It Ain't What You Do, It's the Way That You Do It! Teaching Style Affects Children's Motivation in Track and Field Lessons

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The purpose of this study was to examine the motivational effects of two different teaching styles in one sport activity. One class of 24 girls was taught track and field for 10 weeks, each lesson being taught with either a direct (practice) or a differentiated (inclusion) teaching style. After each lesson the girls completed self-report measures of intrinsic motivation and goal involvement. On course completion, 8 girls were interviewed to assess their reactions to the course. ANOVA showed that students reporting higher levels of competence, autonomy, and task orientation had higher intrinsic motivation scores throughout the course. However, teaching style was also found to have an independent effect; the differentiated style was associated with higher levels of intrinsic motivation and task goal involvement and lower levels of work avoidance involvement. A differentiated teaching style can positively influence young girls' reactions to a sports activity independently of perceptions of goal orientations, autonomy, and competence.

Children have featured extensively in the sport psychology research literature (e.g., Roberts & Treasure, 1992), but often the emphasis is on children in volunteer sport situations. Naturally, this will yield biased samples for research, and this is particularly problematic if motivational variables are under investigation. Similarly, there have been calls for interventions to increase the amount of physical activity taken by children in response to the apparent sedentary lifestyles of some children and youth (Sallis et al., 1992). One setting that has potential to influence children and avoid the biases of volunteer sport is that of school physical education (PE). As Sallis et al. (1992) state, "the setting with the most promise for having a public health impact is the schools because virtually all children can be reached in school, and an existing infrastructure is devoted to physical education and health education" (p. S251).

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The purpose of this study, therefore, was to investigate the effects of manipulating the teaching styles used to deliver a PE course to Contemporary motivational constructs are used in an effort to extend sport psychology into the school environment.

Goal Perspectives Approach

The goal perspectives approach, now well known in sport psychology (see Duda, 1993), has been shown to be a valuable way of studying motivational antecedents in sport. However, much of the work has focussed on dispositional goal orientations rather than the actual type of goal involvement adopted by the individual for a specific setting. For example, a student who is strongly ego oriented will not necessarily be ego involved to the same degree in all PE activities. Contextual factors will also influence the students' goals when engaged in learning or achievement tasks. However, there is only limited evidence on task and ego goal involvement as opposed to goal orientations. Meece (1991) found that students in different science classes displayed different goal engagement patterns and that these were largely due to the instructional approach of the teacher. When the teacher promoted meaningful learning, adapted instruction to the personal interest of the students, and was more supportive of students' autonomy, students were more task (mastery) involved in the lessons.

The present study, therefore, utilized contemporary motivational theory to study the psychological effects of situational changes in PE lessons. Specifically, it was hypothesized that a teaching style allowing for greater student choice would produce higher levels of motivation than would a contrasting style either singly or in combination with related dispositional variables.

Method

Participants

Participants in the study were 24 Caucasian girls ranging in age from 12 years and 4 months to 13 years and 7 months (mean age of 13 years). The girls attended a private single-sex school in a small city in the southwest of England. As such, they were representative of middle to higher socioeconomic status.

Procedure

A single intact class of girls was taught track and field athletics over a 10-week period through two different teaching styles delivered by a male university lecturer experienced in teaching styles, pedagogy, and track and field. The activity of track and field was chosen for two reasons. First, it has been suggested by Dickenson and Sparkes (1988) that girls prefer individual rather than team activities, and so track and field was considered an activity of possible interest for the students. Second, the girls had not been taught track and field before.

Students were informed that they were going to take part in a PE course and a study that "would look for the 'best' way to teach PE," but they were not informed of the exact purposes of the study. Students were assured by the

researcher that their responses to questionnaires and in interviews would not be revealed to their teachers, parents, or the university lecturer teaching the course ("the teacher").

The teacher was blind to the exact purpose and hypotheses of the study, but was aware that the study sought to investigate different teaching styles and psychological outcomes. This was necessary, as a great deal of interaction took place between the researchers and the teacher in preparing the study. All lessons were videotaped, and the teacher's verbal interactions with the pupils were recorded with a wireless microphone and receiver connected to a video camera. The video camera was placed in the middle of a balcony overlooking the teaching area such that the whole class was in full view throughout each lesson.

One week prior to the first lesson, the girls completed a series of baseline questionnaire assessments in quiet classroom conditions. Questionnaires were also completed at the end of each lesson. On completion of the course, 8 girls were interviewed for 10–15 minutes each and were asked various questions concerning their perceptions of the lessons.

Course Description

Table 1 shows the course content and the teaching style used in each lesson. Four track and field activities were taught, each with the two teaching styles. The first lesson was an introduction and in the last lesson all four activities were repeated as a conclusion. All lessons were taught in a large sports hall to assist in standardizing the conditions.

The theoretical framework used to develop the two teaching styles was Mosston's spectrum of teaching styles (Mosston & Ashworth, 1986). Mosston's framework is based on the series of decisions required in the teaching–learning process. These decisions are made by the teacher, the pupil, or a combination of the two. Mosston has described a continuum of styles with extremes of Style A (command style), in which the teacher makes all of the decisions, and

Table 1 The Course Structure

Lesson	Activity	Teaching style
1	Hurdling, throwing, relay, jumping	Direct
2	Hurdling	Direct
3	Hurdling	Differentiated
4	Throwing	Differentiated
5	Throwing	Direct
6	Relay	Direct
7	Relay	Differentiated
8	Jumping	Direct (competitive)
9	Jumping	Differentiated (competitive)
10	Hurdling, throwing, relay, jumping	Direct

Style J (self-teaching style), in which
teaching styles used in the present study were Style B (practice
often referred to as the *direct* style, and Style K (inclusion
sometimes referred to as the *differentiated* style.

In the lessons using the direct style of teaching, most of the
made by the teacher. He dictated which tasks should be attempted and
practices should last. Also, all of the students practiced at the same level
difficulty, and instruction was usually in whole class rather than small group
settings. However, the style does allow for some decisions to be made by the
students. For example, in hurdling, students could choose the pace they were
practicing at a given height of hurdle.

In the differentiated style, students were provided with a number of choice
For example, they could choose the pace they wanted to work at and, in some
cases, the activities they wanted to practice. They could choose whether they
wanted to be assessed or whether they wanted to measure (e.g., time) themselves
Where applicable, they could choose between alternative methods of practicing
as in the relay changes where they could choose between downsweep and upsweep
methods. Moreover, an effort was made to allow the students to practice at the
level of difficulty of their choice. For example, in the hurdles lesson, a series of
hurdles at different heights was provided, and students were allowed to choose
their own level. Whole class instruction was generally not used. Throughout the
course, however, in both direct and differentiated lessons, the teacher emphasized
pupil self-improvement.

Assessment of Dispositional Differences

One week prior to the course, students completed questionnaire measures of
achievement goal orientations and perceived autonomy. The latter was assessed
due to its proposed link with intrinsic motivation (Deci & Ryan, 1985). Immediately
ately after the first lesson, the girls completed a measure of perceived athletic
competence.

Achievement Goal Orientations. An established English version of the
Task and Ego Orientation in Sport Questionnaire (TEOSQ) was used for the
assessment of dispositional achievement goal orientations (Duda, Fox, Biddle &
Armstrong, 1992). The TEOSQ is a 13-item scale asking the students to respond
to task and ego goal statements following the stem "I feel successful in sport
when. . . ." In addition, a 3-item work avoidance goal subscale was included
(see Duda et al., 1992). Each item was answered on a 5-point scale. Prior research
has demonstrated acceptable psychometric properties with British children of the
same age (Duda et al., 1992; Fox, Goudas, Biddle, Duda & Armstrong, 1994).
In the present study, internal reliability, using Cronbach's alpha, was satisfactory
for task ($\alpha = 0.80$), ego ($\alpha = 0.86$), and work avoidance ($\alpha = 0.81$) goals.

Perceived Autonomy. Items from the Academic Self-Regulation Questionnaire (ASRQ; Ryan & Connell, 1989) were adapted to assess external regulation, introjected regulation, identified regulation, and intrinsic motivation orientation. *External regulation* refers to behavior that is externally controlled through threats and rewards. In this case, students participate in the lesson because "they have to" and because they will be punished if they do not. In *introjected regulation*, the locus of causality lies within the person, but the individual

primarily to avoid negative feelings or to obtain rewards. Introjected regulation in PE might be shown by the student who participates to avoid being labeled a "bad student." In *identified regulation*, students realize that their participation may be useful to them in some way, such as helping them get a job or learn valuable skills. The *intrinsic motivation* pole of this continuum describes the student who participates for enjoyment and the intrinsic pleasure of the activity itself.

Ryan and Connell (1989) have shown that an index of self-determination —the Relative Autonomy Index (RAI)—can be obtained by giving each orientation subscale a weighting as follows: external regulation (−2), introjection (−1), identification (+1), and intrinsic motivation (+2). The RAI is then computed by adding the products of the motivational subscales by their relative weight. The RAI represents a continuum of perceived locus of causality, or perceived autonomy, with positive scores indicating more internal locus of causality. Cronbach's alpha for the subscales were just satisfactory: external, $\alpha = 0.76$; introjection, $\alpha = 0.70$; identified, $\alpha = 0.64$; and intrinsic, $\alpha = 0.65$.

Perceived Competence. At the end of the first lesson, students completed a 5-item scale assessing their perceived competence in track and field athletics. Ratings were made on 5-point scales anchored by *very much so* (5) and *not at all* (1). Cronbach's alpha was a satisfactory 0.87.

Questionnaire Measures Taken at the End of Each Lesson

Immediately after lessons 2–9, each student completed questionnaire measures of intrinsic motivation, task and work avoidance *involvement*, manipulation check items, and a question concerning future intentions.

Intrinsic Motivation. Intrinsic motivation was assessed with the Intrinsic Motivation Inventory (IMI; see McAuley, Duncan, & Tammen, 1989; Ryan, 1982; Ryan, Mims, & Koestner, 1983). The IMI comprises four subscales and 18 items assessing enjoyment/interest, effort/importance, perceived competence, and pressure/tension. An overall intrinsic motivation score can be computed. Prior research with British children has demonstrated adequate psychometric properties and the utility of the scale (see Goudas & Biddle, 1994a; Goudas, Biddle, & Fox, 1994).

Manipulation Check. Two items served to check whether each teaching style was salient in the appropriate lessons. The students were asked, "How much did you feel you could work at your own pace in today's lesson?" and "How much did you feel you could decide what you wanted to do in today's lesson?" Answers were given on 5-point scales anchored by *very much* (5) and *not at all* (1).

Task and Work Avoidance Involvement. Items to assess goal *involvement* in the lessons were adapted from Meece (1991). There were six items assessing task involvement (e.g., "In today's lesson I wanted to try to improve") and three for work avoidance involvement (e.g., "In today's lesson I wanted to do things as easily as possible so I wouldn't have to work hard"). Answers were given on 5-point scales anchored by *YES!* (5) and *NO!* (1).

Intention. One item ("Do you look forward to next week's athletics lesson?") served as a measure of intentions to participate in the next lesson. Answers were given on a 5-point scale anchored by *YES!* (5) and *NO!* (1).

Postcourse Interviews

Three days after the completion of the course, 8 students were interviewed. These 8 girls were selected in collaboration with the teacher to represent the range of physical abilities in the class. The interviews, which were recorded and later transcribed, were conducted by two of the authors, but not by the teacher. A structured interview schedule was used.

Results

Preliminary Analyses

Manipulation Check. Table 2 shows the mean of the two manipulation check items for each lesson. This shows that the students felt they had more choice and could work more at their own pace in the differentiated lessons. However, Lessons 8 ($M = 2.62$) and 9 ($M = 2.75$) were not different from each other and so were excluded from further analyses. Lessons 8 and 9 also included an extra manipulation in the form of greater emphasis on competition. However, the researcher observing these lessons, as well as the teacher himself, expressed doubts whether this manipulation was successful. Consequently, only Lessons 2–7 were used for further analysis.

Teacher Behavior. Differences in student motivation between the two teaching styles could be the result of differing amounts of support offered by the teacher to the students during the lessons. To examine whether the teacher's verbal interaction with the students did not differ across the two teaching methods, Lessons 2–7 were coded using an adapted form of the Coach Behavior Assessment System (CBAS; Smith, Smoll, & Curtis, 1979). This adaptation examined nine categories of teacher/coach behavior organized into two dimensions: (a) general teacher-initiated behavior, and (b) teacher behavior in response to students' performance. The first dimension involves organizational comments, technical instruction, general encouragement, and general punitive negative behavior. The second dimension involves positive general comments for good performance but with no instruction, negative comment for poor performance with no instruction, negative comment followed by hostile delivery of instruction, and negative comment followed by nonhostile delivery of instruction.

Table 2 Mean Scores for Intrinsic Motivation (IM), Task Involvement, Work Avoidance (WA) Involvement, and the Manipulation Check (MC)

Lesson	IM	Task	WA	MC
2 direct	3.77	4.21	2.09	3.04
3 differentiated	3.94	4.35	2.03	4.54
4 differentiated	3.77	4.20	2.01	3.37
5 direct	3.38	3.83	2.13	2.25
6 direct	3.66	3.99	2.13	2.09
7 differentiated	3.99	4.26	1.88	3.88

Coding the video recordings of lessons was performed by one of the researchers and one other person who was blind to the purpose of the study. Preliminary coding helped to resolve differences and establish interrater reliability. Three intervals of 5 minutes each were used to code each of the six lessons. The first of these intervals began when the teacher finished his introductory talk and video demonstration of the days' skill. The second 5-minute interval was for the middle period of the lesson, and the final period was for the last 5 minutes of the lesson. Interrater reliability was above 0.80 in all cases.

In order to test for differential teacher verbal behavior in the two teaching styles, chi-square tests were computed on the frequencies of each behavioral category of the CBAS. Chi-squares were nonsignificant in all categories, indicating that the teacher's verbal behavior did not differ across the two teaching styles. This enabled greater confidence to be placed in the belief that the lessons associated with a particular teaching style differed in terms of class structure rather than teacher verbal behavior.

Main Analyses

Table 2 presents descriptive data for task and work avoidance involvement, as well as the composite intrinsic motivation score.

Predictors of Intrinsic Motivation. Table 3 presents correlations between the key variables in the study. Ego orientation did not correlate with either intrinsic motivation or intention, whereas task orientation showed clear associations. The Williams T^2 test (Steiger, 1980) for comparing correlations with a common index showed that the lesson-specific measures of task involvement and work avoidance correlated significantly higher with intrinsic motivation and intention than the general task and work avoidance orientation scores, both for direct and differentiated lessons (all $p < .05$).

Effects of Teaching Style. We examined whether the teaching style and dispositional variables had joint or independent effects on intrinsic motivation

Table 3 Correlations Between Goal Orientations, Goal Involvement, Perceived Competence (PC), and Perceived Autonomy (RAI) With Intrinsic Motivation (IM) and Intention (INT)

	Goal orientations			Goal involvement			
	Task	Ego	WA	Task	WA	PC	RAI
Direct teaching style							
IM	.56	−.29	−.64	.85	−.85	.68	.64
INT	.37	−.27	−.39	.78	−.74	.60	.48
Differentiated teaching style							
IM	.32	−.16	−.57	.81	−.71	.58	.41
INT	.27	−.19	−.47	.50	−.41	.61	.31

Note. WA = work avoidance involvement.

and task avoidance lesson-specific involvement. [illegible] high or low on the dispositional measures of task orientation, [illegible] tence, and perceived autonomy (RAI) through mean splits. ANOVA[illegible] computed using intrinsic motivation and the goal involvement measures [illegible] two types of lessons as independent variables.

Differences in Intrinsic Motivation. A 2 × 2 (Teaching Style × High/Low RAI) ANOVA, with repeated measures on the first factor, was performed with intrinsic motivation as the dependent variable. A significant main effect for teaching style was found, $F(1, 22) = 24.92$, $p < .001$, such that differentiated lessons ($M = 3.90$) produced higher intrinsic motivation scores than the direct lessons ($M = 3.60$). There was also a main effect for RAI, $F(1, 22) = 5.59$, $p < .03$, with students higher in perceived autonomy reporting higher levels of intrinsic motivation. There was no interaction between teaching styles and RAI.

To examine the effect of dispositional task orientation on intrinsic motivation, a 2 × 2 (High/Low Task × Teaching Style) ANOVA was computed in the same way as above. There was a main effect for task orientation, $F(1, 22) = 7.63$, $p < .01$, with students high in task orientation reporting higher intrinsic motivation. There was no interaction between task orientation and teaching style.

A similar analysis showed that perceived competence also had a significant effect on intrinsic motivation, $F(1, 22) = 9.16$, $p < .007$. Students perceiving higher competence levels scored higher on intrinsic motivation than those with low perceived competence. Again, there was no interaction between the two independent variables.

Finally, with work avoidance as one of the two independent variables, a main effect for work avoidance was found, $F(1, 22) = 18.81$, $p < .001$, such that students high in work avoidance orientation had lower intrinsic motivation scores. There was no interaction between work avoidance and teaching style. Overall, therefore, the dispositional variables and teaching style had significant and independent effects on intrinsic motivation.

Differences in Lesson Involvement Variables. The same form of analysis as just described was used to test for the effects of dispositional variables and teaching style on task and work avoidance involvement in the lessons. First, a 2 × 2 (Teaching Style × High/Low RAI [perceived autonomy]) ANOVA was computed, with repeated measures on the first factor and task involvement as the dependent variable. There was a significant main effect for teaching style, $F(1, 22) = 18.37$, $p < .001$, such that differentiated lessons ($M = 4.27$) produced higher task involvement scores than direct lessons ($M = 4.01$). Task involvement was also higher for students high in RAI, $F(1, 22) = 4.21$, $p < .02$. There was no interaction between RAI and teaching style.

The same form of analysis was used to examine the effect of perceived competence. A 2 × 2 (High/Low Perceived Competence × Teaching Style) ANOVA showed that high perceived competence students reported greater task involvement than students perceiving themselves as low in competence, $F(1, 22) = 4.81$, $p < .04$. There was no interaction between perceived competence and teaching style.

Finally, a similar analysis showed that high work avoidance students exhibited less task involvement than those scoring low in dispositional work avoidance, $F(1, 22) = 5.38$, $p < .009$). There was no interaction between dispositional work avoidance and teaching style.

Analysis of Interviews

When asked about their preferences concerning the lessons, the students interviewed generally expressed a desire to be taught through a differentiated style. A variety of reasons were given such as the reduction of discrimination in the class:

> Student: I prefer the one that you can choose because people who are very good, they are not held back, but people who are not so good, they don't want to rush. I think that usually the really good ones get encouraged, and the not-so-good ones get ignored.
>
> Interviewer: So this method stopped that happening?
>
> Student: Yes.

Another student reported that she felt that the differentiated style provoked less anxiety: "Because you can work at your own pace, and you are not told to do things, so you don't feel under pressure."

Overall, students in interviews confirmed the quantitative results by expressing a preference for the differentiated style of teaching for reasons commonly thought to be related to intrinsic motivation, that is, greater autonomy and effort and less anxiety.

Discussion

Applying sport psychology to the domain of school physical education has the potential to positively influence a large number of children of all abilities and interests. For this reason, it could be argued that greater emphasis in applied sport psychology should be placed in this context. However, little research is available where the two areas of physical education and applied sport psychology come together. The results of this study suggest that such an association may be a fruitful one.

Due to the small sample size, it was not possible to conduct multivariate analyses, and we recognized that multiple univariate analyses increase the chance of error. However, a coherent pattern of results did emerge. Students in this study reported higher levels of intrinsic motivation and were more task involved in the lessons when they were taught by a differentiated style. Although the differences were not large, they were statistically significant. The students in the class appeared to be highly motivated, and again, this result reduces the chance of large intrinsic motivation differences resulting from the manipulation of teaching style. However, the interview results confirmed the quantitative results and add to the internal and ecological validity of the findings.

The results showed that individual dispositional differences and teaching style manipulation had independent effects on motivation. Higher intrinsic motivation was reported through the course by those students who felt competent, autonomous, and task oriented. However, teaching style did not interact with the individual dispositions. This suggests that students low in either perceived competence, autonomy, or task orientation could still be motivated through a differentiated teaching style.

In this study, lesson-specific goal involvement was distinguished from dispositional goal orientation. It was shown that goal involvement can be influenced by teaching style. Students reported being more task involved in the differentiated lessons than in the direct lessons. Goal perspectives theory (e.g., Duda, 1993) predicts that the goal state of an individual in an achievement context is determined both by the person's relatively enduring goal orientation and by situational factors. These results are confirmed in the present study. This is similar to prior research finding that low ego-oriented children taught with an emphasized externally referenced teaching style had significantly raised ego goal scores after a 6-week PE program (Lloyd & Fox, 1992).

In addition, the present study indicated that specific goal states were more strongly associated with intrinsic motivation than dispositional goal orientations. This suggests that future research might need to pay more attention to goal involvement measures, in addition to achievement goal orientations measured more at a dispositional level.

Finally, the present findings confirm earlier predictions from Cognitive Evaluation Theory (Deci & Ryan, 1985) that intrinsic motivation is likely to be enhanced through perceived competence, but only in the context of self-determination. Although not directly tested, the results suggest that perceived autonomy is as important for intrinsic motivation as perceived competence and that a differentiated teaching style has the potential to influence feelings of autonomy and perceived control.

Implications for Applied Sport Psychology

The rapid expansion of applied sport psychological literature, such as that published in this journal, would appear to be biased towards application to superior athletic performance. However, there is no reason why the principles of (sport) psychology cannot be broadened to include children with a wide range of interests and abilities in sport and physical activities. To this end, school physical education is likely to be a most valuable arena in which to study psychological processes (Biddle & Goudas, 1994; Goudas & Biddle, 1994a) and may be more informative than studying volunteer youth sport environments.

Currently, there is a great deal written on the need to increase children's physical activity levels. The present study has shown that the motivation towards physical activity of a small group of girls can be influenced through an intervention strategy. If these findings are shown to be robust, the sport psychologist has an important role in school physical education is helping teachers plan, deliver, and evaluate lessons for maximizing positive psychological outcomes.

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