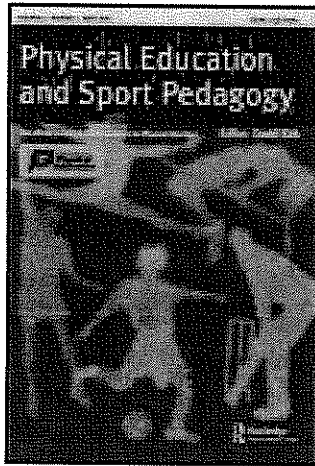


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Students' perceptions of the command, practice, and inclusion styles of teaching

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Students' perceptions of the command, practice, and inclusion styles of teaching

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Background: For many physical educators, the Spectrum of Teaching Styles serves as a 'tool box' for meeting the different needs of students and goals in physical education. Despite the proliferation in Spectrum research in which researchers have examined teacher experience and student skill, knowledge, and social learning within the styles, little is known of the extent to which students perceive the Spectrum teaching styles. Exploring students' perceptions about the teaching styles will broaden our understanding of the ways students learn, what students identify as the benefits and drawbacks of the teaching styles, the relationships that students perceive between the styles and learning domains, and student style preferences.

Purpose: The purpose of this study was twofold: (a) to examine students' perceptions of physical, cognitive, and social involvement in physical activity lessons conducted in the command, practice, and inclusion styles of teaching and (b) to examine student preference for different teaching styles.

Setting and participants: A total of 77 college-aged students enrolled in four different physical activity classes at a university in the USA participated in this study.

Data collection: All students participated in three 50-minute lessons. One lesson was delivered in the command style, one in the practice style, and one in the inclusion style. All 12 lessons were taught by one Spectrum trained teacher. The students performed the same series of pilates exercises in all the three lessons. After each lesson, the students completed two questionnaires that included statements addressing physical, cognitive, and social involvement (seven-point semantic-differential scales), style preference, and rating of perceived exertion. Additionally, individual interviews were conducted with four students from each class after each lesson.

Findings: The students reported feeling more physically and cognitively involved in the inclusion-style lessons than in the command- and practice-style lessons. No differences were found for social involvement. In terms of style preference, the inclusion and command styles were selected most frequently.

Conclusions: These findings suggest that the command, practice, and inclusion styles can influence the level of student involvement in physical activity lessons.

Keywords: Spectrum of Teaching Styles; student perceptions; pilates; college students; physical activity

Delivering a quality physical education program, one in which student learning can be demonstrated, is not an easy task. In fact, it is a very complex task because students enter the learning environment with varying levels of skill ability and diverse movement

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backgrounds. Curricula must be taught to accommodate a wide array of goals and objectives encompassed within the psychomotor, cognitive, and affective educational domains which are reflected in national standards (NASPE 2004). To meet the diverse needs of students and the outcomes associated with national standards, physical educators must develop a 'tool box' of instructional strategies. For many, the Spectrum of Teaching Styles (Mosston and Ashworth 2002) serves as this 'tool box' for designing quality physical education programs.

The Spectrum is recognized worldwide (Cothran et al. 2005; Kulinna and Cothran 2003). It has been embraced in physical education as a structure for teaching in schools (Hall and McCullick 2002; Jackson and Dorgo 2002), designing undergraduate teacher preparation programs (Ashworth 1992; Byra 2000), and conducting research (Hennings, Wallhead, and Byra 2010; Iserbyt, Elen, and Behets 2010). It is a framework 'that delineates alternative teaching-learning styles' (Mosston and Ashworth 2002, 1) based on the deliberate decisions that teachers and students make within the instructional setting.

Validating theoretical assumptions associated with the Spectrum continues to be critical to the pursuit of knowledge about the landmark teaching styles. Many Spectrum studies have been conducted to examine student skill learning (Hennings, Wallhead, and Byra 2010; Iserbyt, Elen, and Behets 2010), student knowledge gains (Beckett 1991; Jenkins and Byra 1997), and student social behaviors (Byra and Jenkins 1998; Chatoupis 2005). In addition, teacher experience with and use of Spectrum teaching styles in the K-12 physical education setting have been studied (Cothran et al. 2005; Kulinna and Cothran 2003).

However, little is known about the extent to which students perceive the Spectrum teaching styles. To better understand student perspective of Spectrum teaching styles, additional research needs to be conducted. According to Cullingford (1991), the views of learners 'need to be taken into account because they know better than anyone which teaching styles are successful, which techniques of learning bring out the best of them, and what the ethos of the school consists of' (2). 'What children say should help us understand better what the experience is . . .' (13). Lee (1997) reiterated this premise by suggesting that there is ample research available 'to indicate that students are aware of their thoughts and are able to report them with sufficient accuracy to yield information that researchers can use to explain how they learn from teaching' (267).

In one study, college-aged students reflected on their K-12 physical education experiences in terms of teacher use of Spectrum styles (Cothran, Kulinna, and Ward 2000). These students recollected that their teachers employed about half of the 11 Spectrum styles in their teaching and that the styles employed were almost exclusively from the reproduction cluster (i.e. teacher-centered styles of teaching). The command and practice styles were most frequently identified. In the command style of teaching, students learn to perform a task accurately and quickly as presented by the teacher (Mosston and Ashworth 2002). In the practice style of teaching, students learn to perform a task through individual or paired practice as presented by the teacher (Mosston and Ashworth 2002). Cothran et al. also reported that the students perceived the practice style as most fun, most effective for learning, and most motivating. In two other studies, students reported their experiences in lessons conducted under the conditions of two other Spectrum styles, the reciprocal and inclusion. In the reciprocal style, learners are paired; while one learner completes the task, the other observes and provides feedback based on the criteria presented on a task sheet (Mosston and Ashworth 2002). In the inclusion style, the students are provided alternative levels of difficulty from which to choose when performing a task (Mosston and Ashworth 2002). Cai (1997) studied the attitudes of college-aged students toward

participation in the command, reciprocal, and inclusion styles while engaging in racquetball and karate. Command was identified as the preferred style for the students in both content areas. When comparing styles across the two content areas, the students reported that the inclusion style should be used with sport-specific skills. In a rifle shooting task taught under the conditions of the command, practice, and reciprocal styles, Boyce (1992) found that approximately half of the students who received the reciprocal-style treatment reported that they felt that their partners knew no more about the shooting task than they did. About half of the students who received the command-style treatment reported disliking the way feedback was publicly available to all students.

The purpose of this study was twofold: (a) to examine students' perceptions of physical, cognitive, and social involvement in activity lessons conducted in the command, practice, and inclusion teaching styles and (b) to examine student preference for different teaching styles. Exploring students' perceptions about the styles will broaden our understanding of the ways students learn, what students identify as the benefits and drawbacks of the styles, the relationships that students perceive between the styles and learning domains, and student style preferences. Knowing how students perceive the different teaching styles should promote more effective teacher use of styles.

Methods

Participants

A total of 77 college-aged students, 59 females and 18 males, from one university in the Rocky Mountain region of the USA participated in this study. The students were between 18 and 24 years of age. They were enrolled in four different physical activity classes, classes which were a part of their university-wide general education program. Student enrollment in the four classes was 13, 18, 23, and 23, respectively. In terms of class status, 51% of the students were freshmen, 21% sophomores, 5% juniors, and 23% seniors. Approximately 80% of the students were Caucasian. The remaining students were of African-American, Asian, Hispanic, and American-Indian descent.

All the students were taught by one female teacher who had 2 years of teaching experience. This teacher was trained and assessed in the use of Mosston and Ashworth's (2002) teaching styles through a university graduate-level course. Having one teacher provide all instruction helped control for variability in delivery of the styles.

Setting and content

This study took place during the students' regularly scheduled activity classes. The students met once per week, 50 minutes per session, for the semester. The actual study was conducted during the first four classes of the semester. All class sessions were conducted in a gymnasium measuring 120 by 60 feet. The students had access to individual mats on which to lie while performing the movement tasks.

The content delivered during the study lessons was pilates. The students performed three sets of five pilates abdominal exercises each lesson, the 100 (100 reps), bicycle (20 reps), alternating leg lift (20 reps), double straight leg (6 reps), and roll up (6 reps). Engaging students in meaningful lifetime physical activities while teaching fitness and wellness concepts is the emphasis in today's 'new' physical education programs (Viadero 2008; Wikgren 2011). Pilates is one of those activities that can be performed for a lifetime and is commonly included in 'new' physical education programs where the goal is to develop lifelong movers. 'New' physical education is all about teaching students how to

lead active and healthy lives through participation in meaningful, lifelong or lifetime physical activities.

Style intervention

This study spanned a 4-week period of time. During the first week, the students were introduced to the study. The participants were informed that for 3 weeks they would be performing a series of pilates abdominal exercises while being taught within the command, practice, and inclusion teaching styles during their weekly 50-minute physical activity classes. The information provided to the students during the introductory session enabled them to voluntarily decide whether to serve as a participant in the study. Written informed consent was obtained from all the students at the end of the introductory session. The approval of this research study was granted by the university's Institutional Review Board.

A crossover treatment research design protocol was utilized. Within a crossover design, the participants serve as their own control across the different treatments (Ott and Longnecker 2010). There is a move away from using control groups in educational research because of the potential of the control group participants not receiving the benefits of the learning outcomes associated with the treatments used in a study. During the first pilates lesson (second week), two of the four classes were randomly assigned to the command teaching style and two to the practice style. During the second lesson (third week), the two teaching style treatments were reversed for the four classes. Finally, during the third lesson, all the students received instruction under the conditions of the inclusion teaching style. It is important to note that within the inclusion style, the students were not required to self-check task performance. Rather, task performance was assessed by the teacher as is the case in the command and practice styles. This modification was made to maintain consistency across the feedback factor in the three teaching styles studied. Given that the focus of this study was to examine student perceptions of each style, a design that included only a singular well-designed lesson within the conditions of each teaching style was deemed sufficient for the students to be able to accurately report their perceptions of each teaching style experienced. The goal was to allow the participants to report on their perceptions of each style while the experience of each lesson was fresh in their thoughts. The questionnaires were completed immediately following each lesson and the interviews immediately following the completion of the questionnaires.

Description of lessons

Each lesson consisted of an introduction, demonstration and explanation of the exercises, practice time to engage in the exercises, and a short closure. Each lesson lasted approximately 40 minutes.

Introduction

During the introductory phase of each lesson, the teacher explained to the students what they would do, what their role was, and what the teacher's role was specific to the teaching style used. In the command style, the teacher stated the following:

Today we will be using the command teaching style. You will do five pilates exercises. I will demonstrate each exercise and then you will perform them at the pace I establish. While exercising, I will give you feedback about your performance.

In the practice style, the teacher stated the following:

Today we will be using the practice teaching style. You will do five pilates exercises. I will demonstrate each exercise and then you will practice them on your own as listed on the task sheet. While exercising, I will circulate and give you individual feedback about your performance.

In the inclusion style, the teacher stated the following:

Today we will be using the inclusion teaching style. You will do five pilates exercises. I will demonstrate the levels of task difficulty for each exercise and then you will choose a level of difficulty for each exercise and perform them on your own at your own pace as listed on the task sheet. While you are exercising, I will circulate and give you feedback about your performance.

Demonstration and explanation

Following the introductory phase of the lesson, the teacher demonstrated/explained each exercise to the students. Task directions and critical cues were provided. Following the demonstration, the students performed a partial set of each exercise as per the conditions of each teaching style.

Practice time

After the demonstration/explanation, the students engaged in the demonstrated exercises as per the conditions of each teaching style. In the command style, the students followed every decision that the teacher made regarding the quantity, quality, and order of exercises to be performed, where to locate, when to begin, the pace at which to exercise, duration time for exercising, stopping time, interval time between exercises, and posture for performing each exercise. These nine decisions that the teacher made in the command style were shifted to the students in the practice style. In the inclusion style, the students made the same nine decisions as well as decisions about the level of exercise difficulty. In all the three teaching styles, the teacher was the provider of feedback. In the practice and inclusion styles, the students received a task sheet that included performance directions and skill cues for the five exercises.

Closure

At the end of the lesson, the teacher gathered the students for closure. During closure, the main points of the episode were summarized and role- and task-related feedback was provided.

Data collection instruments

At the end of each of the three lessons, the participants completed the developmental channels questionnaire (DCQ) (Mosston and Ashworth 2002) and rating of perceived exertion (RPE) form (Borg 1998). In addition, four participants from each class were interviewed. The purpose of the individual interviews was to solicit more in-depth information related to the themes that emerged from the questionnaire analysis. A mixed-method design was utilized to strengthen data structure and increase the depth of analysis of the specific research questions addressed (Johnson and Onwuegbuzie 2004).

The DCQ

Mosston and Ashworth (2002) suggested that the structure of decisions made by the teacher and learner in each teaching style impacts the 'developing learner in unique ways by creating conditions for diverse experiences' (11). Each teaching style underscores distinct objectives that lie along the physical, cognitive, and social developmental channels. In the general field of education, developmental channels are referred to as educational learning domains, psychomotor (manual/physical skills), cognitive (mental skills/knowledge), and affective/social (growth in feelings or emotional areas/attitudes) (Krathwohl 2002). Each teaching style reflects some combination of human attributes specific to these developmental channels.

Following each lesson, the students reported perceived level of physical, cognitive, and social involvement for the teaching styles employed. The same six seven-point semantic-differential scales were employed to examine student involvement in each of the three developmental channels. The seven-point scoring system associated with the scale items consisted of three positive points, three negative points, and one neutral point. A semantic-differential scale involves the rating of concepts using bipolar adjectives. These adjectives represent opposite meanings with scales anchored at the extremes (e.g. minimal–maximal, difficult–easy, powerful–powerless, bad–good, useful–useless, and enjoyable–not enjoyable). Nunnally (1978) stated that the evaluation factor of the semantic-differential scale serves as a definition of attitude and/or perception, and responses to this factor's adjective pairs are excellent measures of an individual's thoughts. The scales used in this study were similar to those employed by Papaioannou and Theodorakis (1996) and Digelidis et al. (2003) to assess student attitudes toward exercise and sports participation in physical education classes. Reliability scores (Cronbach's α) of 0.82 and 0.87 were reported in these studies. After the second and third lessons, two additional questions about teaching style preference were included in the DCQ form. The participants were asked in which teaching style they preferred exercising and why.

The RPE scale

The RPE scale (Borg 1998) was administered at the end of each lesson to examine perceived level of student exertion in physical activity. The students rated their perceived exertion on a scale of 0 (no exertion) to 10 (extreme exertion). RPE has been shown to correlate with other exercise variables such as heart rate, ventilation, percent VO_2 max, and workload (ACSM 2000).

Interviews

Once the students had completed the DCQ and RPE scale, four participants from each class were randomly selected to be interviewed immediately following each lesson. This resulted in a total of 48 interviews (4 students \times 4 classes \times 3 lessons). The interviewees were asked to respond to three statements: (a) Tell me about your physical involvement in this lesson; (b) Tell me about your cognitive involvement in this lesson; and (c) Tell me about your social involvement in this lesson. In addition, the interviewees were asked about their style preference after their second and third lessons. Two trained investigators conducted the interviews. Each interview lasted between 5 and 10 minutes. The interviews were audio-taped and subsequently transcribed for analysis.

Teaching style fidelity

Style implementation was verified through systematic observation of the lessons. Checklists (Sherman 1982) for the command, practice, and inclusion teaching styles were employed to ascertain the level of fidelity between the teacher's instructional behaviors and the style-specific behaviors. Two trained coders coded 6 of the 12 lessons, two from each style, to assess coding biases and reliability. Inter-observer agreement percentage scores for the command, practice, and inclusion styles were 100, 98.39, and 98.44, respectively. Intra-observer agreement percentage scores were 95.45, 98.39, and 98.44, respectively.

Data analysis

Mean and standard deviations were computed for the DCQ items and the RPE scores for the command, practice, and inclusion teaching styles. One-way ANOVAs were performed to examine the differences in developmental channel involvement and perceived exertion across teaching styles. A Bonferroni adjustment was made to the level of significance to accommodate the multiple ANOVAs being performed ($p < 0.02$). When significant differences were found, Tukey *post hoc* tests were used to determine the origin of the differences. Frequency scores were calculated for the style preference questions that were answered after the second and third lessons. Qualitative data reduction techniques (Bogdan and Biklen 1998) were used to determine the common themes that evolved from the open-ended question DCQ instrument regarding style preferences.

The transcribed post-lesson interviews were analyzed using qualitative data reduction techniques (Bogdan and Biklen 1998). Two coders initially analyzed the data for regularities and patterns (common elements). The two coders then grouped the interview statements to determine category descriptors. Once the categories were developed, the two coders sorted the statements into the identified categories. This step was repeated until the two coders had come to a common agreement on the categories and placement of statements.

Results***RQ1: Students' perceptions of physical, cognitive, and social involvement****The DCQ*

Descriptive statistics for the participants' perceptions of physical, cognitive, and social involvement in the command-, practice-, and inclusion-style lessons are presented in Table 1. One-way ANOVAs revealed significant main effects for the cognitive ($F[2, 205] = 36.72, p < 0.001$) and physical ($F[2, 202] = 3.64, p < 0.028$) channels across teaching styles. Tukey *post hoc* tests showed cognitive involvement in the inclusion-style lessons to be significantly higher (i.e. more involved) than in the practice- and command-style lessons and significantly higher in the practice-style lessons than in the command-style lessons. For physical involvement, the students reported significantly higher scores in the inclusion-style lessons than in the practice-style lessons. No significant main effect was found for social involvement across styles.

The RPE scale

The means for the participants' RPE scores in the command-, practice-, and inclusion-style lessons were 6.35, 6.65, and 7.14, respectively. A one-way ANOVA was performed and a

Table 1. Mean and standard deviation scores for the four developmental channels.

Channels	Teaching styles					
	Command		Practice		Inclusion	
	<i>M</i>	SD	<i>M</i>	SD	<i>M</i>	SD
Physical	5.45	0.86	5.34*	0.93	5.61*	0.84
Cognitive	3.96*	1.16	4.75*	0.98	5.38*	0.76
Social	4.51	0.89	4.24	1.00	4.45	0.99

* $p < 0.05$.

significant main effect found ($F[2, 205] = 6.35, p < 0.002$). A Tukey *post hoc* test showed RPE to be greater in the inclusion style than in the command and practice styles.

Interviews

Physical involvement. Two themes emerged for physical involvement across all the three styles. Most students reported that they felt *Physically Involved* and that they felt as though they exhibited *Great Effort* in the lessons. Two style-specific themes emerged as well. In the practice-style lessons, the students reported *I Can Determine My Own Level of Effort*. This theme relates to making the decision about the pace and rhythm at which to exercise. A theme that evolved in the inclusion-style lessons was *I Can Make the Exercise Difficult and Challenging*. These two style-specific themes directly reflect elements of instructional delivery unique to the practice and inclusion teaching styles. The following are three student quotes that supported the idea that physical involvement was similar across styles:

- I was pretty physically involved, it was challenging for me because I am really sore today so it was a decent workout. (Sean, command-style lesson)
- It was a good deal . . . it definitely worked my abs . . . you had to think about it more when you were the one doing the counting. (Harold, practice-style lesson)
- I think I was pretty physically involved. I pushed myself to see how far I could go. (Katie, inclusion-style lesson)

Cognitive involvement. Style-specific themes emerged for cognitive involvement, *No Thinking* for the command style, *Some Thinking* for the practice style, and *A Lot of Thinking* for the inclusion style. In the command style, the participants reported that they were told what to do and when to do it. This led the students to believe that no thinking was involved. In the practice style, the participants reported that they had to keep track of their own performance including counting repetitions, pacing themselves, and remembering the skill elements for each exercise. This led the students to believe that some thinking was involved. In the inclusion style, the students not only had to keep track of counting repetitions, pacing themselves, and remembering the skill elements, but also had to make decisions about the level of difficulty for each exercise. This led them to realize that a lot of thinking was involved in the inclusion style. The following quotes highlight the style-specific themes:

- Probably not a lot (of thinking) because I just followed the cues and did whatever she (the teacher) said, and I did not think about it much. (John, command-style lesson)

- I kind of had to think about all of the cues and points when I was doing it because I could not really see it so you had to think more about them. (Shauna, practice-style lesson)
- Compared to all of the others (teaching styles) this one was probably the most thinking you had to decide which level to do and make sure that you were following all of the skill cues. (Harry, inclusion-style lesson)

Social involvement. Overall, the students perceived social involvement in much the same way across all the three styles. In the command style, about two-thirds of those interviewed perceived social involvement to be minimal. These students felt like they were on their own, *Alone in a Mass* (Graham, Holt/Hale, and Parker 2010). If a social interaction did occur, it was likely accidental such as mistakenly touching a peer while exercising. Although most of those who were interviewed felt socially isolated, a few did perceive themselves as *A Part of a Whole* in the command style. Because they were performing the same exercises at exactly the same time as their peers, these students felt like they were working together.

In the practice style, more than half of the participants felt *Isolated*. They perceived the environment to be isolating because of having to do the exercises on their own. A few of the participants identified that they perceived the environment to be *Interactive* as a result of the teacher circulating and providing individual feedback.

In the inclusion style, the majority of the participants described their level of social involvement as *Minimal*. They simply stated that they were 'exercising on their own.'

The following are student quotes from each teaching style that reflect the perception of minimal social involvement:

- There was almost no social interaction really ... we sat (exercising in a seated or prone position) and had to look at the ceiling so there was not a whole lot of socialization that went on. (Mary, command-style lesson)
- There was not much. It was mostly just a physical thing. (Barry, practice-style lesson)
- Not too much social involvement. It was mostly just keep to yourself activity. (Shane, inclusion-style lesson)

RQ2: Students' preferences for different teaching styles

The DCQ

Frequency scores were calculated for style preferences reported after the second and third lessons, while qualitative techniques were used to identify the common themes that evolved from the participants' 'why' answers. The teaching style selected most frequently following the completion of the second lesson was the command style (62%), and following the third lesson, it was the inclusion style (56%). All the three teaching styles were selected as a favorite by some participants after the third lesson (command 37%; practice 7%).

Several themes emerged from the answers that the participants provided about why they preferred one teaching style over another. *Keeping to the Pace and Form* and *Motivation* were two themes that emanated from those selecting the command style over the practice style after the second lesson. The students indicated that they preferred the command style over the practice style because the teacher helped them maintain an appropriate pace while performing the exercises correctly and that following the leader was highly motivating. Those selecting the practice style over the command-style lesson identified *Individual*

Pace as the reason for preferring the practice style. These students liked the ability to work at their own pace.

After the third lesson, once the participants had experienced all the three styles, those selecting the command style as the preferred style reported doing so for the same reasons as selecting the command style over the practice style after the second lesson, *Keeping to the Pace* and *Motivation*. *Level of Difficulty* emerged as the theme for those selecting the inclusion style over the command and practice styles. Those selecting the inclusion style reported doing so primarily because they could match the level of difficulty of each exercise to their own needs.

Interviews

After having participated in the first two lessons, and subsequently, the third lesson, the students who were interviewed were asked to identify style(s) preferred and why. Overwhelmingly, the interviewees selected the command style over the practice style after the second lesson. The students reported feeling more motivated to make a greater effort in the command style because they were exercising in unison and better able to execute the exercises correctly given a constant model. The few who did select the practice style over the command style said that they liked to be able to perform the exercises on their own and at their own pace.

After having participated in the inclusion-style lesson, the interviewees identified the command and inclusion styles as the preferred teaching styles. In fact, no interviewee selected the practice style as his/her preferred instructional style. Nine chose command as the favorite teaching style, while seven chose inclusion. The two main reasons for selecting the command style were being able to perform the exercises correctly as a result of having them constantly modeled and feeling highly motivated as a result of working at the pace set by the leader. Being able to make their own decisions about the level of difficulty was the reason for most of the interviewees selecting the inclusion style as the preferred teaching style. These students felt empowered and more independent as a result of selecting their own level of difficulty.

Discussion

The purpose of this study was twofold: (a) to examine students' perceptions of physical, cognitive, and social involvement in activity lessons conducted in the command, practice, and inclusion teaching styles and (b) to examine student preference for different teaching styles. The students' perceptions of physical involvement were similar and different across the three teaching styles. In terms of likeness, the students perceived physical involvement to be positive and strong. The DCQ and RPE scores and the interview responses overwhelmingly demonstrated that the students felt physically involved and perceived making a great effort during all the lessons. According to Mosston and Ashworth (2002), objectives specific to motor performance are emphasized in the reproduction cluster of teaching styles. The students' perceptions of feeling physically engaged clearly reflect this emphasis. Mosston and Ashworth's theoretical assumptions about the kinds of objectives emphasized within reproduction teaching styles were supported by the findings from this study. In terms of differences, the students reported feeling more physically involved in the inclusion-style lessons than in the practice- and command-style lessons. Again, this was reflected in the DCQ and RPE scores. Why this difference? One might postulate that the students felt empowered as a result of having to make decisions about the

level of task difficulty. Feeling 'in charge' may have inspired them to work harder and expend more energy. Mosston and Ashworth (2002) suggested that the single most important element of the inclusion style of teaching is its power of inclusion. 'It is as if the learner says, I have a place too . . . I belong' (180). Other research supports this contention as well. Goudas et al. (1995) found middle-school students' level of motivation to be higher when participating in a differentiated teaching style (inclusion) than in a direct teaching style (practice).

The students reported social involvement in the lessons in a similar manner across the three teaching styles. Their DCQ scores and responses to the interview questions seemed to reflect a perception of indifference or neutrality. Generally, the students' questionnaire responses reflected feelings that were neither positive nor negative. Social involvement was not necessarily enjoyable or not enjoyable, easy or difficult, or good or bad for the students. It seems likely that the feeling of indifference or neutrality specific to social involvement resulted from the students having to exercise on their own. Student organization in all the three teaching styles reinforced an individual experience for the students. If the lessons were designed to include exercises that involved some level of student interaction, it is likely that the students would have felt more socially involved. Research, however, must be conducted to verify this speculation.

The most profound differences were revealed for cognitive involvement. The students perceived cognitive involvement to be much greater in the inclusion-style lessons than in the command- and practice-style lessons. This finding was clearly supported by data derived from the DCQ, RPE scale, and interviews. In the inclusion style, learners must survey the levels of task difficulty, select an initial level at which to enter performance, practice the task, and then reselect a level of difficulty before performing the next set (Mosston and Ashworth 2002). Cognitive processes used to satisfy the decisions to be made in the inclusion style include remembering (recognizing and recalling) and understanding (interpreting, classifying, and comparing) (Krahtwohl 2002). Comparatively, decision-making in the command and practice styles is limited to cognitive process associated with remembering. Beckett (1991) and Jenkins and Byra (1997) found that learners performing under the conditions of the inclusion style scored higher in written knowledge tests than the students engaged in instruction under the conditions of the practice style. The findings from this study support the contention that students engage in more cognitively complex processes when participating in the inclusion style than when participating in the command and practice styles.

After having performed pilates exercises under the conditions of the command and practice styles, the majority of the participants chose the command style as the preferred teaching style. Those selecting the command style over the practice style did so because they liked having the instructor maintain the pace and form for moving. One may postulate that the students associated the content, pilates, as being similar to the content delivered in a step/dance aerobics class (which is almost always taught in the command style) and thus their beliefs that a pilates lesson would be best delivered under the conditions of the command style of teaching. It is important to note, however, that about a third of the participants did choose the practice-style lesson over the command-style lesson because they liked working at their own pace. It seems like different learners have different preferences.

After having experienced the pilates exercises under the conditions of the command, practice, and inclusion styles, the students identified the inclusion- and command-style lessons as their favorites. They selected the inclusion and command styles because of their unique instructional delivery systems. Those who selected the inclusion style liked being able to make their own decisions about the level of task difficulty. Those who selected

the command style liked exercising in unison while following a leader. Only a few students selected the practice style of teaching as their favorite. This finding suggests that learners are diverse. They learn in different ways, come from different cultural backgrounds, and enter physical education with different levels of movement experiences, which precipitates different learner needs and aspirations (Graham 1995; Mosston and Ashworth 2002). To reach the physical, cognitive, and social needs of the different learners, it makes good sense for teachers to employ different teaching styles in their instructional routines.

Summary and educational significance

The findings from this study provide some answers to the two questions posed. First, teaching style does impact students' perceptions about physical and cognitive involvement in pilates lessons. The students felt physically involved participating in pilates exercises delivered in the command, practice, and inclusion styles of teaching. This finding makes perfect sense in that objectives specific to motor/fitness performance are emphasized in the reproduction cluster of teaching styles (Mosston and Ashworth 2002). In addition, the students perceived physical involvement to be greater in the inclusion style than in the command and practice styles. Similarly, the students perceived cognitive involvement to be greater in the inclusion style than in the command and practice styles. Reflecting on Lee's (1997) mediation model of student thinking and behavior, the inclusion style of teaching seems to have much to offer learners in physical education. The inclusion style of teaching allows for choice in the level of task difficulty, the development of task-oriented goals, and the employment of self-referenced assessment strategies. Lee suggested that a learning environment of this type, one that influences student interest, enjoyment, and personal meaning, likely has a positive impact on learner task engagement that, in turn, mediates achievement.

Second, students participating in the pilates exercises did identify teaching style preferences. The command style was favored over the practice style when comparing the two styles and the inclusion and command styles were favored over the practice style when comparing the three styles. This is important for physical education teachers to know because most physical education teachers use instructional strategies that fall under the canopy of Mosston and Ashworth's (2002) practice style of teaching (Cothran et al. 2005; Kulinna and Cothran 2003). Knowing that students prefer other teaching styles such as the command and inclusion styles to the practice style will help physical educators better meet the instructional needs of their students.

So what implications do these findings have for practitioners? If the primary goal is to maximize physical activity involvement, it seems as though any one of these three teaching styles can be effectively used when teaching pilates or perhaps other similar activities such as step/dance aerobics. However, it should be kept in mind that the students in this study preferred the command and inclusion styles over the practice teaching style. On the other hand, if the goal is to get students physically and cognitively engaged, the most efficient way to do so may be to integrate the inclusion style with the command style. The students should be provided alternative levels of task difficulty (inclusion) but should be made to perform the task with regard to the model in unison (command).

Much still remains to be learnt about the perceptions of students about Spectrum teaching styles. To learn more, researchers need to conduct similar studies with school-aged learners (e.g. elementary school-, middle-school-, and/or high-school-aged learners), different content areas (e.g. motor skills), and different drill organizations (e.g. students paired and students working at stations). These represent but a few of the directions for future research.

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