

# THE EFFECTS OF GROUPING BY PERCEIVED ABILITY ON THE ATTITUDE OF YEAR TEN STUDENTS TOWARD PHYSICAL EDUCATION

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By

Tim Fletcher, John Haynes and Judith Miller  
School of Education

The University of New England  
Armidale NSW Australia

## ABSTRACT

Given the challenges to maintain adolescent engagement and participation in Physical Education lessons, and the reported deleterious effects of inactivity on children's health, secondary school Physical Education teachers are keen to find effective methods to sustain student commitment. This paper reports on the approach used at one school in Ontario, Canada to investigate the effects of ability grouping on Year 10 students' attitude toward Physical Education. The enquiry is based upon the perceived ability scores of students, which are assigned to two streamed Physical Education classes, and a third group, which is used for comparison. Changes in attitude toward Physical Education are measured and effects of perceived ability grouping ascertained. Implications for engagement and attitude to Physical Education are explored.

## INTRODUCTION

There is currently a concern among some members of the medical profession with the levels of overweight and obese adolescents in some western countries. Researchers have found that the prevalence of overweight and obese adolescents has increased in Canada (Plotnikoff, Bercovitz & Loucaides, 2004), Australia (Magarey, Daniels & Boulton, 2001), Great Britain (Chinn & Rona, 2001) and the United States (Ogden, Flegal, Carroll & Johnson, 2002). Furthermore, there is evidence of a link between physical inactivity and obesity in Canadian children, while those who engage in regular physical activity are less likely to be overweight (Tremblay & Willms, 2003).

One possible method of increasing the physical activity rates of adolescents is to target Physical Education programs in schools. If strategies can be implemented to change the attitude of students to enable a positive outlook toward Physical Education, it is possible that attitude toward physical activity in general may change also, thereby helping to decrease the incidence of overweight and obese children in Canada in the future. A national survey of students in grades 4 to 12 in the United States revealed that enjoying Physical Education was one of the most powerful factors related to participation in physical activities outside school (Sallis, Prochaska, Taylor, Hill & Geraci, 1999). Coakley and White (1992) found that past experiences in Physical Education programs influenced participation levels and future expectations in physical activity outside of school.

To increase participation levels in secondary Physical Education classes, physical educators should understand why students do or do not continue with Physical Education in the senior secondary years (that is, Years 11 and 12). Negative memories toward Physical Education were based upon boredom, lack of choice, feelings of incompetence and humiliation. Tjeerdsma, Rink and Graham (1996) identified lack of experience and low perceived ability as reasons for some students not enjoying Physical Education content. Furthermore, the concept of attitude and how it can influence participation levels and involvement in Physical Education is an important consideration (Silverman & Subramaniam, 1999).

This study is designed to measure any change in attitude toward Physical Education when students are grouped by perceived ability. The research took place in a private school in Ontario, Canada and involved Year 10 Physical Education students. Thus, any conclusions made from the results of the study may only be applicable to such a population. However, it may allow for recommendations for further research that investigates the effects of grouping by perceived or actual ability in Physical Education.

## RESEARCH QUESTIONS

The research investigates the following questions:

Does grouping by perceived ability affect the attitude of Year 10 students toward Physical Education in a private school in Ontario, Canada?

The main question will be directed by these sub-questions:

What are the effects of grouping by perceived ability on attitude toward Physical Education of:

Low-skilled Physical Education students?

Mid-skilled Physical Education students?

High-skilled Physical Education students?

Are there differences in the attitude of males and females toward Physical Education in each of the perceived ability groups?

What did the students like or dislike most when being grouped by perceived ability?

## CONCEPTUAL FRAMEWORK

Theoretical underpinnings central to this study include the concepts of attitude and perceived ability. Study of these variables has been extensive in a variety of settings, including Physical Education. Failure of some previous researchers to adequately conceptualise relevant study variables (such as attitude and perceived ability) has led to inconsistent findings and a lack of agreement regarding the effects of such concepts amongst physical educators. Thus, it is deemed to be important to acknowledge and consider relevant theories pertaining to the concepts of attitude and perceived ability.

### THE CONCEPT OF ATTITUDE

Attitude has been explored extensively in an attempt to offer explanations of human behaviour (Ajzen, 1988). The term *attitude* describes an evaluation of the feelings, beliefs and actions an individual may possess or demonstrate toward someone or something (Ostrom, 1969; Triandis, 1971; Ajzen, 1988; Zanna & Rempel, 1988; Eagly & Chaiken, 1993). Attitude is a hypothetical concept not open to direct observation, however, it is possible to infer an individual's attitude by analysing the way in which they respond toward an object or stimulus (Henerson, Morris & Fitz-Gibbon, 1987; Himmelfarb, 1993). To this end, whilst it is difficult to alter attitude (Eagly & Chaiken, 1993), it is also recognised that it is possible, with extended positive experiences or exposure toward an attitude object, i.e., any nameable or describable entity (Greenwald, 1989), that an individual may change their attitude (Silverman & Subramaniam, 1999).

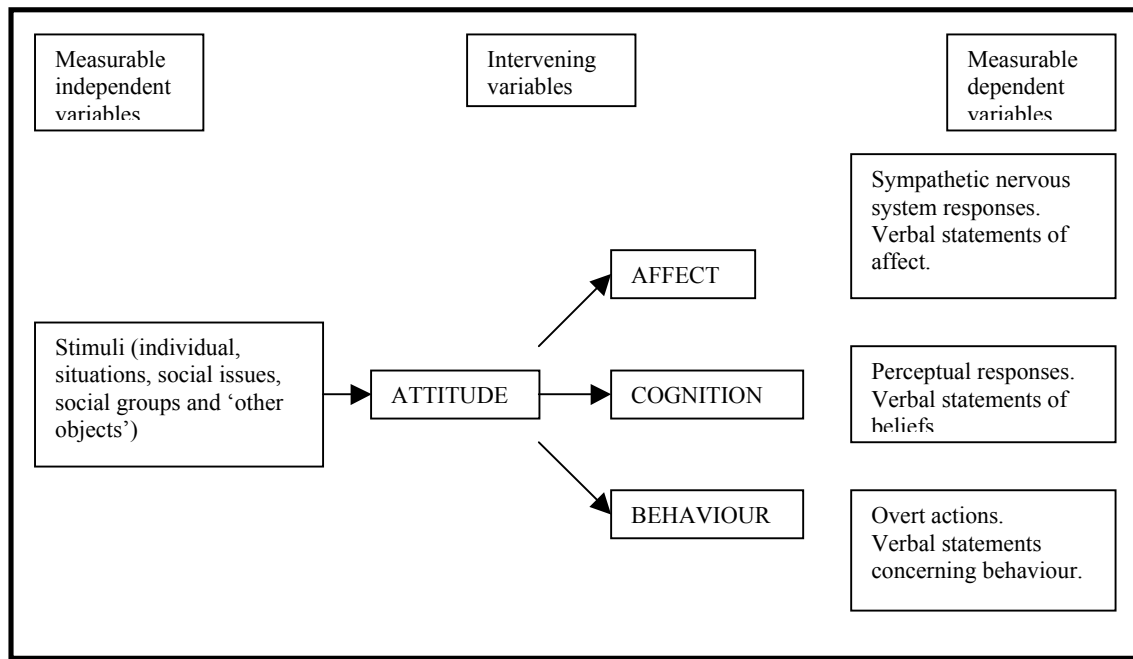
#### The Structure and Function of Attitude

Previous attitude research in Physical Education may have added knowledge and understanding to the field, however, most of these studies were not guided by theoretical frameworks, thus, information was often descriptive, leading to limited understanding of the attitude concept (Godin, 1994; Silverman & Subramaniam, 1999). For this reason the three-component model of attitude is deemed most appropriate for this study (Rosenberg & Hovland, 1960).

#### *The Three-Component Model (Rosenberg & Hovland, 1960)*

Rosenberg and Hovland (1960) suggested that three categories of response to an attitude object exist: affective, cognitive and behavioural. The affective component consists of positive or negative feelings or emotions toward the attitude object (Fabrigar & Petty, 1999). The cognitive component contains thoughts or beliefs that individuals may possess toward the attitude object (Eagly & Chaiken, 1993). The

behavioural component comprises an individual's actions or intentions to act with respect to the attitude object (Eagly & Chaiken, 1993). Although the three-component model was developed in 1960, empirical support has been demonstrated in each decade following its creation (for example, Ostrom, 1969; Kothandapani, 1971; Breckler, 1984; Edwards, 1990; Fabrigar & Petty, 1999; Giner-Sorolla, 2001; Farley & Stasson, 2003).



**Figure 1: Three-component Model of Attitude (Rosenberg and Hovland, 1960:3).**

Rosenberg and Hovland's three-component model of attitude is presented in Figure 1. Each of the three classes of attitudinal response (that is, affective, cognitive and behavioural) is inferred from the specific types of measurable response on the right side of Figure 1. The most common way of measuring attitude is by asking individuals to respond in verbal or written form, from which attitude is inferred.

### THE CONCEPT OF PERCEIVED ABILITY

Perceived ability has been identified as an indicator of self-concept, self-perception and self-esteem (Marsh, 1990; Fox, Gouda, Biddle, Duda & Armstrong, 1994; Rose, 1994; Asci, Kosar & Idler, 2001; Hagger, Biddle & Wang, 2005; Sheldon & Eccles, 2005). Adequate definitions of perceived ability recognise two constructs: conceptions of ability and perceived competence (Xiang & Lee, 1998). In addition, Nicholls (1989) claimed that individuals conceive ability in two ways: (i) ability can be judged high or low in reference to an individual's past experiences, knowledge or performance; or (ii) ability can be judged in terms of capacity relative to others. With respect to perceived competence, Harter (1978) provided a multidimensional conceptualisation of competence, identifying various competence domains, such as cognitive competence, social competence and athletic competence.

### **Conceptions of Ability**

Nicholls (1989) argued that an adequate conceptualisation of ability should encompass the notions of *luck and skill*, *task difficulty* and *effort*. According to this idea, individuals possessing a 'mature' conception of ability recognise that luck and skill are clearly differentiated. Until the age of seven years, children possess a limited understanding of the difference between luck and skill (Nicholls, 1989). After eleven years, a majority of children realise that there is a clear discrepancy between luck and skill. Furthermore, a mature conception of ability judges the difference between task difficulty and high and low ability with reference to the performance of members of a normative reference group (Nicholls, 1989). Finally, a more 'differentiated' conception of ability infers that the effects of effort on performance are limited by ability (Nicholls, 1989).

The underlying principles of the concept of ability are guided by achievement motivation theory (Nicholls, 1984; 1989). The tenets of achievement motivation claim that individuals possess either a task-orientation or ego-orientation to a given situation.

#### ***Task-orientation***

Individuals displaying a task-orientation perceive ability as a demonstration of mastery through effort (Nicholls, 1984). Task-oriented individuals view success as stemming from learning, effort and interest in the relevant skill, and perceived ability is self-referenced (Xiang, Lee & Shen, 2001). Fry and Duda (1997) demonstrated that as individuals grow older, their conceptions of ability and subsequent achievement motivations change, shifting to a more ego-oriented view of ability.

#### ***Ego-orientation***

Individuals who are ego-oriented assess what they can master and judge their ability according to their capacity to demonstrate superiority over others (Nicholls, 1984; Duda & Nicholls, 1992; Xiang, Lee & Shen, 2001). Most children develop an ego-oriented conception of ability by the late primary school years; that is, ages eleven years and older (Nicholls, 1989; Fry & Duda, 1997). Duda and Nicholls (1992) found that an ego-orientated conception of ability predicted satisfaction in sport. The predominance of ego-orientations in physical settings may be explained by the fact that performance outcomes are more evident in Physical Education than other academic activities, meaning that mistakes are harder to disguise and skills are subject to public performance (Fry & Duda, 1997).

### **Perceived Competence**

Perceived competence can be defined as an individual's view of the degree of success they have in meeting achievement demands (Weiss, 1987). Harter (1982) argued that competence was a multidimensional construct, including the domains of cognitive, social and athletic competence. Identification of previous studies relating to perceived competence in sport and Physical Education can be problematic, due to ambiguous conceptualisation of the perceived competence construct. Roberts, Kleiber and Duda (1981) concluded that perceived competence may be a deciding factor in youth sport participation as well as influencing perceived ability. There is disagreement amongst researchers regarding differences in perceived competence between genders. Several authors showed that boys have higher levels of perceived competence than girls (Rose, 1994; Williams & Gill, 1995; Todd & Kent, 2003), while Asci, Kosar and Isler (2001) found no significant difference between genders.

## **SUMMARY OF CONCEPTUAL FRAMEWORK**

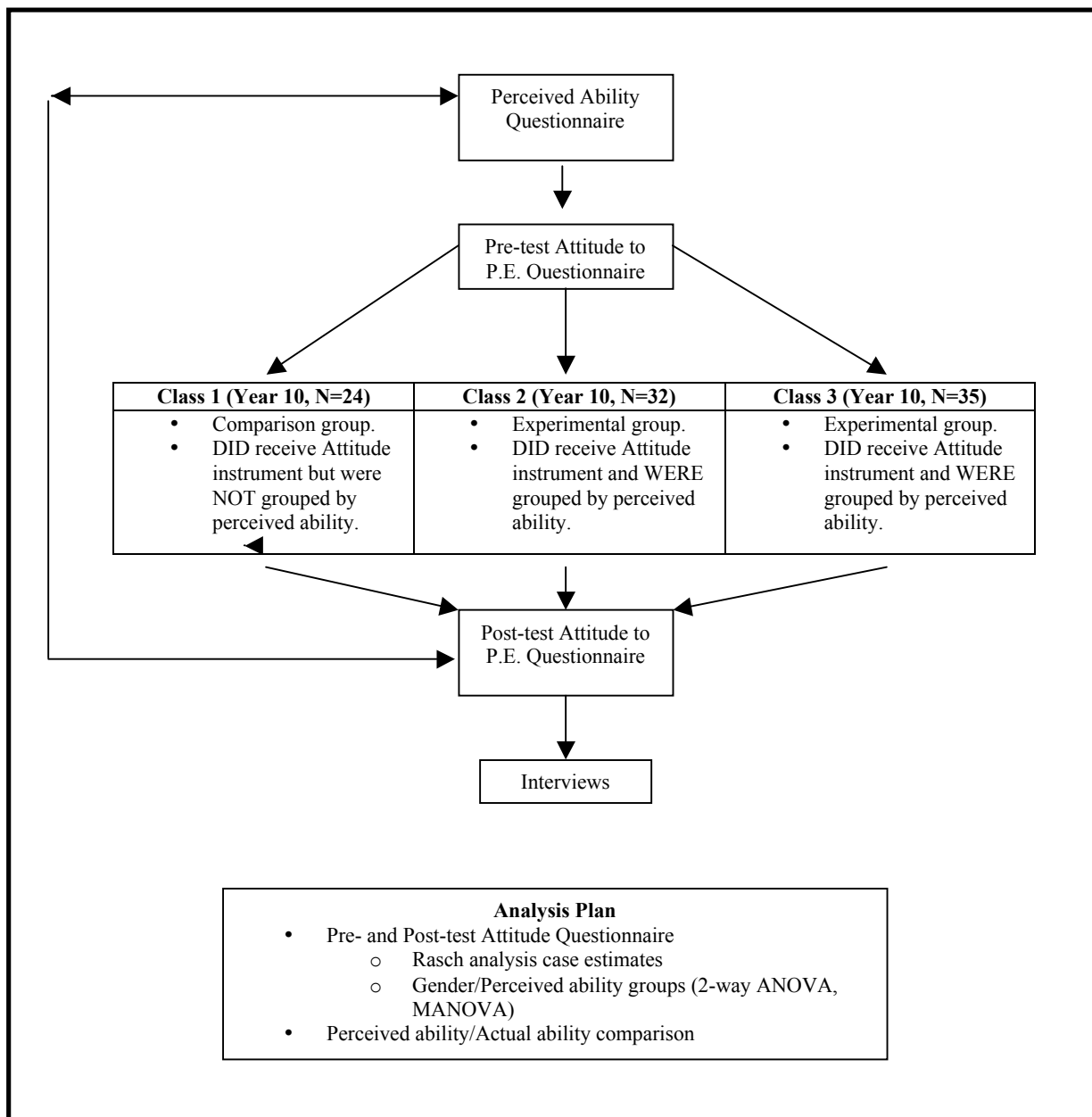
The research methodology is guided by the conceptual framework discussed above. Consideration of previous findings from relevant literature leads this study to adopt a three-component view of attitude in line with the model initially proposed by Rosenberg and Hovland (1960). This model considers affective, cognitive and behavioural attitude components. As well, perceived ability is deemed to consist of two constructs: conceptions of ability (task- and ego-orientations) and perceived competence. Conceptualisation will be reflected in the choice of instruments used to measure the study variables to allow reasonable conclusions to be made pertaining to the research questions.

The nature of physical education and sport means that the skills of students are on display to their peers. With this in mind, the avoidance of normative comparisons, or judging ability based on comparisons with others in the group, may be more difficult than in other academic subjects (Fry & Duda, 1997). However, it may be possible for physical educators to provide a task-oriented classroom and learning environment, while allowing for the fact that most students will still maintain an ego-orientation. If physical education classes are grouped by perceived or actual physical ability, then ego-oriented students may derive positive experiences from their class. Particularly for students of low perceived ability, classes that are grouped in this manner may allow opportunities for increased participation in an environment where criticism and harassment by higher skilled students is not evident (Portman, 2003). In turn, student attitude toward physical education may be affected.

## **METHODOLOGY**

An overview of the research design includes; descriptions of (i) the participants in the study; (ii) the instrumentation used to measure the study variables, (iii) the experimental conditions; and an outline of techniques used to analyse data.

The following sections provide an overview of the research design (see Figure 2), including how the study was organized and the phases of the research. The major procedures of the research, including the study participants, instruments used and intervention methods are described in the following sections.



**Figure 2: Overview of Research Design**

### Participants

Informed consent was obtained before students participated in the study. The sample ( $n=91$ ) was made up of both female students ( $n=50$ , 55%) and male students ( $n=41$ , 45%) from three Year 10 Physical Education classes in at M College; a private school in Ontario, Canada. Class 1 represented the comparison group ( $n=24$ ), which consisted of fourteen females (58%) and ten males (42%). Class 2 was one experimental group ( $n=32$ ) and contained seventeen females (53%) and fifteen males (47%). Class 3 was the other experimental group ( $n=35$ ), with nineteen females (54%) and sixteen males (46%). Students in Year 10 are approximately 15 years of age. This is a narrow population from which to draw conclusions pertaining to the research questions, however, logistical constraints made the study of a larger sample



impractical. The organisation of the experimental procedures to which the sample was exposed is discussed in detail in subsequent sections.

### **Instrumentation**

The selection of instruments used in this research was based upon their capacity to measure the study variables of perceived ability and attitude as conceptualised in the preceding paragraphs. Existing instruments were chosen that addressed rigorous psychometric standards.

#### ***Perceived Ability***

The 'Sport Competence' subscale of the *Physical Self-Description Questionnaire I (PSDQ I)* (Marsh, 1999) measured the perceived ability of the experimental group. The full *PSDQ I* instrument comprises seventy items on a 6-point Likert scale. Eleven subscales are evident within the instrument: Health; Coordination; Physical Activity; Body Fat; Sport Competence; Global Physical; Appearance; Strength; Flexibility; Endurance; and Esteem. Responses are reported to measure physical self-concept. The six items of the Sport Competence subscale fit with the conceptualisation of perceived ability used in this study. Included are items that cater for both task-and ego-oriented conceptions of ability. For example, "Most sports are easy for me" allows for a self-referenced, or task-oriented conception of ability, while "I am better at sports than most of my friends" enables the respondent to conceptualise ability by comparing themselves with others.

The complete *PSDQ I* has undergone rigorous psychometric testing, with validity and reliability established for secondary school students in Australia (Marsh, Richards, Johnson, Roche & Tremayne, 1994; Marsh, 1996a; 1996b); Norway (Klomsten, 2002); Spain and Turkey (Marsh, Marco & Asci, 2002); and France (Guerin, Marsh & Famose, 2004). The questionnaire has also been used in studies of Canadian students (Wilson & Rodgers, 2002). Due to the establishment of validity and reliability for the *PSDQ I* in both English speaking and non-English speaking countries, it was assumed that the integrity of the instrument would be upheld in this study of Canadian students.

The *PSDQ I* was administered to both the control and experimental groups. However, analysis of the instrument for grouping purposes will only apply to respondents from the experimental group. The researcher carried out the administration of the instrument. Administration took place in the school gymnasium at the beginning of a Physical Education lesson for the control group and experimental groups. Students were assured of anonymity, and were informed that there was no right or wrong answers. They were encouraged to answer items as honestly as they could.

#### ***Student Attitude Toward Physical Education***

The *Student Attitude Toward Physical Education* questionnaire (Subramaniam & Silverman, 2000) was used to measure student attitude pre- and post-test. The instrument was developed to detect reasons for student enjoyment (affective component) and perceived usefulness (cognitive component) of Physical Education in their current school. Students responded to twenty items on a 5-point Likert scale. Likert responses ranged from 1 (strongly disagree) to 5 (strongly agree). Ten items were constructed to measure the affective component with the remainder constructed to measure the cognitive component of student attitude.



Content validity for the *Student Attitude Toward Physical Education* questionnaire was determined by a panel of thirty-five experts in Physical Education and sport pedagogy (Subramaniam & Silverman, 2000). Percentage agreement of the experts for items in the complete instrument was 97% (Subramaniam & Silverman, 2000:37). Construct validity was measured by Goodness of Fit Analyses (GFA) (Subramaniam & Silverman, 2000:38). GFA values for the two-component model of attitude were between .82 and .86. Alpha and McDonald's omega reliability coefficients for the complete instrument were .92.

The first author/researcher administered the instrument. Instructions were given to students as outlined by Subramaniam and Silverman (2000). Other administrative procedures were followed in the same fashion as the *PSDQ I*. As the research was designed to assess change in student attitude, slightly different directions were given to the students in the experimental group post-test. When the researcher gave instructions to the groups, they were informed that the instrument was assisting the first author in understanding their attitude toward Physical Education *in the last five weeks* (emphasis added).

Because five weeks is a small amount of time to allow attitude change, interviews were conducted with a sub-sample of students. Interviews allow the researcher to gather in-depth responses to enable a rich understanding of student attitude. Furthermore, interviewing may uncover different reasons for attitude change that are not addressed in the *Student Attitude Toward Physical Education* questionnaire.

### Experimental Procedures

A sample of two Year 10 Physical Education class ( $n=67$ ) were assigned to experimental conditions. A third Physical Education class ( $n=24$ ) acted as a comparison group. Classes were co-educational and taught by qualified, full-time Physical Education staff at 'M College'. Each of the three classes attends Physical Education at different times of the day. For example, Class 1 may attend Physical Education at 9.00a.m., Class 2 may attend Physical Education at 1.00p.m., and Class 3 may attend Physical Education at 2.00p.m. Table 1 shows the allocation of experimental and comparison groups within the sample.

**Table 1: Experimental and Comparison Group Allocation**

Class 1 Year 10 ( $n=24$ )	Class 2 Year 10 ( $n=32$ )	Class 3 Year 10 ( $n=35$ )
<ul style="list-style-type: none"> <li>Control group.</li> <li>DID receive Attitude instrument but were NOT grouped by perceived ability.</li> </ul>	<ul style="list-style-type: none"> <li>Experimental group.</li> <li>DID receive Attitude instrument and WERE grouped by perceived ability.</li> </ul>	<ul style="list-style-type: none"> <li>Experimental group.</li> <li>DID receive Attitude instrument and WERE grouped by perceived ability.</li> </ul>

As presented in Table 1, Classes 2 and 3 comprise the experimental group. Students in these classes were grouped by perceived ability (high, mid and low) based on their

pre-test responses to the Sport Competence subscale of the *PSDQ I*. These students were also administered the *Student Attitude Toward Physical Education* questionnaire pre- and post-test. A comparison of the pre- and post-test responses from the experimental group can indicate any change in attitude.

In Table 1, Class 1 represents the comparison group. This class attended their usual physical education lessons. The students in Class 1 were not grouped by perceived ability. The *Student Attitude Toward Physical Education* questionnaire was administered to the comparison group both pre- and post-test to measure any change in attitude. Class 1 was considered the ‘comparison group’ as their conditions represented regular curriculum conditions in physical education.

Classes 2 ( $n=32$ ) and 3 ( $n=35$ ) were divided into three groups respectively. Cutoffs for the respective perceived ability groups and statistical analysis of responses are discussed in the Results section of this paper. The division of the classes into perceived ability groups warrants closer attention. Table 2 shows how Classes 2 and 3 were subjected to the experimental conditions.

**Table 2: Experimental Conditions for Classes 2 ( $n=32$ ) and 3 ( $n=35$ )**

High Perceived Ability Group: ‘Blue’ Class 2, $n=11$ Class 3, $n=10$	Mid Perceived Ability Group: ‘White’ Class 2, $n=11$ Class 3, $n=15$	Low Perceived Ability Group: ‘Green’ Class 2, $n=10$ Class 3, $n=10$
HEALTH	Teacher A P.E. Unit: Volleyball	Teacher B P.E. Unit: Basketball
Teacher B P.E. Unit: Handball	HEALTH	Teacher A P.E. Unit: Wrestling
Teacher A P.E. Unit: Basketball	Teacher B P.E. Unit: Badminton	HEALTH

Following analysis of student responses to the Sport Competence subscale of the *PSDQ I*, each student in Classes 2 and 3 was allocated to a perceived ability group for their class: high, mid or low (as shown in Table 2). Groups were labeled Blue (High-Perceived Ability), White (Mid-Perceived Ability) and Green (Low-Perceived Ability). Referring to groups by a colour is an attempt to reduce any stigma being overtly attached to members of each group and their respective athletic abilities.

Each cell in Table 2 represents six lessons. For example, the Blue group attended Health class in the first six lessons, the White group was taught volleyball by Teacher A for the first six lessons, and the Green group was taught basketball by Teacher B for the first six lessons. As shown in Table 2, each group was taught six lessons of Health, and twelve lessons of Physical Education in the time allocated for the experimental conditions. The ‘Health’ class is not relevant to this study, however, attendance in these classes is necessary for all students, according to the Ontario Ministry of Education Health & Physical Education Grade 9/10 Curriculum Guidelines (Ontario Ministry of Education, 1999). Each class was taught six Physical Education lessons by both Teacher A and Teacher B. Students were exposed to both teachers to minimise the confounding variable that one teacher’s methods and styles

would have a major role in influencing the attitude of the experimental and control groups toward Physical Education.

### **Statistical Analyses**

Data were analysed using both quantitative and qualitative approaches. Students were allocated to a perceived ability group based on their mean score to the items on the Sport Competence subscale of the *PSDQ I*. As there are no negatively worded items in this subscale of the *PSDQ I*, no reverse scoring was necessary. One-way analysis of variance (ANOVA) was used to determine difference in the perceived ability scores of males and females.

Before any analysis of student attitude scores could take place, Rasch analysis was performed on the *Student Attitude Toward Physical Education* questionnaire. Wright and Linacre (1989) assert that meaningful quantitative measurement is based on the arithmetical properties of interval scales. As such, the “Rasch model provides the necessary and sufficient means to transform ordinal counts into linear measures” (Wright & Linacre, 1989:857). In educational circles, Rasch analysis has been applied to tests of intelligence or ability, due to the model’s capacity to include estimates of item difficulty (item fit) and respondent ability (case estimates) (Miller, 2001). However, such measures are not restricted to tests of ability. The Rasch technique has also been found to be particularly useful for determining the degree of item fit for other rating scales, such as attitude instruments (Rennie, 1982; Wright & Linacre, 1989). Thus, a secondary purpose of this research is to determine the psychometric properties of the *Student Attitude Toward Physical Education* questionnaire based on Rasch analysis.

As well as analysing item fit, the Rasch model can also be used to measure the extent to which an instrument measures the underlying construct. The application of the *Quest* software programme (Adams & Khoo, 1993) provides a Partial Credit form of Rasch analysis. In this study, Rasch measures the fit of the items (on the *Student Attitude Toward Physical Education* questionnaire) to the underlying construct (levels of student attitude). Further, Rasch analysis transformed ordinal data to an interval scale (Miller, 2004). Case estimates were taken for each subject and used as a measure for further statistical analysis.

Negatively worded items on the *Student Attitude Toward Physical Education* questionnaire were reverse scored. A favourable attitude toward Physical Education is reflected by a mean score closer to five. To examine student attitude by gender and perceived ability group, a 2 (gender: male vs. female) x 3 (perceived ability group: high vs. mid vs. low) ANOVA are employed.

For interviews, analysis procedures followed suggestions given by Hycner (cited in Cohen & Manion, 1994). Firstly, tapes of the interview were transcribed word for word. Secondly, units of meaning pertinent to the research questions were delineated. That is, units of what students liked or disliked most about the grouping procedures used in the study. Thirdly, themes were determined from the units of meaning described in the second step. Fourthly, these themes were contextualised to give a broad scope relating to student attitude towards physical education when grouped by perceived ability.

## RESULTS

Results presented in the following sections, at this stage, are preliminary and focus upon the grouping of students by perceived ability. Further statistical analysis is planned for early 2006 as the experimental conditions finish and post-test questionnaire administration and interviews are completed.

### PERCEIVED ABILITY

Students in all three classes were administered the *PSDQ I*. Table 3 shows the mean and standard deviation for responses to six items on the Sport Competence subscale from students by gender. As items were scored on a 6-point Likert scale, mean scores closer to six represent a higher perceived ability than mean scores closer to zero.

**Table 3: Mean and Standard Deviation for *PSDQ I* Sport Competence Subscale Responses from Students by Gender.**

Gender	Mean ( <i>M</i> )	Standard Deviation ( <i>SD</i> )
Females ( <i>n</i> =50)	3.8104	1.0031
Males ( <i>n</i> =41)	4.5885	1.1261
Total ( <i>n</i> =91)	4.1610	1.1238

One-way analysis of variance (ANOVA) was performed, which is summarized in Table 3, to test for differences within and between groups. Using gender as the independent variable and perceived ability as the dependent variable, the ANOVA indicated that level of perceived ability differed significantly according to gender,  $F(1,89)=12.134$ ,  $p<.001$ , with males demonstrating a higher mean perceived ability ( $M=4.5885$ ,  $SD=1.1261$ ) compared to females ( $M=3.8104$ ,  $SD=1.0031$ ) in the sample.

Responses from students in Classes 2 and 3 only were used to allocate students to high, mid or low perceived ability groups within each class. From the six items on a 6-point Likert scale used in the Sport Competence subscale of the *PSDQ I*, high perceived ability was defined as a mean response score between 5.00 and 6.00; mid perceived ability was defined as a mean response score between 4.00 and 4.99; and low perceived ability was defined as a mean score between 0.00 and 3.99. Thus, from the results shown in Table 3, one can determine that females, as a cohort, fell into the low perceived ability category ( $M=3.8104$ ,  $SD=1.0031$ ), while males can be categorised as mid perceived ability ( $M=4.5885$ ,  $SD=1.1261$ ).

Table 4 details the distribution of males and females in Classes 2 and 3 to the three different perceived ability groups.

**Table 4: Student Allocation to Perceived Ability Groups by Gender in Class 2 and 3.**

<b>Class 2</b>	<b>Female (n=17)</b>	<b>Male (n=15)</b>	<b>Total (n=32)</b>
High Perceived Ability	4	7	11
Mid Perceived Ability	6	5	11
Low Perceived Ability	7	3	10
<b>Class 3</b>	<b>Female (n=19)</b>	<b>Male (n=16)</b>	<b>Total (n=35)</b>
High Perceived Ability	3	7	10
Mid Perceived Ability	8	7	15
Low Perceived Ability	8	2	10

As shown in Table 4, for Classes 2 and 3 respectively, males were more prevalent than females in the high perceived ability group (Class 2:64% male, 36% female; Class 3:70% male, 30% female). However, for both the mid and low perceived ability groups in Classes 2 and 3, females were more prevalent than males (Mid Group – Class 2:45% male, 55% female; Class 3:47% male, 53% female; Low Group – Class 2:30% male, 70% female; Class 3:20% male, 80% female). Furthermore, a larger percentage of males in Class 2 perceived themselves to be of high ability (47%) compared to mid ability (33%) and low ability (20%).

### STUDENT ATTITUDE

At this stage, pretest data pertaining to student attitude has undergone Rasch analysis to determine the degree to which the *Student Attitude Toward Physical Education* questionnaire (Subramaniam & Silverman, 2000) measures an underlying construct.

### DISCUSSION

This paper describes the process used to determine the effects of grouping students by perceived ability on the attitude of Year Ten students toward Physical Education in a school in Ontario, Canada. It was determined that the three-component model of attitude (Rosenberg & Hovland, 1960) would be used to conceptualise the attitude variable, with attitude comprising three categories: affective (feelings and emotions), cognitive (thoughts and beliefs) and behavioural (actions and intentions). Perceived ability was identified as consisting of two constructs: perceived competence and an individual's conception of ability (Xiang & Lee, 1998).

The study employs a mixed methodology, with descriptive statistics used to allocate students from two classes to one of three perceived ability groups in each class; high, mid or low. Pre- and post-test attitude scores are used to determine any change in attitude based upon gender and perceived ability. A third class acted as a comparison group, participating in their regular Physical Education lessons. Interviews were also utilized to gain a deep understanding of student attitude.

Rasch analysis was employed to determine the extent to which the *Student Attitude Toward Physical Education* questionnaire measured an underlying construct. Case estimates from this analysis are due to be analysed to determine differences in student attitude toward Physical Education according to gender and the perceived ability group to which students were allocated.

At this stage, the study supports the notion that perceived ability levels differ between males and females, with males found to have a higher perceived ability level than females in this sample. This difference was statistically significant ( $p < .001$ ). As the research is mid-way through the intervention period, additional results are imminent.

As this paper reports on the results of the preliminary stages of the study, there is potential to inform the issues of student attitude and perceived ability in Physical Education. As there is a concern with obesity and physical activity levels of adolescents, Physical Educators may benefit from methods that may affect student attitude toward their subject, and utilise these methods to give students positive experiences with Physical Education and physical activity in general.

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