

# The Effects of Two Disparate Instructional Approaches on Student Self-perceptions in Elementary Physical Education

*Constantine Chatoupis and Constantine Emmanuel*

Using competence motivation theory, this study examined the effects of Mosston's practice style (B) and inclusion style (E) on perceived athletic competence of 111 fifth-grade students (62 boys, 49 girls). Teaching styles were systematically applied for 12 weeks. Harter's Self Perception Profile for Children was used to measure perceived athletic competence prior to and after the instructional intervention. Factorial analysis of covariance (Gender  $\times$  Treatment) on the posttest scores showed that there were no significant differences between the two teaching style groups in perceived athletic competence and no significant gender effect ( $p < .05$ ). However, both groups did significantly better than the control group ( $p < .05$ ). Moreover, a statistically significant interactive effect (Gender  $\times$  Treatment) was found ( $p < .05$ ). Girls did better with the inclusion style than with the practice style and the control group, and boys did better with the practice and inclusion styles than with the control group. This result indicates that self-perceptions may vary as a function of the teaching style and gender.

**Key Words:** physical education, teaching styles, self-perception, athletic competence

**Key Points:**

- The effectiveness of two disparate teaching methods on children's competence beliefs was assessed.
- The motivational climate was manipulated to affect perceptions of competence.
  - Students' characteristics interacted with instructional strategies to influence self-perceptions.

## Introduction

A major goal for physical education (PE) teachers is to motivate students to participate in physical activities on a regular basis and encouraging them to adopt lifetime activity habits. The intent of the Greek PE curriculum (16) reflects this goal. The literature has revealed that perceptions of competence are said to be a primary factor

---

C. Chatoupis <solomosd@acn.gr> is with the Faculty of Education at the University of Manchester, Manchester, UK. C. Emmanuel <cemman@cc.uoa.gr> is with the Faculty of Physical Education and Sport Science at the University of Athens, Athens, Greece.

that affects students' motivation (20, 21, 34), and they are also associated with choice and degree of students' involvement in activity and sport (9). A setting that has the potential to impact children's self-perceptions and competence beliefs, and in turn motivation, is the school because almost all children can be reached in that setting. Therefore, PE teachers are the ones who can foster enhanced perceived competence by selecting appropriate instructional strategies.

### ***The Spectrum of Teaching Styles***

Goldberger (12) states that each scientific discipline should have a conceptual framework that can provide researchers with definitions and parameters, and serve as a repository for gathering results. A conceptual framework, commonly used in conducting research and delivering instruction in schools, is the Spectrum of Teaching Styles (4). According to Mosston and Ashworth (32), the Spectrum consists of a continuum of 11 styles, each of which emerges as decisions shift between teacher and learner. Styles A, B, C, D, and E represent the teaching options that foster reproduction of past knowledge, whereas styles F, G, H, I, J, and K represent options that invite production of new knowledge.

The focus of this study is on two of the reproduction teaching styles, the Practice and Inclusion styles. Style B (Practice style) is the first style in the Spectrum that involves the student in the decision making process (32). For the first time, nine impact decisions of the impact set are shifted to the student. The impact set includes decisions made during the teaching-learning transaction that define the action. These decisions are posture, location, order of tasks, starting time per task, pace and rhythm, stopping time per task, interval, attire and appearance, and initiating questions for clarifications. The teacher observes student performance and offers individual and private feedback to each student. Also, he or she is available to answer questions by the students (32).

In style E (Inclusion style), apart from the nine decisions of the impact set, students have to make two additional decisions: select a level of difficulty (an entry point) that is appropriate for them, and check their own work against criteria prepared by the teacher (32). In this style, the teacher does not give feedback about the performance of a task. This is the responsibility of the student. The role of the teacher is to prepare the tasks and the levels of difficulty within each task, observe student performance, answer questions by the students, and respond to the students' role in decision making—that is, to communicate with students about their accuracy in self-checking task performance and their appropriate selection of the level of difficulty (32).

A basic difference between styles B and E lies within the conditions for learning (32). In style B the teacher provides a single level of difficulty within a given task, and all students perform at that level of difficulty. In style E the teacher designs the tasks in such a way that the learners choose among several levels of difficulty and then enter the activity at the level of their choice.

### ***Self-perceptions of Competence***

Harter's (19) competence motivation theory is specific about ways of enhancing competence. A central construct in Harter's model of competence motivation is

perceived competence. Harter (19, 20) argued that perceived competence refers to one's domain-specific self-esteem as it relates to the competence dimension of self-esteem and is an indicator of students' sense of what they can do and how good they are at different tasks. Harter (22) viewed children's (6–12 years old) perceived competence as separate domains, including scholastic competence, athletic competence, social competence, physical appearance, and behavioral conduct.

According to Harter's (19, 20) model, a factor that can influence perceived competence is optimal challenges. Optimal challenge, according to Harter (19), refers to situations in which the activity is changed or modified to fit the child rather than the child to the activity. This notion is also supported by other authors who believe that instructional strategies that allow for task or equipment modifications can be very effective in effecting competence beliefs (34, 46, 47).

### *Self-perceptions and the Spectrum*

Compared to style B, the climate provided by style E, as Goldberger (13) has hypothesized, can improve learners' emotional development. Based on the notion of optimal challenges (19), the Inclusion style should hold potential in promoting self-perceptions: In style E individual differences are accommodated because activities are modified to provide different difficulty levels (32) and thus, optimal degrees of challenge. Weiss (48) argues that ordering skills from simple to complex or making intra-skill modifications is a path of providing optimal challenges and thus increasing perceived competence. Several theorists recommend that style E should lead to students' success in task performance, which should lead to improved feelings about oneself—that is, self-esteem, self-concept, or self-confidence (11, 31, 32, 35).

Although self-esteem development is one of the most important outcomes of teaching PE in Greece (16), few Spectrum studies have investigated constructs concerning the self. Specifically, Chamberlain (6) examined the effects of style B and style E on self-concept of fifth-grade students and found no significant differences. Harrison, Fellingham, Buck, and Pellett (18) studied the effects of styles A and B on self-efficacy of 58 university students. According to the findings, self-efficacy increased for all students with no significant difference in style. Similar results were found in another study of self-efficacy. The elementary students (240) in Salter and Graham's study (37) showed no difference in self-efficacy when taught within the Command and the Guided Discovery styles. Perhaps most relevant to the present study, Goudas, Biddle, Fox, and Underwood (14) examined the motivational effects of style B and style E in track and field. Twenty-four girls, 12 to 13 years of age, were divided into two groups based on the teaching styles implemented. Results indicated that girls in the Inclusion style group had higher perceptions of competence in track and field athletics than their counterparts in the Practice style group. In other similar studies (24, 42, 46) the researchers used approaches that share characteristics similar to those of style E to manipulate the motivational climate in the class. They found that students in task-involved conditions demonstrated higher perceptions of competence than their counterparts in the control classes.

Presently, little is known about the effects of teacher behaviors that support inclusion practices on primary school children's perceptions of athletic competence

in PE settings. Given this lack of empirical evidence, it seems important that this area of investigation receive further attention from researchers.

The primary purpose of this study was to examine the effects of style B and style E on fifth-grade students' perceived athletic competence. A secondary purpose was to examine differences in perceived athletic competence between boys and girls, as well as the interactive effects of teaching styles and gender on perceived athletic competence. Important information about differences in learning among groups of students with different characteristics (e.g., gender) is concealed when only group means are used to compare control and experimental group data (41). Therefore, we felt justified in factoring gender in the statistical procedure to see if boys profit from one style and girls profit from the other in terms of perceptions of competence. Two questions were addressed in this study: (a) Will the conditions of style B and style E make a difference in students' perceived athletic competence? and (b) Are there interactive effects between styles of teaching and students' gender on perceived athletic competence?

## Method

### *Participants and Setting*

A total of 111 (62 boys, 49 girls) fifth-grade students from three public schools located in one of the eastern municipalities of Athens, Greece, participated in this study. All three schools were representative of the schools of that area in terms of indoor facilities, sport equipment, and the PE curriculum taught. Two intact classes from each school were randomly assigned to the three groups (treatment groups and control group). A total of 37 students participated in the style B classes (24 males, 13 females), 34 in style E classes (19 males, 15 females), and 40 in control classes (19 males, 21 females). It should be noted that the students did not know whether they were in the treatment or the control groups. The students, who were approximately 10 years old ( $M = 10.11$  years,  $SD = 0.39$ ), came from similar socioeconomic background (middle class). Moreover, none belonged to ethnic or religious minority groups. Male PE teachers had taught the students during the previous school year.

The study lasted 12 weeks. PE was taught twice a week at 45 min per session. Teaching took place in the gymnasium of each school used by the students during their regularly scheduled PE classes.

All students were taught by the same teacher, who had 8 years of teaching experience in elementary PE settings (third- to sixth-grade level). While abroad as a post graduate student, and later as an in-service teacher, he was trained in the appropriate use of the Spectrum of Teaching Styles. In addition, in his most recent years of teaching, he had presented numerous episodes of the teaching styles (including styles B and E) to elementary school children. Also, he was new to the students of the present study. Having one teacher provide all instruction helped to control for unplanned variability in the teacher factor. The students received an orientation to the teaching prior to the first session. This included an introduction to the two teaching styles. However, they did not know they were participating in a research project. The parents were asked to sign a consent form for their child's participation.

## *Sport Skills*

The subject matter taught included sport skills suggested by the National Analytical Program of PE for the fifth grade (16). This was done to retain the ecological validity of the findings and be consistent with the National Curriculum. Therefore, during the 12 weeks, the following skills were taught: volleyball (set, underhand serve, forearm pass), basketball (one hand set shot, jump shot), and association football (throw in, forward pass, kick). The teacher planned the sessions for each style group (organization and management of students and equipment as well as the skill tasks taught) and spent 3 teaching hours (three sessions) to teach each sport skill. All skills were novel to the students, and none of them had received formal instruction in these skills prior to the study. The teacher presented the skills in such a way as to resemble sport-like and game-like situations. Therefore, there was a match between the subject matter taught and the perceived athletic competence questionnaire. The tasks were the same for the style groups (treatment groups) and the control group.

## *Treatments/Teaching Styles*

The treatments for this study involved sessions on sport skills that were presented by the teacher in either style B or E. In style B, there was one single level of difficulty determined by the teacher, whereas in style E, the teacher provided multiple levels of difficulty within each task (32). In the present study, the factors that determined the levels of difficulty were the size and the weight of the balls (i.e., small, medium, large), the size of the baskets (small or large), the size of the area on the volleyball court (large or small), the height of the net and the basket, the width of the goal, and the distance (close, in between, far) from a given target (the basket, the goal, or the area on the volleyball court).

To ensure that each student in the style E group would select a level that was difficult enough but not too difficult for him/her to perform a skill successfully, the teacher did the following:

- He urged students to survey the different levels of difficulty within each given task, select an initial level for performance, perform the task, assess their performance against criteria written on the task sheets, and decide whether the level was appropriate for performing the task in accordance with the criteria for correct performance (32), and hitting a target. If they could not perform the task and hit the target, then they had to choose a lower level. If they could, then they could try a more difficult level to challenge themselves.
- When students were unsure about their ability level and could not decide on the difficulty level, he asked them to select the least difficult level. After completing some attempts and realizing at which level they were most capable of performing, they could make the decision about a new difficulty level (4).

Also, in each style E session, the teacher developed dialogues between each student to ascertain the student's ability to compare his/her own performance against criteria (32). The above verbal behavior (Nos. 23, 24, 29, 30, 31, 32 on the checklist in Appendix B) was monitored and checked on the style E checklist by the observer every time he had to make observations. Most of the times, students could verbalize

what they were doing (identify the correct or incorrect performance and correct the errors in case of an incorrect performance).

Following the suggestions of Mosston and Ashworth (32), in both teaching styles, communication among the students was kept to a minimum, and comparing each other's results was not encouraged because both styles are designed for individual and private practice. The focus was not for students to compete against each other but, instead, competition was against oneself and one's own standards (32). Also, in both teaching styles, knowledge of performance was the salient form of feedback. The teacher worked with students on an individual basis and focused on technique as long as learning new technique is a major objective of the Greek PE National Curriculum (16). Knowledge of performance was used to inform students of their competence in the sport skills. Furthermore, task sheets were used to assist the students in remembering the tasks and cutting down on repeated explanations by the teacher (32). For style B lessons, the task sheets included verbal and pictorial information about what to do and how to do it (criteria for the correct performance). For style E lessons, the task sheets included the same verbal and pictorial information as well as information about the factors affecting the degree of difficulty and the different levels of difficulty within each task.

### ***Control Group***

We decided to have the control group be involved in PE lessons. In this way the treatment and the control groups were similar in the sense that all students were involved in PE activities. The teacher made attempts not to exhibit behaviors that could be specific to style B or style E because according to Gall, Borg, and Gall (10), a study can be more valuable to the extent that the control and the experimental groups are similar except that the control group receives no treatment or an alternate treatment to that given to the experimental group. Thus, the teacher consistently utilized an approach that included verbal presentation of the task, demonstration, practice, and closure. Also, he interacted with the students only for organization/managerial and discipline purposes. Therefore, it can be said that the control group was exposed to a "laissez faire" type of strategy.

The employment of a control group, like the one described above, served two purposes. First, research designs that include a control treatment group or a false treatment group are less susceptible to the Hawthorne effect and the John Henry effect, as well as to compensatory equalization and resentful demoralization than those that do not (10, 40, 43). Therefore, attempts were made to minimize the influence of those psychological factors. Second, at the same time students of the control group were not deprived of the opportunity to be involved in PE lessons and thus to learn during the 12 weeks.

### ***Instrumentation***

The athletic competence subscale of Harter's (22) Self Perception Profile for Children was used to measure perceived athletic competence. According to Harter (23), this subscale measures how competent a child feels at sports and games requiring physical skill and athletic ability and is designed for children ages 8 to 15. The subscale consists of 6 items. Each item of the subscale is given scores ranging

between 1 and 4. A score of 1 indicates the lowest perceived athletic competence, and a score of 4 indicates the highest perceived athletic competence (22). The subscale has been used in PE contexts (29, 33), and its validity and reliability have been demonstrated by Harter (22) and several studies in the physical domain (49). Apart from the athletic competence subscale, the questionnaire included some demographic information such as the name of the students (the initials), school, class, sex, and age.

### ***Pilot Study***

Prior to the main study, a pilot study was conducted to check the reliability of the measuring instruments and record the decision making process. The pilot study lasted for a month. One hundred and ninety-four fifth-grade students were used to estimate the reliability of the athletic competence subscale. Cronbach's alpha was computed to assess the internal consistency of the subscale and was found to be satisfactory ( $\alpha = .78$ ). It should be noted that the students of the pilot study had similar characteristics to those who participated in the main study.

The teacher, who also participated in the main study, implemented the two teaching styles. The teaching period lasted 20 days and took place in a school with three fifth-grade classes. The testing days preceded the teaching period of the pilot study because we did not want the students to be influenced by the two teaching styles, which would contaminate their responses to the questionnaire. This may have affected the reliability results. Furthermore, the students of the pilot study did not participate in the main study.

### ***Pretest-Posttest Procedures***

The initial administration of the questionnaire (pretest) was given 1 day before the study started, and the second administration of the questionnaire (posttest) was given 1 day after the completion of the study. One class session was used to administer the perceived athletic competence questionnaire to the students in all three school settings. Prior to completion of the questionnaire, instructions were given to the students on how they should complete it. The same administration and instruction directives, as specified in Harter's (22) manual, were followed. It took students 40 min to complete the questionnaire.

To avoid socially desirable responses, certain procedures were stressed. First, students were asked to write only the initial letter of their first and last name. Second, they were told that there were no right or wrong answers. Third, the students were told that their PE teacher would not be shown the answers they gave. Fourth, it was stressed to the students that the questionnaire related specifically to their PE lessons and to the tasks taught during the study and not to sports and games that they might be involved in outside school.

### ***Style Analysis Checklists***

Fidelity between the teacher's instructional behavior and the style-specific behaviors was ascertained through systematic observation by means of style analysis checklists (39). Each style-specific analysis checklist contains a list of sequentially organized behaviors/decisions and role description categories that should occur in



an episode conducted in style B and E (see Appendices A and B). The coder must determine whether the behavior in each statement was exhibited by the teacher (T) or the learner (L) by circling the appropriate indicator on the style analysis checklist. The style B checklist contains 28 possible behaviors and the style E checklist contains 37. In both styles, 26 of the possible behaviors are identified as ones that should be exhibited by the teacher for pure style implementation. The remaining behaviors should be exhibited by the learner (1). Also, behaviors exhibited by the incorrect party (teacher or student) are not circled (8).

### ***Observation Coding Procedures and Observers Training***

Lessons taught to both treatment groups were audio-videotaped every other week, enabling teacher behavior to be analyzed. Also, the control group was audio-videotaped because we wanted to check that the teacher did not adopt behaviors that might be specific to style B or E. Observer reliability was checked every 4 weeks to ensure that the observer was using the checklists accurately. The video camera was located in a discreet place so as to reduce students' reactivity to it, and included all students and the teacher in the picture.

Two observers were trained by the lead author to use the Practice and the Inclusion style checklists. Training lasted approximately 10 hours. Within these 10 hours the two observers, with the help of the lead author, developed and discussed the various definitions of the behaviors mentioned on Sherman's (39) checklists, discussed a typical style B and E episode and categorized the behaviors identified on the checklist, practiced some observations on some videotaped lessons, discussed any discrepancies in the observations between them, and kept practicing until the inter- and intra-observer reliability, estimated with Scott's coefficient, exceeded .75. All the lessons of the pilot study were audio-videotaped, and the observers used them to undergo training.

### ***Data Analysis***

A preliminary ANOVA on the pretest scores yielded significant differences among the group means,  $F_{2, 105} = 3.216, p = .008$ . Thus, a factorial 3 (Treatment)  $\times$  2 (Gender) ANCOVA was run on the dependent variable scores. The covariate was the pretest scores on the athletic competence questionnaire. As a post hoc test, the Bryant Paulson generalization of Tukey's HSD procedure was used (3). The .05 level of significance was employed. Scores from the 6 items of the subscale were averaged to provide a profile of the subscale mean for each student. These individual means were averaged again to come up with the group means.

## **Results**

### ***Fidelity of Teaching Style Implementation***

Sherman's checklists were utilized to verify fidelity of teaching style implementation. Sherman established scores of 21 (80%) and above to verify style implementation (1). In this study, scores of between 24 (91%) and 26 (99%) were obtained from one of the two trained observers. Fidelity between the teacher's instructional behaviors and the style specific behaviors was ascertained.



**Table 1** Pretest and Adjusted Posttest Means for the Dependent Variable By Gender and Treatment Groups

Gender/Treatment group	Pretest <i>M</i>	Posttest <i>M</i>
Style B		
Boys	20.61	21.90
Girls	19.67	20.34
Total	20.28	21.12
Style E		
Boys	21.04	21.72
Girls	17.45	22.38
Total	19.45	22.14
Control		
Boys	20.93	18.54
Girls	21.03	20.04
Total	20.98	19.32

To calculate intra- and inter-observer reliability, Scott's Pi coefficient of reliability was used (45). The inter- and intra-observer reliability was between .70 and .95. According to Gelfland and Hartmann (cited in 45), coefficients for reliability that take into account chance agreement (like Scott's coefficient) should be higher than .60.

### *Perceived Athletic Competence Subscale*

After adjustment by the covariate, there was a significant main effect of the treatments,  $F_{2,104} = 14.093, p = .0001$ . Post hoc analysis revealed that style B and style E groups significantly outperformed the control group, whereas there was no significant difference between style B and style E groups. Girls ( $M = 20.94$ ) scored higher than boys ( $M = 20.76$ ) on the questionnaire, but this difference was not significant,  $F_{1,104} = .223, p = .63$ . Also, a significant interactive effect of the Treatments and Gender on perceived athletic competence revealed,  $F_{2,104} = 4.504, p = .013$ . Post hoc analysis showed the following. For boys, significant differences were found between the posttest means of each of the treatment group and the control group; the differences among the treatment groups were not significant. For girls, significant differences were found between the style E group and control group, and the style E group and style B group (see Table 1).

## Discussion

The disparate teaching styles implemented in the two treatment groups did not have distinctively different effects on students' perceptions of athletic competence, as seen in Table 1. In particular, post hoc analyses of the adjusted posttest means

revealed no significant differences between the two teaching style groups in their effects on perceived athletic competence. This pattern of results supports those reported by other, similar studies (6, 18, 37). According to Graham and Heimerer (15), nonsignificant differences between instructional methodologies are not uncommon in pedagogical research. However, the findings of the present study calls for the question, why this nonsignificant difference?

A possible explanation might be that the teaching period did not include enough sessions to enable students to feel competent in the various sport skills taught. More sessions during those 12 weeks might have resulted in revealing significant differences between the two treatment groups. We could not have more than two sessions per week or a longer intervention period because school regulations did not allow for this. Future studies should consider the frequency of the sessions as well as the length of the intervention period.

An important finding was the significant differences in adjusted posttest means between the teaching style groups and the control group for perceived athletic competence scores. The control group was not taught with any standard teaching style, and teaching was not structured in the same way as in the teaching style groups. This finding enables us to argue that when the teacher or the lessons are deliberate in the teaching-learning process and outcomes and students are given decision-sharing responsibilities, their performance in the emotional domain is enhanced. Evidence from research, in which the treatment groups did better than the control group, attests to that notion (7, 26). Apart from the empirical support, several authors have argued that achievement is maximized when roles are clear, the teacher emphasizes instruction, and the teacher takes responsibility for student learning (30). Goldberger's statement that "while teaching behavior (i.e., use of the various styles) is not the only factor which affects student behavior and student learning, it clearly can have a significant affect" (13, p. 435) begs for teachers' attention.

With respect to gender effects, irrelevant of the teaching style, ANCOVA revealed that the adjusted posttest means of boys and girls on the athletic competence questionnaire were not significantly different, with girls yielding higher scores. This result is not consistent with the literature, which shows that usually boys score significantly higher than girls (5, 25, 36, 44, 50). Considering that all skills taught in the present study are masculine-typed skills, and in general boys display more positive competence beliefs on such skills than girls (24, 25, 27), the present finding is difficult to explain.

However, when gender was factored into the analysis, ANCOVA yielded a significant interactive effect on perceived athletic competence (see Table 1). Girls of style E had higher perceptions of athletic competence than girls of style B and the control group, whereas boys profited most from style B and style E than the control group. It seems that when girls are given the opportunity to choose among different levels of difficulty within a given task and, thus, have an entry point from which to succeed, they display more positive self-perceptions, even on skills that are masculine-typed. This result can be very important for pedagogical community and teachers, considering that girls are not so positive about their competence on masculine-typed sports (e.g., football, volleyball, basketball; 24, 27). Designing tasks that are planned at different levels of difficulty to accommodate the vast differences in a class, or introducing equipment and skill modifications (as in style E), seems to be an effective approach to teach girls masculine-typed skills without affecting negatively their self-perceptions.

Previous research (7, 28, 38) has revealed that gender does not interact with instructional approaches to influence the affective domain. Nevertheless, the present finding corroborates Griffey (17), who found that gender is an important characteristic to consider in Aptitude Treatment Interactions (ATIs)<sup>1</sup> and holds potential for helping us to understand how instruction is mediated by individual characteristics. This calls for focusing on which instructional approaches work best for subgroups of students with different characteristics within the classes, in addition to between-class analyses.

In conclusion, within the limitations of this study (i.e., 111 primary school children performing tasks suggested by the Greek National Curriculum), the following recommendations can be made for enhancing fifth-grade students' perceptions of athletic competence: (a) Either style, regardless of gender, can be used to teach the subject matter taught in the present study; (b) style E seems to be more effective for teaching girls; (c) boys can be taught with either style B or style E; and (c) the effectiveness of a selected instructional approach depends, amongst other things, on certain characteristics of the learner (2) such as gender, and thus the teacher should possess a variety of teaching styles to reach more students (1, 32). However, more replication studies, as well as further research conducted in different school settings and with different age groups and sport skills, are needed to support or refute the above findings. In addition, it will be interesting to examine which students choose difficult task-performance levels and which choose easy, and the way this choice is related to perceived competence development.

## References

1. Beckett KD. 1990. The effects of two teaching styles on college student's achievement of selected physical education outcomes. *Journal of Teaching in Physical Education* 10:153-69.
2. Boyce BA. 1992. The effects of three styles of teaching on university students' motor performance. *Journal of Teaching in Physical Education* 11:389-401.
3. Bryman A, Cramer D. 1999. *Quantitative data analysis with SPSS for windows*. London: Routledge.
4. Byra M, Jenkins J. 2000. Matching instructional tasks with learner ability: Teaching style E. *Journal of Physical Education, Recreation and Dance* 71(3):26-30.
5. Causgrove DJ, Watkinson J. 1994. A study of the relationship between physical awkwardness and children's perceptions of physical competence. *Adapted Physical Activity Quarterly* 11:275-83.
6. Chamberlain JR. 1979. The effects of Mosston's "Practice style" and "Individual programme-teacher design" on motor skill acquisition and self concept of fifth grade learners [Doctoral dissertation]. Philadelphia: Temple University. *Dissertation Abstracts International* 40:2540-A.
7. Emmanuel C, Zervas Y, Vagenas G. 1992. Effects of four physical education teaching methods on development of motor skill, self-concept and social attitudes of fifth-grade children. *Perceptual and Motor Skill* 74:1151-67.
8. Ernst M, Byra M. 1998. Pairing learners in the reciprocal style of teaching: influence on student skill, knowledge and socialization. *The Physical Educator* 55(1):24-37.
9. Fox KR, Corbin CB. 1989. The physical self-perception profile: development and preliminary validation. *J Sport Exerc Psychol* 11:408-30.

10. Gall MD, Borg WR, Gall JP. 1996. Educational research: an introduction (6th ed.). White Plains, NY: Longman.
11. Goldberger M. 1984. Effective learning through a spectrum of teaching styles. *Journal of Physical Education Recreation and Dance* 55(8):17-21.
12. Goldberger M. 1992. The spectrum of teaching styles: a perspective for research on teaching physical education. *Journal of Physical Education, Recreation and Dance* 63(1):42-46.
13. Goldberger M. 1995. Research on the spectrum of teaching styles. In: Lidor R, Eldar E, Harari I, editors. Bridging the gaps between disciplines curriculum and instruction, windows to the future. Israel, Wingate Institute: AIESEP. p. 429-35.
14. Goudas M, Biddle S, Fox K, Underwood M. 1995. It ain't what you do, it's the way you do it! Teaching style affects children's motivation in track and field lessons. *The Sport Psychologist* 9:254-64.
15. Graham G, Heimerer E. 1981. Research on teacher effectiveness: a summary with implications for teaching. *Quest* 33:14-25.
16. Greek Ministry of Education. 1997. Elementary physical education—book for the PE teacher. Athens, GR: Greek Ministry of Education, Pedagogical Institute.
17. Griffey DC. 1983. Hunting the elusive ATI: how pupil aptitudes mediate instruction in the gymnasium. In: Templin TJ, Olson JK, editors. Teaching in physical education (Big Ten Body of Knowledge symposium series, Vol. 14). Champaign IL: Human Kinetics. p. 265-76.
18. Harrison JM, Fellingham GW, Buck, MM, Pellett TL. 1995. Effects of Practice and Command styles on rate of change in volleyball performance and self-efficacy of high-, medium-, and low-skilled learners. *Journal of Teaching in Physical Education* 14:328-39.
19. Harter S. 1978. Effectance motivation reconsidered. Toward a developmental model. *Human Development* 21:34-64.
20. Harter S. 1981. A model of intrinsic mastery motivation in children: individual differences and developmental change. In: Collins WA, editor. Minnesota Symposium on Child Psychology (Vol. 14). Hillsdale, NJ: Erlbaum. p. 215-55.
21. Harter S. 1983. Development perspectives on the self-system. In: Hetherington E, editor. Socialization, personality, and social development. New York: Wiley. p. 275-385.
22. Harter S. 1985. Manual for the Self-Perception Profile for children. Denver, CO: University of Denver.
23. Harter S. 1988. Developmental processes in the construction of the self. In: Yawkey TD, Johnson JE, editors. Integrative processes and socialization in early to middle childhood. Hillsdale, NJ: Erlbaum. p. 45-78.
24. Lee AM. 1997. Contributions of research on student thinking in physical education. *Journal of Teaching in Physical Education* 16:262-77.
25. Lee AM, Friendburg K, Belcher D, Cleveland N. 1999. Gender differences in children's conceptions of competence and motivation in physical education. *Sport, Education and Society* 4:161-74.
26. Lydon MC, Cheffers JTF. 1984. Decision-making in elementary school-age children: effects upon motor learning and self-concept development. *Res Q Exerc Sport* 55:135-40.
27. Lirgg CD. 1991. Gender differences in self-confidence in physical activity: a meta-analysis of recent studies. *J Sport Exerc Psychol* 13:294-310.
28. Martinek J, Zaichkowsky D, Cheffers JTF. 1977. Decision making in elementary age children: effects on motor skills and self-concept. *Res Q Exerc Sport* 48:349-57.

29. McKiddie B, Maynard IW. 1997. Perceived competence of schoolchildren in physical education. *Journal of Teaching in Physical Education* 16:324-39.
30. Medley D. 1979. The effectiveness of teachers. In: Peterson P, Walberg H, editors. *Research on teaching*. Berkeley, CA: McCutchan. p. 11-27.
31. Mellor W. 1990. An overview of Mosston's Spectrum of teaching styles. Kingston, Ontario: Queens University.
32. Mosston M, Ashworth S. 2002. *Teaching physical education* (5th ed.). San Francisco, CA: B. Cummings.
33. Papaioannou A. 1997. Perceptions of motivational climate, perceived competence and motivation of students of varying age and sport experience. *Perceptual and Motor Skills* 85:419-30.
34. Papaioannou A, Theodorakis Y, Goudas M. 1999. *Improving the practice of physical education*. Thessaloniki, GR: Salto.
35. Robinson BA, Turkington HD. 1992. Individualized instruction . . . What, why and how?? . . . in physical education. *Runner* 30(4):29-32.
36. Rudisill ME, Mahar MT, Meaney KS. 1993. The relationship between children's perceived and actual motor competence. *Perceptual and Motor Skills* 76:895-906.
37. Salter WB, Graham G. 1985. The effects of three disparate instructional approaches on skill attempts and student learning in an experimental teaching unit. *Journal of Teaching in Physical Education* 4:212-18.
38. Schempp PG, Cheffers JTF, Zaichkowsky LD. 1983. Influence of decision-making on attitudes, creativity, motor skills and self-concept in elementary children. *Res Q Exerc Sport* 54:183-89.
39. Sherman MA 1982. Style analysis checklists for Mosston's spectrum of teaching styles. Unpublished manuscript, University of Pittsburgh.
40. Slavin RE, Leavey MB, Madden NA. 1984. Combining cooperative learning and individualized instruction: effects on student mathematics achievement, attitudes and behaviours. *The Elementary School Journal* 84:409-22.
41. Snow RE. 1987. Aptitude—treatment interaction models. In: Dunkin MJ, editor. *The international encyclopedia of teaching and teacher education*. Oxford: Pergamore. p. 28-31.
42. Theeboom M, De Knop P, Weiss MR. 1995. Motivational climate, psychological responses, and motor skill development in children's sport: a field-based intervention study. *J Sport Exerc Psychol* 17:294-311.
43. Thomas JR, Nelson JK. 1996. *Research methods in physical activity* (3rd ed.). Champaign, IL: Human Kinetics.
44. Trew K, Scully D, Kremer J, Ogle S. 1999. Sport, leisure and perceived self-competence among male and female adolescents. *European Physical Education Review* 5(1):53-73.
45. Van der Mars H. 1989. Observer reliability: issues and procedures. In: Darst PW, Zakrajsek DB, Mancini, VH, editors. *Analyzing physical education and sport instruction*. Champaign, IL: Human Kinetics. p. 53-80.
46. Weigand DA, Burton S. 2002. Manipulating achievement motivation in physical education by manipulating the motivational climate. *European Journal of Sport Science* 2(1). Retrieved from <http://www.humankinetics.com/ejss>.
47. Weiller KH. 1992. The social—emotional component of physical education for children. *Journal of Physical Education, Recreation and Dance* 63(6):50-53.
48. Weiss MR. 1987. Self-Esteem and achievement in children's sport and physical activity. In: Gould D, Weiss MR, editors. *Advances in pediatric sport sciences* (Vol. 2). Champaign IL: Human Kinetics. p. 87-119.

49. Weiss MR, Chaumeton N. 1992. Motivational orientations in sport. In: Horn TS, editor. *Advances in sport psychology*. Champaign IL: Human Kinetics. p. 61-99.
50. Williams L, Gill DL. 1995. The role of perceived competence in the motivation of physical activity. *J Sport Exerc Psychol* 17:363-78.

## Note

<sup>1</sup>An ATI occurs when one or more characteristics of the learner (i.e., gender) and one treatment variable (i.e., teaching style) interact to affect at least one dependent variable (i.e., achievement) (41).

## Appendix A: Practice Style (B) Analysis Checklist

Practice Style–Analysis Checklist

Date..... Time..... Class size.....

### PHASE ONE: SETTING THE SCENE/ROLE IDENTIFICATION

- TL 1. Locates and positions learners.
- TL 2. Names the teaching style.
- TL 3. States the objectives of the teaching style.
- TL 4. Describes the learner’s role, the “shift” in nine decisions.
- TL 5. Shift posture decision to learners.
- TL 6. Repositions learners.
- TL 7. Describes the teacher’s role.
- TL 8. Asks questions for role clarification.
- TL 9. Answers questions for role clarification.

### PHASE TWO: SETTING THE SCENE/SUBJECT MATTER IDENTIFICATION

- TL 10. Announces the general subject matter.
- TL 11. Announces the specific task(s).
- TL 12. Delivers the task(s) to the learners (“show and tell”).
- TL 13. Establishes quantity and quality of task performance.
- TL 14. Establishes order of task performance if not random.
- TL 15. Establishes parameters and logistics for the nine decisions.
- TL 16. Solicits and answers questions for task clarification.
- TL 17. Shifts starting time decision to learners - “You may begin when you are ready”.

### PHASE THREE: PERFORMANCE OF THE TASK

- TL 18. Performs the task(s).
- TL 19. Makes the nine impact decisions, within designated parameters: posture, location, order, starting time, pace and rhythm, stopping time, interval, attire and appearance, and questions for clarification.

### PHASE FOUR: EVALUATION AND FEEDBACK

- TL 20. Moves around classroom, monitors task and role performance of individual learners.

- TL 21. Evaluates learners, offers individual and private feedback to learners about task and roles.
- TL 22. When deemed necessary, adjusts episode at critical moments.

**PHASE FIVE: END-OF-LESSON CEREMONY (“CLOSURE”)**

- TL 23. Locates learners.
- TL 24. Summarizes main points of lesson.
- TL 25. Offers feedback to learners for role performance.
- TL 26. Answers learner-initiated questions for clarification.
- TL 27. Announces coming events.
- TL 28. Closes the episode (i.e., collects equipment and materials, rearranges class room, bids farewell to learners, dismisses the class).

**Appendix B:  
Inclusion Style (E) Analysis Checklist**

**Inclusion Style–Analysis Checklist**

Date..... Time..... Class size.....

**PHASE ONE: SETTING THE SCENE/ROLE IDENTIFICATION**

- TL 1. Locates and positions learners.
- TL 2. Names the teaching style.
- TL 3. Explains the concept of inclusion (the “slanty rope” principle).
- TL 4. States the objective of the style.
- TL 5. Describes the role of the learner, emphasizing the privacy of selecting an entry point (the “plug in” decision).
- TL 6. Describes the role of the teacher.

**PHASE TWO: SETTING THE SCENE/SUBJECT MATTER IDENTIFICATION**

- TL 7. Announces the general subject matter (and why selected).
- TL 8. Announces the specific task(s) (and why selected).
- TL 9. Delivers the task description (individual program) to the learners.
- TL 10. Describes the factor determining degree of difficulty and the various levels specified in the individual program.
- TL 11. Describes the quality, quantity and order of tasks.
- TL 12. Delivers the criteria; explains it and how to use it.
- TL 13. Establishes task-appropriate parameters and logistics.
- TL 14. Answers learner-initiated questions for clarification.
- TL 15. Announces: “You may begin when you are ready.”

**PHASE THREE: PERFORMANCE OF THE TASK**

- TL 16. Acquires equipment and materials (i.e., individual program and criteria).
- TL 17. Conducts self-assessment and selects an entry level for task(s).
- TL 18. Performs the task(s).
- TL 19. Makes the nine impact decisions within designated parameters.
- TL 20. Initiates questions for clarification.



**PHASE FOUR: EVALUATION AND FEEDBACK/LEARNERS ROLES**

- TL 21. Has the criteria for evaluating task performance.
- TL 22. Monitors task performance.
- TL 23. Compares and contrasts task performance against criteria intrinsic to the task.
- TL 24. Draws conclusions about task performance.
- TL 25. Offers task-related feedback.
- TL 26. Decides whether to continue or change entry point placement.

**PHASE FIVE: EVALUATION AND FEEDBACK/TEACHER ROLES**

- TL 27. Has the criteria for evaluating role performance.
- TL 28. Monitors role performance.
- TL 29. Compares and contrasts role performance against criteria.
- TL 30. Draws conclusion about role performance.
- TL 31. Offers role-related feedback after the learner has made entry point and self-check decisions.
- TL 32. Answers learner-initiated questions for clarification.
- TL 33. When deemed necessary, adjusts episode at critical moments.

**PHASE SIX: END-OF-LESSON CEREMONY (“CLOSURE”)**

- TL 34. Locates and positions learners.
- TL 35. Summarizes main points of lesson; announces coming events.
- TL 36. Offers role-related feedback based on objectives of style E.
- TL 37. Closes the episode (i.e., collects equipment and materials, rearranges class room).

***Acknowledgments***

Appreciation is extended to Dr. Dimitris Hatziharistos and Dr. Yiannis Zervas for their comments on the research design and for coding teacher’s behavior. Also, special thanks go to Adonis Gavotsos, Evi Spanou, and Spiros Drosos for helping with data collection.

***About the Authors***

Constantine Chatoupis earned his PhD at the University of Manchester. His main research interests lie in the area of teaching effectiveness and instructional methodology. In particular, he investigates the effects of disparate teaching methods on student behavior and achievement in the physical and affective domains. Moreover, he is interested in the objectives priority in the curriculum and the continuous and regular participation in meaningful physical activities as a major goal of elementary and secondary physical education.

Constantine Emmanuel (PhD) is a professor of Sport Pedagogy in the Department of Physical Education and Sport Science (Athens University, Greece). He is interested in investigating what behavioral objectives Mosston and Ashworth’s teaching styles can accomplish and what students of different ability levels will benefit from which styles, as related to their physical and emotional development.