CLASSROOM BEHAVIOUR MANAGEMENT: THE EFFECTS OF IN-SERVICE TRAINING ON ELEMENTARY TEACHERS' SELF-EFFICACY BELIEFS[1]

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ABSTRACT. We examined a training program in classroom management in relation to the efficacy beliefs of elementary school teachers. The training program used a quasi-experimental design with a waitlist control group. Twenty-seven elementary school teachers in the greater Quebec City area participated. The repeated measures ANOVA results revealed positive effect of the program on teachers' personal teaching efficacy beliefs, and in the teachers' perceived self-efficacy in managing difficult behaviours in the classroom. A group by time interaction effect was also observed with regard to the teachers' perceived self-efficacy in eliciting principals' support where participating teachers were more confident in their interactions with principals at follow-up. Factors that influence the development of self-efficacy beliefs of teachers and implications for practice are discussed.

LA GESTION DES COMPORTEMENTS EN CLASSE: EFFETS D'UNE FORMATION CONTINUE SUR LE SENTIMENT D'AUTOEFFICACITÉ DES ENSEIGNANTS DU PRIMAIRE

RÉSUMÉ. Les effets d'une formation continue des enseignants du primaire en matière de gestion des comportements en classe sur le sentiment d'autoefficacité des enseignants ont été étudiés. À partir d'un devis quasi-expérimental avec groupe témoin, 37 enseignants du premier cycle du primaire de la ville de Québec ont participé aux activités de formation continue. Les analyses de variance à mesures répétées révèlent un effet positif du programme sur le sentiment d'efficacité personnelle des enseignants et sur le sentiment d'efficacité personnelle à gérer les comportements difficiles des élèves en classe. Un effet d'interaction temps-groupe a aussi été observé au niveau du sentiment d'efficacité personnelle des enseignants à susciter le soutien de la direction de l'école. Les facteurs qui influencent le développement des croyances d'efficacité personnelle des enseignants et des implications pour la pratique sont aussi discutés.

The educational practices of teachers have a significant impact on student behaviour by directly affecting teacher-student relationships, the type of learning activities used, and collaborations with parents, colleagues, and with the

principal. Research has enabled us to better understand the factors that influence teachers' practices in relation to issues of classroom management and especially in addressing difficult student behaviours. Teacher preparation and their sense of efficacy are influential in the process of building a harmonious classroom dynamic. This article presents the results of an in-service training program aimed at promoting better classroom management by focusing on developing elementary school teachers' professional competencies in working with students who display difficult behaviours. Generally, we examined the effect of this training program on teachers' self-efficacy beliefs, and, more precisely, on their perceived self-efficacy in managing difficult student behaviour.

THEORETICAL FRAMEWORK

Self-efficacy theory

According to socio-cognitive theory, self-efficacy is defined as the belief in one's abilities to attain a particular goal based on their own actions (Bandura, 2007). Thus, self-efficacy is based on a person's beliefs and on their expectations with regard to a desired outcome. Bandura (2007) discussed the results of numerous studies that highlight the impact of self-efficacy beliefs on performance even in relatively homogeneous groups. However, it is important to note that self-efficacy beliefs do not develop in a vacuum and that they are shaped by context as well as by emotional / physiological factors.

In education, the concept of teacher efficacy was developed by Armor et al. (1976) and was further elaborated by Berman, McLaughlin, Bass, Pauly, and Zellman (1977), Ashton and Webb (1986), and by Gibson and Dembo (1984). Other influential work includes Denham and Michael (1981), Soodak, Podell, and Lehman (1998), and Woolfolk and Hoy (1990). According to Bandura (2003), teacher efficacy is a combination of general teaching efficacy and personal teaching efficacy. General teaching efficacy refers to the broad conception that teaching guides students toward success despite familial influences, socioeconomic status, and other environmental factors. Personal teaching efficacy refers to a teacher's beliefs in his or her own teaching abilities.

These individual beliefs occur within a context that further influences general and personal teaching efficacy beliefs. For example, Ashton (1984) found that the development of collective teaching efficacy (Bandura, 2007) - the notion that teachers can work collaboratively with a variety of partners to promote learning regardless of contextual barriers - was hindered when teachers felt isolated and powerless, and when they perceived a lack of support from their colleagues. Thus, it is likely that classroom management and the ability to address difficult classroom behaviours will be influenced by the level of support and collegiality of the school environment.

Teachers' efficacy beliefs, educational practices, and student achievement

Research has shown that a connection exists between teachers' self-efficacy beliefs, educational practices, and student achievement. This effect is cross-disciplinary as a strong sense of self-efficacy is associated with a greater level of student achievement in reading, arts, social sciences (Anderson, Greene & Loewen, 1988; Armor et al., 1976; Ashton & Webb, 1986; Ross, 1992), and in mathematics (Ashton & Webb, 1986; Ross & Cousins, 1993).

The relationship between the teachers' perceptions of students with behavioural difficulties and their own beliefs with regard to self-efficacy have also been well examined. These attitudes regarding students who display difficult behaviours influence the choice of interventions (Ghaith & Yaghi, 1997; Gordon, 2001; Milner, 2002), the willingness to welcome these students, and beliefs regarding student success (Baker, 2005; Gordon, 2001; Poulou & Norwich, 2002; Skaalvik & Skaalvik, 2007; Woolfolk, Rosoff, & Hoy, 1990). Teachers who possess a stronger perceived teaching self-efficacy are more open to new ideas and more inclined to experiment with new approaches in class (Cousins & Walker, 2000; Guskey, 1988; Stein & Wang, 1988; Tschannen-Moran & Woolfolk Hoy, 2001). These teachers are also more likely to work collaboratively to support the growth of their students' intrinsic motivation and self-control, and to adapt their expectations to the specific needs of their students (Baker, 2005; Gibson & Dembo, 1984; Melby, 1995; Rimm-Kaufman & Sawyer, 2004).

Other studies have reported that teachers with a low personal teaching efficacy spend more time on non-curricular activities, are more critical of their students' difficulties, and are more likely to manage their classrooms through strict behavioural control and punishments (Woolfolk & Hoy, 1990; Woolfolk et al., 1990). According to Gordon (2001), a strong sense of personal teaching efficacy also helps teachers to better manage their own emotions and behaviours. Teachers with higher personal teaching efficacies had better emotional control, stress management, and consequently, they were less likely to resort to using punishments as a way of managing difficult behaviours in their classrooms.

Some studies have examined the relationship between teachers' efficacy beliefs and their collaborative practices. Research has revealed that the greater the sense of self-efficacy, the easier it is for teachers to ask their colleagues for help (Baker, 2005; Gibson & Dembo, 1984; Melby, 1995). Moreover, the more they feel supported, the more flexible they are with regard to choosing intervention strategies and to managing a variety of difficult behaviours (Baker, 2005; Gibson & Dembo, 1984; Treder, Morse, & Ferron, 2000).

Teacher training, educational practices, and self-efficacy

According to Blaya and Beaumont (2007), pre-service teacher training provides very little in terms of behaviour management in class, which may explain why

most teachers feel underprepared and are often overwhelmed by the number of challenges they face when they begin teaching (Begeny & Martens, 2006; Conseil des ministres de l'Éducation des provinces canadiennes, 2002; Conseil supérieur de l'éducation, 2001; Couture, 2005; Jeffrey & Sun, 2006; Ndoreraho & Martineau, 2006; Rosenberg, Sindelard, & Hardman, 2004; Royer, 2006). Once in service, teachers have the possibility of continuing their training by participating in personal development activities and seminars or by pursuing graduate studies. Researchers have demonstrated that in-service training can have a positive impact on both teaching practices (Behnke, 2006; Evertson, 1989; Raver et al., 2008; Roelofs, Veeman, & Raemaekers, 1994; Veenman, Lem, & Roelofs, 1989) and efficacy beliefs (Lewis, 2001; Ross & Bruce, 2007).

Two important considerations are essential to designing effective in-service training programs aimed at shaping teachers' efficacy beliefs: (1) how do efficacy beliefs develop? and (2) what content to choose?

Researchers examining the development of efficacy beliefs have highlighted that these beliefs are most flexible during pre-service training (Housego, 1992; Hoy & Woolfolk, 1993, Woolfolk Hoy & Burke-Spero, 2005), and progressively more resistant to change with experience (Anderson et al., 1988; Ohmart, 1992; Ross, 1994; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998). Teachers with the least amount of experience also tend to report low self-efficacy with regard to managing difficult classroom behaviours (Carter, Cushing, Sabers, Stein & Berliner, 1988). Further, teachers who work alone, who do not participate in decisions, and who are not solicited to collaborate with their peers are most likely to have a low general teaching efficacy, even if they possess a strong personal teaching efficacy (Beady & Hansell, 1981; Hoy & Woolfolk, 1993). Some research points to the importance of directly addressing the notion of efficacy beliefs in in-service teacher training programs (Ohlhausen, Meyerson, & Sexton, 1992; Stein & Wang, 1988) to have a positive impact on classroom management. This component is all the more important for the groups of teachers who are the most resistant to modifying how they manage their classrooms as they are also less inclined to pursue professional development activities and to collaborate with their colleagues (Raver et al., 2008).

Teacher training and classroom management

Teachers must be very well prepared to work effectively with students who display behavioural difficulties. Recent research confirms the importance of addressing these difficulties in the school environment as early as possible so as not to maintain and aggravate behaviours of opposition, aggression, and social isolation (Dishion & Patterson, 2006; Keenan, 2003; Kellam, Rebok, Lalongo & Mayer, 1994). Hamre and Pianta (2005) found that first-grade students who were considered to be "at-risk" in kindergarten, but who experienced first grade in a welcoming, well-structured setting fared better than expected in both academic and social realms. These findings add further

credence to the fact that a positive climate and the presence of a teacher who is both capable and caring are associated with positive child outcomes for children displaying behavioural difficulties (Myers & Pianta, 2008; Skinner, Zimmer-Gembeck, Connell, Eccles, & Wellborn, 1998). On the other hand, conflicts between the teacher and the child tend to predict the development behaviour problems in later years (Hamre & Pianta, 2001; Ladd & Burgess, 2001). Thus, the first years of elementary school are pivotal to promoting positive behavioural development in the classroom and teachers can positively impact the behavioural trajectory of students who are considered to be at-risk for developing behavioural difficulties (Myers & Pianta, 2008).

Implementing a Positive classroom Behaviour Management (PBM) training program

In this study, an in-service training program in positive classroom behaviour management (PBM) elaborated by Gaudreau (2012) was developed based on research in this domain. The bodies of literature on classroom management (Archambault & Chouinard, 2005, 2009; Beaman & Wheldall, 2000; Doyle, 2006; Evertson & Emmer, 2009; Evertson & Weinstein, 2006; Jones & Jones, 2007) and on behavioural difficulty prevention (Bertsch, Houlihan, Lenz & Patte, 2009; Boynton & Boynton, 2009; Canter & Canter, 2001; Jolivette & Steed, 2010; Kauffman, Mostert, Trent & Pullen, 2006; Massé, Desbiens & Lanaris, 2006) were consulted to inform the design of the program.

The program was designed for teachers in the early elementary years to be in line with research on the early influence of positive classroom management practices. The format and related activities focused on supporting the development of a strong perceived teaching self-efficacy (Ross, 1994; Ross & Bruce, 2007). According to Bandura's social cognitive theory (Bandura, 1977, 1986), a teacher's self-efficacy develops (a) when they experience success (mastering); (b) when they see their peers succeeding (vicarious experience); (c) when they are encouraged to try new practices (social persuasions); and (d) when they experience less stressful teaching situations over which they feel they have more control (physiological factors).

Our training program was designed to promote the sharing of experiences with other teachers (vicarious experience; see Fritz, Miller-Heyl, Kreutzer, & MacPhee, 1995; Poulou, 2007 for discussion in relation to pre-service teachers), classroom experimentation (mastering; see Bandura, 1977, 1986, 2007 for discussion in relation to experienced teachers), and reflective activities on teaching practices so as to develop better emotional control during the interventions with students (psychological and physiological state), as well as to capitalize on positive feedback incorporating frequent encouragement (peer support; see Tschannen-Moran & Woolfolk Hoy, 2007 for discussion in relation to new teachers) throughout the training activities. In between training session, the teachers were also asked to study selected readings from

their program notes, to try new educational approaches in class, and to share their experiences with the colleagues in their group.

As presented in Table 1, the PBM program (Gaudreau, 2012; Gaudreau, Royer, Beaumont, Frenette, 2012) examined in this study was divided into eight three-hour thematic sessions, with case studies and group activities to discuss the literature, to share experiences, and to reflect on the teachers' respective practices. A private, virtual community of practice was also created on the school district's on-line portal to facilitate exchange between the participants and to encourage collaborations. This tool was also useful to communicate practical information relative to the training sessions or to share additional resources.

TABLE 1. *PBM program workshop themes*

Month	Themes
October	Classroom management: Preventing is better than punishing In-class prevention measures
November	Classroom management profile Observation and identification of difficult classroom behaviours Characteristics of students with behavioural difficulties
December	Functional behavioural analysis Individualized intervention
January	Non-aversive intervention techniques Exemplary practices
February	Students with ADHD: Intervention
March	Aggressive behaviour in young students Oppositional behaviour: Intervention Crisis intervention
April	Stress management Collaborating and communicating with parents
May	Developing social skills

Research objectives

Using a quasi-experimental approach with one pre-test, two post-tests, and a waitlist control group, we sought to evaluate the effects of the PBM program on teachers' general efficacy beliefs and on their personal teaching efficacy in specific contexts. The following research questions were addressed.

Does participating in the PBM training program have a positive impact on participants':

- general teaching efficacy?
- personal teaching efficacy?
- perceived self-efficacy in managing difficult student behaviours?
- perceived self-efficacy in eliciting support from peers?
- perceived self-efficacy in eliciting support from principals?

METHODOLOGY

Participants

Our study took place in one school district located in the greater Québec City area with 210 Grade 1 and Grade 2 teachers (199 women and 11 men) from 48 elementary schools of notably different socioeconomic status (deprivation index from 1 to 10). During the recruitment process, the participants filled out a personal information sheet and signed a consent form approved by the *Université Laval* Research Ethics Committee. The district elementary school principals were also informed of the study in writing.

A total of 56 teachers volunteered to participate in our study and were randomly assigned to either the experimental group (n = 30) or the waitlist control group (n = 26). In order to obtain groups with similar characteristics, the following variables were controlled during the assignment: school of origin (cluster assignment), grade level, level of experience in special education, age, years of teaching experience, and school deprivation rating. Five participants dropped out of the study for health reasons prior to the first post-test (three from the experimental group and two from the control group). Table 2 presents the participants' characteristics. Chi^2 and t-tests revealed no significant differences between the two groups. The experimental group of teachers participated in the training activities during the 2008-2009 school year, while the waitlist control group received the pre and post-tests in 2008-2009 but were offered the training program in 2009-2010 (as is typical practice with waitlist control designs where treatment is offered to the control group if the treatment has been proven effective).

Instruments

L'Échelle d'Auto-Efficacité des Enseignants (Dussault, Villeneuve & Deaudelin, 2001), the French-Canadian version of the Teacher Efficacy Scale (Gibson & Dembo, 1984), was used to evaluate the two main dimensions of teacher self-efficacy (personal teaching efficacy [PTE], and general teaching efficacy [GTE]). A modified version of the scale, consisting of 16 statements to which each teacher provided an opinion on a Likert-type scale from 1 (totally disagree) to 6 (totally agree), was used for this study. In particular, items #1 and #15 were removed as they were deemed to be problematic (Crocker & Algina, 1986; Dussault et al., 2001). Table 3 presents the two evaluated dimensions.

TABLE 2. *Teacher characteristics*

Characteristics	Total sample (n = 51)	Experimental group (n = 27)	Control group (n = 24)	Comparison tests
Age Mean (SD)	40.08 (8.15)	38.48 (7.36)	41.88 (8.77)	t = -1.502
Teaching experience Mean (SD)	13.85 (6.92)	12.67 (6.39)	15.17 (7.37)	t = -1.298
GENDER Female Male	49 2	25 2	24 0	$\chi^2_{(1)}$ = 1.850
GRADE 1 2 1 and 2	21 25 5	14 11 2	7 14 3	$\chi^2_{(2)}$ = 2.726
PARTICIPATION Only participant With one colleague With two colleagues With three colleagues	14 12 13 12	8 4 7 8	6 8 6 4	$\chi^2_{(3)}$ = 2.863
Deprivation index Mean (SD)	4.65 (2.47)	4.89 (2.19)	4.38 (2.57)	t = 0.771

NOTE. SD= Standard deviation *p > .05

TABLE 3. *Characteristics of the teacher interpersonal self-efficacy scale*

Subscales (evaluated dimensions)	Items	Internal consistency (α)			Mean (SD)		
		T1	T2	T3	T1	T2	T3
PTE	8	0.75	0.83	0.81	33.37 (4.70)	36.14 (4.92)	36.29 (4.61)
GTE	5	0.63	0.77	0.81	18.73 (3.60)	18.84 (3.81)	18.92 (4.02)

NOTE. SD = Standard deviation; T1 = pretest; T2 = 1rst posttest; and T3 = 2nd posttest (n = 51)

The Teacher Interpersonal Self-Efficacy Scale (Brouwers & Tomic, 2001), was translated into French by "Author" (*Échelle d'Auto-Efficacité des Enseignants sur le Plan Interpersonnel*, 2008b) in accordance with the method proposed by Vallerand (1989) (see Table 4). It was used to evaluate the effects of the PBM program on three dimensions: perceived self-efficacy in managing student

behaviour (PSE-MB), perceived self-efficacy in eliciting collegial support (PSE-CS), and perceived self-efficacy in eliciting principals' support (PSE-PS). The translated scale enabled us to use contextualizing (see Bandura, 2007; Brouwers & Tomic, 2001; Emmer & Hickman, 1991) to evaluate these dimensions of teacher self-efficacy. The scale consists of 24 items that measure a teacher's perceived personal and interpersonal efficacy in school on a Likert-type scale from 1 (totally disagree) to 6 (totally agree). Table 5 presents the properties of this scale. As in the original English version, item #10 of subscale PSE-MB was removed due to its poor psychometric qualities (item-total correlation < 0.20; Crocker & Algina, 1986).

Procedure

The teachers in the experimental group participated in the PBM training program between October 2008 and May 2009 at the rate of one session every five weeks. All of the training activities and supervision stipulated in the PBM program (Gaudreau, 2012) were provided to the teachers.

Each of the eight thematic workshops lasted three hours and was led by the author who was a special education consultant for the school district at the time. The integrity and reliability of the intervention were accounted for in different ways. First, following each workshop, the participants were asked to provide feedback by filling out a workshop evaluation questionnaire. The completed questionnaires (eight in total) from the 27 participants demonstrated the integrity of the planned activity. Second, the participants completed a program appraisal at the end that examined the effectiveness of the different training activities (training workshops, in-class experimentation, readings, discussions with peers, and reflective practice). Third, the author completed field notes for each completed training activity. Finally, an education consultant was present during two randomly chosen workshops to observe and to provide feedback on progress and on training activities using the training plan outlined in the training manual as a checklist.

Analysis procedure

A quasi-experimental method with a pretest, two posttests, and a waitlist control group was implemented. The two previously mentioned self-efficacy scales were used to evaluate the effects of the PBM training program on its participants. The experimental group completed these rating scales prior to the training (September 2008), after (June 2009), and at the end of the summer (September 2009). The control group completed these rating scales at the same times, but completed their training in the year following the study. The first post-test served to determine the impact of the training program, while the second enabled us to verify the stability of this impact.

TABLE 4. *Transcultural validation of the teacher interpersonal self-efficacy scale*

Procedure (Vallerand, 1989)	Actions
1) Preliminary version by reverse translation	Translation into French by a professional translator. Translation into English by a 2nd professional translator.
2) Evaluation of preliminary version and preparation of an experimental version with committee-type approach	Adaptation of divergent items to respect the original meaning in the language spoken in Québec. Steps undertaken by student researcher, 2 psychologists, and special education counselors.
3) Pretest of the experimental version using survey method	10 people (teachers et education counselors) evaluated, on a scale from 1 to 7, the clarity of each item of the experimental version. Two modifications were made (synonyms to better convey the meaning).
4) Concomitant validity and content validity via bilingual participant approach	The original scale (English version) was administered to 4 bilingual teachers. One week later, they completed the experimental version (French version). Results comparison: 2 participants responded identically to the 2 scales, while the other 2 responded identically to 92% of the items, with a difference of one point.

5) Internal coherence analysis to verify reliability	Reliability analysis performed with a group of pre-service teachers (n = 37), producing similar results for the 3 dimensions :
	• PSE-MB: English version $\alpha = 0.91$*
	  French version $\alpha = 0.93$
	• PSE-CS: English version $\alpha = 0.90$*
	  French version $\alpha = 0.92$
	• PSE-PS: English version $\alpha = 0.94$*
	  French version $\alpha = 0.91$

6) Construct validity test	Due to the small number of respondents, this step was not performed.
7) Establishment of norms by the chosen population and the statistical indications	The means and standard deviations are presented in Table 5.

NOTE. * Value of the internal consistency coefficient, from Brouwers and Tomic (2001).

Initial analyses were performed to determine if the experimental and waitlist control groups differed on the variables of interest. Independent group t-tests were performed on the five dependent variables and no significant differences were found prior to the experimentation. Consequently, controlling for initial differences between the groups during analysis was deemed unnecessary in further analyses.

TABLE 5. *Characteristics of the teacher interpersonal self-efficacy scale*

Subscales (evaluated dimensions)	Items	Internal consistency (α)			Mean (SD)		
		T1	T2	T3	T1	T2	T3
PSE-MB	13	0.90	0.92	0.93	58.33 (7.50)	62.31 (7.89)	62.94 (7.65)
PSE-CS	5	0.93	0.93	0.97	26.57 (4.13)	27.27 (3.39)	27.50 (3.59)
PSE-PS	5	0.92	0.93	0.94	24.59 (4.43)	24.88 (4.03)	25.50 (3.98)

NOTE> SD = Standard deviation; T1 = pretest; T2 = 1st posttest; and T3 = 2nd posttest (n = 51)

Determining the impact of the PBM training program on teachers' efficacy beliefs was achieved by means of repeated measures analysis of variance based on the general linear model (GLM). The mean variance was calculated in order to obtain the deviation (intergroup variance) and to compare it with the variance within each group (intragroup variance). This analysis also allowed for a study of the possible interactions between various factors, namely, the time*group effect.

Five 3X2 Repeated Measures ANOVAs were performed. The dependent variables were personal teaching efficacy (PTE), general teaching efficacy (GTE), teachers' perceived self-efficacy in managing student behaviour (PSE-MB), teachers' perceived self-efficacy in eliciting collegial support (PSE-CS), and teachers' perceived self-efficacy in eliciting principals' support (PSE-PS); the independent variables were time (pre-experimentation [T1], at the end of the training program [T2], and three months later [T3]), and group (experimental or control). The effects of the program were measured by comparing the rating scale results according to (a) test period (T1 vs. T2 and T1 vs. T3) by using a contrast test with the pretest as the reference, and (b) group (experimental vs. control) at the three test periods. One-tailed probability values were chosen since previous research pointed to the positive impact of the PBM program on teachers' efficacy beliefs.

RESULTS

Table 6 presents the means and standard deviations for the five subscales under study at the three test periods as well as the repeated measures ANOVA results for the dependent variables.

Impact of the PBM training on Personal Teaching Efficacy (PTE)

The repeated measures ANOVA results on dependent variable PTE revealed a significant difference in terms of time ($F_{(2.46)}$ = 17.572, $p < .001$, η_p^2 = 0.433), as

well as the presence of a significant time*group effect ($F_{(2.46)}$ = 22.524, p < .001, η_p^2 = 0.495) and a significant difference between the two groups ($F_{(1.47)}$ = 8.063, p < .01, η_p^2 = 0.146). The Levene test to assess homogeneity of variance was respected for each test period (Figure 1).

TABLE 6. *Results of the self-efficacy rating scales and the repeated measures ANOVAs on the dependent variables*

| Subscale | Time | Means (SD) | | F | df | p^* | η^2 |
		PBM Group (n = 27)	Control Group (n = 24)				
PTE	T1	32.96 (4.27)	33.83 (5.21)	17.57	2.46	.000	.433
	T2	38.74 (4.23)	33.21 (3.93)	8.06	1.47	.003	.146
	T3	38.54 (3.46)	33.74 (4.47)	22.52	2.46	.000	.495
GTE	T1	18.78 (3.12)	18.67 (4.15)	0.02	2.46	.491	.001
	T2	19.59 (3.15)	18.00 (4.35)	1.04	1.47	.156	.022
	T3	19.38 (4.08)	18.39 (3.97)	1.05	2.46	.179	.044
PSE-MB	T1	57.74 (7.60)	58.96 (7.66)	10.87	2.47	.000	.316
	T2	65.59 (6.75)	58.87 (7.63)	4.68	1.48	.001	.089
	T3	65.89 (6.74)	59.48 (7.29)	9.36	2.47	.000	.285
PSE-CS	T1	26.93 (3.81)	26.22 (4.60)	1.17	2.47	.159	.047
	T2	28.26 (3.06)	26.43 (3.27)	2.81	1.48	.050	.055
	T3	28.26 (2.57)	26.61 (4.40)	0.46	2.47	.159	.019
PSE-PS	T1	24.11 (3.77)	25.13 (5.22)	1.64	2.47	.102	.065
	T2	25.96 (3.56)	23.78 (4.32)	0.66	1.48	.209	.014
	T3	26.15 (3.89)	24.74 (4.04)	6.65	2.47	.001	.221

NOTE. SD = Standard deviation; T1 = pretest, time effect; T2 = 1ˢᵗ posttest, group effect; T3 = 2ⁿᵈ posttest, time*group effect; * = One-tail signifiance test

The Mauchly sphericity test results reveal no difference with regard to the variance over time ($W_{(2)}$ = 0.985, p > .05). The intra-subject analyses (sphericity-presumed) show a difference in terms of time ($F_{(2.94)}$ = 19.538, p < .001, η_p^2 = 0.294) as well as a difference in the time*group interaction ($F_{(2.94)}$ = 24.42, p < .001, η_p^2 = 0.342). Specifically, the contrast analyses confirm a significant difference between the pretest and the first post-test ($F_{(1.47)}$ = 28.776, p < .001, η_p^2 = 0.380) and between the pretest and the second post-test ($F_{(1.47)}$ = 27.393, p < .001, η_p^2 = 0.368). These analyses also indicate a significant difference in the time*group interaction between the pretest and the first post-test ($F_{(1.47)}$ = 41.46, p < .001, η_p^2 = 0.469) and between the pretest and the second post-test ($F_{(1.47)}$ = 29.169, p < .001, η_p^2 = 0.383).

These findings thus enable us to confirm that the teachers in the experimental group significantly developed their personal teaching efficacy after having followed the PBM training program. This increase was considered significant compared to that of the control group and was maintained over time.
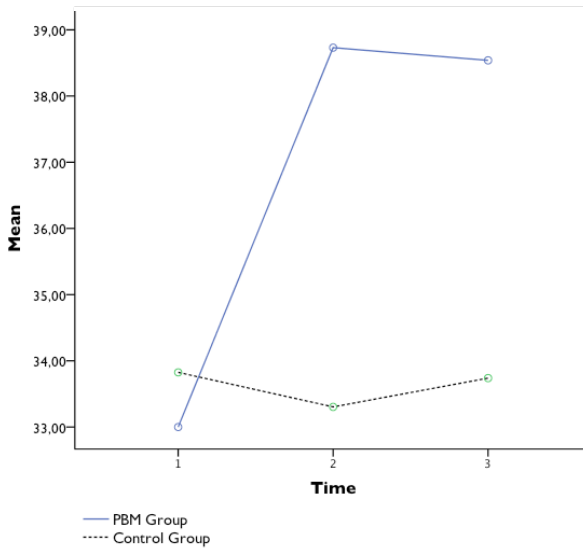
FIGURE 1. *Evolution of the personal self-efficacy by group over time*

Impact of the PBM training program on teachers' perceived self-efficacy in managing student behaviour (PSE-MB)

The results of the repeated measures ANOVA on dependent variable PSE-MB show a significant difference over time ($F_{(2.47)}$ = 10.87, p < .001, η_p^2 = 0.316) as well as the presence of a significant time*group effect ($F_{(2.47)}$ = 9.355, p < .001, η_p^2 = 0.285). We also report a significant difference between the two groups ($F_{(1.48)}$ = 4.684, p < .05, η_p^2 = 0.089). The Levene test for homogeneity of variance was respected for each test time (Figure 2).

The Greenhouse-Geisser adjustment was retained for the intra-subject analyses, as the Mauchly sphericity test showed a difference concerning the variance over time ($W_{(2)}$ = 0.648, p < .001) (Tabachnick & Fidell, 2006). These intra-subject analyses reveal a difference over time ($F_{(1.479; 71.006)}$ = 17.084, p < .001, η_p^2 = 0.262) as well as a difference in the time*group interaction ($F_{(1.479; 71.006)}$ = 15.205, p < .001, η_p^2 = 0.241). Specifically, the contrast analysis results indeed confirm a significant difference between the pretest and the first post-test ($F_{(1.48)}$ = 17.287, p < .001, η_p^2 = 0.265) and between the pretest and the second post-test ($F_{(1.48)}$ = 22.062, p < .001, η_p^2 = 0.315). The contrast analyses also show a significant difference in the time*group interaction between the pretest and the first posttest ($F_{(1.48)}$ = 18.071, p < .001, η_p^2 = 0.274) and between the pretest and the second post-test ($F_{(1.48)}$ = 17.071, p < .001, η_p^2 = 0.262).

To summarize, the results show that the teachers who participated in the PBM program developed a greater perceived self-efficacy in behaviour management.

This increase was significant compared to that of the control group and was maintained over time.
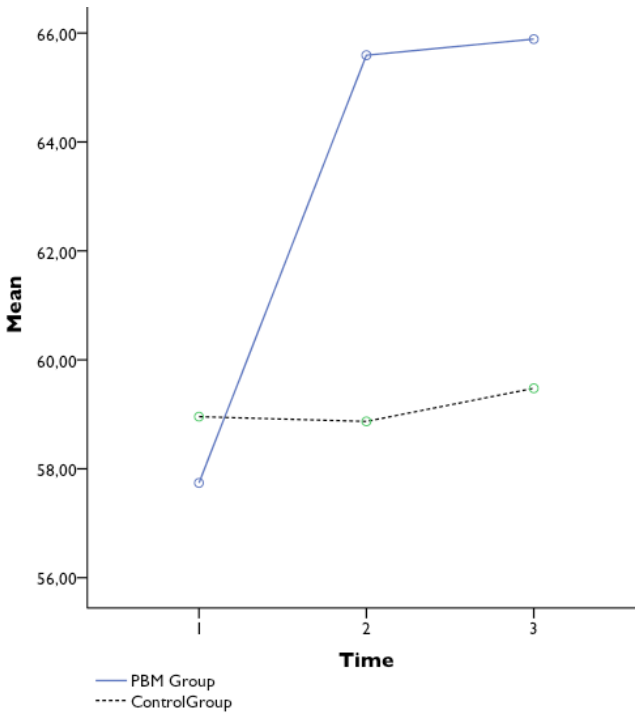

FIGURE 2. *Evolution of the teachers' perceived self-efficacy in managing student behaviour by group over time*

Impact of the PBM training on teachers' perceived self-efficacy in eliciting principals' support (PSE-PS)

The ANOVA results on dependent variable PSE-PS reveal no significant difference over time ($F_{(2.47)}$ = 1.64, p = 0.1, η_p^2 = 0.065), although the presence of a significant time*group interaction effect was recorded ($F_{(2.47)}$ = 6.649, p < .01, η_p^2 = 0.221). The results according to group also indicate no significant difference ($F_{(1.48)}$ = 0.664, p > .05, η_p^2 = 0.126) and the Levene homogeneity of variance test was respected for each test time.

The sphericity test results indicate no difference in terms of the variance over time ($W_{(2)}$ = 0.995, p > .05). The intra-subject analyses (sphericity-presumed) show only a difference in the time*group interaction ($F_{(2.96)}$ = 6.897, p = .001, η_p^2 = 0.126). Specifically, the contrast analyses show a significant interaction effect over time but only between the pretest and the first post-test ($F_{(1.48)}$ = 12.914, p < .001, η_p^2 = 0.212) (Figure 3).

In summary, our results indicate a time*group interaction between the pretest and the first post-test. Although no difference between the two groups was identified for dependent variable SPE-SP on the pretest, the control group recorded a slightly higher average. On the first post-test, the reverse was observed, leading to the interaction.
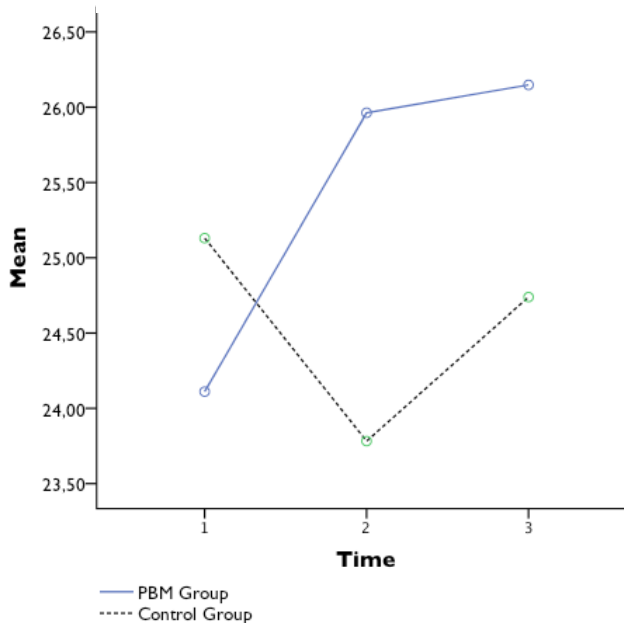

FIGURE 3. *Evolution of the teachers' perceived self-efficacy in eliciting principals' support by group over time.*

DISCUSSION

We examined the impact of the PBM in-service training program on several variables associated with teacher self-efficacy and sought to determine whether this program supported the development of strong efficacy beliefs in teachers participating in professional development.

The results demonstrated that participation in the PBM training activities promote a stronger personal teaching self-efficacy and perceived efficacy in managing behavioural difficulties in the classroom. These findings may be explained in different ways. To begin, this training program centers primarily on classroom and behaviour management and is likely to be linked with a greater understanding of students with behavioural difficulties, and effective intervention practices that help to develop more flexibility in relation to these students and to the situations that may arise in class (Gordon, 2001; Raver et al., 2008).

The PBM training program also specifically addresses emotional management within the context of intervention. Activities that allow for exchange and for the reflective analysis of one's practice are key factors in the development of solid efficacy beliefs in classroom management, as they help teachers to gain perspective on classroom situations that may be stressful such as oppositional behaviours. By planning effective intervention strategies, teachers can arm themselves with a stronger feeling of personal efficacy to deal with these difficult situations and are ultimately better equipped to create new cognitive constructions to guide their actions (Bandura, 2007). As reported by Tschannen-Moran and Woolfolk Hoy (2007), this may reduce the level of stress associated with feelings of not being in control.

The variety of authentic situations experienced by the teachers in the training sessions likely also contributed to the development of greater self-efficacy with regard to classroom and behaviour management. The program's activities related theoretical content to concrete in-class application which, according to Raver et al., (2008), is effective in supporting teachers in their professional development. Furthermore, the participants were strongly encouraged to experiment with these new techniques and to share their experiences with their peers during the training sessions. This educational format may have enabled them to experience opportunities for positive feedback in a supportive environment with other participating teachers (vicarious experiences and social persuasions), which are powerful promoters of self-efficacy, as reported by Bandura (2007), Fritz et al. (1995), Poulou (2007), and Tschannen-Moran and Woolfolk Hoy (2007). The PBM program not only required 24 hours of participation spread out over an entire school year but also offered a series of supervision and support measures (homework, readings, portal), which further supports its use in professional development (Bissonnette & Richard, 2010; Stein & Wang, 1988). The numerous guided activities in each workshop encouraged the participants to reflect on their practice, to question their current strategies, and to try new approaches. To explain the results, the considerable emphasis on educational practices that support the implementation of various sources of efficacy and the focus on the importance of keeping an open mind with regard to students with behavioural difficulties seemed to offer optimal conditions for success (Fritz et al., 1995; Poulou, 2007; Tschannen-Moran and Woolfolk Hoy, 2007).

As for the evolution of the teachers' perceived self-efficacy in eliciting principals' support, the results showed a significant time*group interaction effect between the beginning and the end (first post-test) of the training program. However, following the summer hiatus (second post-test), this interaction effect was not significant. This suggests that during the school year, the teachers in the control group experienced a decrease in their confidence in terms of seeking the support of their principal, while the experimental group experienced increased confidence. It is thus possible that the PBM workshops acted as a

buffer for the participating teachers and that the positive impacts continue well after the training sessions are complete.

Regarding the general teaching efficacy and that of teachers' perceived self-efficacy in eliciting collegial support, these variables remained stable, which may be explained in different ways. The pedagogical format of the training program was specifically designed to support teachers in changing and improving the way they teach. For this purpose, the majority of the training activities purposely highlighted each teacher's relationship with their students.

Although collaborative practices with peers were encouraged during the workshops, it was difficult to ensure the continuity of these newly forged collaborations. The participant groups were formed within an early elementary teacher population throughout the entire school district. Thus, collaborations were tenuous since collective efficacy and general efficacy beliefs are directly related to the context within each school.

Limitations, implications, and future directions

Despite encouraging results, this study presents certain limitations. First, the study is limited by a small sample size from a particular school district. It would be of interest to test the same in-service training model on a larger and more diverse sample to increase the generalizability of the results to a larger population of teachers. Second, the workshops were led by the creator of the PBM program (who was also a well-known and respected member of the school district), which may have positively skewed the results. It would therefore be of interest to evaluate the effects of the PBM program under the direction of another resource person who should nevertheless master the training content and its educational formulas. Third, while we sought to closely respect existing in-service teacher training practices, no in-class observations were performed. It would have been relevant, however, to observe the changes introduced by the teachers in their classroom and behaviour management. Nevertheless, according to Bandura's self-efficacy theory, teachers who display greater self-efficacy in classroom and behaviour management do in fact fare better and are more effective in guiding their students and therefore the PBM program likely influenced actual classroom practice. Finally, PBM training adapted to the needs of elementary school teachers would allow for experimentation involving an entire school, which would make it possible to better evaluate the effects of such a program on the general teaching efficacy as influenced by peer support and school culture.

CONCLUSION

The goal of this study was to evaluate the impact of the PBM training program on teachers' efficacy beliefs. Research on the subject confirms that general and personal efficacy beliefs of educators are most malleable during preservice

training and tend to remain stable (Woolfolk Hoy et al., 2005). Moreover, several studies have shown the positive effects of professional development on educational practices (Behnke, 2006; Evertson, 1989; Jones, 1991; Raver et al., 2008; Roelofs et al., 1994). However, few teacher training programs place any emphasis on the development of strong efficacy beliefs despite the knowledge that they often influence teaching practices. This study highlights the beneficial effect of a training program adapted to the needs of in-service teachers by taking into account the sources that influence their self-efficacy: (1) past performances in terms of successes and failures, (2) the influence of observed models, (3) social persuasions, and (4) physiological and emotional aspects.

Our results show an improved personal teaching self-efficacy in the teachers who participated in the study. For professional development to produce positive results, however, certain conditions must be respected. We believe that specific factors ultimately contributed to the favourable impact of this training: the willingness of the participants, the duration and distribution of the training activities, the training schedule (the teachers were granted leave during regular class hours), content adapted to the teachers' needs, the credibility of the workshop leader (according to the participants), and group homogeneity (all were elementary teachers).

The education practices of teachers who work with students with behavioural difficulties have a very real impact on how these students will react in the future. It is therefore crucial that these teachers be adequately trained to be effective in their interventions. It is crucial to establish in-service training programs that develop high self-efficacy attitudes in classroom and behaviour management, as these programs will guide teachers to seek out effective education practices that not only directly address the needs of their students but also help to reduce their own stress level. The more teachers believe in their ability to work with their students and to lead them on the path to success, the more open they will be to teaching students with behavioural difficulties. This study encourages the implementation of similar in-service training formulas that will equip teachers to better prevent difficult classroom situations and to deal with them more effectively.

NOTES

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