Investigating Factors in the Retention of Students in High School Physical Education

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Several studies have reported declining student enrolment rates in optional physical education. This study—incorporating constructs from social cognitive, self-determination, and body image theory—investigated factors that might be influential to this trend. Surveys were administered to 227 tenth-grade students from five schools in one school district of Ontario, Canada. MANOVA results revealed a significant main effect difference in variables by gender and enrollment group but not by the interaction. Enrollees had statistically higher motivation (domain value, self-efficacy, perceived autonomy support, and autonomous regulation), PE grade, and weekly levels of exercise beyond physical education. Qualitatively, nonenrollees reported more social concerns, less domain value, and disliked activities like fitness training, health content, and competition. Females had statistically higher body size discrepancy and qualitatively more domain value and concern about the social setting and the type of activities. Implications for the retention of high school physical education students are discussed.

Keywords: motivation, gender, adolescents, achievement, attrition

In many high schools, physical education (PE) is often the primary means for students to participate in and learn about the benefits of physical activity and fitness and it becomes more optional as students enter the senior grades (Sallis, Prochaska, & Taylor, 2000; Ntoumanis, 2005). Some studies have differentially reported a lowering of motivation, value, and enrollment in optional PE (Faulkner, Goodman, Adlaf, Irving, & Dwyer, 2007; Gao, Lodewyk, & Zhang, 2009; Hardman, 2005). For example, Chen (2001; see also CDC, 2004) reported that only 25% of tenth-graders, 19% of eleventh-graders, and 21% of twelfth-graders among a considerable sample of United States adolescents chose to enroll in PE. This and the extensive evidence that low numbers of adolescents meet minimal weekly physical activity levels (Craig, Cameron, Russell & Beaulieu, 2001), signals that youth are considerably vulnerable to establishing the inactive lifestyles that are so strongly linked to many health-related challenges.

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The aforementioned trends have prompted organizations such as the United States Department of Health and Human Services (2006) to call for a fundamental reform in the way schools and teachers promote physical activity and implement PE. Researchers have highlighted a variety of factors to facilitate this process each of which reflect a particular theoretical approach. For example, some (Pelletier & Vallerand, 1996) highlight the joint role of body image and motivation while others (Ntoumanis, 2005) more emphasize the importance of feeling autonomous and supported in movement settings. An integrated theoretical approach in PE research has been welcomed (Chen, 2001; Sallis et al., 2000). This study endeavors to discover more about potential factors associated with attrition from optional high school PE in a group of Canadian adolescents. More specifically, it aims to illuminate differences between gender and enrollment group (in or out of optional PE) in demographic factors, enjoyment, and motivational constructs representing social cognitive (self-efficacy and domain value), self-determination (perceived autonomy support, autonomous and controlled regulation, and amotivation), and body image (body size discrepancy) theory.

Social Cognitive Theory

Social cognitive theory (Bandura, 1986) is the unifying theoretical foundation of this work as it asserts the importance of the dynamic interaction between behavioral, environmental, and personal factors within students’ attempts to self-regulate and control these as they pursue their goals. To illustrate, a person’s behavior and motivation are functions of, among other things, one’s feelings, thoughts, beliefs, social influences and the ability to self-regulate these. Expectancies and values are particularly influential social-cognitive constructs. Self-efficacy—an individual’s expectancy feelings toward their own ability to be successful at any given time with respect to a specific performance or behavior—has been linked to learners’ effort level, engagement, willingness to actively participate, and perseverance in the PE setting and in physical activities generally (Dishman, Motl, Sallis, Dunn, Brinbaum et al., 2005; Sallis et al., 2000). Increasing personal levels of self-efficacy in a certain environment can lead to lower perceptions of barriers to tasks, beliefs that obstacles can be overcome, higher likelihood to act on intrinsic goals, and increases in personal enjoyment while working on learning tasks. Further, having a more optimistic outlook of the task because of the intrinsic enjoyment being experienced has also been shown to lead to increased value for the final task product and its domain (Dishman et al., 2005).

Domain value reflects one’s personal views on how interesting, important, useful, and costly the pursuit of goals in a domain is (Bandura, 1986). Understanding more about students’ value for PE is necessary since PE is often valued less than other educational classes (van Wersch, Turner, & Trew, 1992) and those believing so tend to exert less effort during and outside of PE (Xiang, McBride, & Bruene, 2006); and, enroll less in optional PE classes (Chen, 2001). A host of studies (e.g., Gao et al., 2009) have linked such values to academic achievement and related factors like choice, persistence, effort, and self-efficacy in educational settings like PE. It appears that the value one places on the process of attainment, the outcome, and the belief that one can achieve an outcome (task efficacy) is predictive of positive
change in learners. Little is yet known about the differences in self-efficacy and domain value between students who opt for or against optional PE in high school.

**Self-Determination Theory**

According to Deci and Ryan (2002), self-determination theory highlights the innate determination of individuals to achieve and fulfill innate psychological needs such as autonomy, relatedness (socially connected to others like the teacher or their peers), and perceived competence. Briefly explained, those with more autonomously-regulated motivation tend to strive for goals for more intrinsic reasons. They participate in a behavior or activity more for the inner satisfaction, joy, self-improvement, and mastery that it provides them than for more extrinsic aims. Such a self-determined motivational inclination has been linked to future exercise and activity participation, and higher levels of creativity, engagement, learning, achievement and content appreciation. In comparison, those with more controlled-regulated motivation tend to be more extrinsically motivated, feel more controlled (less autonomous), and act to accommodate external pressures like earning rewards, gaining skills, responding to feelings of guilt and the need to earn approval from significant others. Such individuals tend to experience lower enjoyment levels and perform less successfully. Finally, a-motivated individuals have neither extrinsic or intrinsic motives and tend to have more unfulfilled core needs, more readily withdraw from challenges, demonstrate lower attendance rates, are less active and more bored in class, and have lower value for PE (Ntoumanis, 2005; Ntoumanis et al., 2004).

Students’ experiences with and perceptions of their environment—particularly their interactions with the teacher—are a profound influence on their level of self-determination mainly through their effect on perceptions of competence (Bandura, 1986; Ntoumanis, 2001). In other words, teachers can help students to be more intrinsically motivated and academically successful when they help to ensure that students feel competent, autonomous, and related. This concept is referred to as perceived autonomy support and is defined by Standage, Duda, and Ntoumanis (2006) as the “social context that supports choice, initiation, and understanding, while minimizing the need to perform and act in a prescribed manner” (p. 102). Otherwise stated, perceived autonomy support reflects how much learners feel understood by their teacher (or parent or significant peer) and perceive that the teacher provide them with choices, listens and tries to understand how they would like to do things, demonstrates confidence in their abilities to succeed, and invites them to ask questions. Perceived autonomy support has positively predicted autonomy, relatedness, and competence-need satisfaction, higher teacher ratings of student effort and perseverance in PE (Ferrer-Caja & Weiss, 2000), future participation in optional PE (Ntoumanis, 2005), self-determined motivation (Standage et al., 2006), physical activity behavior, perceived behavioral control, and being more autonomously-motivated for leisure-time physical activity (Hagger & Chatzisarantis, 2007).

The movement experiences of female adolescents are of particular interest in this study since females spend even less time than males enrolled in and enjoying PE and being physically active each week (Dishman et al., 2005) yet enjoyment
seems to be a more important physical activity factor in girls than boys especially during middle school (Barr-Anderson, Young, Sallis, Neumark-Sztainer, Gittelsohn, et al. 2007). Gao, Lee, and Harrison (2008) report that the results of motivational research on gender in PE has generally been mixed. They state that although ability beliefs and expectancies for success tend to be higher in males than females, some studies (Xiang et al., 2006) have found no differences. Meanwhile, Deci and Ryan (2002) argue that motivational constructs such as autonomy-support that function within the quest to meet basic psychological needs are not expected to differ significantly by gender. It appears that gender differences in these constructs are highly dependent on particular qualitative factors such as the gender power relations, social climate, instructional dynamics, and curricular emphasis (Dyson, 2006; Flintoff & Scratton, 2006; Gao et al., 2008). Assessing associations among gender, enrollment decisions in optional PE, and indices of motivation and performance in this study will add insight to such disparities.

**Body Image Theory**

A construct in this study having more consistent gender differences in PE is body image (Dyson, 2006; Flintoff & Scratton, 2006; Lodewyk, Gammage, & Sullivan, 2009). Feelings of dissatisfaction with one’s body size or shape relative to social comparisons increases and becomes more of a source of worry as children move into puberty (Duncan, Al-Nakeeb, Nevill, & Jones, 2004). Both males and females have mental representations (images) of their body that can be a concern, particularly in adolescent females (McCabe, Ricciardelli, & Finemore, 2002). Such knowledge reflects advances in body image theory from its roots in neuropathology and psychodynamic paradigms to “important, wide-ranging perspectives including socio-cultural, evolutionary, genetic and neuro-scientific, cognitive-behavioral, and feminist (objectification theory) viewpoints” (Cash & Smolak, 2011, p. 7). Body image can be particularly influential in movement settings. For example, negative self-evaluations and perceptions have been linked to lowered motivation and self-confidence exemplified as barriers to exercise, participation, and enjoyment of physical activity (Treasure, Lox, & Lawton, 1998) including in PE (Lodewyk et al., 2009). The PE setting can heighten the saliency of students’ bodies (e.g., changing into and wearing PE attire, activities and assessments that heighten social comparisons) inducng more anxiety about one’s body appearance (Gammage, Martin, Ginis, & Hall, 2004). It is unclear whether students who opt out of PE have lower body image perceptions than those who continue enrolling in PE.

**Enjoyment and Demographics**

Enjoyment—a staple affective self-regulatory construct in social cognitive theory (Bandura, 1986) and in the intrinsic motivation facet of self-determination (Deci & Ryan, 2002)—will be synonymous in this study with generally positive affective “feelings such as pleasure, liking, and fun” (Scanlan & Simons, 1992, p. 202). Research clearly reveals the vital role of enjoyment in the attitudes and behaviors of students both in PE (e.g., Smith & St. Pierre, 2009; Garn & Cothran, 2006)
and in physical activity outside of PE (Barr-Anderson et al., 2007). Particularly influential on students’ enjoyment are the teacher, the type of instructional unit, and perceived competence (Smith & St. Pierre, 2009). We add to this research by qualitatively linking students reported sources of enjoyment (or the lack thereof) to their gender and enrollment in optional PE.

Another prominent reason for students not enrolling in optional PE might be because they have other and perhaps more enticing choices particularly in relation to their changing personal values (Sulz, Humbert, Gyursik, Chad, & Gibbons, 2010). After all, adolescence is a time of noteworthy physiological, cognitive, and socioemotional change as adolescents encounter and make more important decisions in life about, for example, in which high school courses to enroll. As they do so, youth increasingly consider their values, expectations, goals, and socioemotional factors while better engaging higher-order cognitive and affective executive processes (McClelland, Ponitz, Messersmith, & Tomainey, 2010).

**Purpose**

The primary aim of this study is to discover more about factors related to retaining students in optional high school PE. To meet this aim, three specific objectives are posited. First, the proportion of students who opt not to enroll in optional PE because of non-PE related reasons will be explored and omitted from subsequent analyses to enable more insight into the specific PE-related enrollment factors. Second, differences will be determined between those who enroll in optional PE and those who do not. It is expected that enrollees will report unique sources of enjoyment (i.e., likes and dislikes) and higher perceived autonomy support, self-efficacy, domain value, autonomous regulation, PE grade, and daily active exercise outside of PE and lower levels of controlled-regulation, amotivation, body size discrepancy. Third, gender differences in each of these constructs will be ascertained. In line with consistent research findings about the importance of body image in females (e.g., Flintoff & Scratton, 2006) we anticipate that body size discrepancy will be particularly higher in females than in males.

Fulfilling these objectives will illuminate factors in students’ motivation, performance, and enrollment so steps can be considered that might avail more students to the benefits of optional PE. A significant contribution of this study is its multimethod approach toward improving knowledge about how enrollees and nonenrollees of optional high school PE differ. We add to existing qualitative (e.g., Sulz et al., 2010) and quantitative (e.g., Ntoumanis, 2005) accounts by analyzing students’ responses to open-ended questions and Likert-type items. Other valuable aspects of this research include accounting for administrative reasons for not enrolling in PE and jointly investigating motivational constructs from different theoretical frameworks and their relations to gender, enrollment group, level of physical activity beyond PE, and PE grade. This study is also a novel contribution to the research literature by accounting for the effects of gender and non-PE related obstacles (e.g., course scheduling) in assessing students’ enrollment justifications temporally close to their actual decision making point about whether to enroll in optional PE.
Methods

Participants and Procedure

The initial sample consisted of 236 volunteering students from 16 separate classes, within five different high schools in a school district of southern Ontario, Canada. Consent was attained from all necessary levels (university, school board, principals, teachers, parents, and students). Nine cases were removed after completion of a Mahalanobis distance analysis, with the Chi Square criteria for exclusion of >66.9, as recommended for a sample of this size (Tabachnick & Fidell, 2006). This resulted in a final sample of 227 participants, of which 118 were females (51.98%) and 109 were males (48.11%). The overall sample consisted of Caucasian (77.5%), Asian (6.3%), Euro-Canadian (7.2%), and other (Hispanic, African-Canadian, Arabic, Native and Samarian; 9.1%) ethnic background. Most (64.3%) lived in an urban rather than a rural setting.

To ensure inclusion of both enrollees and nonenrollees of optional high school PE in this study, participants were all sampled during their required grade 10 (age 16) Career and Civics class midway through the academic year. Grade 10 was selected because almost all of Ontario’s high school students (95%) fulfill their one required high school physical and health (PHE) education credit (Ontario Ministry of Education, 1999) by taking the course in grade 9 (Dwyer, Allison, LeMoine, Adlaf, Goodman, et al., 2006). Consequently, all participants in this study had completed the grade-nine gender-segregated (not-coed) PE course during the previous year. Before beginning the survey, participants were told to think back to their most recent physical education classes when completing the items. The administered questionnaire consisted of one page of demographic items along with three short established measures. It was administered by one of the authors during the regular Career and Civics class and took approximately 10–15 minutes for students to complete.

A short interview was conducted with the district’s PE consultant before selecting schools and teachers for the study so contextual factors (e.g., teaching differences) would be relatively minor, largely unavoidable, and reflective of PE in many settings. The district’s PE consultant was appointed by the district’s public school board to network with, and support K-12 physical and health educators in understanding and implementing the physical and health education curriculum. The PE consultant’s responsibilities included serving as a resource (contact) person, reviewing and assessing the curriculum support materials, leading professional development initiatives, and being a liaison between PE, administrators, provincial PE initiatives, and other education services. PE courses generally met 70 minutes each school day for semester-long courses or on alternating days for full-year courses. Each of the high schools in the school district followed the Provincial Ministry of Education’s curriculum (Ontario Ministry of Education, 1999). Most (80%) of course time was spent in movement-oriented units like fitness, developmental games, team sports, and individual sports while the remaining time (20%) consisted of health units in health-fitness theory, sexuality, or substance abuse. PE grades were generally distributed across skill (20%), fitness (20%), knowledge (20%), and attitude (40%). A grade of 80% would earn students a first-class standing (A).
Measures

Demographics. The first page of the survey consisted of a Demographics Questionnaire (DQ) similar to that used by others (e.g., Lodewyk et al., 2009) that consisted of one item each asking students to report their gender and ethnicity, weekly levels of active exercise outside of PE at least 30 minutes per day (scored 0 for never, 1 for 1–2 days/week, 2 for 3–4 days/week, 3 for 5–6 days/week, and 4 for every day), and the grade (a percentage) typically earned in their most recent PE courses. Where possible (n = 55), participants’ actual ninth-grade PE marks were obtained and used from the school’s student services. Self-reported estimates of grades have been used validly in PE research (e.g., Haerens, Kirk, Cardon, De Bourdeaudhuij, & Vansteenkiste, 2010). The correlation of .66 between the actual and self-reported grades of the subsample of students for whom both grades were available in this study supported this (Tabachnick & Fidell, 2006).

Students’ current enrollment status in PE was also questioned in the DQ. First, students were asked if they were currently enrolled in PE (beyond the required credit that they all completed in grade 9). If they responded negatively, they were asked to check off reasons why not from a menu of nine choices following by a space in which to include other reasons. The menu included both PE-related items (e.g., “I do not want to take PE.” “I plan to take PE next year.” “I do not enjoy the health component of the course.”); and, non-PE related reasons (e.g., “I do not need any more PE credits to meet my future goals or plans.”). The items were designed by the authors to identify some of the main attrition factors from relevant Canadian research literature (e.g., Faulkner et al., 2007; Sulz et al., 2010). If not checked, the item was coded 0 (no) whereas if the item was checked it was coded 1 (yes) for that student. Finally, students were invited to add to this information by providing a written response to the question: “What factors influenced your choice to take or not take 10th grade PHE?”

In line with the definition of enjoyment noted earlier and the acknowledgment of many diverse “likes and dislikes” of students in PE (see Dyson, 2006), students enjoyment (and lack thereof) was assessed using these two open-ended written-response questions: “What are some aspects of PHE classes that you enjoy?” and, “What are some aspects of PHE classes that you dislike?” Before beginning the survey, students were informed both verbally and in the directions on the survey that they were to consider their previous (grade 9) PE course when completing the items.

Motivation. Participants responded to each of the motivational surveys using a 7-point Likert scale, ranging from “1 = not at all true for me” to “7 = very true for me”. Self-efficacy and domain value were assessed using eight and six item statements, respectively, found in their corresponding subdimensions within the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, Smith, Garcia, and McKeachie (1991). The MSLQ has demonstrated reliability and validity is previous uses in numerous countries and domains including PE (Ommundsen, 2006). Sample items are: “I will receive a high grade in physical education” (self-efficacy) and, “I think I will be able to use what I learn from PE in my other courses” (domain value). Motivational regulation was assessed using the 15-item Treatment Self-Regulation Questionnaire (TSRQ) and is valid (δ values of 0.81 and 0.84) and applicable for the domain assessment performed.
herein (Williams & Deci, 1996). Each item was a response to the stem: “The reason I would participate in optional PE classes is…” The three sub-scales are autonomous-regulated motivation (AR; six items), controlled-regulated motivation (CR; six items), and amotivation (AM; three items). Sample items are: “Because I personally believe it is the best thing for my health” (AR); “Because I want others to see I can do it” (CR); and, “I really don’t think about it” (AM). Students’ level of perceived autonomy support in PE was assessed using the short (six-item) form of the *Learning Climate Questionnaire (LCQ)* that was developed by Williams and Deci (1996) for use in an educational setting and validated (e.g., Ntoumanis, 2005). A sample item is, “I feel that my physical education teachers provide me choices and options.”

**Body Size Discrepancy.** This construct was assessed using a silhouette measure consisting of nine gender-specific figures presented in a continuum of body types ranging from ectomorphic (“1”) to endomorphic (“9”) as used previously in the PE setting by Lodewyk et al. (2009). Students rate which figure best represents how they feel they currently look (perceived body type) and also how they want to look (ideal body type). The body size discrepancy score is the ideal score subtracted from the perceived score. A positive score indicates that an individual desires a thinner frame compared with a negative score favoring a larger body size than current.

**Data Analysis**

Quantitative analysis was performed using the Statistical Package for the Social Sciences (SPSS Version 16.0). Internal consistency reliability coefficients for each scale (construct) and bivariate (Pearson) correlations between each variable were computed. A multivariate analysis of variance (MANOVA) procedure ($p < .05$) was implemented to determine differences in motivation (domain value, self-efficacy, motivational regulation, body size discrepancy), PE grade, and out-of-PE exercise levels across gender and enrollment groups.

Between group differences (gender, in or out of PE) were also assessed qualitatively by analyzing responses to the three open-ended questions using a recommended protocol involving multiple examinations with increasing interpretive specificity (Creswell, 2007). First, responses were read and analyzed to identify patterns (categories) of key words and phrases which were then, secondly, coded within a two (likes and dislikes) by four (male/female, In PE, Not in PE) matrix. Finally, the coded content was analyzed to better understand factors related to students’ PE enrollment choices including aspects of PE they enjoy and dislike (see Table 1). We exemplify this using the following statement from the data: “I don’t like the fact that after PE class I have to feel sweaty and gross for the rest of the day.” After the statement was examined with all the others to identify key patterns, it was coded and copied to the dislike, female, in PE matrix under the “appearance/feeling for the rest of the day” category. Related categories (e.g., showering/changing) were then reviewed for conceptual similarities and aggregated under the theme “social aspects.” To control for error we used a standard practice for independent qualitative reporting (Miles & Huberman, 1994) by having another researcher take a sample of the raw qualitative data and recode that data using the same scale. For example, a graduate researcher within the same faculty as the
primary investigator but in a different discipline (Kinesiology not PE) assessed a sample of the qualitative data using the original coding scale and subsequently compared with the original data coding to identify similarities and/or differences. This comparison revealed highly consistent (97%) coding practices and emergent themes. The few discrepant cases were discussed until a classification agreement was reached. Responses that reflected multiple thematic categories were entered under each respective theme in their assigned grouping.

Results

Quantitative Results

Statistical analyses of item and scale frequency distributions revealed no abnormalities. Except for amotivation (.50), the scale internal consistency reliability coefficients were acceptable (> .75). The low coefficient for amotivation was attributed to the application of only three items to the students within this context so it was removed from subsequent analysis. Scale means were computed and are presented in Table 2. Bivariate (Pearson) correlations were conducted for each variable being investigated in this study and are reported in Table 3. These values showed no evidence of multicollinear relationships and generally supported the joint inclusion of constructs from social cognitive, body image, and self-determination theory in this study.

To determine the proportion of students attributing their decision not to enroll in PE to non-PE related reasons, participants’ responses to the menu of choices on the DQ for enrolling or not enrolling in PE were analyzed. Proportionally, 158 (82
Table 2  Descriptive Statistics

<table>
<thead>
<tr>
<th>Scales</th>
<th>All (N = 227)</th>
<th>In PE (n = 158)</th>
<th>Not In PE (n = 36)</th>
<th>Males (n = 109)</th>
<th>Females (n = 118)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Autonomy Support</td>
<td>4.90 (1.23)</td>
<td>5.03 (1.16)</td>
<td>4.13 (1.40)</td>
<td>5.05 (1.14)</td>
<td>4.74 (1.30)</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>5.53 (1.12)</td>
<td>5.78 (1.04)</td>
<td>4.57 (1.22)</td>
<td>5.65 (1.05)</td>
<td>5.43 (1.19)</td>
</tr>
<tr>
<td>Domain value</td>
<td>4.72 (1.26)</td>
<td>5.05 (1.12)</td>
<td>3.52 (1.33)</td>
<td>4.76 (1.22)</td>
<td>4.70 (1.28)</td>
</tr>
<tr>
<td>Autonomous Regulation</td>
<td>4.66 (1.44)</td>
<td>5.02 (1.29)</td>
<td>3.49 (1.35)</td>
<td>4.64 (1.42)</td>
<td>4.69 (1.45)</td>
</tr>
<tr>
<td>Controlled Regulation</td>
<td>2.41 (1.12)</td>
<td>2.51 (1.09)</td>
<td>2.15 (1.22)</td>
<td>2.46 (1.24)</td>
<td>2.39 (0.99)</td>
</tr>
<tr>
<td>Body Size Discrepancy</td>
<td>-.54 (1.35)</td>
<td>-.44 (1.35)</td>
<td>-.581 (1.52)</td>
<td>-.03 (1.27)</td>
<td>-1.02 (1.25)</td>
</tr>
<tr>
<td>Out-of-PE Exercise</td>
<td>2.37 (1.16)</td>
<td>2.47 (1.10)</td>
<td>1.81 (1.33)</td>
<td>2.47 (1.13)</td>
<td>2.27 (1.18)</td>
</tr>
<tr>
<td>PE Grade</td>
<td>81.79 (8.75)</td>
<td>82.49 (8.50)</td>
<td>78.06 (10.59)</td>
<td>81.98 (7.96)</td>
<td>81.62 (9.46)</td>
</tr>
</tbody>
</table>

Note. Means are reported. Standard deviations are in parenthesis.

Table 3  Scale Internal Consistency Reliability Coefficients and Correlations (N = 227)

<table>
<thead>
<tr>
<th>Scales</th>
<th>Alpha</th>
<th>SE</th>
<th>DV</th>
<th>AR</th>
<th>CR</th>
<th>BSD</th>
<th>EX</th>
<th>PEG R</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAS</td>
<td>.90</td>
<td>.52**</td>
<td>.60**</td>
<td>.40**</td>
<td>.18**</td>
<td>.07</td>
<td>.10</td>
<td>.25**</td>
</tr>
<tr>
<td>SE</td>
<td>.91</td>
<td>-</td>
<td>.71**</td>
<td>.44**</td>
<td>.17**</td>
<td>.22**</td>
<td>.34**</td>
<td>.47**</td>
</tr>
<tr>
<td>DV</td>
<td>.90</td>
<td>-</td>
<td>.68**</td>
<td>.31*</td>
<td>.12</td>
<td>.36**</td>
<td>.33**</td>
<td></td>
</tr>
<tr>
<td>AR</td>
<td>.90</td>
<td>-</td>
<td>.43**</td>
<td>.03</td>
<td>.26**</td>
<td>.18**</td>
<td></td>
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<tr>
<td>CR</td>
<td>.76</td>
<td>-</td>
<td>-.01</td>
<td>.19**</td>
<td>.19**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSD</td>
<td>-</td>
<td>-</td>
<td>.14*</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>EX</td>
<td>-</td>
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<tr>
<td>PEGR</td>
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</table>

Notes. * p < .05; ** p < .01.

Perceived autonomy support = PAS; Self-efficacy = SE; Domain value = DV; Autonomous regulation = AR; Controlled regulation = CR; Body Size Discrepancy = BSD; Weekly exercise outside of PE = EXER; PE grade = PEGR.
females, 76 males; 69.6%) were either in optional PE or had intentions to subsequently enroll in a high school PE class (IPE); 36 students (18 females, 18 males; 15.9%) reported not wanting to enroll in PE (NIPE); and, the remainder (n = 32; 18 females, 15 males; 14.5%) did not enroll for non-PE related reasons. All of those in this group responded “no” to the item: “I do not want to take PE” indicating that something beyond PE was the reason for their not enrolling. Within this group, 24 (75%) attributed it to a timetabling (scheduling) problem, 29 (91%) stated the reason as “not needing anymore PE credits to meet my future goals or plans,” and 47% noted that they were “sufficiently physically active in other activities.” Since these were non-PE related reasons these students were omitted from subsequent comparisons of enrollees and nonenrollees of PE in this study.

Following the guidelines of Tabachnick and Fidell (2006), a two (male/female) by two (enrollees/nonenrollees) multivariate analysis of variance (MANOVA) using type I (unique) sums of squares to adjust for nonorthogonal sample sizes was performed (p < .05) on the following eight dependent variables: perceived autonomy support, self efficacy, domain value, autonomous regulation, body size discrepancy, controlled regulation, out-of-PE exercise, and PE grade. The Box’s M test (F = 1.60, p < .001) was significant indicating a violation of the assumption of homogeneity of variance-covariance matrices so Pillai’s trace and an alpha level of .01 were used to indicate multivariate significance (Tabachnick & Fidell, 2006). The results indicated the combination of dependent variables differed significantly as a function of both gender [Pillai’s trace = .18, F(8, 180) = 4.97, p < .001] and enrollment group [Pillai’s trace = .25, F(8, 180) = 7.35, p < .001] but not their (gender × enrollment group) interaction [Pillai’s trace = .03, F(8, 180) = .75, p = .65]. Follow-up univariate F-values, η², and paired comparisons (see Table 4) revealed that only body size discrepancy differed significantly (p < .01) by gender whereas, except for body size discrepancy and controlled regulation, each dependent variable varied statistically between enrollees and nonenrollees especially for domain value, self-efficacy, and autonomous regulation.

Table 4  Results of Follow-Up Univariate Tests for Two-by-Two (Gender and Enrollment) MANOVA

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
<th>F</th>
<th>p</th>
<th>η</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Body Size Discrepancy</td>
<td>35.19</td>
<td>&lt;.001</td>
<td>.16</td>
</tr>
<tr>
<td>Enrollment</td>
<td>Domain value</td>
<td>49.76</td>
<td>&lt;.001</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Autonomous regulation</td>
<td>39.41</td>
<td>&lt;.001</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td>Self-efficacy</td>
<td>36.79</td>
<td>&lt;.001</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>Perceived Autonomy Support</td>
<td>16.68</td>
<td>&lt;.001</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>Out-of-PE exercise</td>
<td>9.13</td>
<td>.003</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>PE grade</td>
<td>7.02</td>
<td>.009</td>
<td>.04</td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td>.75</td>
<td>.65</td>
<td>.03</td>
</tr>
</tbody>
</table>
Qualitative Results

Regardless of gender or enrollment status (IPE or NIPE), analysis of the qualitative data revealed participants “liked” (1) the types of physical activities (e.g., sports/games, fitness, dance, gymnastics); (2) the value of PE (e.g., exercise, stress release, fun); (3) the health content (e.g., learning about one’s body, drug and sexual awareness, nutrition); (4) the social aspects (e.g., friends took the class, ability to socialize); and, (5) that PE “is a break from regular school activities.” Negative comments about PE also centered around the types of physical activities (e.g., participating in undesired sports/games, fitness training and testing, competitive settings), the health content in the course (e.g., being in a classroom setting, work load, tests), social factors (e.g., showering and changing), and domain value (e.g., not necessary, a waste of a credit). Only 10 participants reported negative comments (e.g., unfair, can’t relate to) about their previous PE teachers.

The relative distribution of qualitative comments across the themes demonstrated some variance between males and females (see Table 1). Compared with males, proportionally more females reported positively on the health content and negatively on having social concerns and fitness testing. Females were also expressive of their likes and dislikes for certain activities in PE. They were more prone to liking dance and gymnastics, novel activities, fitness-oriented endeavors that helped them stay healthy and regularly active, and the overall enjoyment their experienced in PE. For example, “I loved being able to do the dances, it was really different from the normal sports that we normally play.” In contrast, male students were more inclined to favor weight training and to dislike health class and competition. One male student commented: “I like the games that we play in PE but sometimes they (other students in the PE class) take it too seriously and then it’s not fun anymore.”

The main themes to emerge and their frequencies relative to enrollment status (IPE or NIPE) are presented in Table 1. Contrasting comments made by IPE and NIPE students across these themes revealed noteworthy differences what the two groups liked about PE. The IPE group responded proportionally more favorably to the types of physical activities (including fitness testing) and the value for PE particularly for a healthy lifestyle and as a “break” from other responsibilities whereas the NIPE group was more positive about the social benefits of PE. For example, one student in the IPE group stated: “I feel like in PE class I’m improving my body… not just getting smarter like in my other classes.” In regards to dislikes, proportionally more NIPE students reported a dislike for certain activities, social concerns, and a lack of value for the subject. Finally, the IPE group more frequently reported frustration and disappointment with peer behaviors, abilities and efforts in the PE class setting. For example, “I get very frustrated when students in my class don’t try, goof off and don’t listen to instructions.”

Discussion

The aim of study was to qualitatively and quantitatively improve understanding about potential factors in the decisions of high school students to enroll or not enroll in optional PE. Results generally supported the joint role of social cognitive (self-efficacy and domain value) and self-determination (perceived autonomy support and autonomous regulation) theory in the PE enrollment decisions of high school students. Similar to Sulz et al. (2010), results stemming from of our first research
objective revealed that a significant proportion of students did not enroll in optional PE because of factors beyond PE (e.g., PE being fully enrolled so not available, PE not fitting into their timetable or schedule, and PE not meeting a graduation requirement, career goal, or a personal need for physical activity). This reflects the conundrum that many high school students face as they encounter more choices and obstacles about, for example, in which high school courses to enroll (McClelland et al., 2010) and highlights the need for school officials to more highly value, promote, avail, and accredit PE courses and to consider problems students face in scheduling them into their course timetable (Gibbons, Wharf-Higgins, Gaul, & Van Gyn, 1999).

After removing those attributing their decision not to enroll in optional PE to non-PE related reasons, PE enrollees reported significantly higher quantitative levels of perceived autonomy support, self-efficacy, domain value, autonomous regulation, PE grade, and levels of active exercise beyond PE than nonenrollees. This corroborates some of the other quantitative research on attritional factors in secondary PE. For example, students who enroll in PE once it is optional reported higher levels of competence, relatedness, and autonomy in the previous year of required PE (Ntoumanis, 2005). Lower levels of perceived competence and perceived autonomy support has been linked to less self-determination (Ntoumanis, 2005) with corresponding links to less effort and persistence in PE (Ferrer-Caja & Weiss, 2000) each of which may explain the elevated indices of motivation among PE enrollees in this study. Further, the finding that autonomous regulation was more related to PE grade and was higher in enrollees than nonenrollees when no difference was observed in controlled regulation highlights the importance of intrinsic drive (i.e., choosing to strive for personal goals to fulfill inner values more than for pleasing others) in motivated PE achievement (Ntoumanis, 2005). The qualitative finding that nonenrollees reported more social concerns (e.g., frustration with fellow classmates), a lack of enjoyment and value for it, and a dislike of certain activities like fitness training, health classes, and competition is noteworthy because it actually links many such feelings noted elsewhere (for a review, see Dyson, 2006) to PE enrollment.

Differences between enrollment groups in this study also mirror some other reported links between motivation in PE and either intentions for or actual levels of physical activity out of school (Gao et al., 2009). For example, Ntoumanis (2005) found that less self-efficacious PE students who are assessed in ways that are salient to peers and that engage in activities for competitive ends are prone to being less physically active in or out of school. It is likely that PE teachers who emphasize improvement, cooperation, and reduce overt peer comparisons will enhance students’ competence and satisfaction and decrease their perceptions of being controlled (Ntoumanis, 2001). Lower achievement and motivation in PE has likewise been linked to learning in an environmental setting that lacks novelty (over-emphasizing the same team sports), and fosters social comparisons (Sulz et al., 2010). Increasing the enrollment choices students have about which forms of high school PE (e.g., team games, lifestyle fitness, weight training, dance, and individual and dual games) they can enroll in might stimulate more optimal value, motivation, and retention of students in PE and beyond it particularly among girls (Ntoumanis, 2005). More research using, for example, different statistical procedures (e.g., path analysis) in a variety of PE settings is needed to more conclusively ascertain such potential.
Of particular note was the lack of an interaction effect between gender and enrollment group signaling that they do not depend on one another in explaining levels of motivation, grade, out-of-PE exercise, and body size discrepancy in this study. It is likely that students’ enrollment choice depends on various indices of motivation (e.g., self-efficacy, enjoyment) and performance (e.g., grade) regardless of their gender. The absence of statistical gender differences in motivational constructs and PE grade reflects absent and often varied gender differences in the literature. For example, Ntoumanis (2005) reported subtle ($\eta^2 < .03$) gender differences in just three of 15 motivational constructs. Gender differences in the motivational constructs assessed in our study might be more salient if investigated in more specific settings such as during specific curricular units or learning tasks than in this relatively general (domain) focus. Qualitative gender differences in our study also reflect other research on females’ enjoyment and participation in PE highlighting the role of body image or shape concerns, school peers, and low confidence in skills and abilities (Couturier, Chepko, & Coughlin, 2005). Girls also tend to be more inclined to engaging in individual sports (e.g., gymnastics and track and field) compared with boys’ preference for team activities (Kann et al., 2000). Our results add to these findings as females more liked the health portion of the course and novel activities whereas more males reported disliking health and competition and favor for traditional sport, physical activities, and working out (e.g., weight training). Contextual factors like teaching style might also partially account for the different value males and females place on a variety of PE activities (Flintoff & Scratton, 2006) that might, however, be mediated by more autonomy-supportive instructional methods (Ntoumanis, 2005).

The quantitative and qualitative elevations in social and body image concerns among females in PE compared with their male classmates was another key finding of this study. It corroborates some other related research in PE (e.g., Couturier et al., 2005; McCabe et al., 2002) that personal appearance and social anxieties seem to become more activated when self-presentation of body and skill are more emphasized than other classes (Duncan et al., 2004; Gammage et al., 2004). Since early adolescence is a period of lowered self-esteem and increased gender stereotyping of socially-desirable attitudes and behavior, especially for girls who tend to be vulnerable to concerns related to their body image in PE (McCabe et al., 2002), compared with adolescent boys, adolescent girls tend to more highly value emotional intimacy and trust in friends (Parker & Asher, 1993), prefer mixing fun with social engagement, and put less emphasis on winning and personal performance. The finding that body size discrepancy was the sole construct to quantitatively differ by gender and that it related only to self-efficacy reflects similar findings across gender by Lodewyk et al. (2009). We concur with them that body size discrepancy may uniquely contribute to motivation and grade in PE according to gender and through its relationship with self-efficacy rather than with constructs such as autonomous regulation, controlled regulation, and domain value.

In closing, this study helps to illuminate motivational, grade, gender, and associated factors that may be influential in students’ decisions to enroll in optional high school PE. We acknowledge the inherent limitations of the study’s self-report data, interpretations of the qualitative data, lower than necessary internal consistency of the amotivation scale, unequal group sizes, and restricted transferability of findings beyond this context. We welcome extended research in more diverse (e.g.,
coed) settings with more balanced group sizes since the proportions of enrollees in optional PE in this study may differ for a variety of reasons. We recommend that to reduce proportions of students opting out of PE, administrative efforts include making more high school PE courses accredited and compulsory and better aligning them so more students can include them in their class timetable. Physical educators might also better monitor and cultivate for optimal motivational and grade levels in pupils by implementing autonomy-supportive practices, reinforcing the value of the domain content (particularly in specific situations), and better adapting instruction, content, and setting for the unique needs of individuals especially the body image concerns of some females.

References


