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Behaviors of students and teachers in the command, practice, and inclusion styles of teaching: Instruction, feedback, and activity level

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Abstract

Validating selected theoretical assumptions associated with the Spectrum of Teaching Styles is critical to the pursuit of knowledge about effective instructional strategies. To assess these styles, a total of 77 college-aged students at one university enrolled in four physical activity classes and participated in three 50-minute lessons with different teaching styles. One lesson was delivered in the command teaching style, one in the practice teaching style, and one in the inclusion teaching style. All 12 lessons (three to each class) were taught by one Spectrum trained teacher. Students performed the same series of five Pilate's abdominal exercises in all three lessons. Three observation instruments were used to systematically code instructional climate (Stewart, 1989), time-on-fitness (Chung, 1989), and teacher feedback (Dodds, 1989; Mosston and Ashworth, 2002). Descriptive statistics were computed for the student and teacher behaviors. One-way ANOVAs were used to examine behavior differences among teaching styles. The results revealed that the amount of time spent in instruction was higher in the inclusion style of teaching and amount of time spent in activity was lower. Within active fitness time, no differences were revealed across teaching styles. Individual skill feedback was provided at a higher rate in the practice and inclusion styles of

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teaching. This information is critical to educators making informed decisions regarding the efficacy of a specific teaching style and its potential utility in facilitating student performance behavior.

Keywords
Spectrum of teaching styles, teacher behavior, student behavior, physical education

Introduction

The Spectrum of Teaching Styles (Mosston and Ashworth, 2002) is recognized worldwide (Cothran et al., 2005; Mellor, 1992; Telama, 1992). It has been embraced in physical education as a structure for teaching in schools (Gerney and Dort, 1992; Greenspan, 1992), designing undergraduate teacher preparation programmes (Ashworth, 1992; Byra, 2000), and conducting research (Byra and Jenkins, 1998; Goldberger, 1992; Goldberger and Gerney, 1986). The spectrum is a framework that 'delineates alternative teaching-learning styles' (p. 1) based on the deliberate decisions teachers and students make within the instructional setting (Mosston and Ashworth, 2002). Mutually exclusive learning objectives are met when specific decisions are ordered according to 'who (teacher or student) makes which decisions about what and when' (p. 4). These learning objectives differentiate one teaching style from another, and in turn, impact the 'developing learner in unique ways by creating conditions for diverse experiences' (p. 11).

The Spectrum serves as a continuum of alternative instructional approaches from which teachers select the best to realize the learning objectives (motor, cognitive, and social) associated with a given context. Spectrum theory suggests that 'no teaching style is inherently better or worse than another. Rather, each because of the unique learning conditions it fosters, is either more or less appropriate given the purposes, the context in which it is presented, and the learners involved' (Goldberger, Ashworth and Byra, 2012, p. 268). The Spectrum 'makes no judgment about any teaching approach but rather identifies its position along this decision making continuum within the elements of an instructional context (p. 269). Although some have criticized instructional models like the Spectrum for having universalized and de-personalized teaching particularly in its application of the non-versus notion (Carr, 1993; Sicilia-Camacho and Brown, 2008), Goldberger et al. (2012) argued that the Spectrum provides teachers with a versatile tool through which they can express their creativity and individuality.

Validating theoretical assumptions associated with the Spectrum continues to be critical to the pursuit of knowledge about landmark teaching styles. Numerous Spectrum studies have been conducted to examine student skill learning (Hennings, Wallhead and Byra, 2010; Iserbyt, Elen and Behets, 2010), knowledge gains (Beckett, 1991; Jenkins and Byra, 1996), social behaviors (Byra and Jenkins, 1998; Byra and Marks, 1993; Chatoupis, 2005), and motivation (Chatoupis and Emmanuel, 2003a; Digelidis, Papaioannou, Laparidis, and Christodoulidis, 2003; Morgan, Kingston and Sproule, 2005). In addition, student and teacher perceptions of Spectrum teaching styles in the K-12 physical education setting has drawn the attention of some researchers (Cothran et al., 2005; Jaakkola and Watt, 2011; Kulinna and Cothran, 2003; Sanchez, Byra and Wallhead, 2012).

The most frequently used/experienced styles from the Spectrum are from the reproduction cluster (Cothran et al., 2005; Jaakkola and Watt, 2011; Kulinna and Cothran, 2003). From within the reproduction cluster, teachers and students identify the command and practice as the styles most frequently used in physical education. These two teaching styles are representative of teacher-centered approaches to teaching. Teaching styles within this cluster foster reproduction of

knowledge (Mosston and Ashworth, 2002) and include common teacher decisions regarding demonstration, explanation, and practice with the intent of practice being replication of the modeled movement. Although there is a movement to include student-centered instructional approaches in schools today, the research in the area of physical education indicates that physical educators clearly prefer using teacher-centered approaches to teaching. Cothran and Kulinna (2008) report that physical educators prefer teacher-centered teaching styles over student-centered because they perceive that they can manage students and class time more effectively under the conditions imposed by teacher-centered instructional approaches, and have the knowledge necessary for student learning to occur. Although the research suggests a need to promote student-centered instructional approaches reflective of teaching styles in the production cluster of the Spectrum, it is clear that we must simultaneously continue to research teacher-centered styles of teaching to help teachers make more informed decisions about the efficacy of these approaches and their potential utility in facilitating student performance behavior.

The decisions that teachers and learners make in reproducing teaching styles are organized into three mutually exclusive sets based on the purpose they serve. First, there are pre-impact decisions which define the intent of an episode. These are the planning and preparation decisions made prior to any teacher-learner interaction. Second, there are impact decisions which define the actions of an episode. This involves the implementation of the pre-impact decisions, decisions related to task performance made during the initial stages of an episode (i.e. what, how, when, where). Third, there are post-impact decisions which define assessment during student practice time. These include decisions about giving feedback and assessing what was learned during the episode. These three decision groupings comprise the anatomy of any teaching style (Mosston and Ashworth, 2002).

In this study, the command (A), practice (B), and inclusion (E) teaching styles, all commonly used Spectrum teaching styles that reside within the reproduction cluster, were examined. In the command style of teaching, students learn to perform a task accurately and quickly as presented by the teacher (Ashworth, 2008; Mosston and Ashworth, 2002). The teacher cues the students to move and the students perform the movement in unison. Feedback is provided by the teacher following the completion of a movement sequence. This teaching style is often referred to as *follow the leader*. Teacher decision making is at a maximum in style A while student decision making is at a minimum. All pre-impact, impact, and post-impact decisions are made by the teacher. The role of the students is 'to follow the decisions made by the teacher' (Mosston and Ashworth, 2002, p. 80).

In the practice style of teaching, students learn to perform a specific task as demonstrated by the teacher (Ashworth, 2008; Mosston and Ashworth, 2002). Impact decisions are shifted from the teacher to the learner in style B. The learners must make decisions about where to locate in the movement environment, how quickly to perform the task, when to start and stop a task and move on to the next task, how to posture themselves for the task, and when to ask questions about the task. While practicing the presented task, the teacher offers the students individual feedback to help them reproduce the modeled movement. All pre- and post-impact decisions continue to be made by the teacher, as in style A.

In the inclusion style of teaching, students are provided alternative levels of difficulty from which to choose when performing a task (Ashworth, 2008; Mosston and Ashworth, 2002). After having observed a demonstration, the students enter the task at the level of difficulty that they perceive they will be successful and after practicing for a set number of trials decide whether to continue performing the task at the same, a lesser, or a higher level of difficulty. The purpose of style E is to include learners at their appropriate skill ability level. In addition to choosing the level of task difficulty the students make the same impact decisions as in style B. All pre-impact

decisions continue to be made by the teacher in style E while post-impact decisions are shared between the teacher and learner. Learners must check their own skill performance with the help of a task sheet while the teacher provides them feedback about their role-related behaviors (i.e. communicates with learners about their accuracy in checking skill performance and/or their selection of level of task difficulty). In this study, one modification was made to the inclusion style of teaching. Rather than having the students assess their own task performance, the teacher did, as is the case in styles A and B. This modification was made to better reflect how the inclusion style of teaching is commonly used in the instructional environment (i.e. the teacher allows the students to decide their own level of task difficulty while providing the student with task-related feedback).

There remains a dearth of literature in which teacher and student behaviors within the reproduction teaching styles have been examined. Little is currently understood about the effect of choice of teaching style on impact variables such as student activity and academic learning time, and post-impact variables such as type and frequency of teacher feedback. This information is critical to educators making informed decisions regarding the efficacy of a specific teaching style and its potential utility in facilitating appropriate student performance behavior. Findings from this type of research would also help educators to broaden their understanding of the benefits and limitations of reproduction teaching styles, particularly as they apply to a lifetime activity like Pilates.

The purpose of this study was to examine the behaviors of students and teachers during Pilates physical activity lessons delivered under the conditions of the command, practice, and inclusion styles of teaching. Three questions were addressed: (a) how does teaching style effect the amount of time students spend in instruction, management, wait, and activity?; (b) how does teaching style effect the amount of time students spend being physically active, passively active, and non-active during allocated fitness time?; and (c) how does teaching style effect teacher feedback statements?

Methods

Participants

A total of 77 college students (18–24 years of age), comprising of 59 females and 18 males, from one university in the Rocky Mountain area of the USA participated in this study. The participants were enrolled in four different physical activity classes which were part of their university-wide general education programme. In terms of the students' status, 51% were freshmen, 21% were in their second year, 5% were in their third year, and 23% were in their final year. Approximately 80% of the students were Caucasian. The remaining students were of African-American, Asian, Hispanic, and American-Indian descent, which was representative of the university population.

All of the students were taught by one female teacher who had 5 years of teaching experience with elementary- and college-aged learners. This teacher was trained and assessed in the appropriate use of Mosston and Ashworth's (2002) teaching styles through a university graduate-level course titled *Models of Teaching*. Having one teacher provide all instruction in this study helped control for unplanned variability in teacher behavior (Byra and Jenkins, 1998; Goldberger and Gerney, 1990; Sanchez et al., 2012).

Setting and content

This study took place during the students' regularly scheduled physical activity classes. The students in the four classes met once per week for a 50-minute lesson during the semester. The four sessions required for this study were scheduled consecutively from the second through to the fifth

weeks of each class. During the remaining 8 weeks of the semester, the students in these four classes engaged in other types of aerobic and anaerobic activities under instructional conditions unlike the command, practice, and reciprocal teaching styles. The first lesson of the study was used to introduce the study and the following three lessons to deliver the exercises within each teaching style. All of the lessons were delivered in a gymnasium setting. Each student had an area of approximately 3 m^2 within which to perform the assigned exercises. The students had access to individual foam mats on which to lie while performing the movements. Two cameras placed in non-intrusive positions were used to videotape each lesson. The videotaped lessons were systematically analyzed to examine student and teacher behaviors.

The content delivered during the lessons was Pilates. Pilates is a form of exercise that underscores the development of muscle strength and endurance, flexibility, and body awareness (Shedden and Kravitz, 2006). The students in this study performed the same three-sets of five Pilates abdominal exercises during each of the three lessons: the 100 (100 repetitions), bicycle (20 repetitions), alternating leg lift (20 repetitions), double straight leg (six repetitions), and roll up (six repetitions). Engaging students in meaningful lifetime physical activities while teaching fitness and wellness concepts is the emphasis in today's 'new' physical education programmes (Viadero, 2008; Wikgren, 2011). Pilates is one of those activities that can be performed for a lifetime and is commonly taught in 'new' physical education programmes where the goal is to develop lifelong movers.

Style intervention

This study spanned four lessons. During the introductory lesson, students were provided information regarding the study data collection protocols to enable them to voluntarily decide whether to participate as a research participant in the proposed study. Written informed consent was obtained from all students at the end of the introductory session. Approval of this research study was granted by the university's Institutional Review Board.

The following three lessons were dedicated to deliver the exercises within each teaching style. Given that the focus of this study was to examine teacher and student behaviors (and not learning) across each style, a design that included only a singular well implemented lesson within the conditions of each teaching style was deemed sufficient for the comparative analysis of the chosen behavior variables. 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). During the first activity lesson, two of the four classes were randomly assigned to perform the Pilates exercises under the conditions of the command style of teaching and the other two classes under the conditions of the practice style of teaching. During the second activity lesson, the two teaching style treatments were reversed for the four classes. In the third activity lesson all students received instruction under the conditions of the inclusion style of teaching. The inclusion style lesson was scheduled to take place last to allow the students time to become familiar with the content (i.e. as presented in the command and practice teaching styles in lessons 1 and 2) prior to being placed in a situation that required them to make decisions about level of task difficulty.

Description of lessons

Each activity lesson consisted of an introduction, demonstration, and explanation of the five Pilates abdominal exercises, practice time to engage in the exercises, and a short closure. Lessons 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 use the command 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 use the practice style of teaching. You will do five Pilates exercises. I will demonstrate each exercise and then you will practice each on your own at your own pace and rhythm with the help of the task sheet. While exercising, I will visit each of you to give you feedback about how well you are performing the exercises.

In the inclusion style, the teacher stated the following:

> Today we will use the inclusion style. You will do five Pilates exercises. Once I demonstrate the levels of difficulty for each exercise, you will select the level at which you will begin performing the exercise. After each set of exercises, you will decide whether to make the next set less difficult, keep it the same, or make it more difficult. You will do so at your own pace and rhythm with the help of the task sheet. While you are exercising, I will visit each of you to give feedback about how well you are performing the exercises.

Demonstration and explanation. Following the introductory phase of the lesson the teacher demonstrated and explained each exercise to the students. Task directions and critical cues were provided. Following the demonstration and explanation, the students performed a partial set of each exercise per the conditions of each teaching style. In the command and inclusion styles, a task sheet that included performance directions and cues for the five exercises was provided and explained.

Practice time. After the demonstration and explanation, the students engaged in the demonstrated exercises per the decision-making conditions of each teaching style. In the command style the students followed every decision the teacher made regarding frequency, order, quality, location, timing, and rest time between exercises. These teacher decisions in the command style were shifted to the students during the practice style. In the inclusion style, the students made these same decisions as well as decisions about level of exercise difficulty. In all three teaching styles, the teacher was the provider of task- and role-related feedback.

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

Data collection instruments

Three observation instruments were used to systematically collect data about (a) instructional climates as defined through student actions, (b) student behaviors emitted during time allotted to

physical activity, and (c) teacher feedback provided to the students. All student and teacher behaviors were coded from videotape/audiotape.

Instructional climates. Four instructional climate categories were systematically coded as reflected by student behavior for the duration of each lesson. The instructional climates were comprised of instruction, management, physical activity, and wait time (Stewart, 1989). The learners' actions were coded as instruction when they received information from the teacher about the content of the lesson. Examples include listening to teacher demonstrations, explanations, reviews, and closures. When time was used for managerial or organizational purposes, student behavior was coded as management. Examples include time used to call roll, change activities, and equipment distribution. Student behavior was coded as physical activity when students were to be engaged in physical activity consistent with the instructional goals of the lesson. Student behavior was coded as wait when the student was not involved in instruction, management, or activity. Examples include waiting for the instructor to begin class, going for a drink, waiting to resume an activity, or socializing with another student.

A 5-second observe, record interval recording system was used to determine the amount of time students spent in each of the four instructional categories. Six randomly selected target students were observed for alternating 1-minute segments across each lesson. Specifically, target student one was observed for the first minute of the lesson, followed by student two during the second minute, etc. Once target student six had been observed for one minute, the coder would return to target student one to repeat this cycle of observation. Previous inter-observer reliability for instructional climates has been field-tested yielding a percent agreement score of 93 (Stewart, 1989).

Time-on-fitness. The time-on-fitness observation instrument was used to examine student behavior during lesson time spent within the instructional climate category of physical activity (Chung, 1989). Time in physical activity was sub-categorized as active fitness time, passive fitness time (rest or knowledge), or non-fitness time (Chung, 1989). Active fitness time was defined as 'time spent in a state of motion devoted to the fitness activity' (p. 234). Passive fitness time was categorized as either *rest* or *knowledge*. It was categorized as *rest* when students were engaged in deliberate rest periods associated with the principle of interval training (Faigenbaum, 2009), and *knowledge* when the student either received individual instruction about content from the teacher or was cognitively engaged in task sheet activity. Student behavior was coded as non-fitness when the student was engaged in behavior not related to the prescribed fitness activities. Examples include talking to other students, observing others perform when one should be performing oneself, and tying shoes. An important point to note was that rest time after the completion of each set of exercises was limited (prescribed) to one 10-second time segment based on interval training theory (Faigenbaum, 2009). If a student was inactive the 10-second segment following a 10-second rest segment, the second 10-second segment was coded as non-fitness time. The same 5-second observe record procedures were used to code student behaviors during time allotted to physical activity. According to Chung (1989), inter-observer reliability tests for the time-on-fitness instrument categories have yielded percent agreement scores of 99 (active fitness time), 96 (passive fitness rest time), and 97 (non-fitness time).

Teacher feedback. Teacher feedback statements were classified as positive, negative, or corrective, and either general or specific (Dodds, 1989). In addition, each feedback statement was coded according to whom it was directed (individual student, group of students, or the entire class) and

whether it was role- or task-related (Mosston and Ashworth, 2002). Because feedback statements are discrete, that is, they have a distinct beginning and end and can occur over and over, these data were collected using event recording (van der Mars, 1989). Inter-observer reliability for teacher feedback has been field-tested yielding a percent agreement score of 91 (Stewart, 1989).

Observer agreement

Data derived from the three observation instruments were coded by two trained coders. Coder training was conducted in two stages. During the first stage, the coders independently observed two sample 10-minute fitness episodes conducted within styles A, B, and E three times, once with each instrument. During stage two, three 25-minute lessons, one from each teaching style, were coded independently three times, once with each instrument. Percentage agreement scores of at least 88 for each variable coded had to be obtained for stage two before the coders proceeded to coding the data generated in the study.

Following training, three of the videotaped lessons from the study were randomly selected (one from each teaching style) and coded independently by the two trained observers two different times to obtain inter- and intra-observer agreement scores for the instructional climate, time-on-fitness, and feedback variables. The scored-interval method was used to calculate inter- and intra-observer agreement (van der Mars, 1989). The mean inter- and intra-observer agreement percentage scores for the instructional climate measures were 92 (range 85–100) and 95 (range 92–100), respectively, and time-on-feedback measures 94 (range 86–100) and 96 (range 88–100), respectively. The mean inter- and intra-observer agreement percentage scores for the feedback measures were 87 (range 85–98) and 87 (range 84–100), respectively.

Teaching style fidelity

Style implementation in this study was verified through systematic observation. Style analysis checklists (Sherman, 1982) for the command, practice, and inclusion (modified for the change in feedback) teaching styles were employed to ascertain the level of fidelity between the teacher's instructional behaviors and the style specific behaviors. The checklists included specific criteria about lesson introduction (role identification), lesson demonstration/explanation (subject matter identification), student engagement (performance of the task), teacher feedback (evaluation and feedback), and lesson closure. Inter-observer agreement percentage scores for teaching styles A, B, and E were 100, 98, and 98, respectively. Intra-observer agreement percentage scores for teaching styles A, B, and E were 95, 98, and 98, respectively. Fidelity between the teacher's instructional behaviors and the style specific behaviors was found to be very high.

Data analysis

Descriptive statistics of all variables were computed. Due to variation in lesson duration each category of instructional climate and time-on-fitness behavior was calculated as a percentage of total lesson time. Frequency of teacher feedback statements within each category were summarized and rate per minute scores calculated per lesson. For all descriptive statistics the unit of analysis was an aggregate occurrence of the behavior across all students within class. A series of one-way ANOVA were then conducted to examine for differences across teaching styles. When significant differences were found, Tukey post-hoc tests were used to determine the origin of the

Table 1. Mean percentage of time (SD) spent in instructional climate and time-on-fitness categories.

	Teaching styles			
Categories	Command	Practice	Inclusion	Total
Instructional climate				
Instruction	27.25 (0.50)	23.50 (4.65)	38.25 (2.87)	29.67 (7.14)
Management	3.75 (0.50)	7.00 (0.82)	8.00 (2.94)	6.25 (2.49)
Wait	0.25 (0.50)	2.00 (1.83)	4.50 (1.29)	2.25 (2.18)
Activity	68.75 (0.96)	67.75 (6.40)	49.50 (4.43)	62.00 (10.11)
Time-on-fitness				
Active	72.00 (5.47)	65.25 (8.73)	68.25 (4.50)	68.50 (6.54)
Passive rest	7.25 (1.71)	8.25 (2.06)	7.00 (1.83)	7.50 (1.78)
Passive knowledge	16.50 (3.42)	9.25 (2.22)	15.25 (2.76)	13.67 (4.19)
Non-active	4.50 (2.52)	17.50 (7.90)	10.25 (4.11)	10.75 (7.36)

SD: Standard Deviation.

differences. A $p < 0.05$ level of significance was employed in all analyses. Negative feedback was not included in the statistical analyses because of a lack of its presence in the teacher's interactions with the students.

Results

The purpose of this study was to examine behaviors of students and teachers in Pilates lessons delivered under the conditions of the command, practice, and inclusion styles of teaching. A total of 12 lessons, four conducted under the conditions of each of the three teaching styles, were analyzed for instructional climate, time-on-fitness, and teacher feedback.

Instructional climate

Percent mean and standard deviation scores for the time students spent in the four instructional climate categories within the command, practice, and inclusion style lessons are presented in Table 1. The descriptives revealed that the students spent the greatest amount of time engaged in physical activity and receiving instruction and the least amount of time engaged in management and wait across all three teaching styles. One-way ANOVAs revealed significant main effects for instruction time ($F[2, 11] = 23.38$, $p < 0.001$) and activity time ($F[2, 11] = 22.915$, $p < 0.001$) across teaching styles. Tukey post-hoc tests showed time spent in instruction to be significantly higher in the inclusion style of teaching than in the command and practice styles, and time spent in activity to be significantly higher in the command and practice styles than in the inclusion style. No significant main effects were found for class time spent in management and wait.

Time-on-fitness

One-way ANOVAs revealed significant main effects for passive fitness knowledge ($F[2, 11] = 7.459$, $p < 0.01$) and non-active fitness ($F[2, 11] = 5.950$, $p < 0.02$) across teaching styles. Tukey post-hoc tests showed time spent in passive knowledge fitness to be significantly higher in the

Table 2. Mean rate per minute scores (SD) for feedback type, direction, and concern categories.

Categories	Teaching styles					
	Command		Practice		Inclusion	
Type	General	Specific	General	Specific	General	Specific
Positive	0.41 (0.06)	0.10 (0.08)	0.42 (0.09)	1.14 (0.22)	0.27 (0.14)	1.06 (0.21)
Negative	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Corrective	0.02 (0.05)	0.44 (0.19)	0.01 (0.02)	0.70 (0.33)	0.01 (0.02)	0.27 (0.23)
Direction						
Individual	0.00 (0.00)		1.57 (0.62)		1.03 (0.51)	
Group	0.00 (0.00)		0.26 (0.22)		0.37 (0.06)	
Class	1.34 (0.52)		0.45 (0.17)		0.34 (0.20)	
Concern						
Task	0.95 (0.26)		2.21 (0.26)		1.57 (0.46)	
Role	0.02 (0.03)		0.03 (0.02)		0.03 (0.00	

SD: Standard Deviation.

command and inclusion styles than in the practice style of teaching, and time spent in non-active fitness to be significantly higher in the practice style compared to the command style. No significant main effects were found for time spent in active fitness or in passive rest fitness across styles.

Teacher feedback

Mean frequency scores for teacher feedback behaviors recorded within the command, practice, and inclusion style lessons are presented in Table 2. In terms of feedback type, the provision of positive general feedback was similar across all lessons regardless of teaching style imposed as was the provision of corrective feedback (general and specific) and the complete omission of negative feedback. In terms of concern, the feedback provided was overwhelmingly task-related in all lessons. One-way ANOVAs revealed several significant main effects for teaching styles. For type, a main effect was revealed for positive-specific feedback ($F[2, 11] = 39.662$, $p < 0.001$). Tukey post-hoc tests indicated that the rate per minute of positive-specific feedback was significantly higher in the practice and inclusion style lessons than in the command style lessons. For direction, main effects were found for individual ($F[2, 11] = 11.809$, $p < 0.003$), group ($F[2, 11] = 8.177$, $p < 0.009$), and class ($F[2, 11] = 10.831$, $p < 0.004$) directed feedback. Rate of feedback directed towards individual and groups of students was significantly higher in the practice and inclusion style lessons than in the command style lessons, while rate of feedback directed towards the class was significantly higher in the command style lessons than the practice and inclusion style lessons.

Discussion

In this study college-aged students participated in three 50-minute physical activity lessons in which they performed the same series of five Pilates exercises under the conditions of the command, practice, and inclusion styles of teaching. Three research questions were examined: (a) how does teaching style effect the amount of time students spend in instruction, management, wait, and

activity? (b) how does teaching style effect the amount of time students spend being physically active, passively active, and non-active in fitness time?; and (c) how does teaching style effect teacher feedback statements? The behaviors analyzed revealed similarities and differences in the students' and teachers' actions across the three style-specific lessons.

Instructional climate

The amount of management (6%) and wait time (2%) accumulated in each lesson was quite low in this study. No style differences were found for these two variables. In real time, wait and management combined equated to a little more than 3 minutes per lesson. In a review of studies on academic learning time with elementary-aged learners, Siedentop, Mand and Taggart (1986) found that in games lessons (e.g. tennis, soccer, basketball, volleyball, and badminton) management time ranged between 20% and 25%, while in lessons involving continuous activity like swimming and fitness exercises management time ranged between 7% and 14%. In these same studies wait time was found to be higher in sport-related lessons and lower in lessons where activity was more continuous (e.g. fitness, swimming, etc.). Given that the content in the lessons delivered in this study was fitness-related, it is not surprising that time for management and wait were low. Additionally, development maturity would suggest that management time should decrease when teaching college-aged students compared to teaching school-aged learners.

Two teaching style differences were revealed for instruction and activity. Time allotted to instruction was found to be significantly higher and time allotted to activity significantly lower in the inclusion style lessons compared to the command and practice style lessons. These findings suggest that additional instruction time (5 minutes) is required for demonstrating and explaining levels of task difficulty and that this, in turn, reduces the amount of time that can be allocated towards activity (7 minutes) within an inclusion style lesson. Overall, it should be noted that in the current study the amount of time devoted to activity (62%) and instruction (30%) reflects findings reported in the literature regarding ALT-PE subject matter motor time (Godbout, Brunelle and Tousignant, 1983; Randall and Imwold, 1989; Silverman et al., 1984) and general instruction time (Chow, McKenzie and Louie, 2009).

Although the data show activity time to be greater in the command and practice style lessons, the unique set of choices or options presented in the inclusion style of teaching may afford some opportunities for fostering learner motivation. In this type of instructional environment, students are likely to experience higher levels of perceived autonomy, one of three antecedents of motivated behaviors identified in self-determination theory (Vallerand, 2001). Positive increases in student self-determination have been shown to result from participation in environments where students control their performance options (Ommundsen and Eikanger-Kvalo, 2007; Prusak et al., 2004). A recent study by Sanchez et al. (2012) showed that students preferred the inclusion style (over the command and practice) as they felt empowered as a result of being able to choose the level of task difficulty. Lee (1997) suggests 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.

Time-on-fitness

Although the amount of time allocated to activity was higher in the command and practice lessons, the amount of time that students were engaged in active fitness during activity time was similar

across the three teaching styles. This is an interesting finding in that the students are afforded opportunity to make multiple impact decisions in the practice and inclusion styles, and post-impact decisions in the inclusion style, decisions that are made by the teacher in the command style of teaching. Commonly made pedagogical assumptions suggest that this shift in decision-making responsibility could result in students spending less time in active fitness as the students may lack the personal social responsibilities associated with making these decisions. Studies with school-aged participants are needed to further investigate this finding. The findings from research in which the system for observing fitness instruction time (SOFIT) has been utilized (McKenzie, Sallis and Nader, 1991) to measure time spent in active fitness in similar lesson contexts compare favorably to the results in the current study. For example, activity levels during swimming instruction with fifth graders (Cardon et al., 2004) and health-related physical fitness lessons with elementary-aged learners (van der Mars et al., 1998) were found to be slightly over 50%.

Significant differences were revealed for passive knowledge fitness time and non-active fitness time across styles. Passive knowledge fitness was higher in the command and inclusion teaching styles. In the command style lessons, the teacher provided instructional information to the learners at the completion of each set of exercises (i.e. what was done well and what needed to be corrected). In the inclusion style lessons, the students spent time reviewing their task sheets while making decisions about level of task difficulty for their next set of exercises. Although the students did have task sheets on which exercise cues were provided in the practice style lessons, the students spent little time looking at these sheets. The repetition of exercise across lessons suggests that the learners in the practice style knew how to do the exercises without having to review their task sheet, hence, less time spent in passive fitness knowledge.

Non-active fitness behavior was displayed when the students were talking to or observing their peers, tying their shoelaces or adjusting their gear, or simply spending more time resting than prescribed. Amount of time categorized as non-active fitness was significantly greater in the practice and inclusion style lessons than the command style lessons. In the command style lessons the students were found to be off-task for an average of 1 minute and 30 seconds compared to an average of 4 minutes in the practice and inclusion style lessons. Findings in the practice and inclusion lessons indicated that when given the opportunity to make decisions about the pace and rhythm at which to practice, students were apt to spend more time engaging in activity that was misaligned with the lesson objectives. Research indicates that student decision-making is something that students have little experience with in the physical education setting (Chatoupis and Emmanuel, 2003b; Goldberger and Gerney, 1990; Goldberger, Gerney and Chamberlain, 1982) and this may be why it appeared that students in this study were not always physically active during the allocated activity time. If students can successfully negotiate the pace and rhythm and level of exercise difficulty chosen by the teacher, then the command style of teaching may be the more appropriate teaching style to employ of the three studied when teaching Pilates lessons.

Teacher feedback

The majority of feedback received by the students was positive and concerned with student task performance. This was found to be the case in all lessons regardless of the teaching style imposed. In terms of general and corrective feedback, the teacher provided similar amounts across all lessons. These findings reflect those reported in other studies of teacher feedback that have been conducted in the physical education setting (Rikard, 1991; van der Mars, 1987, 1988), which found

teacher feedback to be predominantly positive, specific, task-related, and directed towards the individual with the goal of student practice after feedback reflecting skill performance development.

Two informative differences were revealed for teacher feedback. First, a greater frequency of positive specific feedback was provided under the conditions of the practice and inclusion styles of teaching compared to the command. Second, feedback was directed more towards individual student performance in the practice and inclusion style lessons. Explanation for these differences seems to lie within the structure of the teaching styles (i.e. who makes what decisions when). In the command style of teaching, the students perform the prescribed activities exactly as cued (paced) by the teacher. That is, the students *do as the teacher says and does*. Having to make all of the impact and post-impact decisions seems to limit giving feedback after the completion of each task (series of exercises) and to the entire class. In the practice and inclusion styles of teaching, the students are initially shown what to do, and then, at their own pace and rhythm they practice the prescribed activities. Relinquishing some of the impact decisions to the learner allows the teacher to circulate amongst the students and give feedback to individual learners during activity time. These findings clearly support the theory that each teaching style meets a unique set of objectives and in doing so contributes to the instructional environment in different ways (Chatoupis, 2009; Mosston and Ashworth, 2002).

Practical implications

Teachers have many decisions to consider when teaching a lesson. One of those decisions is what teaching style(s) to use. Findings from this study can be used to help physical education teachers make informed decisions about the selection of one or more teaching styles for a given lesson.

In the command style of teaching teachers tend to be limited to directing general feedback to the entire class (rather than to individual students) and only after the completion of task performance. The reason for this is that the teacher is providing a continuous model for the students during activity time. While there are some limits to when and whom feedback is directed, student off-task behavior during activity time tends to be reduced because the students are attempting to stay to the pace and rhythm of the teacher's model. Students do not want to feel like they are 'alone in a mass, (Graham, Holt/Hale and Parker, 2013). If the primary objective of the lesson is to have students work at a prescribed pace and rhythm like when performing fitness-related activities, and giving individual and specific feedback is not of high priority, then the command style of teaching is the more appropriate teaching style of choice amongst the ones researched in this study.

In the practice and inclusion teaching styles the findings indicate that the teacher has much greater opportunity to provide individual specific feedback to the learners because they are working independently at their own pace and rhythm. If the primary objective of the lesson revolves around students assuming more self-responsibility, and individual specific feedback is deemed necessary for higher quality of task- and role-related performance, then engaging students within the conditions of the practice and/or the inclusion teaching styles would be more appropriate than the command style.

Finally, when utilizing the inclusion style of teaching teachers must realize that the students will spend more time in instruction and passive knowledge during activity time because the teacher has to model the different levels of task difficulty to the students and the students must make decisions about selection of level of task difficulty when performing the activities. These actions will have an impact on the amount of time students are physically engaged in the lesson tasks (Chatoupis, 2009). However, teachers must also recognize that the outcome of students making their own

decisions (i.e. level of task difficulty) in the inclusion style of teaching is engagement in activity at a more appropriate skill/task level. A skill/task level prescribed by the teacher, which is the case in the command and practice styles of teaching, may lead to the task being too difficult (frustrating) or too easy (boring) for students. If the primary objective of the lesson is more about engaging at an appropriate skill/task level and less about being engaged in activity for the greatest amount of time, then the inclusion style of teaching is the more appropriate teaching style of choice amongst the ones researched in this study.

Summary

Within the design limitations and context of this study – a single content area, Pilates; a relatively small sample size; university level participants all from one institution; participation in three 40-minute lessons, one under the conditions of each style – the findings provide some answers to the questions posed. However, much still remains to be learned about the behaviors of students and teachers in Spectrum teaching styles. To learn more, researchers need to conduct similar studies with school-aged learners from different grade levels while using the same and/or different teaching styles and the same and/or different content. For example, what will the results be when studying third graders and the content being taught is a motor skill (e.g. striking with a short-handled racquet)? Research that includes multiple lessons within each teaching style must also be studied. This would help determine the stability of the teacher and student behaviors over time. For example, what will the results be after students engage in three or four lessons within each teaching style studied? Finally, the need to extend this research to include episodic teaching (Chatoupis, 2009), investigating the use of a series of two, three, or perhaps four different teaching styles, would be beneficial. Chatoupis suggests that 'using alternative teaching styles in a deliberate sequence can produce expanded learning experiences that provide learning opportunities on multiple domains [of learning]' (p. 202). These represent but a few of the directions for future research in this area.

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