



**Research Report of the Month**  
**DECEMBER 2003**

Xiang, P., McBride, R.E., & Solmon, M.A. (2003).

**Motivational climates in ten teachers' elementary physical education classes:  
An achievement goal theory approach.**

The Elementary School Journal, 104, 71-92.

**Introduction**

For Unlockresearch visitors who are at the intermediate stage of learning about research on teaching in physical education (beyond the point of being complete novices, but not yet familiar with all of the details that characterize the enterprise), the study reported here offers two particularly useful benefits – quite aside from the reported results. From the starting point of (1) grounding the study and its question(s) in the existing literature, to the finishing point of (2) addressing the matter of what the findings mean for practice in real schools and college preparation programs, this report describes a complete model of careful, thorough, and competent inquiry (of one type) into teaching in the public schools. If you want to track through the individual steps of how it is done when it is done well – and how it is reported when it is well reported – Xiang, McBride and Solmon have here produced a sound and easily accessible exemplar.

Further, this same study represents a perfect specimen of a stage in the larger process of ongoing educational research – when that process is working correctly. The pedagogical theory used here ("achievement goal theory," as noted in the title) was developed more than a decade ago. It has been the subject of some preliminary investigation (starting with doctoral dissertations), and now has been refined and expanded in light of that earlier work. In particular, there now is some persuasive evidence that achievement goal theory can successfully predict important educational outcomes ("Teaching *this way* consistently produces results for children that are superior to what is accomplished when teaching *that way*"). In addition, methods have been developed for gathering theory-relevant data about teaching that are trustworthy (reliable and valid). From the outset, physical educators have been involved in that research-based process of theory development.

With that much accomplished, it is time for the next steps in the research sequence: (1) to focus in on public school physical education, (2) to directly observe physical education classes in their natural state, (3) to gather data from a larger number of physical education teachers, students, classes, and schools than had participated in previous studies, (4) to gather data from a variety of sources within those classes (students, teachers, trained observers) so that accounts from different sources can be checked against each other, (5) to examine those data by using a template that includes the most refined elements of the theory – particularly those aspects that might be critical in physical education, (6) to devise a thick and lively description of what actually was going on in those classes and, (7) to continue the search for variables that appear to influence both the use of theory-based teaching and the resulting outcomes for pupils. Those points describe exactly what was done in the present investigation.

That this study represents the appropriate "next step" can be understood by considering research efforts that lie further into the future, studies that can be intelligently planned only when the present work has been completed (and shared through publication). If the members of our physical education research community behave appropriately, they now will read this study and then go about devising (1) study replications in schools that have contexts different from those used to date, (2) studies with much larger populations of participants, (3) studies with quasi-experimental designs involving deliberate interventions into the teaching behaviors observed, and (4) descriptive studies that begin to explore how teachers can develop and maintain the skills required to make use of achievement goal theory as the basis for shaping their instruction. Things do not always work out that way, but this investigation, at least, is exactly where it should be in the idealized sequence of inquiry.

## The Study

The researchers' goal was to carefully examine and then describe the motivational climates of physical education classes from the multiple perspectives of teachers, students, and trained observers. Their rationale was that "Doing so provides us with a starting point to examine the challenges that elementary physical educators face by examining the intersection between their instructional intentions and the reality of daily teaching demands, and the effect that intersection has on children's perceptions of their classes." (p. 73) This led to two research questions: (1) What kind of motivational climate do elementary physical education teachers create for their students, and (2) are there grade-related differences in the climate between second- and fourth-grade classes?

In brief, achievement goal theory posits two primary kinds of climate in the classroom: (1) **mastery focused** (sometimes referred to as a "task orientation") in which teachers present a variety of learning tasks in interesting ways that are meaningful to students, involve students in making decisions so that they must take a degree of responsibility for their own learning, recognize individual accomplishment (particularly improvement), evaluate students on mastery and skill development rather than on ability, and make little or no use of public comparisons of student achievement, and (2) **performance focused** (sometimes referred to as an "ego orientation") in which the teacher does not emphasize the meaningfulness of learning, places a high value on performance outcomes rather than on effort and skill improvement, and focus student attention on competition rather than social cooperation. The two kinds of teaching emphasis clearly overlap in some respects, and there are versions of achievement theory that make other distinctions among teaching elements, but the two primary orientations, mastery and performance, represent the polar (opposite) anchors for the theory.

Again, considering only the essential points, in previous studies, mastery-focused climates have been associated with students' positive attitudes toward the class, use of effective learning strategies, belief that effort is the route to success, and preference for challenging tasks. In classrooms for which the teacher created a performance-focused climate, students tended to focus on the presence or absence of native ability rather than effort as the cause of successful learning and performance, to display lower perception of their own ability, and to hold negative attitudes toward the class. It has been those early findings that have provoked among teacher educators considerable enthusiasm for an emphasis on creation of mastery climates in public school classes (in all subject fields).

## Context and Participants

Ten elementary school physical education specialists (five male and five female) were recruited as volunteers for the study. They came from six public schools and had teaching experience ranging from 3 to 24 years ( $M=12$  years). During the period of the study they were teaching a variety of movement skills including: floor hockey, juggling, jumping rope, fundamental locomotor skills, physical fitness, and basic skills for basketball and tennis. Classes met either every day for 30 minutes, or every other day for 45 minutes. Class sizes were relatively large, ranging from 45 to 60 pupils. †

All classes used in the study were intact classes normally taught by the participating teachers. Teachers were fully informed about the goal for observing their classes, which was to record "...typical lessons, i. e., whatever they would have been doing had the [investigators] not been in the gymnasium." (pp. 75-76). Some evidence indicated that this condition was achieved.

## Design and Method

Two of each teacher's second- and fourth-grade lessons were utilized, resulting in a total of 40 lessons equally divided between the two grade levels and the 10 teachers. Of the 423 students who returned signed consent forms, 180 were randomly selected so that 15 students represented each teacher, grade, and school. Videotaping, interviews, and questionnaires were used to collect data. In all instances, the methods of both gathering and analyzing data were based on previously developed instruments and procedures with demonstrated validity and reliability, or employed protocols and materials (designed for the study) that had been carefully pilot tested, reviewed by consulting experts, and revised accordingly.

Videotaping was supplemented by audiotapes through use of a cordless microphone system (all audiotapes were fully transcribed). The four-lesson sequence of observation was immediately followed by a semi-structured individual interview averaging 30 minutes) with each teacher, followed in turn by completion of a 26-item questionnaire. Both interview and questionnaire focused on the teachers'

intentions concerning the motivation of pupils and their use of specific teaching strategies related to mastery and performance climates.

In like fashion, students were interviewed individually (for 10-15 minutes) and completed a nine-item questionnaire – read aloud with follow-up probes as required to achieve clarification of understanding and responses. Again, data gathered from children related to the pupils' perception of class climate and how the teacher created that learning environment.

Data from all sources, class video and audiotapes, and interview transcripts for both teachers and students, were analyzed by systems designed to reveal motivational climate in six critical areas (as specified by the acronym "TARGET"): (1) Task variety and meaningfulness, (2) delegation to pupils of Authority for learning, (3) teachers' Recognition of students learning or performance achievements, (4) Grouping in homogeneous or heterogeneous configurations and use of those groups as the basis for competition or social cooperation, (5) Evaluation as meaningful feedback under public or private conditions, and (6) Time for students to complete learning tasks and achieve skill mastery.

### Results

When analyzed by trained observers, the videotapes revealed that the command style of teaching dominated all of the classes observed – a teaching style characterized by the teacher making almost all the decisions for student learning. With that context, teachers provided a wide variety of learning tasks that were carefully related to students' interests and experiences. In fewer than half of the lessons, however, were students given any authority to make choices (restricted mostly to choices of equipment). Teachers made an effort to attend to all students with recognition of effort and mastery of skills – though generally this was done publicly rather than privately. Usually, teachers employed heterogeneous grouping, although those often were the basis for social comparison of performance through the use of competitive activities. Although the feedback given was both timely and meaningful, in almost every class teachers provided that information as public evaluation of individual achievement. Finally, the time provided was sufficient to allow students to learn the skills and complete learning tasks.

Analysis of teacher interview transcripts and questionnaire responses indicated that with very few exceptions they had deliberately intended to produce a mastery climate -- including all of the TARGET variables. They acknowledged, however, that they intentionally gave fourth-grade children more choices than second graders (often using the rationale of greater maturity). Data from students indicated a generally positive response to both teachers and their physical education program. In particular, children both perceived and liked the elements of variety, choice, and recognition.

### Discussion

Overall, similarities across the data sources were more striking than were the differences. Teachers planned and implemented many mastery-focused practices from the TARGET dimensions, thus creating at least a degree of mastery climate. The persistent presence of performance-focused practices such as public evaluation, absence of opportunities for students to exercise authority over their own learning, lack of emphasis on social cooperation, and frequent use of competitive formats for practice, however, resulted in a climate that was a mixture of the two orientations (children in the second grade did perceive the climate as performance-focused in some respects).

In the concluding section of the report the investigators offer explanations for mixed climate that are both rich in insight and provocative in implications. The researchers were impressed by the difficulty of providing private recognition and evaluation in large classes – nearly everything has to be public. On the other hand, they were persuaded that the absence of both pupil choices and structured opportunities for social cooperation were the direct consequence of teachers simply not knowing how to achieve those goals (despite clear indication that they valued those as appropriate elements in their idealized form of instruction).

The clear implication of the latter incongruence is expressed in the researchers' closing note. "If teacher educators want to promote a mastery-focused climate in elementary physical education, then they must help teachers integrate a mastery-focused approach within all the TARGET dimensions." (88)

Translated into my own terms, the conclusion to be drawn from this study is that it is not enough for teacher educators to just endorse the value of mastery-climates. They must provide teacher preparation (pre-service) and teacher development (in-service) instruction that is designed to show exactly how to create and sustain that environment in the real (and often problematic) environments of public school physical education classes. That will not be easy to accomplish, but if this line of research continues to produce similar results – it might assume a high priority within physical education teacher education programs.

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