efforts are anticipated to meet the needs of approximately 80% of students. In addition, about 10% to 15% of students may require Tier 2 (secondary) supports, and 3% to 5% of students, with the most intensive learning needs, may require Tier 3 (tertiary) preventions. Each tier includes evidence-based programs, practices, and interventions to meet students' diverse needs (Lane et al., 2016).

Ci3T emphasizes the use of multiple sources of data for data-informed instructional and implementation decision-making and professional learning. Two primary sources of data are systematic screening and measures of implementation (i.e., treatment integrity and social validity). Academic and social-behavioral screening data are collected three times per year (fall, winter, and spring) to detect students who may require more support than primary (Tier 1) efforts have to offer. Screening data are used in conjunction with other school-wide data sources (e.g., attendance, office discipline referrals) to connect students to Tier 2 or 3 supports. Educators utilize an integrated approach, selecting interventions to support students' multiple needs rather than considering each challenge in isolation. For example, a second-grade student who is performing below benchmark in reading fluency and exhibits moderate risk for externalizing behaviors may participate in a phonics intervention and utilize a self-monitoring checklist to facilitate engagement. The integrated nature of the intervention allows educators to effectively and efficiently meet students' individual needs.

Implementation data support decision-making for instruction and professional learning. Implementation data are collected twice per year (fall and spring). Data are used to evaluate the extent to which all elements of the Ci3T plan are being implemented as planned (i.e., treatment integrity), and to ascertain the extent to which faculty and staff view the school's Ci3T plan as targeting socially significant outcomes and applying socially acceptable procedures (Lane, Oakes, & Magill, 2014; Wolf, 1978). Treatment integrity data identify the extent to which Tier 1 is implemented as planned when making decisions regarding Tier 2 or 3 (Bruhn et al., 2014). For example, if low levels of implementation exist, teachers access professional learning opportunities targeting specific Ci3T components (e.g., effective teaching practices, procedures for reinforcing students meeting expectations) to ensure students have access to high-quality Tier 1. However, if high levels of implementation exist and screening data suggest Tier 1 efforts are insufficient to meet some students' learning needs, students are connected to Tier 2 or Tier 3 supports. In this way, decisions support both students and educators.

Monitoring social validity of primary (Tier 1) prevention efforts represents an advancement in using data to drive implementation of tiered systems. Traditionally, social validity has been used to assess the social significance of intervention procedures, goals, and outcomes for individual student interventions (Baer et al., 1968). However, assessing social validity of complex school-wide interventions, such as Ci3T, has yielded important information in predicting implementation. Lane et al. (2009) found scores on a measure of social validity, Primary Intervention Rating Scale (PIRS), at the end of a year-long Ci3T training process predicted levels of treatment integrity during the first year of implementation. Findings suggested social validity data provided critical information about initial implementation levels of school-wide practices. Our interest in Ci3T implementation efforts and the impact of Ci3T on teachers' well-being continues as these models are designed, implemented, and evaluated across the United States (Lane, Oakes, & Menzies, 2014).

Teachers' Self-Efficacy and Burnout in Tiered Systems

Two outcomes of interest are teachers' self-efficacy and burnout. Teacher efficacy refers to teachers' beliefs in their abilities to help students obtain desired outcomes (Bandura, 1993; Tschannen-Moran & Woolfolk Hoy, 2001). Higher levels of teacher efficacy are associated with a greater likelihood of implementing new instructional and classroom management practices such as those associated with SWPBIS (Han & Weiss, 2005; Reinke et al., 2013). Conversely, teachers reporting lower levels of efficacy are more likely to have higher levels of burnout (Brouwers &

Tomic, 2000). Burnout refers to a response to long-term stress consisting of depersonalization, emotional exhaustion, and reduced sense of personal accomplishment (Maslach & Jackson, 1981). Teachers experiencing burnout may become discouraged with the teaching profession, thereby contributing to decisions to leave the profession (Billingsley, 2004; Ingersoll, 2001), surrender to chaotic classroom environments (Chang, 2009), or experience decreased tolerance for managing challenging behaviors in the classroom (Kokkinos et al., 2005).

Examining teachers' sense of efficacy and indicators of burnout in relation to working in tiered systems is a critical consideration as schools and districts design and implement these systems to meet students' multiple needs. Furthermore, in the case of Ci3T, a goal of implementation is to support educators through data-informed professional learning. Thus, examining how educators fare in these contexts is critical for evaluating the utility of Ci3T models. To date, five studies have examined teacher efficacy and burnout or stress within tiered models. Four investigated SWPBIS (Kelm & McIntosh, 2012; Reinke et al., 2013; Ross et al., 2012; Ross & Horner, 2007) and one examined Ci3T (Oakes et al., 2013).

Within schools implementing SWPBIS with a high degree of treatment integrity, elementary school teachers experienced greater teacher efficacy than teachers at non-SWPBIS schools within the same district (Kelm & McIntosh, 2012). Similarly, in a small sample ($n = 20$) of middle school teachers, schools' SWPBIS treatment integrity levels were associated positively with teacher efficacy. However, treatment integrity was not associated with teacher stress (Ross & Horner, 2007). Ross and colleagues (2012) extended this inquiry with a larger sample ($n = 186$) of elementary school teachers. Results indicated level of treatment integrity (measured at the school level) of SWPBIS was positively correlated with teacher efficacy and negatively correlated with teacher burnout. To further explore associations between SWPBIS and teacher outcomes, Reinke and colleagues (2013) examined relations between observed teacher behaviors related to implementation of SWPBIS on the Classroom Ecology Checklist (Reinke & Lewis-Palmer, 2005), teacher efficacy, and emotional exhaustion in 33 K-3 elementary school classrooms in three high implementing schools. Teacher use of general praise was positively correlated with teacher efficacy. In contrast, student disruptions were correlated inversely with efficacy and positively with emotional exhaustion. In addition, ratios of positive-to-negative teacher statements were associated with lower emotional exhaustion. These studies provided important first steps in the exploration of the relation between tiered models of prevention and teacher well-being. Yet, additional inquiry is needed to explore generalizability of these findings into new locales, examine educators' well-being throughout the implementation process, and investigate educators' well-being when working within other tiered models.

Extending this inquiry, Oakes and colleagues (2013) examined teacher efficacy and burnout for 86 teachers from two middle schools implementing Ci3T in a Southern state. Participating teachers completed self-report measures of treatment integrity and social validity during the school year. At year-end, teachers completed the Teachers' Sense of Efficacy Scale 24-Item Long Form (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) and Maslach Burnout Inventory (MBI; Maslach et al., 1996). Relative to national norms, results indicated teachers had lower overall levels of burnout but slightly higher levels of emotional exhaustion. Regression analyses indicated higher levels of treatment integrity predicted lower levels of depersonalization. However, neither treatment integrity nor social validity scores were significant predictors of teacher efficacy. Beyond providing an initial examination of teacher outcomes in the Ci3T model of prevention, Oakes et al. extended the literature by examining treatment integrity at the teacher level in addition to school level. Yet, findings were limited by sample size, number of schools, school location, and cross-sectional analytical approaches.

Collectively, studies conducted to date suggest teachers working within schools using tiered models of prevention experience positive outcomes, including lower ratings of symptoms related to burnout (Oakes et al., 2013; Reinke et al., 2013; Ross et al., 2012). Furthermore, initial evidence suggests degree of implementation of practices related to prevention models (e.g., teaching behavior expectations, providing positive reinforcement) may be related to greater sense of self-efficacy (Kelm & McIntosh, 2012; Reinke et al., 2013; Ross et al., 2012). However, further inquiry into these outcomes is needed. To date, one study (Oakes et al., 2013) examined treatment integrity from the teacher level rather than school level. Additional inquiry is needed to further examine relations between treatment integrity at the teacher level, social validity, and subsequent teacher outcomes (e.g., efficacy and burnout) in other locales and with a broader range of educators.

Purpose

We conducted this descriptive study to examine the relation between implementation of Ci3T models of prevention in elementary schools and educator outcomes of burnout and efficacy. Specific questions included the following:

Research Question 1 (RQ1): To what extent was a randomly selected sample of teachers implementing Ci3T with integrity during the second year of a districtwide initiative focused on the installation and implementation of Ci3T?

Research Question 2 (RQ2): To what extent did these teachers view their schools' Ci3T plans as socially valid at the end of their second year of implementation?

Research Question 3 (RQ3): To what extent did selected teachers in schools implementing Ci3T report feelings of burnout and efficacy?

Research Question 1 (RQ4): What was the relation between teachers' reported levels of burnout, efficacy, social validity, and treatment integrity during the end of the second year of implementation? Moreover, to what extent did teachers' levels of treatment integrity and social validity predict efficacy and burnout?

Method

Participants and Setting

Participants were 120 educators from 14 elementary schools serving students in kindergarten through fifth grades in one Midwestern school district (see Tables 1 and 2 for participant and school characteristics). Most participants were female ($n = 112$; 94.12%), White ($n = 108$; 90.00%) general educators ($n = 93$; 77.50%), who ranged in age from 22 to 64 years of age ($M = 40.76$, $SD = 11.67$). Teachers were highly experienced ($M = 14.63$ years of teaching; $SD = 9.86$) in education. Most held a master's degree ($n = 62$; 51.67%) and completed a course or professional development in classroom management ($n = 117$; 97.50%), academic screening ($n = 95$; 79.17%), and behavior screening ($n = 88$; 73.33%).

Procedures

All schools were concluding their second year of implementing a Ci3T model of prevention and their first year of an Institute of Education Sciences (IES) researcher–practitioner partnership grant. Each of the 14 schools established a Ci3T Leadership Team. Membership generally included the principal, two teachers, special education teacher, parent, student, and a district coach. Ci3T Leadership Teams participated in a year-long Ci3T training series to design their Ci3T plan as described in the introduction (see Lane et al., 2016, for a detailed description of the professional learning series). With district and university support, each school implemented its Ci3T plan beginning the following year, collecting treatment integrity and social validity data to assess the degree to which they implemented Ci3T as intended as well as stakeholders' views in fall and spring each year (description of measures to follow).

After securing university and district approvals, up to 10 ($M = 9.64$, $SD = 1.08$, range = 6–10) educators from each elementary school in the district were invited by email to an informational meeting at their school site if they had (a) previously provided consent to participate in the primary

Table 1. Participant Characteristics.

Variable and level	n (%)[a]
Gender	
Male	7 (5.88)
Female	112 (94.12)
Grade level taught	
Kindergarten	13 (10.83)
First	11 (9.17)
Second	11 (9.17)
Third	18 (15.00)
Fourth	19 (15.83)
Fifth	12 (10.00)
Mixed-grade class	1 (0.83)
Teaches multiple grades	35 (29.17)
Ethnicity	
White	108 (90.00)
Hispanic	5 (4.17)
Black	3 (2.50)
American Indian/Alaska Native	2 (1.67)
Asian/Pacific Islander	1 (0.83)
Other	1 (0.83)
Assignment	
General education teacher	93 (77.50)
Special education teacher	20 (16.67)
Related service provider	7 (5.83)
Highest degree obtained	
Bachelor's degree	58 (48.33)
Master's degree	48 (40.00)
Master's degree + 30 credits	14 (11.67)
Age, M (SD)	40.76 (11.67)
Years of teaching experience, M (SD)	14.63 (9.86)
Years of teaching experience at current school level, M (SD)	9.24 (8.97)

Note. $N = 120$. Percentages based on the number of participants who provided data. Age range: 22–64 years. Years of teaching experience ranged from 1 to 41 years. Years of teaching experience at current school level ranged from 0 to 41.
[a]Unless otherwise noted.

study examining implementation of Ci3T and (b) completed the Ci3T Treatment Integrity: Teacher Self-Report (Ci3T TI:TSR; Lane, 2009) to measure integrity and PIRS (Lane et al., 2002) to assess social validity for the spring time point during the second year of implementation. For three elementary schools where fewer than 10 educators completed the Ci3T TI:TSR and PIRS in spring, we extended eligibility criteria to educators who completed the Ci3T TI:TSR and PIRS in fall. When more than 10 educators were eligible to be invited, we used a random number generator formula and invited the first 10.

We held informational meetings at the end of the school year at each school to explain the study, answer questions, and obtain informed consent. Of the 136 educators who provided instruction to students (e.g., homeroom teachers,

Table 2. School Characteristics.

Variable	School						
	ES 1	ES 2	ES 3	ES 4	ES 5	ES 6	ES 7
Enrollment,[a] *n*	310	278	522	350	412	512	212
Attendance rate,[a] %	95.6	96.2	96.0	96.2	95.1	96.4	94.2
State assessment,[a] % (ELA/M)	63.7/ 49.7	63.9/ 57.1	56.2/ 45.6	65.9/ 58.6	33.3/ 25.5	71.8/ 68.0	59.6/ 51.1
Title 1 school[b]	Yes	Yes	No	Yes	Yes	No	Yes
Economic disadvantaged,[a] %	47.1	43.9	29.1	60.0	68.7	10.4	65.6
Students with disabilities,[a] %	13.2	11.5	10.0	9.4	40.7	6.3	11.3
	ES 8	ES 9	ES 10	ES 11	ES 12	ES 13	ES 14
Enrollment,[a] *n*	226	353	434	383	490	285	229
Attendance rate,[a] %	97.0	96.0	96.7	94.7	95.6	96.1	97.0
State assessment,[a] % (ELA/M)	58.7/ 47.6	44.2/ 36.6	68.1/ 62.4	36.7/ 48.1	49.6/ 51.3	57.0/ 57.0	43.4/ 47.8
Title 1 eligible[b]	Yes	Yes	No	Yes	Yes	Yes	Yes
Economic disadvantaged,[a] %	63.3	46.2	21.2	60.6	47.8	46.0	51.1
Students with disabilities,[a] %	15.5	16.4	8.5	11.2	10.6	13.3	11.8

Note. The percent of students with disabilities at School ES 5 includes those attending district special programs; the special education pre-K classes are considered separate from the elementary school. However, they are included in the state report card data reported in this table. ES = elementary school; State assessment = percentage reported for students scoring in Levels 3 (at expectations) and 4 (above expectations); ELA = English language arts; M = math; Locale = City Small for all schools.
[a]State school report card data 2015–2016. [b]National Center for Education Statistics, Common Core Data 2014–2015.

special education teachers, Title 1 small group teachers), 120 participated (88.24%). Consented participants completed two measures at that time: the MBI and TSES.

Measures

Ci3T Treatment Integrity: Teacher Self Report (Ci3T TI:TSR). The Ci3T TI:TSR (Lane, 2009) measures treatment integrity of primary (Tier 1) prevention efforts. The measure consists of 38 items, which make up three subscales. Subscales measure the core components of primary prevention including Procedures for Teaching (16 items; e.g., *Did I differentiate instruction [academic tasks] as needed?*), Reinforcing (10 items; e.g., *Did I give tickets to students demonstrating school-wide expectations?*), and Monitoring (12 items; e.g., *Did I complete behavior screeners at each time requested by my principal or Ci3T Team?*). Educators rate items using a 4-point Likert-type scale (i.e., 0 = *not at all*, 1 = *some of the time*, 2 = *most of the time*, 3 = *all of the time*). Each subscale is scored by summing items, dividing by the total number of points possible after correcting for missing items, then multiplying by 100 to convert to a percentage. Items not rated are deducted from the total possible points. A total score is also computed by summing all completed items, dividing by the total possible score based on the number of items completed, then multiplying by 100. Levels of treatment integrity at the school level are computed by calculating the mean of all raters for both subscales and total score. The Ci3T TI:TSR was distributed two times per year to all faculty and staff to assess treatment integrity from all stakeholders' perspectives in fall and spring. Initial evaluations indicated each subscale

demonstrates adequate-to-good internal consistency (α = .83, .76, .85, Procedures for Teaching, Reinforcing, and Monitoring, respectively; Bruhn, 2011).

Primary Intervention Rating Scale (PIRS). The PIRS (Lane et al., 2002) was adapted from the Intervention Rating Profile (Witt & Elliott, 1985) to assess educators' views of Tier 1 regarding the social significance of intervention goals, social acceptability of intervention procedures, and the likelihood of the intervention yielding socially important outcomes. The PIRS includes 17 items rated on a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher scores indicating higher acceptability. Items are summed to yield a total score (range = 17–102). Internal consistency reliabilities range from .88 to .98. The PIRS was completed twice annually during implementation years, once in fall and once in spring.

Maslach Burnout Inventory–Educators Survey (MBI). The MBI (Maslach et al., 1996) is an educator-completed measure of teacher burnout. The MBI includes 22 items, yielding three subscales: Emotional Exhaustion (9 items), Depersonalization (5 items), and Personal Accomplishment (8 items). The Emotional Exhaustion subscale reflects feelings of being emotionally overwhelmed or exhausted by work. The Depersonalization subscale reflects the absence of feelings and impersonal responses toward others. The Personal Accomplishment subscale reflects feelings of competence and success by work. Educators rate the frequency of their feelings using a 7-point Likert-type scale ranging from 0

(*never*) to 6 (*every day*). The technical manual provides procedures for computing mean and categorical (low, moderate, and high) scores. Internal consistency estimates range from .76 to .90.

Teachers' Sense of Efficacy Scale (TSES). The TSES (Tschannen-Moran & Woolfolk Hoy, 2001) is a teacher-completed measure of efficacy including 24-items rated on a 9-point Likert-type scale of 1 (*nothing*), to 3 (*very little*), to 5 (*some influence*), to 7 (*quite a bit*), to 9 (*a great deal*). The measure includes three subscales: Efficacy for Student Engagement, Efficacy for Instructional Strategies, and Efficacy for Classroom Management (8 items each). Scores are totaled (range = 8–72), with higher scores indicating higher levels of efficacy. Internal consistency estimates suggest adequate reliability with a coefficient alpha of .94 for the total score, with subscale alphas of .87 to .90 (Tschannen-Moran & Woolfolk Hoy, 2001).

Design and Analysis

This is a descriptive study replicating and extending inquiry by Oakes and colleagues (2013) with a larger sample and an elementary population. We computed descriptive statistics to analyze variables related to treatment integrity, social validity, burnout, and efficacy. We computed mean scores for Ci3T TI:TSR and PIRS scores in fall and spring to measure treatment integrity (RQ1) and social validity (RQ2). We conducted paired *t* tests for RQ1 and RQ2 to determine whether treatment integrity and social validity remained stable between fall and spring. We also computed effect sizes using Hedges's *g* formula to examine the magnitude of differences between fall and spring during the second year of implementation, using Cohen's (1988) recommendations for interpretation (0.2, 0.5, and 0.8 indicating small, medium, and large effects, respectively). We computed mean scores for burnout (Emotional Exhaustion, Depersonalization, and Personal Accomplishment) and efficacy (Efficacy for Student Engagement, Efficacy for Instructional Strategies, and Efficacy for Classroom Management) subscale scores to address RQ3. We compared sample mean scores to national samples to mirror analyses conducted by Oakes et al. and Ross et al. (2012), with effect sizes computed to examine the magnitude of differences. Following the data analytic plan used by Oakes et al., we used burnout cut scores provided in the Maslach Burnout Inventory Manual third edition (Maslach et al., 1996) to place educators in low, moderate, and high burnout categories.

We computed correlation coefficients to examine relations between variables of interest: Pearson correlations when comparing continuous variables and Spearman correlation coefficients when comparisons involved dichotomous variables (e.g., gender; see Table 5). We conducted a series of multiple regression analyses to determine the extent to which treatment integrity, social validity, and demographic variables predicted efficacy and burnout subscale scores (RQ4). When analyzing the data, we used listwise deletion. This resulted in 20 participants (16.67%) being removed from the sample because of missing data on predictor variables. In each model, demographic variables (i.e., gender, highest degree obtained) and individuals' scores on the Ci3T TI:TSR and PIRS served as predictor variables (Oakes et al., 2013), with the following TSES and MBI subscale scores serving as criterion variables: Efficacy for Student Engagement, Efficacy for Instructional Strategies, and Efficacy for Classroom Management, Emotional Exhaustion, Depersonalization, and Personal Accomplishment.

Results

Treatment Integrity

Results indicated respondents reported implementing their Ci3T plans with integrity in fall and spring, with respective mean scores of 81.20% (*SD* = 13.18) and 80.27% (*SD* = 11.68). Paired *t* test suggested no statistically significant differences in mean treatment integrity scores between fall and spring (*p* = .61). Observed effect sizes suggested only negligible decreases (*g* = −0.08; see Table 3).

Social Validity

Results indicated respondents reported a high level of social validity in fall and spring, with respective mean scores of 81.62% (*SD* = 13.57) and 80.27% (*SD* = 12.48). Paired *t* test suggested no statistically significant differences in mean social validity scores between fall and spring (*p* = .19). Observed effect sizes indicated a small decline (*g* = −0.15).

Teacher Well-Being

Burnout. Examination of mean and frequency scores indicated moderate-to-high levels of emotional exhaustion, with 40.83% of participants reporting moderate levels and just over one third (35.83%) of participants reporting high levels (see Table 4). Fewer educators indicated moderate (15.00%) or high (7.50%) levels of depersonalization. Most teachers reported low levels of depersonalization (77.50%) and high levels of personal accomplishment (80.83%).

When comparing participants to a national sample, there were small-magnitude, nonstatistically significant differences in Emotional Exhaustion scores (*g* = 0.24 with confidence intervals [CIs] including zero). However, there were large magnitude differences in Depersonalization (*g* = −0.91) and Personal Accomplishment (*g* = 1.01) total scores, with participants in the current sample having more favorable outcomes (see Table 4 for 95% CIs).

Table 3. Treatment Integrity and Social Validity: Mean Scores Over Time.

	Time		
	Fall M (SD) n	Spring M (SD) n	
Measure			Hedges's g
Ci3T Treatment Integrity: Teacher Self-Report	81.20 (13.18) 78	80.27 (11.68) 110	−0.08
Primary Intervention Rating Scale	81.62 (13.57) 72	79.72 (12.48) 101	−0.15

Note. Ci3T = Comprehensive, Integrated, Three-tiered model of prevention.

Table 4. Burnout and Efficacy Descriptive Statistics Relative to National Samples.

Measure	Current sample	National sample	Hedges's g	95% CI
Emotional exhaustion				
Total, M (SD)	23.89 (10.13)	21.25 (11.01)	0.24	[−0.09, 0.57]
Low, n (%)	28 (23.33)			
Moderate, n (%)	49 (40.83)			
High, n (%)	43 (35.83)			
Depersonalization				
Total, M (SD)	5.42 (4.70)	11.00 (6.19)	−0.91	[−1.09, −0.72]
Low, n (%)	93 (77.50)			
Moderate, n (%)	18 (15.00)			
High, n (%)	9 (7.50)			
Personal accomplishment				
Total, M (SD)	40.45 (4.83)	33.54 (6.89)	1.01	[0.80, 1.22]
Low, n (%)	3 (2.50)			
Moderate, n (%)	20 (16.67)			
High, n (%)	97 (80.83)			
Efficacy, M (SD)				
Student engagement	7.04 (0.95)	7.3 (1.1)	−0.24	[−0.33, −0.15]
Instructional strategies	7.58 (0.80)	7.3 (1.1)	0.27	[0.18, 0.36]
Classroom management	7.39 (0.97)	6.7 (1.1)	0.64	[0.55, 0.73]

Note. Emotional Exhaustion, Depersonalization, and Personal Accomplishment refer to subscales of the Maslach Burnout Inventory–Educators' Survey (Maslach et al., 1996). The Emotional Exhaustion subscale ranges from 0–54; Depersonalization ranges from 0–30; Personal Accomplishment ranges from 0–48. National norms presented for sample of teachers from 1996 ($N = 4,163$). The Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) was used to measure efficacy. Efficacy range = 1–9, with higher scores indicating higher efficacy. Comparisons for the TSES were based on a sample of 410 educators (Tschannen-Moran & Woolfolk Hoy, 2001). CI = confidence interval.

Teacher efficacy. Examination of mean teacher efficacy scores indicated participants reported slightly higher levels of efficacy for Instructional Strategies ($M = 7.58$, $SD = 0.80$) and Classroom Management ($M = 7.39$, $SD = 0.97$) relative to efficacy of Student Engagement ($M = 7.04$, $SD = 0.95$).

When comparing participants to a national sample, there were small-to-medium magnitude differences in Student Engagement ($g = −0.24$) and Instructional Strategies ($g = 0.27$) subscales. However, there were medium-to-large magnitude differences in Classroom Management ($g = 0.64$), with participants in the current sample having a higher sense of efficacy related to classroom management (see Table 4 for 95% CIs).

Relation Between Constructs

In terms of regression outcomes, models consisting of demographic variables alongside treatment integrity and social validity scores were not predictive of any burnout subscale scores (see Tables 5 and 6). However, models consisting of the same predictor variables were statistically significant across the three teacher efficacy subscales: Student Engagement, $F(4, 95) = 4.76$, $p = .0015$, $R^2 = .1319$, Instructional Strategies, $F(4, 95) = 2.66$, $p = .0372$, $R^2 = .0629$, and Classroom Management, $F(4, 95) = 2.50$, $p = .0480$, $R^2 = .0570$. Spring treatment integrity and social validity scores predicted Student Engagement scores, whereas treatment integrity scores were the only variable

Table 5. Intercorrelations.

Variable	1	2	3	4	5	6	7	8	9	10
1. Emotional exhaustion	1.00									
2. Depersonalization	.64 <.0001 120	1.00								
3. Personal accomplishment	−.55 <.0001 120	−.37 <.0001 120	1.00							
4. Student engagement	−.36 <.0001 120	−.28 .0018 120	.48 <.0001 120	1.00						
5. Instructional strategies	−.25 .0051 120	−.23 .0115 120	.41 <.0001 120	.71 <.0001 120	1.00					
6. Classroom management	−.35 .0001 120	−.26 .0047 120	.51 <.0001 120	.79 <.0001 120	.66 <.0001 120	1.00				
7. Ci3T TI:TSR (Spring)	.03 .7824 110	−.09 .3545 110	.17 .0725 110	.37 <.0001 110	.31 .0009 110	.31 .0009 110	1.00			
8. PIRS (Spring)	−.12 .2204 101	.01 .9197 101	.11 .2923 101	.28 .0050 101	.10 .3252 101	.17 .0809 101	.19 .0593 101	1.00		
9. Educator gender	.19 .0370 119	.17 .0684 119	−.05 .6164 119	.11 .2278 119	.10 .2921 119	.05 .5972 119	.08 .3892 109	.08 .4435 100	1.00	
10. Highest degree earned	.09 .3519 120	.05 .5801 120	.09 .3081 120	−.07 .4309 120	.08 .4088 120	.01 .9406 120	−.01 .9642 110	−.12 .2482 101	−.06 .5436 119	1.00

Note. Pearson correlation coefficients, *p* value, and *n* are presented for each correlation between continuous variables. Spearman correlation coefficients are presented for correlations between continuous and dichotomous variables (i.e., educator gender and highest degree earned). Ci3T TI:TSR = Comprehensive, Integrated, Three-tiered model of prevention Treatment Integrity: Teacher Self Report; PIRS = Primary Intervention Rating Scale.

predictive of educators' efficacy in Instructional Strategies and Classroom Management scores. In each instance, higher treatment integrity was positively associated with teacher efficacy scores for Student Engagement, Instructional Strategies, and Classroom Management. In addition, there was a statistically significant, positive relation between social validity and student engagement (see Table 5).

Discussion

Beyond providing positive and responsive learning environments for students, school-wide tiered prevention models such as Ci3T hold promise for bolstering educator outcomes including self-efficacy and professional longevity (Oakes et al., 2013). For example, data-informed decision-making processes, which utilize student-level data (e.g., systematic screening) and educator-level data (e.g., treatment integrity and social validity), directly support educators in (a) making efficient and informed decisions to connect students to supports and (b) receiving professional

learning tailored to their needs. These data also ensure their voice is heard regarding potential needs or modifications for implementing tiered prevention models. Indirect supports for educators include providing more explicit ways of encouraging prosocial student behavior—such as through implementation of PBIS—which may reduce potential stressors and improve teachers' sense of efficacy (Ross et al., 2012). Understanding how implementation of Ci3T affects educator outcomes is critical for continued improvement of school-wide systems.

The present study extends Oakes et al. (2013) findings by measuring outcomes of elementary educators in their second year of Ci3T implementation. Our lessons learned provide additional information regarding the relation between treatment integrity and social validity within Ci3T models and teacher well-being.

Treatment Integrity and Social Validity

Participants reported implementing their school's Ci3T model of prevention with moderate to high levels of integrity.

Table 6. Variables Predicting Teacher Burnout and Self-Efficacy.

Outcome variable	Model	Predictor	Regression parameter			
			B	*t*	*p* value	Standardized estimate
Emotional exhaustion	$F(4, 95) = 1.54, p = .1982,$ $R^2 = .0212$	Intercept	18.46	1.85	.0667	0
		Ci3T TI:TSR	0.10	1.06	.2921	0.11037
		PIRS	−0.12	−1.51	.1339	−0.15526
		Gender	6.49	1.54	.1280	0.15659
		Highest degree obtained	0.20	0.14	.8857	0.01453
Depersonalization	$F(4, 95) = .84, p = .5021,$ $R^2 = −.0064$	Intercept	3.71	0.78	.4367	0
		Ci3T TI:TSR	−0.04	−0.98	.3303	−0.10338
		PIRS	0.01	0.27	.7865	0.02828
		Gender	3.27	1.62	.1077	0.16791
		Highest degree obtained	0.43	0.64	.5250	0.06524
Personal accomplishment	$F(4, 95) = 1.06, p = .3790,$ $R^2 = .0026$	Intercept	32.04	6.57	<.0001	0
		Ci3T TI:TSR	0.04	0.86	.3926	0.09032
		PIRS	0.04	1.09	.2771	0.11334
		Gender	−0.68	−0.33	.7415	−0.03406
		Highest degree obtained	1.02	1.46	.1477	0.14857
Student engagement	$F(4, 95) = 4.76, p = .0015,$ $R^2 = .1319$	Intercept	3.55	4.03	.0001	0
		Ci3T TI:TSR	0.02	2.64	.0098	0.23239
		PIRS	0.02	2.40	.0182	0.09880
		Gender	0.38	1.03	.3062	0.01774
		Highest degree obtained	0.02	0.19	.8522	0.25876
Instructional strategies	$F(4, 95) = 2.66, p = .0372,$ $R^2 = .0629$	Intercept	5.18	6.59	<.0001	0
		Ci3T TI:TSR	0.02	2.14	.0353	0.21772
		PIRS	0.00	0.78	.4396	0.07800
		Gender	0.33	0.99	.3239	0.09894
		Highest degree obtained	0.17	1.48	.1418	0.14619
Classroom management	$F(4, 95) = 2.50, p = .0480,$ $R^2 = .0570$	Intercept	4.38	4.52	<.0001	0
		Ci3T TI:TSR	0.02	2.06	.0423	0.21045
		PIRS	0.01	1.50	.1365	0.15137
		Gender	0.18	0.44	.6588	0.04434
		Highest degree obtained	0.15	1.09	.2796	0.10763

Note. Emotional Exhaustion, Depersonalization, and Personal Accomplishment refer to subscales of the Maslach Burnout Inventory–Educators' Survey (Maslach et al., 1996). Student Engagement, Instructional Strategies, and Classroom Management refer to subscales of the Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001). All analyses were conducted using spring Ci3T TI:TSR and PIRS data, with data analyzed using listwise deletion. Ci3T TI:TSR = Ci3T Treatment Integrity: Teacher Self Report (Lane, 2009); PIRS = Primary Intervention Rating Scale (Lane et al., 2002).

Levels of treatment integrity across this sample of educators were stable from fall to spring. Likewise, participants reported moderate to high levels of social validity, with mean scores also stable throughout the year. Findings suggested individual educators reported being able to implement and sustain practices and procedures related to Ci3T over time. In addition, social validity ratings indicated this sample of educators (which includes general educators, special educators, and related service providers such as interventionists and counselors) largely found the goals, procedures, and outcomes of Ci3T to be socially acceptable well into the implementation phase. These findings are consistent with Oakes et al. (2013) who found favorable school-level social validity scores. This is promising, as sustaining system-level reforms requires ongoing support of front-line stakeholders (Fixsen et al., 2005). Findings also suggested shifts aligned with Ci3T, such as subscribing to an instructional approach to behavior and proactive, data-informed decision-making, which are deemed acceptable means for structuring educational settings by those charged with implementation. It stands to reason these systemic changes may be correlated with commensurate enhancements to educators' sense of efficacy and resilience against risks to attrition.

Teacher Well-Being

Burnout. Participants' levels of burnout were comparable with previous findings (Oakes et al., 2013). Across MBI

subscale scores, only Emotional Exhaustion scores reflected slightly higher levels of risk for burnout relative to national norms (see total mean scores in Table 4). However, these differences were not statistically significant. Most participants rated their level of emotional exhaustion as moderate ($n = 49$; 40.83%) or high ($n = 43$; 35.83%). These outcomes mirror findings reported by middle school teachers implementing Ci3T (Oakes et al., 2013), and reflect only small-magnitude differences between a national sample of educators (Maslach et al., 1996).

On the two remaining MBI subscales the majority of participants reported low levels of depersonalization ($n = 93$; 77.50%) and high levels of personal accomplishment ($n = 97$; 80.83%). Mean scores on the Depersonalization and Personal Accomplishment subscales indicated large magnitude differences between the present sample and a national sample ($g = -0.91$ and 1.01, respectively). Results replicated promising educator outcomes reported in similar studies of school-wide tiered prevention models. The present sample's ratings indicated lower levels of depersonalization and higher levels of personal accomplishment than middle school teachers in their first year of implementing Ci3T (Oakes et al., 2013) or elementary teachers implementing PBIS (Ross et al., 2012). A higher sense of personal accomplishment and lower depersonalization may serve as protective factors against emotional exhaustion (Jennings & Greenberg, 2009). Future studies may explore the relation between these factors over time. Given the emphasis of Ci3T on creating positive, proactive learning environments and empowering educators through data-informed professional learning and structures for supporting students exhibiting learning, behavioral, or social challenges, positive outcomes observed in the present study may reflect possible peripheral benefits of sustained implementation of Ci3T.

Regression models using individual self-reported treatment integrity and social validity did not predict burnout variables. This finding mirrored those of Oakes et al. (2013) who found treatment integrity and social validity did not predict Depersonalization or Personal Accomplishment scores. It may be that individual levels of implementation and social validity are not linked directly to these domains of burnout. This supposition is supported by findings reported by Ross et al. (2012) who found school-level variables, such as treatment integrity measured at the school level and school socioeconomic status were significant predictors of burnout variables, whereas individual teacher behaviors (e.g., reviewing expectations, providing positive reinforcement) were not significant predictors. Similarly, Grayson and Alvarez (2008) found school-level variables such as school climate contributed to teachers' burnout. Future inquiry is needed to explore the relation between teacher burnout and school-level variables including demographics, treatment integrity, and school climate in schools implementing Ci3T.

Teacher efficacy. Participants' ratings of teacher efficacy on the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) were high. Relative to findings from Oakes et al. (2013), participants in the present study rated themselves higher across the Student Engagement, Instructional Strategies, and Classroom Management subscales. Participants' ratings were also slightly higher than the national sample in Instructional Strategies ($g = 0.27$) and moderately higher in Classroom Management ($g = 0.64$), albeit slightly lower in Student Engagement ($g = -0.24$). Correlational findings also indicated a significant, positive relationship between implementing Ci3T with fidelity and all three subscales of the TSES. Regression analyses showed a small but statistically significant positive relation between individual educators' self-reported ratings of treatment integrity on the Ci3T TI:TSR and subscale scores on the TSES. It may be that implementing Ci3T procedures at Tier 1 (treatment integrity) and viewing Ci3T to be socially valid (e.g., goal to be socially significance, procedures acceptable, and outcomes important) serve as protective factors for elementary educators, supporting their own emotional well-being and recommending researchers continue exploring these relations. For example, it may be treatment integrity and social validity scores predict teachers' sense of efficacy, which in time reduces teachers' burnout.

These promising outcomes provide support for the potential of Ci3T to bolster educators' confidence to positively impact students by implementing effective instructional and classroom management strategies. This contrasts with findings of Ross et al. (2012) who found no relation between individual teachers' self-report of behaviors associated with PBIS and higher levels of efficacy, and with those of Oakes et al. (2013) who found no relation between treatment integrity measures and efficacy. Future studies may further examine the specific active ingredients of tiered prevention models that may contribute to increases in teacher efficacy. Given these results diverge from earlier lessons learned, we urge caution when interpreting these findings.

Limitations and Future Directions

Educator outcomes such as efficacy and burnout are complex and multifaceted, including contributing factors at the individual and environmental level. When interpreting results from the present study, an important limitation to consider is the role of school-level variables. For example, research suggests school-level variables such as implementation fidelity of SWPBIS and school climate may influence these outcomes (Grayson & Alvarez, 2008; Ross et al., 2012). More complex, multilevel models may allow for a more nuanced understanding of the relation between high-quality implementation of school-wide, tiered systems of support such as Ci3T and decreased risk for burnout and increased teacher efficacy. Future studies should seek larger

sample sizes from within and across schools to allow for analysis of potentially significant differences in outcomes between schools based on variables such as school-level treatment integrity, social validity, and measures of school climate.

As described in the method, to answer the fourth research question we conducted a series of multiple regression analyses to determine the extent to which treatment integrity, social validity, and demographic variables predicted efficacy and burnout subscale scores. We used listwise deletion which results in any participants missing one or more predictor variables being removed from analysis. This resulted in 20 participants (16.67%) being removed from the sample because of missing data on predictor variables. A potential concern is the possibility deleted and retained participants differed in a meaningful, nonrandom manner. To test this possibility, we conducted comparisons to determine whether there were statistically significant differences between deleted and retained participants (those participants with information on all variables in each analysis) on each of the six variables of interest. Results of *t* test suggested there were no statistically significant differences between groups with respect to emotional exhaustion, depersonalization, personal accomplishment, student engagement, or instructional strategies. The absence of differences between deleted and retained participants on these variables of interest builds confidence in the findings.

A third limitation of this study is the use of self-reported treatment fidelity data. Self-reported data may suffer from issues of social desirability bias as well as the potential of overestimating actual implementation (Debnam et al., 2015), and in some instances underestimating actual implementation. In this study, we mitigated the potential for the influence of social desirability by collected and reporting treatment fidelity data back to schools in a confidential way. For example, numerical data were aggregated (e.g., mean scores, distributions) and open-ended responses were reviewed to look for instances in which a respondent might have inadvertently identified themselves. Information was reported using descriptive statistics and any identifying comments were redacted. For example, "as the school nurse" would have been removed as it identified the respondent. All other comments were reported as submitted. Treatment fidelity data may have incorrectly estimated (e.g., overestimated or underestimated) actual implementation for two reasons: (a) Data were included for only those who opted to complete the surveys, and (b) participants were in Year 2 of implementation and were still acquiring certain practices as part of their Ci3T prevention plan. However, self-reported levels of treatment integrity predicted teacher efficacy for this sample. Future studies should examine the relation of observational and self-reported treatment integrity data to

teachers' sense of efficacy and burnout (Debnam et al., 2015).

A noteworthy consideration is the descriptive nature of the study design. Although not a limitation, because this was not an experimental study, it is important to avoid the unintended error of drawing causal relations between implementation of Ci3T and educator outcomes. Although descriptive comparisons between outcomes in schools implementing Ci3T and national samples provide insights into potential impacts of Ci3T implementation and educator outcomes, causation cannot be determined. Randomized controlled trials may provide an opportunity to examine the extent to which working within a school-wide, tiered prevention model leads to decreased risk for burnout and increased self-efficacy.

Summary

Educators across 14 elementary schools in one Midwestern district reported moderate to high levels of treatment integrity and social validity in the second year of implementing their schools' Ci3T plans. Results indicated educators experienced moderate to high levels of emotional exhaustion; however, reported levels of depersonalization and personal accomplishment revealed large magnitude differences between a national sample in positive directions. Also, educators reported higher levels of efficacy related to instructional strategies and classroom management than a national sample. Furthermore, self-reported levels of treatment integrity were associated with increased levels of efficacy related to student engagement, instructional strategies, and classroom management. Furthermore, social validity ratings were related to increased student engagement. These findings share similarities to results of a previous study (Oakes et al., 2013) of educator outcomes within schools implementing Ci3T providing further evidence of potential benefits for educators working within the context of school-wide efforts to create positive, productive learning environments.

Declaration of Conflicting Interests

Funding

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