

The Role of Teachers' Psychological Experiences and Perceptions of Curriculum Supports on the Implementation of a Social and Emotional Learning Curriculum

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Abstract. The present study examined how teachers' psychological experiences of burnout and efficacy as well as perceptions of curriculum supports (e.g., coaching) were associated with their implementation dosage and quality of Promoting Alternative Thinking Strategies, a social-emotional curriculum. Results revealed that teachers' psychological experiences and perceptions of curriculum supports were associated with implementation. Teacher burnout was negatively associated and efficacy was positively associated with implementation dosage. Teachers who perceived their school administration as more supportive reported higher implementation quality, and positive perceptions of training and coaching were associated with higher levels of implementation dosage and quality. Teachers who reported the highest levels of burnout and the most negative perceptions of curriculum supports reported the lowest levels of implementation dosage and quality. The findings suggest that both individual and organizational factors are related to self-reported implementation and may be important to address in order to maximize the effectiveness of school-based curricula.

The role of teachers has changed and expanded over the past few decades. As a result, teachers' rates of stress and burnout are believed to have increased, particularly in urban schools, and in turn may be influencing teachers' effectiveness (Jennings & Green-

berg, 2009). When asked to implement new curricula, it is likely that teachers who have these psychological experiences in the workplace, and who perceive low levels of support for the innovation, will be the most vulnerable to poor implementation quality. Guided by an

This project was supported by the Safe Schools Healthy Students grant awarded to the Harrisburg City School District. The authors thank the administration, faculty, and staff of the Harrisburg City School District as well as Jennifer Glenn, Alison Rosen, Howard Rosen, and Prevention Research Center staff, who contributed to the data collection effort. The authors also thank Michael Cleveland, who provided helpful feedback and support for the manuscript.

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ecological systems framework (Bronfenbrenner, 1986) and recent conceptualization of individual and organizational factors that influence school-based implementation efforts (Greenberg, Domitrovich, Graczyk, & Zins, 2004), the present study examined how teachers' psychological experiences of burnout and efficacy as well as their perceptions of curriculum supports (e.g., school administration, training, and coaching) were associated with teachers' self-reported implementation of an evidence-based, social-emotional curriculum.

The Changing Roles and Conditions for American Teachers

Teachers' roles have evolved with new demands that result, in part, from federal legislation. Most recently, the No Child Left Behind (NCLB) Act (2001) has placed additional pressures and accountability on teachers and schools. For instance, teachers must ensure that all students make adequate progress in core academic areas. Under NCLB, districts that fail to make adequate yearly progress for multiple consecutive years become subject to increasingly serious consequences and interventions (No Child Left Behind Act, 2001). Although many occupations require their employees to demonstrate ongoing competence in their roles and adapt to new job requirements, the recent changes for teachers are without precedent. Given the fact that students' performance is determined by a variety of factors that lie outside of teachers' control, the pressure regarding student performance can cause a high degree of stress (Huberman, 2005). Even prior to NCLB, heightened expectations, broader demands, and the implementation of multiple reforms had already led to significant job intensification in teachers' work lives (Hargreaves, 1994).

In the current economy, teachers are pressed to do more work with fewer resources, and many face persistent and chronic overload (Vandenberghe & Huberman, 1999). In the most recent report of the nationally representative School and Staffing Survey (2003–2004), public school teachers reported that they were contracted to work 37.7 hr per

week, but when they were asked to also take into account time spent on school-related work outside of the school day, teachers reported actually working an average of 52.8 hr per week (Strizek, Pittsonberger, Riordan, Lyter, & Orlofsky, 2006). This sustained job intensification may lead to feelings of burnout, affect teachers' ability to deliver instruction with quality, and ultimately affect students' learning and achievement (Dorman, 2003; Hargreaves, 1994; Lasky, 2005; Woods, 1999).

Despite the fact that increasing job demands may lead to burnout, teachers are being asked to deliver social-emotional curricula and other preventive interventions in school settings as part of comprehensive strategies to reduce barriers to learning (Adelman & Taylor, 2003; Strein, Hoagwood, & Cohn, 2003). This is a result of the expanding amount of evidence for universal, classroom-based preventive interventions (Greenberg, Domitrovich, & Bumbarger, 2001) and of the empirical link between social-emotional learning and academic performance (Payton et al., 2008). Although these curricula may add to teachers' workload, they are an essential part of comprehensive approaches to student learning, and there is research to suggest that some teachers feel positively about this type of expanded role. In a recent qualitative study, one sample reported that teachers felt they had an ethical, moral, and professional obligation to go beyond an exclusive focus on academic outcomes and promote students' social and emotional development (Lasky, 2005).

In addition, research from the field of prevention suggests that "at-risk" students benefit from school-based, preventive interventions (Graczyk, Weissberg, Payton, Elias, Greenberg, & Zins, 2000). However, when these types of evidence-based models are implemented in disorganized schools, they are often implemented poorly and fail to produce positive program outcomes (Gottfredson, Jones, & Gore, 2002; Tolan, Gorman-Smith, & Henry, 2004). These schools tend to have a higher proportion of teachers who report difficulties in managing their classroom, low expectations for instructional time, and higher

rates of teacher absences (Gottfredson et al., 2002).

In any setting, fidelity, which refers to the degree to which program implementers deliver the program as intended by the developers, is critical to achieve positive program outcomes (Durlak & DuPre, 2008; Dusenbury, Brannigan, Falco, & Hansen, 2003). Two common measures of program fidelity are dosage (e.g., number of lessons delivered) and quality (e.g., adherence to program objectives, program delivery; Dane & Schneider, 1998).

Observational methods are commonly used to assess program fidelity and are often considered the gold standard because they are less prone to self-report bias. However, this method typically involves observing only a random subsample of those who are implementing or only a portion of the overall time that the intervention is delivered. It is unclear from the existing implementation research what the standard number of observations should be, or what implications the timing or length of observations has on the reliability of the measure (Domitrovich et al., 2008). Given the cost and time that would be required to observe all instances of a program's implementation, using observations to assess program fidelity is not as practical as having the intervention implementer provide this source of data, and there is also precedence in the literature for the use of self-report to collect this type of data (Biggs, Vernberg, Twemlow, Fonagy, & Dill, 2008; Lane, Bocian, MacMillan, & Gresham, 2004). Given that many schools are underresourced and must rely on less expensive and less labor-intensive monitoring tools, implementation research that uses teacher self-report data are important for informing the field about other options for assessing program implementation.

Factors Associated With Implementation Quality of School-Based Interventions

In an effort to maximize implementation quality of evidence-based programs in schools, researchers have developed models of school-based implementation that identify the factors that may facilitate or undermine the

implementation process (Greenberg et al., 2001; Han & Weiss, 2005; Ozer, 2006). Based on the research, both individual and organizational factors are typically included (Rohrbach, Grana, Sussman, & Valente, 2006). At the individual level, many studies examine the role of teacher professional characteristics, but several studies in the prevention literature have also shown that personality characteristics and psychological experiences play a role in how teachers implement interventions in the classroom (Hamre & Pianta, 2004; Lochman et al., 2008). At the building level, organizational factors are also important to consider (Ozer, 2006). This may include curriculum supports that are a permanent part of the setting, such as the quality of the leadership in the building, and those that are unique to the intervention. The current study included both types of factors measured from the perspective of individual teachers.

Psychological Experiences

Burnout. One individual factor that has not received adequate attention in the research on school-based curriculum implementation is burnout. Professional burnout is a psychological response that results from repeated exposure to stressors in the workplace environment, as opposed to responses triggered by acute stressors (Boles, Dean, Ricks, Short, & Wang, 2000; Kokkinos, 2006; Pines & Keinan, 2005). In the teaching profession, burnout may contribute to and result from both poor classroom climate and school disorganization. The most common definition of *burnout* in the research includes three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach & Jackson, 1981). Emotional exhaustion has been described as a feeling of fatigue when emotional resources are depleted, and teachers may be unable to physically and emotionally provide for students (Maslach, Jackson, & Leiter, 1996). Depersonalization has been referred to as feelings of indifference or negative attitudes towards others in the workplace, such as having a cynical attitude towards students, parents, and staff. Reduced personal accom-

plishment has been described as reduced work productivity and an inability to cope, such as when teachers no longer feel they are contributing to students' growth (Maslach, Jackson, & Leiter, 1996). High levels of teacher burn-out have been associated with experiencing job stressors and perceiving high demands and low control in their job (Betoret, 2009; Santavirta, Solovieva, & Theorell, 2007), as well as low job performance, frequent absences, and turnover (Burke, Greenglass, & Schwarzer, 1996; Leithwood, Menzies, Jantzi, & Leithwood, 1999).

Efficacy. A second individual factor that has been found to contribute to school-based curriculum implementation is teacher efficacy. *Teacher efficacy* has been defined as "teachers' belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated" (Guskey & Passaro, 1994, p. 4). In addition, the construct includes teachers' judgments about their own capacity to manage student behavior. Low levels of teachers' instructional and classroom management efficacy were associated with poor job performance (Betoret, 2009), and efficacy beliefs have a strong influence on behavior (Tschannen-Moran, Hoy, & Hoy, 1998; Tschannen-Moran & Hoy, 2001). Teachers with a stronger sense of efficacy set more challenging goals for themselves and their students, take responsibility for student outcomes (Ross, 1995), and are more likely to adopt innovations (Fuchs, Fuchs, & Bishop, 1992). Teacher efficacy has been linked to more successful implementation of prevention curricula (McCormick, Steckler, & McLeroy, 1995; Rohrbach, Graham, & Hansen, 1993).

Curriculum Supports

Administrative support. Implementation of a new model or program in a school is most likely to be successful when administrators at the building level provide strong support and leadership for the innovation (Brends, Bodilly, & Kirby, 2002; Farrell, Meyer, Kung, & Sullivan, 2001; Rohrbach et al., 1993, 2006). Administrative support can take

many forms, but often includes verbal commitment, accountability, monitoring, and the dedication of resources from principals and building-level administrators. In one study, when principals were made aware of their importance in supporting implementation through encouragement and monitoring of teachers, the quality of program implementation improved (Rohrbach et al., 1993). In another study that involved a community replication of the Promoting Alternative Thinking Strategies (PATHS; Greenberg & Kusché, 1994) curriculum, there was no main effect of the intervention, but administrative support interacted with implementation quality in the intervention classrooms. Teachers who implemented the curriculum with quality in buildings with supportive administration rated students as less aggressive and more socially competent compared to teachers who implemented the curriculum well but with low levels of administrative support (Kam, Greenberg, & Walls, 2003).

Training and coaching. Studies of preventive interventions comparing teachers who received in-service training to those without training demonstrate that training is an important element for effective implementation (Perry, Murray, & Griffin, 1990; Ross, Leupker, Nelson, Saavedra, & Hubbard, 1991). Despite the effectiveness of this professional development approach, the variation in implementation that is common in community settings suggests that additional support may be warranted. Indeed, prevention scientists have noted the need for more research in this area (Fagan & Mihalic, 2003; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Gager & Elias, 1997; Gottfredson & Gottfredson, 2002). Coaching is a common strategy to improve professional development and quality of instruction in educational settings, and the approach is gaining attention as a way to improve the implementation quality of evidence-based programs in schools. Joyce and Showers (2002) found that when teachers were given demonstrations, feedback, and practice on new skills in the context of coaching, 95% used them in the classroom. Very few studies have

tested the differential effect of different professional development models or how teachers' experiences of these sources of support relate to their implementation dosage or quality (Dusenbury et al., 2007).

The Current Study

Although research has shown both individual and organizational factors have the potential to influence the fidelity with which school-based curricula are implemented in classrooms (Kam et al., 2003; Lochman et al., 2008; Rohrbach et al., 2006), few studies have measured work-related psychological experiences, such as burnout, and how they influence the implementation of curricula in schools—in particular, how multiple factors interact with one another (Domitrovich et al., 2008). For example, teachers who are suffering from burnout or experiencing low levels of efficacy may not be able to benefit from program training or support, whether it is working constructively in a coaching relationship or experiencing the support of their principal, and this could negatively affect the quality of their implementation. In addition, few studies have examined individual or organizational factors as they relate to different indicators of fidelity, such as curriculum implementation dosage and quality.

The current study examined how teachers' psychological experiences and perceptions of curriculum supports were associated with their self-reported implementation dosage and quality of PATHS (Greenberg & Kusché, 1994), a universal, social-emotional intervention designed for use in kindergarten through Grade 5. The PATHS curriculum has been shown to improve both behavior and cognitive function in a series of randomized trials and is designated as one of the nation's Blueprints for Violence Prevention (Greenberg & Kusché, 2002).

The study examined two research questions. The first was whether teachers' psychological experiences (i.e., experience of burnout and sense of efficacy) and perceived supports for the curriculum were directly associated with their self-reported levels of

implementation dosage and quality. We hypothesized that high levels of teacher burnout would be negatively associated with self-reported implementation dosage and quality, and high levels of teachers' efficacy would be positively associated with dosage and quality. Teachers' positive perceptions of curriculum supports, including administrative support for the intervention, higher levels of preparation as a result of curriculum training, and higher perceptions of coaching as useful, were expected to be positively associated with both implementation dosage and quality.

The second research question was whether teachers' psychological experiences moderated the relationship between their perceptions of curriculum supports and self-reported levels of implementation dosage and quality. We hypothesized that self-reported implementation dosage and quality would be the lowest for teachers who reported high levels of burnout and perceived low levels of curriculum supports. In addition, when teachers reported low efficacy, self-reported implementation dosage and quality were expected to be the lowest for teachers who also perceived their curriculum supports to be low.

Method

Sample and Setting

The study took place in a school district that serves primarily disadvantaged students (e.g., 90% are eligible for free and reduced-cost lunch) located in a midsized, urban setting in Pennsylvania. At the time of the study, the same superintendent had been with the district for several years. However, in the past, there had been frequent turnover both at the building and district administrative levels, and according to the results of the district's annual staff survey, some buildings experienced disorganization and negative climate. As part of the reforms associated with the new administration and a large, federal violence prevention grant, the district made PATHS a formal part of the curriculum in all of its 11 elementary buildings. This process evolved over the 3 years prior to when the current study was conducted, and teachers were asked to imple-

Table 1
Demographics of Participants

Variable	Category	<i>N</i>	%
Gender (<i>N</i> = 109)	Female	100	91.7
	Male	9	8.3
Ethnicity (<i>N</i> = 109)	White	94	86.2
	Black/African American	10	9.2
	Asian	2	1.8
	Multiracial/Other	3	2.8
	Grade level (<i>N</i> = 110)	K	18
	1	20	18.2
	2	17	15.4
	3	19	17.3
	4	9	8.2
	5	16	14.6
	Multigrade class	11	10.0
Year trained in PATHS (<i>N</i> = 119)	<1 year	24	25.2
	1–3 years	65	43.2
	>3 years	30	31.6

Note: Sample sizes varied because of missing data.

ment PATHS while also under significant pressure to improve student achievement. The majority of students were performing below grade level, and many buildings were not meeting the criteria necessary for adequate yearly progress as measured by the NCLB Act (2001).

All 156 kindergarten through fifth grade teachers in the district were eligible to participate in the study. The sample included 133 teachers. The majority of the teachers were female (91.7%) and their average age was 40 years old ($M = 40.73$, $SD = 12.04$). The average length of time that teachers had worked in the school district was 14.7 years ($SD = 11.77$) with similar lengths of time reported for time spent in the teaching profession ($M = 15.00$, $SD = 11.43$). Table 1 provides additional demographic information on the participants.

Measures

Teacher demographics. The opening section of the teacher survey asked teachers to complete a series of demographic questions,

including their background characteristics (e.g., age, gender, ethnicity) and professional characteristics (e.g., grade teaching, years in district, years trained in PATHS, years in teaching overall). These demographic variables were used to describe the sample, and they were used in substantive analyses as control variables when they were significantly associated with the outcome variables.

Teacher burnout. Teachers completed the educator-specific version of the Maslach Burnout Inventory (Maslach, Jackson, & Schwab, 1996), a 22-item measure assessing teachers' experience of three dimensions of burnout (e.g., emotional exhaustion, depersonalization, personal achievement). They were asked to rate how frequently, over the past year, each item (e.g., "I feel used up at the end of the workday") applied to them. Each item was measured on the Maslach Burnout scale of frequency, which is a 7-point scale ranging from 1 (*never*), 2 (*a few times per year*), 3 (*monthly*), 4 (*a few times per month*), 5 (*every week*), 6 (*a few times per week*), to 7 (*every*

day). In the present study, all of the items were summed into a total score and then averaged to achieve the most reliable score representing this psychological construct ($\alpha = .86$). Although the three-factor structure has often been used in research on burnout, recent studies have suggested a higher order factor may also be an acceptable interpretation for burnout as measured by the Maslach Burnout Inventory (Worley, Vassar, Wheeler, & Barnes, 2008).

Teacher efficacy. Teachers completed a 15-item measure of teacher efficacy, which assessed how effective teachers felt they were as a teacher and in the classroom with students (Gibson & Dembo, 1984; Emmer & Hickman, 1991). Teachers were asked to agree or disagree with a given statement (e.g., “If students stop working in class, I can usually find a way to get them back on track”), and were asked how they felt at that present time. Each item was measured on the scale standardized by Gibson and Dembo (1984), which was a 6-point scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*disagree slightly more than agree*), 4 (*agree slightly more than disagree*), 5 (*moderately agree*), to 6 (*strongly agree*). In the present study, the alpha for this measure was .64. Although this alpha is lower than the generally accepted cutoff of .70 for adequate internal consistency, a cutoff of .60 has also been considered acceptable in exploratory research (Nunnally, 1978; Garson, 2009).

Curriculum support: Administrative support for PATHS. Teachers were asked to indicate the degree of support for PATHS provided by the administration in their building (Kam et al., 2003). The term *building administration* was used because in some cases the assistant principal or other member of the school leadership team provided oversight for PATHS in addition to the principal. Teachers were provided with four descriptions of administrative support that ranged from 1 (*not at all supportive*), 2 (*not very supportive*), 3 (*supportive*), to 4 (*very supportive*). Detailed descriptions of the scale items were

the following: 1 (*Does not make PATHS a priority. There is limited discussion of PATHS with staff and the curriculum is not mentioned during observations*); 2 (*Occasional support for PATHS in faculty and staff discussions, but does not see success of PATHS and social-emotional learning as central to the school’s mission*); 3 (*Principal is supportive of teachers’ efforts, speaks positively about PATHS with staff, problem-solves obstacles to implementation, uses PATHS material and observes PATHS lessons*); and 4 (*Is a “cheerleader” for the program, supports staff effectively to use PATHS and sees it as central to school mission*).

Curriculum support: Training. Teachers were asked to rate the effectiveness of the PATHS training they received. This item (i.e., “How well did the PATHS training prepare you to use the curriculum?”) was measured on a 5-point scale ranging from 1 (*not at all*), 2 (*a little*), 3 (*somewhat*), 4 (*quite a bit*), to 5 (*extremely*).

Curriculum support: Coaching. Teachers were also asked 1 item to rate the quality of the coaching support provided by the PATHS coordinator over the past school year (2004–2005). This item (i.e., “Overall, how useful was the consultation time with your PATHS coordinator?”) was measured on a 5-point scale ranging from 1 (*not at all*), 2 (*a little*), 3 (*somewhat*), 4 (*quite a bit*), to 5 (*extremely*).

Implementation dosage of PATHS. Teachers were asked 2 items relating to implementation dosage at the present time. Each item was used in analyses separately. For 1 item, teachers were asked, “How often, on average, do you actually use the PATHS curriculum lessons and generalization techniques in your classroom?” These lessons and techniques were key components to the curriculum. For the second item, teachers were asked, “How often, on average, do you use the supplemental activities that are designed to integrate PATHS with academics?” These supplemental activities were more optional components to the curriculum. Both of these items

were measured on a 5-point scale including the time frames of 1 (*not at all*), 2 (*rarely, only when problems arise*), 3 (*occasionally, every few months*), 4 (*regularly, 1–2 lessons per week*), or 5 (*frequently, weekly lessons with frequent generalization techniques*).

Implementation quality of PATHS.

Teachers were asked 2 items related to implementation quality at the present time. Each item was used in analyses separately. For 1 item, teachers were asked, "How well do you feel you are implementing the lessons in the PATHS manual?" For the second item, teachers were asked, "How well do you feel you are generalizing PATHS concepts throughout the day?" Both of these items were measured on a 5-point scale including ratings of 1 (*not at all*), 2 (*not very well*), 3 (*somewhat*), 4 (*fairly well*), and 5 (*very well*).

Curriculum Model and Implementation

The PATHS curriculum provides students with instruction in the areas of emotional awareness and understanding, self-control, social skills with peers, and social problem-solving skills in order to promote their social and emotional competence. It has been used by teachers in over 1,000 elementary schools in the United States and in about 500 schools internationally (e.g., Netherlands, Australia, United Kingdom, Germany, Mexico). PATHS has been evaluated in a number of randomized trials in urban and rural school districts with ethnically diverse students in Grades 1–4 (Greenberg & Kusché, 2002). The findings across these studies are very similar. Students who received PATHS exhibited fewer externalizing (e.g., aggression, emotional dysregulation) and internalizing symptoms (e.g., depression, anxiety) compared to students in classrooms without PATHS (Conduct Problems Prevention Research Group, 1999; Greenberg, Kusché, Cook, & Quamma, 1995; Riggs, Greenberg, Kusché, & Pentz, 2006). The curriculum also improved the children's social competence, including the ability to regulate emotions, plan for the future, and tolerate frustration (Conduct Problems Pre-

vention Research Group, 1999; Greenberg et al., 1995; Riggs et al., 2006).

Each grade-level curriculum consists of a set of structured lessons and generalization strategies that are designed to (a) improve students' social-emotional and thinking skills and (b) facilitate a positive classroom environment. Teachers are expected to implement two to three lessons weekly and integrate the concepts into their academic lessons. A main goal of the PATHS curriculum is to generalize the concepts throughout the school day and school environment. Schools are encouraged to do so by placing PATHS posters in public places (e.g., hallways and cafeteria) and educating all building staff on the PATHS model and how to incorporate it into their work (Greenberg & Kusché, 1994; Greenberg et al., 1995). Teachers are also encouraged to use supplemental activities that come with the curriculum to extend the concepts beyond lessons.

The professional development model used by the district included 2 days of initial training for teachers and principals prior to implementation. Ongoing, proactive coaching support was provided by coaches, typically former teachers who had prior experience with PATHS. Teachers received weekly coaching support the first year they delivered the curriculum, biweekly support if they were between 1 and 3 years of being trained, and monthly support if they had been using the program for more than 3 years. Table 1 shows the percentage of teachers in each of these support levels.

Design and Procedure

Data were collected through a Web-based survey conducted in October of 2005. Principals were notified of the data collection through a letter from the superintendent's office describing the purpose of the study and the district's support of the research. A follow-up letter inviting staff to participate in the survey was also placed in each teacher's school mailbox. The survey was posted on the Internet for 1 week. Teachers were asked to log onto the Internet and provide their informed consent before continuing to complete

the 20-min survey. Teachers who participated in the survey were given an identification number by an independent third-party survey research center, so that their data could be provided to the research team confidentially. The survey research center had access to both teachers' names and identification numbers in order to send a \$10 reimbursement check to them for their participation. Teachers were informed at the beginning of the survey that their participation was voluntary and that their responses would be kept confidential and only reported in aggregate form to the district (i.e., principals would not see responses). They were also told that they could stop taking the survey at any time. Teachers who completed partial surveys were included in the overall sample and response rate. The overall response rate for these schools was 133 out of 156 total teachers, close to 85% of the overall sample. This high response rate may have resulted, in part, from district- and school-level administration encouraging teachers to participate and providing a 2-hr block for teachers to complete the survey during a district professional development day when they did not have classes.

Because teachers' participation was anonymous, no demographic information was available either directly or from the school district regarding teachers who chose not to participate. This restricted our ability to determine whether teachers who responded to the survey were different from the rest of the teachers in the district. However, the high response rate increases the likelihood that our sample was representative of the total population.

Analysis Plan

Preliminary descriptive analyses were conducted to examine the normality of the data using measures of central tendency as well as frequencies and correlations. Substantive analyses then employed a series of regression models. Although directionality cannot be determined in the present study, we used a linear regression approach to avoid decreasing statistical power and squared correlations that

can occur when splitting continuous variables into groups (Whisman & McClelland, 2005). Separate models were estimated for each implementation outcome, and within each outcome, for each independent variable to address issues of multicollinearity. The first set of models examined the direct relationships between the independent variables of teacher burnout, teacher efficacy, and perceptions of curriculum support and the dependent variables of teacher ratings of implementation dosage and quality.

To test the moderation hypotheses, a second series of regression models were estimated that included both main effects and an interaction term: crossing administrative support, coaching, or training support with burnout or efficacy. Using such an interaction term in regression models is a recommended statistical method for detecting and interpreting moderation effects (Cohen, Cohen, West, & Aiken, 2003). When the coefficient for an interaction term was significant, we used a commonly accepted additional test of significance, change in R^2 , as statistically different from zero (Whisman & McClelland, 2005).

Results

Descriptive Analyses

Psychological experiences. The measures of central tendency generally revealed that the teachers in this study, on average, felt effective in the classroom. The sample mean for teacher efficacy ($M = 4.42$, $SD = 0.58$) was slightly higher than the scale midpoint for this measure (i.e., 3.5). Teachers also, on average, reported experiencing burnout monthly (i.e., 3.0). The sample mean for teacher burnout ($M = 2.68$, $SD = 0.80$) was slightly lower than the scale midpoint (i.e., 4.0).

Curriculum supports. With a mean close to the scale midpoint of 2.5 ($M = 2.62$, $SD = 0.87$), teachers perceived that their building administration was somewhat supportive of the PATHS curriculum and teachers' efforts to implement the curriculum. The sample mean for teachers' perception of the

Table 2
Correlations Among Key Variables, N = 110

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1.00	-.02	.89**	-.84**	.17	.02	.07	.19*	.24*	.21*	.21*	.11	.13
2. Grade		1.00	-.01	-.02	.06	.04	.19*	-.09	.03	-.35**	-.13	-.27**	-.28**
3. Years in teaching			1.00	-.94**	.16	.03	.03	.05	.16	.15	.15	.08	.12
4. Years in district				1.00	-.12	-.04	-.04	-.09	-.15	-.17	-.17	-.06	-.11
5. Burnout					1.00	-.34**	-.15	-.28**	.15	-.13	-.23*	-.23*	-.18
6. Teacher efficacy						1.00	-.04	.20*	.08	.12	.20*	.18	.25*
7. Administrative support							1.00	.34**	.41**	.12	.06	.23*	.24*
8. Curriculum support: Training								1.00	.54**	.27*	.09	.27*	.14
9. Curriculum support: Coaching									1.00	.29**	.35*	.33**	.29**
10. Average number of lessons										1.00	0.50**	.51**	.52**
11. Average number of supplemental activities											1.00	.49**	.47**
12. How well . . . implementing lessons												1.00	.73**
13. How well . . . implementing generalizing concepts													1.00

* $p < .05$.

** $p < .01$.

extent to which their training prepared them to use PATHS was 3.73 ($SD = 0.87$), and the sample mean for their perception of the extent to which PATHS coaching was useful was 3.46 ($SD = 1.19$). Both were slightly higher than the scale midpoint for these measures (i.e., 3.0), which indicated that teachers felt that their training and coaching was “quite a bit” helpful in their utilization of the PATHS curriculum.

Implementation dosage and quality.

Teachers' self-report of implementation dosage and quality differed slightly in their average levels. Concerning implementation dosage, teachers reported implementing the lessons, on average, close to 1–2 times per week (i.e., regularly; $M = 3.63$, $SD = 0.94$) and implemented the supplemental activities, on average, close to a few times per month (i.e., occasionally; $M = 3.06$, $SD = 1.02$). Teach-

ers' implementation quality was measured with two separate items: 1 relating to how well they were implementing lessons and 1 relating to how well they were generalizing concepts. Teachers felt they were implementing lessons and generalizing concepts, on average, “fairly well” ($M = 3.53$ and 3.72 , $SD = 0.99$ and 0.97 , respectively), which were slightly higher than the scales' midpoints (i.e., 3 = somewhat).

Correlations. To identify areas of multicollinearity and potential control variables, we conducted correlation analyses between the demographic, independent, and dependent variables. Table 2 shows the correlations among key demographic variables (e.g., age, grade level, year trained in the PATHS curriculum), independent variables (e.g., burnout, efficacy, support), and dependent variables (e.g., implementation ratings). Many of these

associations were as would be expected (e.g., age and years in teaching; $r = .89, p < .01$) but were not the focus of the current study. Teacher age was significantly and positively associated with several key variables. Age was positively associated with perceptions of coaching curriculum support ($r = .24, p < .05$), curriculum training ($r = .19, p < .05$), and both average lessons and average supplemental activities implemented (both items: $r = .21, p < .05$). Thus, older teachers were more like to report more positive coaching support, training, and greater overall implementation than were younger teachers.

Grade level was positively associated with perceptions of administrative support ($r = .19, p < .05$), suggesting that teachers in upper grade levels reported higher levels of administrative support. Grade level was also negatively associated with 3 of the 4 implementation items: average lessons implemented ($r = -.35, p < .01$), how well teachers were implementing lessons ($r = -.27, p < .01$), and how well teachers were generalizing concepts ($r = -.28, p < .01$). In other words, teachers in upper grades reported lower levels of implementation dosage and quality. Given the above findings, teachers' age and grade level were included as control variables in all analyses.

Substantive Analyses With Implementation Dosage: Lessons and Supplemental Activities

Psychological experiences. Regression models predicting implementation dosage outcomes are displayed in Table 3. Contrary to the hypotheses, neither teacher burnout nor teacher efficacy affected the number of curriculum lessons delivered. However, results indicated a significant negative association between teacher burnout and number of supplemental activities taught ($R^2 = .15, p < .05$) and a positive association between teacher efficacy and number of supplemental activities ($R^2 = .09, p = .05$). After accounting for teachers' age and grade level, teachers who reported higher levels of burnout reported implementing fewer supplemental activities, and

teachers with higher efficacy implemented supplemental activities more often. Tests of significant interaction terms did not indicate any moderator effects of psychological experiences on either factor related to implementation dosage. Therefore, nonsignificant interactions were not included in the results tables.

Curriculum supports. Contrary to hypotheses, teachers' perceptions of administrative support were not significantly related to their report of lesson or supplemental activity dosage. In support of our hypotheses, results indicated that teachers' perceptions of the quality of curriculum training significantly predicted how many lessons they implemented ($R^2 = .20, p < .05$), such that teachers who felt better prepared reported completing more lessons. However, there was no significant association found between curriculum training and supplemental activities. A positive relationship was found with teachers' perceptions of PATHS coaching and both implementation dosage items; teachers who reported PATHS coaching as more useful also reported implementing more lessons ($R^2 = .20, p < .01$) and more supplemental activities ($R^2 = .16, p < .01$). Tests of significant interaction terms did not indicate any moderator effects of curriculum dosage on either factor related to implementation dosage.

Substantive Analyses With Implementation Quality: Lessons and Generalization of Concepts

Psychological experiences. Regression models predicting implementation quality outcomes are displayed in Table 4. Contrary to our hypotheses, teacher burnout and teacher efficacy were not related to either aspect of teachers' perceived implementation quality. Further, neither burnout nor efficacy moderated the effects of administrative or curriculum supports on implementation quality, as no significant interactions were found. Therefore, nonsignificant interactions were not included in the results tables.

Curriculum supports. As hypothesized, administrative support significantly pre-

Table 3
Regression Models for Implementation Dosage

Variable	Model 1: Average Number of Lessons Taught			Model 2: Average Number of Supplemental Activities Taught		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age	.02	.01	.24	.02	.01	.25*
Grade	-.11	.03	-.30	-.03	.04	-.07
Teacher burnout	-.07	.11	-.06	-.27	.12	-.23*
R^2		.06			.15	
<i>F</i> value for model (<i>N</i> = 110)		5.93			4.69	
Age	.01	-.01	.23	.02	.01	.22*
Grade	-.12	.03	-.37	-.05	.04	-.11
Teacher efficacy	.27	.15	.17	.33	.17	.19*
R^2		.19			.09	
<i>F</i> value for model (<i>N</i> = 108)		7.75			3.38	
Age	.02	.01	.22	.02	.01	.22
Grade	-.11	.12	-.33	-.03	.04	-.09
Administrative support	.12	.10	.12	.03	.12	.03
R^2		.16			.06	
<i>F</i> value for model (<i>N</i> = 110)		6.07			1.91	
Age	.00	.01	.06	.02	.01	.23*
Grade	-.08	.03	-.29**	-.03	.04	-.06
Curriculum training	.41	.09	.20*	.05	.11	.04
R^2		.20			.06	
<i>F</i> value for model (<i>N</i> = 101)		8.08			2.23	
Age	.01	.01	.12	.01	.01	.13
Grade	-.12	.03	-.32**	-.05	.04	-.13
Curriculum coaching	.00	.08	.26**	.28	.09	.32**
R^2		.20			.16	
<i>F</i> value for model (<i>N</i> = 96)		7.67			5.68	

* $p < .05$.

** $p < .01$.

dicted how well teachers felt they were implementing the curriculum and generalizing concepts ($R^2 = .13$, $p < .05$, and $R^2 = .15$, $p < .01$, respectively). That is, higher levels of

administrative support were associated with higher levels of implementation quality.

Results also supported the hypotheses regarding curriculum training and coaching.

Table 4
Regression Models for Implementation Quality

Variable	Model 1: How Well Teachers Felt They Implemented Lessons			Model 2: How Well Teachers Felt They Were Generalizing Concepts		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age	.01	.01	.15	.01	.01	.12
Grade	-.10	.04	-.25	-.10	.04	-.27*
Teacher burnout	-.25	.12	-.21	-.18	.11	-.15
<i>R</i> ²		.13			.12	
<i>F</i> value for model (<i>N</i> = 104)		4.81			4.43	
Age	.01	.01	.13	.01	.01	.11
Grade	-.10	.04	-.27	-.11	.04	-.28*
Teacher efficacy	.26	.16	.16	.29	.18	.18
<i>R</i> ²		.11			.12	
<i>F</i> value for model (<i>N</i> = 102)		4.12			4.59	
Age	.01	.01	.12	.01	.01	.12
Grade	-.11	.04	-.29**	-.11	.03	-.31**
Administrative support	.25	.11	.23*	-.29	.10	-.27**
<i>R</i> ²		.13			.15	
<i>F</i> value for model (<i>N</i> = 110)		4.64			5.87	
Age	.01	.01	.13	.01	.01	.15
Grade	-.07	.04	-.19*	-.10	.04	-.25*
Curriculum training	.21	.10	-.21*	.09	.10	.09
<i>R</i> ²		.12			.10	
<i>F</i> value for model (<i>N</i> = 101)		4.28			3.76	
Age	.01	.01	.03	.01	.01	.03
Grade	-.10	.03	-.24*	-.10	.04	-.25*
Curriculum coaching	.25	.08	.32**	.21	.08	.27**
<i>R</i> ²		.16			.14	
<i>F</i> value for model (<i>N</i> = 96)		5.96			4.97	

**p* < .05.
***p* < .01.

Perceived quality of curriculum training was positively related to how well teachers felt they were implementing lessons ($R^2 = .12$, $p < .05$); however, no significant effects were found with curriculum training and how well teachers felt they were generalizing concepts. Perceived quality of ongoing coaching was positively related to both lesson implementation and generalization of concepts ($R^2 = .16$, $p < .01$, and $R^2 = .14$, $p < .01$, respectively).

Tests of significant interaction terms did not indicate any moderator effects of curriculum supports on either factor related to implementation quality.

Post Hoc Analyses

Contrary to our hypotheses regarding moderation, our analyses did not reveal any significant interactions or moderation effects.

That is, no significant interaction models were found, as indicated by a change in R^2 , when compared to a model without the interaction term. Rather, the results indicated significant direct associations among teachers' psychological experiences, curriculum supports, and implementation dosage and quality.

However, as we believed that such interaction effects may only occur at the highest or lowest levels of factors, such as experiencing weekly burnout or having a very unsupportive administration, a second set of analyses were conducted. These post hoc analyses used a "four-corners" analytical approach, which suggests that "jointly extreme observations are crucial for detecting effects" (McClelland & Judd, 1993, pp. 382–383). Applying the four-corners approach, we conceptualized "high-risk" factors as (a) high levels of burnout, (b) low levels of efficacy, and (c) low levels of curriculum support. We examined how various combinations of these risk factors would increase the probability of low levels of implementation dosage and quality. We defined the "high" and "low" levels of these factors as + or - 1 standard deviation from the mean. We compared the highest risk group (i.e., those with a combination of two "high-risk" factors) to the pooled lower risk groups. For example, those individuals who reported high levels of burnout (i.e., at or above +1 standard deviation) and low levels of administrative support (i.e., at or below -1 standard deviation) were considered to be in the highest risk group for that particular analysis. All other combinations were combined into the low-risk group.

We then employed a series of analyses of covariance comparing the two levels of risk. Age and grade level were included as covariates, and dependent variables included teachers' reports on individual items of implementation dosage (e.g., lessons and supplemental activities) and quality (e.g., delivery of lessons and generalizing concepts). Because of unequal cell sizes, we examined Type III sums of squares, and significant between-group findings were followed up using Tukey tests at $p < .05$ to compare group means.

We first present the results for implementation dosage and quality to examine how burnout may be moderated by administrative and curriculum supports. Similar findings are then reported related to teachers' efficacy. Table 5 displays all means and standard deviations by group; however, only significant findings are discussed in the text.

Moderating Effects of Burnout on Administrative Support, Training, and Coaching for Implementation dosage. A significant between-group effect emerged for teachers' risk group when combining the risk factors of administrative support and teacher burnout, $F(1, 97) = 3.77, p = .05$. Teachers with high burnout and low administrative support reported implementing significantly fewer supplemental activities than did teachers in the low-risk group ($M = 2.67$ and 3.14 , respectively). No significant effect was found with average lessons implemented (see Table 5).

A significant between-group effect also emerged for teachers' risk group when combining the risk factors of curriculum training and teacher burnout, $F(1, 97) = 7.32, p < .01$. Teachers with high burnout and low perceived curriculum support reported implementing significantly fewer PATHS lessons ($M = 3.04$) than did other teachers ($M = 3.73$). A similar effect was found for the risk group combining factors of curriculum coaching and teacher burnout, $F(1, 96) = 5.83, p < .05$. Teachers with high burnout and low perceived coaching support implemented fewer PATHS lessons than did other teachers ($M = 3.03$ and 3.68 , respectively). No significant effects were found with training or coaching and supplemental activities (see Table 5).

Moderating Effects of Burnout on Administrative Support, Training, and Coaching for Implementation quality. A significant between-group effect emerged for teachers' risk group when combining teacher risk factors of teacher burnout and administrative support, $F(1, 97) = 4.08, p < .05$. Teachers with high burnout and low administrative support reported feeling less well about their implementation of PATHS lessons ($M = 3.10$)

Table 5
Adjusted Means^a (With Standard Errors) for Implementation Dosage and Quality as a Function of Risk Group

Risk Groups: Psychological Experience × Curriculum Support	Implementation Dosage		Implementation Quality	
	Average Lessons	Average Supplementals	How well ... Lessons	How well ... Generalizing Concepts
Burnout × Administrative Support				
High-risk group	3.35 (0.09)	2.67 (0.11)*	3.10 (0.20)**	3.48 (0.20)
Low-risk group ^b	3.68 (0.18)	3.14 (0.21)	3.61 (0.10)	3.75 (0.10)
Burnout × Curriculum Training				
High-risk group	3.04 (0.24)**	2.77 (0.29)	2.76 (0.26)**	3.18 (0.25)*
Low-risk group ^b	3.73 (0.09)	3.11 (0.10)	3.62 (0.09)	3.77 (0.09)
Burnout × Curriculum Coaching				
High-risk group	3.03 (0.25)*	2.58 (0.29)	2.65 (0.26)**	2.98 (0.25)**
Low-risk group ^b	3.68 (0.09)	3.14 (0.11)	3.61 (0.10)	3.79 (0.10)
Efficacy × Administrative Support				
High-risk group	3.58 (0.32)	2.70 (0.38)	2.90 (0.35)	3.04 (0.34)*
Low-risk group ^b	3.61 (0.08)	3.06 (0.10)	3.55 (0.10)	3.75 (0.10)
Efficacy × Curriculum Coaching				
High-risk group	3.78 (0.51)	3.06 (0.59)	3.43 (0.54)	3.42 (0.53)
Low-risk group ^b	3.59 (0.09)	3.38 (0.10)	3.49 (0.10)	3.70 (0.10)
Efficacy × Curriculum Support				
High-risk group	3.56 (0.42)	3.06 (0.49)	3.05 (0.46)	3.30 (0.45)
Low-risk group ^b	3.65 (0.08)	3.21 (0.10)	3.54 (0.09)	3.72 (0.09)

^aMeans are adjusted for age and grade level.

^bLow-risk group reflects all other combinations of risk factors across all teachers.

*Significance between high and low risk group at $p < .05$.

**Significance between high and low risk group at $p < .01$.

than did other teachers ($M = 3.61$). No significant effect was found for generalizing concepts (see Table 5).

Two significant between-group effects also emerged for teachers' risk group when combining the risk factors of burnout and curriculum training on two factors of implementation quality, $F(1, 98) = 10.31, p < .01$, and $F(1, 97) = 4.75, p < .05$, respectively. Teachers reporting high burnout and low training support reported both lower quality implemen-

tation of lessons and generalization of concepts ($M = 2.76$ and 3.18 , respectively) than did other teachers ($M = 3.62$ and 3.77 , respectively).

Congruent with our hypotheses, two significant between-group effects emerged as well for teachers' risk group combining risk factors of teacher burnout and curriculum coaching, $F(1, 93) = 12.19, p < .01$, and $F(1, 92) = 8.72, p < .01$, respectively. Teachers with high burnout and low training support

reported lower quality lesson implementation and less concept generalization ($M = 2.65$ and 2.98 , respectively) than did other teachers ($M = 3.61$ and 3.79 , respectively).

Moderating Effects of Efficacy on Administrative Support, Training, and Coaching for Implementation Quality. In partial support of our hypotheses, only one significant between-group effect emerged between teachers' efficacy and other factors; the combination of risk factors efficacy and administrative support showed a between-group effect, $F(1, 96) = 4.08, p < .05$. Teachers with the lowest efficacy and low administrative reported less generalization of PATHS concepts ($M = 3.04$) than did other teachers ($M = 3.75$). No other significant effects of implementation dosage or quality were found with efficacy and curriculum training or coaching (see Table 5).

Discussion

The purpose of the current study was to examine how teachers' perceptions of both their work-related psychological experiences and supports were associated with their implementation of an evidence-based, social-emotional curriculum. In this study, two dimensions of implementation were examined: dosage and quality. Within each of these, teachers were asked to rate their implementation of different components of the curriculum that varied in terms of the degree to which they were considered central to the curriculum model. Similar to most educational curricula, PATHS is composed of lessons that contain the core content of the intervention. To achieve skill development in students, teachers are asked to conduct the lessons but also to extend the process of learning by generalizing the concepts, and whenever possible, conducting supplemental activities.

The findings indicated that both sets of factors were relevant but related to different aspects of teacher self-reported implementation. Teachers' psychological experiences were only related to their self-reported dosage of the PATHS supplemental activities. Teachers who experienced higher levels of burnout

were less likely to deliver these additional curriculum components, whereas those who reported higher levels of efficacy were more likely to deliver them. This finding parallels previous research on the negative effect of burnout on worker productivity (Freudenberger, 1974; Cherniss, 1980; Maslach & Jackson, 1981, 1984; Perlman & Hartman, 1982). Supplemental activities are a suggested, not required, component of PATHS, and as such provide a logical indicator of productivity. If teachers are burned out, they may be less likely to have the psychological energy needed to go beyond the bare minimum required of them, and in this case, to implement supplemental activities. They also may have less of a desire to try new activities perceived as an extra benefit to students. In contrast, teachers with higher levels of efficacy may be more willing to take on additional work for their students in the form of such activities. The findings regarding teacher psychological experiences suggest that different kinds of tasks included within interventions may be associated with higher and lower levels of productivity and should be more specifically examined by researchers.

Regarding administrative support, we found that when teachers perceived administrators supported curriculum implementation, they reported implementing curriculum lessons with greater quality and with more extensive generalization. However, administrative support was not related to implementation dosage. These findings were consistent with previous implementation research on the role of school principals and administrators (Brends et al., 2002; Rohrbach et al., 1993). In a previous study of the PATHS curriculum, it was the combination of administrative support and teachers' implementation quality that was associated with positive program outcomes (Kam et al., 2003). Administrative support for a curriculum signals its importance and priority to teachers. Teachers who perceive high levels of support from the leaders in their school may feel more conscientious about how they implement a curriculum or anticipate that it is a permanent innovation. This may in turn lead to higher quality implementation.

In addition to administrative support for PATHS, the current study examined two aspects of PATHS-specific professional development support (i.e., training and coaching) that have been shown to relate to implementation in the research literature. In general, the results supported the hypothesis that positive perceptions of training and coaching would be associated with both implementation dosage and implementation quality. Teachers who perceived the PATHS training as preparing them to implement the curriculum reported that they completed more PATHS lessons and that they delivered the lessons with quality. Perceptions of training were unrelated to the quality of generalization or the use of supplemental activities. When teachers perceived the curriculum coaching as useful, they were also more likely to report conducting both higher numbers of lessons and supplemental activities, and feeling more positively about how well they were implementing lessons and generalizing. Previous descriptive research on coaching has found that program deliverers, such as teachers, were more likely to implement the programs with greater fidelity if they received ongoing coaching during implementation (Fagan & Mihalic, 2003; Gager & Elias, 1997; Gottfredson & Gottfredson, 2002).

The findings that regard training and coaching may reflect the timing and focus of each of these professional development activities. PATHS trainings for this district were always delivered in the late summer prior to the first time that teachers were implementing the program in their classrooms. Their main goal was to prepare teachers to use the program effectively. This included providing an overview of the theoretical model and rationale for the program, the core content, and how the program facilitates student acquisition of social-emotional skills. Although generalization and the use of extension activities is covered in the trainings, it is difficult for teachers to fully appreciate the importance of these elements at the time of the training because they must first become oriented to the core of the program (i.e., the lessons) and work through the practicalities associated with integrating it with their ongoing instruction.

Teachers tend to have a much easier time implementing lessons because the format is familiar to them. The generalization of the curriculum concepts and supplemental activities takes more time to master, as they call for interactive problem solving, class meetings, or integration of the curriculum with reading and language arts curricula.

Unlike training, coaching extends across the academic year. This allows the coach to individualize support and to emphasize different elements of the program over time. Once teachers master the basic program delivery, coaches can provide feedback and support on how to foster student skill development by taking advantage of teachable moments that arise in the classroom. It is likely that teachers who perceive coaching as helpful use this support more than other teachers. This could lead to more extensive implementation of the program components in the form of generalizations and the use of supplemental activities. Future research should focus more attention on evaluating what aspects (e.g., amount, form, quality) of training and coaching support produce the highest quality implementation and the strongest student outcomes. This could be achieved by incorporating actual measures of coaching contacts, collecting coaches' ratings of the support process, or experimentally assigning teachers to receive different types or intensity of support.

Within elementary schools, there are clear differences in emphases and demands in the primary versus intermediate grades. Additional exploratory analyses found that teachers in higher grade levels reported lower levels of implementing lessons and generalizing concepts, as well as higher levels of administrative support. It is likely that teachers in the upper grade levels, especially in lower performing urban districts, have more pressures to focus on academic lessons and improve student achievement, as standardized testing most frequently occurs in grades 3 and above. When assessments are completed with kindergarten through Grade 2, most often they are completed as "practice" for later standardized testing and the results are not held to the same benchmarks as those in upper grades. Al-

though teachers in the upper grades reported more positive administrative support for implementation, they reported having less time for delivering lessons and perceived that they implemented with less quality. Therefore, it may be important to develop coaching support that is more specific to the needs of upper grade-level teachers.

In addition to examining direct relationships between teachers' perceptions of individual and organizational factors and ratings of their own implementation, the current study explored whether certain combinations of these factors interacted in unique ways to affect implementation dosage or quality. A series of variables that combined teachers' perceptions of their psychological experiences and curriculum support were created and tested individually as interaction terms in regression models with the complete sample. Using this linear approach, no moderation was found. This was not surprising given the relatively low levels of burnout and high levels of efficacy in the sample. To refine the test of this hypothesis, a subgroup approach was taken to isolate groups of teachers who were considered the most at risk because their psychological experiences reflected higher levels of distress (i.e., high burnout, low efficacy) and their perceptions of administrative and curriculum supports were low relative to the sample average. The findings suggested that high burnout was especially detrimental to implementation quality. On 8 of the 12 analyses, teachers who reported high levels of burnout and low levels of support reported the lowest levels of implementation dosage or quality compared to teachers with the other possible combinations of factors.

Interestingly, this was not the case for high-risk groups made with the combination of low efficacy and the three support variables. Only 1 of the 12 analyses comparing implementation outcomes of these two groups was significant; therefore, it was considered spurious. The PATHS curriculum was designed with teacher input so the structure is similar to other instructional materials used by teachers, and it does not require a high level of technical expertise to be implemented well. As such, it is unlikely to present a significant challenge to teachers or to be vulnerable to variation in

teachers' efficacy, especially when it has been used for many years within a district. It may also be that a lack of efficacy is not as harmful as the emotional burden of burnout. In this sample, the correlation between these variables was only $-.34$, which suggests that these are relatively independent constructs. Measures of both burnout and efficacy should be included in future research to further understand their effect on behavior in the workplace and potential interventions to maximize teacher wellness and productivity.

Study Limitations

One of the primary limitations of this study was that the research was based entirely on self-report measures. As the constructs of burnout, efficacy, administrative supports, and curriculum supports are all affected by self-perceptions, it is appropriate to measure these constructs via this method. However, our measures of implementation were also collected through teacher self-report, rather than by an observer, and previous research has found low levels of correspondence between teacher self-report and observed levels of implementation (Noell et al., 2005; Wickstrom, Jones, LaFleur, & Witt, 1998). To provide some validation for the use of self-report in the current study, we examined the relationship between similar teachers' self-reports of PATHS implementation and independent observations of PATHS implementation quality collected 1 year prior, using data available for a subsample of the teachers. Significant positive correlations were found between teachers' self-reported implementation and observers' independent ratings of these same teachers' implementation of the PATHS program for both dosage ($r = .22, p < .01$) and quality ($r = .23, p < .01$). Although these correlations are modest, they nonetheless indicate a statistically significant level of agreement between observer reports and teacher self-reports of implementation. As discussed previously, it is important not to assume that observer ratings are always the gold standard and that modest levels of correspondence between observers and teachers invalidate self-report data. Reports of how many lessons teachers deliver may also be accu-

rately assessed by teacher report, as a coach or other observer is not present each time a lesson is delivered. The most effective way to establish the validity of any source of implementation data is to include student outcomes and examine associations between these and the implementation ratings. Given the broad dissemination of evidence-based interventions that is underway in schools and the importance of monitoring implementation to ensure program outcomes, future studies should include (a) multiple methods of gathering implementation data, (b) monitor implementation repeatedly over time, and (c) assess student outcomes to identify the most reliable, valid, and cost-effective methods for use in school-based research.

A second limitation of this study was its cross-sectional methodology. It is impossible to determine the direction of effects or causality without longitudinal research. Therefore, the findings are reported as significant associations among various factors relating to curriculum implementation as opposed to factors that cause variation in implementation outcomes.

There was one unique aspect surrounding the curriculum implementation of the current study that may have affected teachers' experiences and reduced the ability to generalize the findings to other samples. The team that conducted the research has been in a long-term partnership with the school district where the study took place. Despite the high levels of poverty in the district and that many schools were designated as underperforming based on NCLB criteria, these schools have a history of using the PATHS curriculum that began over 8 years ago. The high response rate by teachers and their perceptions of the curriculum may have been affected in some way by this unique collaboration.

Conclusions

As schools expand the use of evidence-based programs to reduce learning barriers and promote student mental health, implementation research becomes more important for understanding the conditions necessary to maximize intervention effectiveness. Although the findings of the current study need to be repli-

cated and conducted with various types of measures, they suggest that teachers' psychological experiences and their perceptions of their workplace can be sources of stress that have the potential to undermine teaching effectiveness. Schools might consider expanding the role of support personnel to identify teachers who are experiencing significant workplace stress and consider providing interventions for teachers that reduce burnout and promote wellness.

The findings also indicated that teachers' perceptions of administrative support were related to how they rated their own quality of curriculum implementation. When implementing social-emotional or other preventive interventions, it is important for members of the administration to be aware of the role they play in creating a supportive implementation environment. They should attend trainings that are conducted and become familiar with the intervention model so that they understand what is being asked of teachers. Further, administrators should engage in collaborative problem solving with teachers to ensure the intervention's success. Future research should consider the development of additional intervention components that provide explicit strategies to enhance the role of administrators in supporting teachers during the implementation process.

In addition to administrative support, teachers implementing school-based interventions appear to benefit from curriculum supports. These supports take various forms and may be delivered through existing professional development structures or ones created for specific interventions. Regardless of their form, it is important that both the individuals delivering the support and those who plan and fund the professional development of teachers also are aware of their importance for the successful implementation of an intervention. With this knowledge, schools may be more inclined to allocate resources toward these supports, even when they are limited, and develop creative ways to sustain professional development. Some examples of self-sustaining support systems are master teachers who serve as mentors to new teachers implement-

ing the program for the first time, or small teams of teachers within school buildings who monitor implementation quality, represent the needs of their colleagues, and develop strategies to ensure program success. Districts might even consider setting aside some of the time allocated to professional development to conduct an internal conference that highlights the creativity and success of teachers using interventions. All of these strategies have the potential to address implementation challenges and maximize the effectiveness of curricula, which is the shared goal of researchers, practitioners, and teachers working in schools to improve student outcomes.

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Date Received: December 3, 2008

Date Accepted: August 24, 2009

Action Editors: Lisa Sanetti and Thomas Kratochwill ■

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