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METHODOLOGY

Relationships Between and Changes in Preservice Classroom Teachers' Efficacy Beliefs, Willingness to Integrate Movement, and Perceived Barriers to Movement Integration

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Abstract

This study used an uncontrolled pre–post design in the context of a 16-week comprehensive school physical activity promotion (CSPAP) course to examine relationships between and changes in preservice classroom teachers' (PCTs; N = 103) efficacy beliefs about integrating movement in the academic classroom, willingness to integrate movement, and perceived barriers to movement integration. Efficacy beliefs were not correlated with willingness to integrate. Perceived barriers correlated with willingness to integrate at the beginning and end of the course and with efficacy beliefs at the beginning of the course. MANOVA with repeated measures indicated collective efficacy beliefs (i.e., beliefs about the capability of peers and practicing classroom teachers to integrate movement) strengthened and the number of perceived barriers

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decreased. Results highlight the relationship between perceived barriers and willingness to integrate movement and also suggest preservice programs could help to foster PCTs' collective efficacy and reduce perceived barriers, although experimental research is needed.

Lack of physical activity (PA) has been identified as a major factor related to childhood obesity (U.S. Department of Health and Human Services, 1996). As such, a great deal of obesity prevention literature focuses on ways to increase children's PA (Koplan, Liverman, & Kraak, 2005) and national organizations and policy makers have responded with a commitment to this goal (National Association for Sport and Physical Education [NASPE], 2008; Pate & O'Neill, 2008; www.letsmove.gov). In particular, the role of schools in the promotion of children's PA has garnered substantial attention (Centers for Disease Control and Prevention [CDC], 1997; Koplan et al., 2005; Pate et al., 2006; Wechsler, McKenna, Lee, & Dietz, 2004). Because children spend a significant portion of their time in school, current recommendations for curbing childhood obesity include promoting PA in multiple school contexts (NASPE, 2008). At the elementary level, physical education, the academic classroom, recess, and before- and after-school programs should be used to maximize the amount of time children spend being physically active during the school day (CDC, 1997; NASPE, 2008). The term generally applied to this type of approach to PA promotion in schools is *comprehensive school physical activity programming* (CSPAP).

The multiple school contexts targeted for PA promotion within CSPAP recommendations implicate substantial support from elementary classroom teachers to increase children's PA participation (CDC, 1997; NASPE, 2008; Pate et al., 2006; President's Council on Physical Fitness and Sports, 2006). Classroom teachers assume leadership/supervisory roles in many or all of these contexts depending on the schools where they work (NASPE, 2010). However, the classroom teacher's primary domain of influence in schools is within the academic classroom. It is important for classroom teachers to be able to collaboratively and effectively plan for, implement, and evaluate PA integration in their classrooms for CSPAP to reach its full potential. Yet, little research has explored variables associated with classroom teachers' PA promotion tendencies (Webster, Monsma, & Erwin, 2010). Moreover, the role or potential of teacher education

in preparing preservice classroom teachers (PCTs) for involvement in CSPAP has received little investigative attention (Webster, 2011).

Theoretical Framework: Efficacy Beliefs

Bandura (1977) defined an efficacy belief as "the conviction that one can successfully execute the behavior required to produce the [desired] outcomes" (p. 193). Efficacy beliefs are important because they determine an individual's effort toward goal attainment and persistence despite perceived barriers (Bandura, 1997). For example, Cantrell and Callaway (2008) found that teachers with stronger efficacy beliefs demonstrated more persistence in the face of barriers within the context of a yearlong professional development program. Educational research also has shown teachers' efficacy beliefs directly influence teaching behavior (Cantrell & Callaway, 2008; Gibson & Dembo, 1984). Ross (1998) conducted a review of 88 studies and indicated more efficacious teachers were more likely to engage in a number of adaptive behaviors, such as learning and implementing new teaching techniques. Similarly, Ghaith and Yaghi (1997) reported a positive correlation between teachers' efficacy beliefs and attitudes toward instructional innovation. Furthermore, Somech and Drach-Zahavy (2000) found a positive relationship between teachers' efficacy beliefs and extra-role behavior, defined as "those behaviors that go beyond specified role requirements, and are directed toward the individual, the group, or the organization as a unit, in order to promote organizational goals" (p. 650). Thus, efficacy beliefs would seem particularly important to meeting CSPAP goals, given that many classroom teachers might view movement integration as novel, innovative, and requiring extended role requirements.

Most educational research has conceptualized teachers' efficacy beliefs at the individual level (i.e., teachers' perceptions of their own performance capabilities). However, efficacy beliefs can also be conceptualized at the collective level (Bandura, 1997; Goddard & Goddard, 2001; Goddard, Hoy, & Woolfolk Hoy, 2000). In situations where joint efforts are critical to meeting organizational goals (as with CSPAP), individuals' perceptions of collective efficacy (i.e., the performance capability of social system as a whole) affect commitment to goal attainment and resilience to perceived barriers (Bandura, 1997). Collective efficacy beliefs have been shown to be a unique predictor of teachers' individual efficacy beliefs (Goddard & Goddard, 2001). Moreover, Tschannen-Moran, Woolfolk Hoy, and

Hoy (1998) suggested collective efficacy beliefs may be especially influential in novice teachers' individual efficacy beliefs as these teachers are socialized into the profession. This has implications for preservice education related to CSPAP. Fostering collective efficacy might be an important goal for preservice education related to CSPAP so that each PCT enters her or his first teaching job with a belief that classroom teachers as a group are capable of integrating movement and, based on this belief, that she or he can integrate movement within her or his own classroom. Moreover, preservice education provides a fitting platform for developing efficacious teachers because individual and collective efficacy beliefs are least resistant to change at early stages in the learning-to-teach process (Ashton, 1984; Bandura, 1977, 1997).

Currently, no studies have examined PCTs' efficacy beliefs related to CSPAP, although some research, albeit limited, has examined in-service classroom teachers. Using a questionnaire, Parks, Solmon, and Lee (2007) found both individual and collective efficacy beliefs were positively correlated with willingness to integrate movement in the academic classroom with a sample of 314 elementary classroom teachers. More recently, Cothran, Kulinna, and Garn (2010) interviewed a sample of 23 elementary and secondary classroom teachers about a schoolwide PA promotion program implemented at their schools. Results of a thematic analysis of the interviews indicated "prior…and largely positive experiences may have helped these teachers feel more competent to implement the program and therefore they volunteered to participate based on their perceived familiarity with and confidence in their ability to lead physical activity" (p. 1387). These studies suggest efficacy beliefs are important to elementary classroom teachers' involvement in CSPAP.

Preservice Preparation Framework: Sources of Efficacy

If teacher education programs are to effectively prepare PCTs for CSPAP, then learning experiences offered to PCTs should be aligned with the theoretical and empirical literature related to how efficacy beliefs are developed. Bandura (1986, 1997) identified four sources of efficacy beliefs that might provide a useful framework for PCTs' preparation related to CSPAP. These sources include mastery experiences, affective states and attributions, vicarious experiences, and social persuasion. Mastery experiences are considered the

most influential in building efficacy beliefs and are defined by successful past performances on a given set of tasks (Tschannen-Moran et al., 1998). Examples of such tasks for classroom teachers integrating movement would be planning active classroom lessons, collaborating with other classroom teachers about movement integration, or managing an active classroom environment. Efficacy beliefs are also strengthened when such experiences are accompanied by positive affective states and attributions, such as feelings of excitement and/or perceived internal locus of causality (i.e., successful performance is seen as a consequence of internal as opposed to external attributes). Vicarious experiences are those in which successful experiences related to performing given tasks are competently modeled by someone with whom the observer can identify, such as another classroom teacher who teaches in a similar school environment as the observer. Finally, social persuasion plays a supportive role in the development of efficacy beliefs and involves performance feedback and encouragement given to the performer by someone viewed as having task-relevant credibility and expertise.

Parks et al. (2007) investigated elementary classroom teachers' sources of efficacy for integrating movement in the academic classroom. Despite using a questionnaire based on Bandura's (1986, 1997) original four sources of efficacy described above (mastery experiences, affective states and attributions, vicarious experiences, and social persuasion), principle components analysis of the scale items revealed a three-factor solution in which the only factor consistent with Bandura's original sources was mastery experiences. Based on the item loadings, the other two factors were labeled institutional environment and professional development. Institutional environment encompassed perceptions of how important and valuable school personnel (e.g., principal, other classroom teachers, oneself) viewed movement integration, and professional development encompassed perceptions of vicarious experiences and of professional involvement and decision making related to movement integration at school. In discussing their findings, the authors indicated these results reflect the "school wide situation" (p. 326) at which the questionnaire items were aimed and suggested that "in situations where efficacy is rooted in an institution, like a school, the sources of influence also function at that level" (p. 326). Regression analyses indicated mastery experiences and institutional environment were significant predictors of individual and collective efficacy. Therefore, it might be important for preservice programs to

not only incorporate CSPAP experiences based on Bandura's four original sources of efficacy, but also focus on the school environment as a possible source of influence on PCTs' efficacy beliefs.

In summary, efficacy beliefs appear to be positively associated with teachers' willingness to engage in and apply new professional activities (e.g., Parks et al., 2007; Ross, 1998) and negatively associated with perceived barriers to learning/using new teaching practices (Cantrell & Callaway, 2008). However, these associations have not been investigated with PCTs who are learning about movement integration. Moreover, although theory and research identify several sources of elementary classroom teachers' efficacy beliefs (Bandura, 1986, 1997; Parks et al., 2007), no studies have investigated the potential of preservice education to facilitate changes in PCTs' efficacy beliefs related to CSPAP when these sources are used as a basis for designing learning experiences. The purpose of the present study, therefore, was to examine relationships between and changes in PCTs' efficacy beliefs, willingness to integrate movement, and perceived barriers to movement integration during a semester-long CSPAP course.

Method

Participants and Course Description

A total of 103 PCTs (67 from the second author's institution and 36 from the third author's institution) participated in this study. The majority of the participants were female (97%) and self-identified their race as White (94%). Most were seniors (43%), followed by juniors (36%), sophomores (18%) and freshmen (2%). Participants were enrolled in a semester-long (16-week) CSPAP course for elementary education majors, who could declare their major as early as their freshman year. The course was offered in separate classes at two universities such that participants were enrolled at their respective university. At both universities, the course was a requirement for graduation leading to teacher certification. The students met 50 min 2 days per week for 16 weeks.

Before beginning the study, the course instructors, who are the second and third authors of this report, outlined the course content and agreed to follow the same curricular, instructional, and evaluative procedures with their respective classes so that PCTs would be offered similar learning experiences. Bandura's (1986, 1997) original four sources of efficacy (mastery experiences, affective states and

attributions, vicarious experiences, and social persuasion) were emphasized in the course. PCTs were given mastery experiences by peer teaching a physical education lesson and teaching multiple classroom PA breaks in elementary schools. From these experiences, PCTs were given opportunities for successful implementation of the activities with their peers and with elementary students. PCTs were given the opportunity to develop their affective states and attributions through written assignments such as a reflection journal. PCTs were asked to write about positive aspects of their experiences integrating movement in the schools. Additionally, the cooperating teachers who worked with the PCTs in the schools gave the PCTs feedback affirming their ability to successfully integrate movement. PCTs were given vicarious experiences through observation of the course instructors and the cooperating teachers in the schools modeling effective PA integration. Specific information related to behavior management principles for a PA setting were described and modeled for the PCTs. These included appropriate stop and start signals for the students to follow, efficient methods for retrieving equipment (if applicable), providing students with short instructional bouts and quick cues/directions for the activity, and grouping strategies to maximize time (e.g., having students stand toe to toe for partners, one person raising his or her hand to split the class into two large groups). Additionally, the PCTs experienced their peers teaching physical education lessons and PA breaks in the university classroom. Social persuasion was provided to the PCTs via external feedback from the instructor and the classroom teacher as the PCTs taught PA breaks. Additionally, grades were assigned for PCT-created bulletin boards, family or community events, and PA task cards related to CSPAP, which provided task-relevant feedback.

As previously discussed, Parks et al. (2007) identified "institutional environment" as a significant predictor of both individual and collective efficacy in the specific context of movement integration in the elementary classroom. Even though institutional environment is not one of Bandura's (1986, 1997) original four sources of efficacy, it was addressed as a possible source of the PCTs' efficacy in this study because the context was similar to that investigated by Parks et al. Institutional environment was addressed in the course with discussion about the importance of support for CSPAP from school administrators, based on the idea that classroom teachers would be less likely to integrate movement if the school principal or an

assistant principal, whose job it is to evaluate the teacher, believed students should stay in their desks, saw PA in the classroom as loss of control over students, or saw movement integration as a threat to academic achievement. Specifically, PCTs were informed about the importance of helping administrators understand that movement integration does not have to take time away from academic tasks, but can instead blend with academics to support student learning and even improve standardized testing, which currently drives school accountability and teacher evaluation. Discussion also focused on other influential members of the school environment, such as other classroom teachers, parents, and the school board, whose judgments about CSPAP could play a role in each teacher's decision making about promoting PA.

Procedure and Instrumentation

The researchers received Institutional Review Board approval for the study protocol before recruiting participants and obtained participant consent before collecting data. Data collection spanned three consecutive university semesters. This study used an uncontrolled pre–post design in which PCTs completed a questionnaire on the first day of class and on the day before the final exam in a 16-week semester. A research assistant who was not a course instructor provided the PCTs with a packet including an informed consent form and the questionnaire (described below). To avoid PCTs feeling pressure to participate in the study, the instructors were not present during data collection and only obtained the data after the semester had ended and grades had been submitted. PCTs were made aware that the instructors would not know whether they were participating in the study and that all data would be numerically coded for confidentiality. The PCTs were given verbal instructions for completing the questionnaire and were allowed to ask questions while completing the questionnaire.

The questionnaire consisted of four sections: biographical information, willingness to integrate movement, perceived barriers to movement integration, and strength of beliefs. Questionnaire items were taken from Parks et al.'s (2007) study with in-service elementary classroom teachers, and the wording was slightly modified where needed to reflect the perspective of a preservice teacher as opposed to an in-service teacher. The biographical information section consisted of items pertaining to participant demographics including participant age, race, gender, preferred

teaching content, year in college, and credit hours completed. The willingness to integrate movement section asked PCTs the number of days per week (0 to 5) and number of subject periods (0 to 5) they would be willing to integrate movement. PCTs were also asked how many days during an average week (0 to 5) they would be willing to collaborate with others to discuss activities that could be integrated. An additional question asked participants to select the subjects (e.g., mathematics, science, reading) in which they would be most comfortable integrating movement. The perceived barriers to Movement Integration section asked PCTs to select from a list of 15 barriers that might prevent them from integrating movement in the classroom. This list included items such as not enough class time, not enough classroom space, and no support from administrators.

The Strengths of Beliefs section included 16 items designed to assess both individual and collective efficacy beliefs about completing movement integration tasks in the classroom. Twelve items were designed to assess individual efficacy beliefs (e.g., "successfully integrate movement into existing lessons"). Participants were asked about what they believed they could do in their own class, right now, given their present level of training, and responses were assessed on a 4-point scale ranging from 1 (*weak beliefs in my ability*) to 4 (*very strong beliefs in my ability*). Four additional items were designed to assess collective efficacy beliefs (e.g., "Successfully involve all parties for integrating movement into classroom lessons"). Participants were asked what they believed a cohort group, such as preservice teachers, in-service teachers, and other school personnel they have worked successfully with on projects in the past, could do, and responses were assessed on a 4-point scale ranging from 1 (*weak beliefs in my work group's ability*) to 2 (*very strong beliefs in my work group's ability*).

Data Analysis

Data analyses were performed using SPSS 18.0 (Chicago, IL). Because the present study was exploratory, we used principal component analysis to examine the factor structure of the scale items assessing theoretical constructs, including individual efficacy beliefs and collective efficacy beliefs. The promax rotation was used to interpret the factors and loadings because the factors were correlated. Eigenvalues greater than 1.0 were interpreted (Tabachnick & Fiddel, 2001). Factor loadings of at least .40 were required for items to be used in further analysis. All items met these criteria and

no items cross-loaded. Therefore, all items were retained and used to calculate subscale means, which were used in subsequent analysis.

Cronbach's alpha coefficients were used to examine internal consistencies of all subscale items (pre and post), including three of the items for willingness to integrate (number of days willing to integrate, number of subject periods willing to integrate, and number of days willing to collaborate; Parks et al., 2007) and the items loading on each of the strength of beliefs subscales. Pearson product–moment correlations (two-tailed) were performed to examine relationships between all variables (for perceived barriers, an aggregated score representing the sum of responses to all 15 items was used). For descriptive purposes, means and standard deviations were calculated for all variables (pre and post). Additionally, frequencies were calculated for items (pre and post) pertaining to willingness to integrate and perceived barriers to PA integration. To test for statistically significant changes in mean response scores between the beginning (pre) and end (post) of the course, a multivariate analysis of variance (MANOVA) with repeated measures was used to test for a main effect of time on all variables (as with the correlation analysis, the aggregated perceived barriers score was used).

Results

Factor Structure of the Strength of Beliefs Scale

The principle components analysis (Table 1) yielded two factors consistent with how the scale items were conceptualized. Items written to measure individual efficacy loaded together on one factor and items written to measure collective efficacy loaded together on a separate factor. Cronbach's alpha coefficients (Table 2) indicated the internal consistency of both subscales was good (Nunally, 1970).

Table 1

Factor Loadings for the Strength of Beliefs Scale

Item	Individual Beliefs	Work Group Beliefs
Successfully overcome obstacles to integrating movement into lessons involving administrators	.921	
Successfully adapt movement to fit my classroom lessons	.920	

Table 1 (cont.)

Item	Individual Beliefs	Work Group Beliefs
Successfully plan movement activities with academic lessons	.909	
Successfully overcome obstacles to integrating movement into lessons involving students	.885	
Successfully carry out my part of integrating movement into classroom lessons	.855	
Successfully master the management aspects of integrating movement	.841	
Successfully master content knowledge of integration of movement	.801	
Successfully integrate movement into existing lessons	.755	
Successfully master the instructional aspects of movement	.748	
Successfully overcome obstacles to integrating movement into lessons involving the PE specialist	.737	
Successfully evaluate movement activities	.602	
Successfully involve all parties for integrating movement into classroom lessons		.999
Successfully carry out evaluations for integrating movement into classroom lessons		.963
Successfully adapt integration of movement into academics in our school		.901
Successfully carry out plans for integrating movement into classroom lessons		.898
Eigen Value	10.193	1.468
Percentage of Variance Accounted for	63.706	9.172

Note. Only items loading at .40 or higher are represented in this table, as they were retained for further analysis.

Table 2

Subscale Means, Standard Deviations, Alpha Coefficients, and Correlations

	M **Pre/Post**	***SD*** **Pre/Post**	**α** **Pre/Post**	**1** **Pre/Post**	**2** **Pre/Post**	**3** **Pre/Post**
1. Willingness to Integrate	3.60/3.75	.93/.89	.64/.60	1.00		
2. Perceived Barriers	3.09/2.26	1.89/1.60	N/A	-.21*/-.22*	1.00	
3. Individual Efficacy	2.73/2.86	.74/.62	.85/.95	.00/.07	-.34** /-.06	1.00
4. Collective Efficacy	2.85/3.38	.77/.64	.97/.95	-.07.06	-.26** /-.15	.69***/.27**

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

Relationships Between Variables

The correlation coefficients (Table 2) indicated there were statistically significant relationships between willingness to integrate, perceived barriers to movement integration, individual efficacy beliefs, and collective efficacy beliefs. Specifically, there was a weak negative correlation between willingness to integrate and perceived barriers at the beginning and end of the course; a moderate negative correlation between individual efficacy and perceived barriers at the beginning of the course, but not at the end; a weak negative correlation between collective efficacy and perceived barriers at the beginning of the course, but not at the end; and a strong positive correlation between individual and collective efficacy beliefs at the beginning of the course, but only a weak positive correlation between these variables at the end of the course.

Changes in PCTs' Perceptions

Frequencies of participant responses at the beginning and end of the course for items on the pertaining to willingness to integrate and perceived barriers to integration are presented in Table 3. Willingness to integrate 4 to 5 days a week increased from 68.7% at pre to 76.5% at post and willingness to integrate in four to five subject periods increased from 47.1% to 60.2%. The number of PCTs interested in collaborating at least 2 to 3 days per week increased from 54.0% to 59.2%. Participants indicated they would feel the most comfortable integrating movement during math lessons both at Time 1 (55.3%) and Time 2 (66.0%).

Although participants expressed willingness to integrate movement, they perceived numerous barriers to successful integration. For most barriers, perceptions were relatively consistent from pre to post. There were minimal changes from pre to post in the number of participants who felt there is not enough class time or classroom space to successfully integrate movement. Relatively unyielding perceptions were also true for roughly one quarter of the sample who identified not having enough instructional materials as a barrier and one third of the sample who identified having too many students in class as a barrier. However, the number of PCTs who perceived insufficient administrative support as a barrier to movement integration doubled from 25.2% to 51.5%. The only notable positive changes in perceived barriers were for training in movement integration, which decreased from 26.2% to 3.9%, and

Table 3

Frequency Count of Participants' Perceived Importance of Physical Activity, Willingness to Integrate, and Perceived Barriers to Physical Activity Integration

Variable	Category	Pre		Post	
		Frequency	%	Frequency	%
Willingness to Integrate					
Days per week	0–1	1	1.0	0	0.0
	2–3	31	30.4	23	23.5
	4–5	70	68.7	75	76.5
Subject periods	0–1	1	1.0	1	1.0
	2–3	53	52.0	38	38.7
	4–5	48	47.1	59	60.2
Collaborate per week	0–1	19	18.6	12	12.2
	2–3	55	54.0	58	59.2
	4–5	28	27.5	28	28.6
Subjects Comfortable Integrating	Mathematics	57	55.3	68	66.0
	Science	15	14.6	10	9.7
	Reading	11	10.7	2	1.9
	Language Arts	6	5.8	7	6.8
	Social Studies	6	5.8	4	3.9

Table 3 (cont.)

Variable	Category	Pre		Post	
		Frequency	%	Frequency	%
Barriers to Integrating	Not enough class time	64	62.1	59	57.3
	Not had enough training in physical education/movement	34	33.0	18	17.5
	Not enough student interest	7	6.8	14	13.6
	Preservice teacher not interested	0	0	2	1.9
	Movement is not important	1	0.1	0	0
	Movement is irrelevant to content	7	6.8	7	6.8
	Not had enough training in integrating movement	27	26.2	4	3.9
	Not enough time to collaborate	12	11.7	30	29.1
	Not enough instructional materials	24	23.3	24	23.3
	Not enough class space	58	56.3	62	60.2
	Too many students in my class	28	27.2	33	32.0
	Movement is solely physical educators' responsibility	0	0	0	0
	Students get enough physical activity during school day	0	0	1	1.0
	Too disruptive	8	7.8	2	1.9
	Not enough support from administrators	26	25.2	53	51.5

for training in physical education/movement, which decreased from 33.0% to 17.5%.

The main effect for the MANOVA was statistically significant, Wilks' $\lambda = .688$, $F(1, 90) = 9.88$, $p < .001$, $\eta^2 = .31$. Therefore, follow-up univariate tests were interpreted to determine statistically significant differences on mean response scores from pre to post for each of the variables. Results indicated significant differences across time for willingness to integrate, $F(1, 90) = 4.15$, $p < .05$, $\eta^2 = .04$, and perceived barriers, $F(1, 90) = 10.81$, $p < .01$, $\eta^2 = .11$, though the effect sizes suggest the change in perceived barriers was more meaningful than the change in willingness to integrate. There was also a statistically significant difference across time in collective efficacy beliefs, $F(1, 90) = 33.26$, $p < .001$, $\eta^2 = 27$, suggesting a meaningful change occurred in participants' perceptions that others in their peer group and/or already practicing classroom teachers could successfully integrate movement. There was not a statistically significant change in individual efficacy beliefs, $F(1, 90) = 2.39$, $p = .13$, $\eta^2 = .03$.

Discussion

The purpose of this study was to examine relationships between and changes in PCTs' efficacy beliefs, willingness to integrate movement, and perceived barriers to movement integration during a semester-long CSPAP course. Although this study was only exploratory, it nonetheless constitutes a critical step in the evaluation process needed to identify effective means for successfully institutionalizing PA promotion across multiple school contexts. Teacher education is a dynamic period of growth during which preservice teachers' professional role identities and self-appraisals rapidly develop (Ashton, 1984; Bandura, 1977, 1997). Therefore, it is important to conceptualize possible roles of preservice education in CSPAP so that variables deserving further investigation can be identified.

The correlation analyses indicated PCTs' efficacy beliefs and willingness to integrate movement in the classroom were not associated. In their study with in-service classroom teachers, Parks et al. (2007) found willingness to integrate to be significantly correlated with individual efficacy (.34) and collective efficacy (.30). It is possible that the association between efficacy beliefs and willingness to integrate increases as classroom teachers gain professional experience and become more aware of the importance

of having the necessary skills for successfully integrating movement amid competing demands on their time. It is also possible that the willingness to integrate scale was not an adequate measure for use in this study, based on the low internal consistency of the scale items. Parks et al. (2007) used the same measure and reported a low but adequate Cronbach's alpha coefficient of .72. Future research with PCTs might consider devising a different willingness to integrate measure or exploring other variables that could represent "approach tendencies" to movement integration (e.g., perceived effort in integrating, intentions to integrate).

Willingness to integrate and perceived barriers (calculated as an aggregated score) were significantly and negatively correlated at the beginning and end of the course. The more barriers to movement integration PCTs perceived, the less willing they were to integrate movement. As this study did not test for causal relationships, this finding should be further investigated to determine whether perceived barriers predict willingness to integrate or, in the context of experimental research, limit the extent to which PCTs actually try to integrate movement in their field experiences. Using interview data, Cothran et al. (2010) found that in-service teachers were less willing to engage in PA integration when the teachers perceived barriers including tight schedules (i.e., time constraints), too much responsibility, and pressure from standardized testing.

There were significant changes in scores from pre to post for collective efficacy beliefs, willingness to integrate, and perceived barriers. The effect sizes suggest the most meaningful changes were the increase in collective efficacy beliefs and the decrease in perceived barriers. These results appear to be consistent with the results of the correlation analyses, which showed perceived barriers was negatively correlated with collective efficacy beliefs at the beginning, but not at the end, of the course. Based on these findings, future research might use inferential statistics to examine whether increasing collective efficacy beliefs reduces perceived barriers, or vice versa.

There was not a significant change in individual efficacy beliefs from pre to post. Because PCTs spend a great deal of time together in learning/performance environments with other members of their cohort, they may tend to mostly evaluate their own professional growth by drawing on beliefs about what others in their peer group can do. However, because individual efficacy and collective efficacy were correlated at the beginning of the course, we recommend

preservice coursework related to CSPAP to strengthen PCTs' efficacy beliefs at both individual and collective levels. Movement integration assignments should give PCTs the opportunity to both individually and collaboratively practice planning, teaching, and evaluating classroom lessons with integrated movement. Learning experiences should encourage all students in the class to feel accountable for gains in personal performance and to recognize improvements among their peers.

Despite the significant decrease in perceived barriers from pre to post, frequency counts showed certain perceived barriers were relatively robust during the semester and even grew. Specifically, PCTs continued to feel they could not overcome barriers including a large class size and limited classroom space when trying to successfully integrate movement. Additionally, although PCTs felt they would integrate movement most days of the week, they felt less inclined to collaborate in doing so and increasingly saw time as a barrier for collaboration. Furthermore, few participants indicated they would feel comfortable integrating movement in academic lessons in subjects other than math. Based on these findings, it seems that teacher educators should increase their efforts to demonstrate and have PCTs experience successful movement integration when faced with these barriers. This could involve field-based teaching experiences in which PCTs are challenged to integrate movement in crowded classrooms with constrained space. Teacher collaboration can be challenging due to teachers' busy schedules at school. PCTs could be encouraged to use electronic communications (e.g., e-mail, texting) and social media (e.g., Facebook) to share movement integration ideas so they feel more willing to collaborate.

PCTs should also be given opportunities to observe and integrate movement in science, language arts, and social studies lessons. Rink, Hall, and Williams (2010) provided numerous examples of movement integration in different subject areas. For instance, in a science lesson, students might be asked to move like atoms in gas, liquid, or solid states (e.g., in a gas state, students should move far apart from one another and use light and free-flowing movements, whereas in a liquid state, students should move closer together in curvy pathways). In a language arts lesson, students can form human links whenever the teacher reads a linking verb (e.g., "The dog is sick") or perform the action whenever the teacher reads an action verb (e.g., "Jane jumped high"). In a social studies lesson on

geography, students can role-play different physical activities for different regions of their state (e.g., coast, plains, mountains).

Finally, the PCTs in this study clearly developed an elevated awareness of the importance of administrative support for movement integration. CSPAP courses, such as the one described in this study, should not only help PCTs recognize the need for school administrators to support teachers' efforts to integrate movement, but also provide strategies for gaining administrative support. For instance, PCTs could write mock letters to school principals underscoring policies and research related to CSPAP or learn how to rally parents, teachers, and other school stakeholders by forming a CSPAP committee and cultivating a climate of PA promotion.

Several limitations existed for this study. Lack of a control group did not allow for specific aspects of the course to be identified as those that led to increased collective efficacy and willingness to integrate and decreased perceived barriers. Surveying or interviewing PCTs about sources of efficacy at the end of the course would have helped the researchers to trace the role of the course with respect to changes in collective efficacy during the semester. This would allow for links to be drawn between the course design, sources of efficacy, and efficacy beliefs. Additionally, future research should monitor content coverage and learning experiences through an instructor log or observations to ensure PCTs actually received course material as originally planned. Finally, the fact that the participants were enrolled in two of the authors' classes may have led them to provide responses they thought the instructors wanted to hear. Although precautionary steps were taken to avoid this from happening, the authors acknowledge that there is no guarantee that the PCTs enrollment in the course and the role of the instructors as researchers did not play a role in participants' responses.

In conclusion, this study suggests PCTs are willing to integrate movement but that willingness and efficacy beliefs about movement integration are not associated in the context of preservice learning experiences related to CSPAP. PCTs may not realize the importance of having a specific skill set for CSPAP until they are faced with the competing demands of day-to-day life at school as a classroom teacher. Teacher educators should nevertheless strive to strengthen PCTs' efficacy beliefs because such beliefs appear to be important to in-service classroom teachers' willingness to integrate movement (Cothran et al., 2010; Parks et al., 2007). Results suggest preservice programs might be able to play an important role in shaping PCTs'

collective efficacy, although additional research using a control group is needed to test this hypothesis. Finally, given that perceived barriers persisted in their association with willingness to integrate during the semester, CSPAP courses should focus on maximizing class time, materials, and space and provide resources for PCTs to garner support from administration. This was an initial study, and continued research exploring possible variables that could influence the effectiveness of teacher education programs in preparing PCTs for CSPAP is needed. Elementary classroom teachers are positioned to make a difference in children's daily PA, but the best strategies for helping these teachers develop into effective PA promoters have yet to be identified.

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