

# Gender Differences in the Relationship between Perceived Competence and Physical Activity in Middle School Students: Mediating Role of Enjoyment

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## Abstract

**Background:** An important topic regarding school health is to investigate the factors affecting students' participation in physical activity inside and outside of school. The purpose of the present study was to investigate the relationship between perceived competence as one of the basic psychological needs and the physical activity of male and female middle school students inside and outside school, considering the role of enjoyment as a mediator variable. Gender differences were further examined.

**Methods:** A descriptive-correlation method was employed in this study. Participants were 600 male and female middle school students from Aliabad Katoul, Golestan province, Iran in 2019. Research tools included Scrabis-Fletcher and Silverman's Perceived Competence Survey, Enjoyment Questionnaire, and Physical Activity Scale. Structural equation method was used to examine the relationship between variables and analysis of variance (ANOVA) was utilized to find out the gender differences.

**Results:** The results showed significant relationships between perceived competence and physical activity inside and outside school among boys ( $P=0.021$  and  $P<0.001$ , respectively). However, in girls, enjoyment was more effective on the in-school and out-of-school physical activity ( $P=0.001$  and  $P=0.003$ , respectively). In addition, boys reported higher perceived competence, more enjoyment, and more physical activity in comparison to girls ( $P<0.001$ ).

**Conclusions:** Perceived competence and enjoyment in physical education classes are correlated among boys. In girls, it seems that enjoyment is a more important factor than perceived competence. Physical educators should encourage the perceptions of the students regarding their abilities in physical education classes, in order to improve their participation in physical activities.

**Keywords:** Perceived competence; Enjoyment; Physical activity; Middle school

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## 1. Introduction

The positive effects of regular physical activity on the physical and mental well-being of students have been well documented (1-3). Despite these positive effects, many children and adolescents at school age have a sedentary lifestyle. Such lifestyle along with its negative impacts on short- and long-term health have increased the interest to examine the psychological determinants of students' participation in physical activity (4-6). However, the research on the psychological components of students' physical activity has mainly focused on participation in organized sports in sport clubs and participation of a specific minority of students and those who are more physically capable (7-11). This has led to less research focused on the sports environments that children experience outside sport clubs. One of these environments is school. In this regard, the factors influencing students' active participation in physical education (PE) classes at school and their physical activity outside school are not well understood (12-14).

One of the most important psychological components of participation in physical activity is perceived competence (15). Competence is one of the basic psychological needs within the Self-Determination Theory (16-22), which is based on experience and on the type of motivation in human behavior (19-21). According to this theory, there are three basic psychological needs that, if satisfied, can facilitate one's growth, integration, and well-being. The basic psychological needs are autonomy, competence (the focus of the present study), and relatedness. The concept of self or self-awareness (including awareness of one's abilities) has been an important component of research in the field of psychology and sport. Perception of competence is a multi-dimensional, dynamic and interactive concept affecting efforts for mastery and success behaviors (22, 23). According to the theory of self-determination, people with high perceptions of their competence and ability put in more effort to make progress in their assigned tasks, and they have more positive experiences compared with those with lower perceptions of their capabilities. One prediction

of this theory is that people with a higher perception of physical activity are more likely to experience pleasure in performing these activities, hence more likely to participate. In this light, research has shown that higher perception of competence increases the likelihood of participation in physical activity and exercise (24-27).

Although the relationship between perceived competence and participation in physical activity has been explored, there is little research on the role of perceived competence in the PE at school. Based on the existing research, students with higher perceived competence are more bound to make more effort to take part in PE classes and school sports (28-31). Participation in PE classes at school is a very good initial step for increasing physical fitness in students (32). Many physical educators underscore the fact that children need a positive sense of self to be able to participate in childhood games and sports. Poor perceptions of physical fitness lead to lower self-esteem in physical activity, often leading to undesirable psychosocial complications (33). Perceived competence in PE and school sports has often been investigated in elementary school children (26, 33) with less attention to middle school students. Based on research, physical activity decreases during adolescence and girls, in particular, had a marked reduction in participation, for which there is no widely accepted explanation. However, some researchers hold that prior negative experiences and low perceptions of competence in PE classes at school may be contributing factors in reducing physical activity (34). Accordingly, it seems necessary to examine the perceived competence in PE of middle school and its impact on adolescent physical activity. Therefore, the primary objective of the present study was to investigate the relationship between perceived competence in physical education and physical activity inside and outside school in male and female middle school students with emphasis on gender differences.

Based on self-determination theory, a sense of pleasure is able to play an important role in motivating individuals to participate in physical activity and sport (35, 36). Fin and colleagues (35) showed that a higher level of enjoyment increased participation in daily physical activity in adolescent girls. Huhtiniemi and co-workers (29) reported a strong relationship between enjoyment in PE classes and the amount of physical activity. They further stated that physical educators should increase children's enjoyment in physical education classes at school because positive experiences in PE class might increase the likelihood of participation in physical activity. Some research has also pointed to

the relationship between perceived competence and enjoyment in physical education classes in primary school students. Cairney and colleagues (34) found that higher levels of perceived competence in physical education classes were associated with higher enjoyment in physical education in primary school students. Similar to perceived competence, enjoyment and its effects on physical activity participation have been less studied in middle school students. During the middle school period, students undergo several changes and they have to be prepared to make decisions that affect their future (37). Students are capable of identifying and designating potential ways to motivate themselves by gaining insights into the social-cognitive processes at this age and determine the key factors that affect motivation. Physical education classes can be a unique potential environment for this to happen. Therefore, the second objective of the current research was to investigate the relationship between enjoyment in physical education classes at school and participation in in-school and out-of-school physical activity and to specify the pleasure can affect the relationship between perceived competence and physical activity. The role of gender differences in enjoyment in PE classes at school was further examined. Given the issues raised, the overall purpose of this study was to examine the relationship between perceived competence and inside and outside school physical activity in middle school female and male students with the mediating role of enjoyment.

## 2. Methods

A descriptive-correlation approach was considered in the present study. The research method was approved by the Ethics Committee of the University. Parents provided written consent for the students to participate in the study.

### *Participants*

The participants of this study were 600 students including 150 boys in grade seven (first year of middle school), 150 boys in eight grade (second year of middle school), 150 girls in seventh graders and 150 eighth graders from Aliabad Katoul, Golestan province, Iran, in 2019. Means and standard deviations of age were as follows: 7<sup>th</sup> grade boys (13.02±0.14 years), 8<sup>th</sup> grade boys (14.01±0.20 years), 7<sup>th</sup> grade girls (13.00±0.21 years), and 8<sup>th</sup> grade girls (13.95±0.21 years).

### *Instruments*

In the present study, three questionnaires were

used regarding perceived competence, enjoyment, and physical activity. Perceived competence in physical education classes was measured using the Scrabis-Fletcher and Silverman Questionnaire (38), which has 15 questions scored on a 5-point Likert scale from completely disagree (1) to completely agree (5). The reliability of this questionnaire was assessed by its designers and its Cronbach's alpha coefficient was reported to be 0.90 (38). In the present study, the validity of this questionnaire was confirmed by seven experts, its reliability was measured, and the Cronbach's alpha coefficient was 0.70. To measure enjoyment, we used a questionnaire consisting of four questions, which were designed on the basis of Intrinsic Motivation Scale (39). Each question was scored based on a Likert scale from completely disagree (1) to completely agree (5). The validity of this questionnaire was confirmed by seven experts, its reliability was measured, and the Cronbach's alpha coefficient was 0.71. A physical activity questionnaire (40) was used to measure physical activity. A single-item scale was used to measure physical activity in PE classes inside school. Students were asked "In physical education classes, how much time do you spend performing activities that cause you to sweat?" The choices were: (a) I don't spend a lot of time, (b) about a quarter of the class time, (c) about half the class time, (d) over half the class time, (e) almost all the class time. A one-item scale was further employed to measure the physical activity outside school. Students were asked, "How much time have you spent doing physical activities outside school over the past week?". Choices were: (1) never, (2) about half an hour, (3) about one hour, (4) around 2-3 hours, (5) approximately 4-6 hours, and (6) 7 or more hours. The validity of this questionnaire was confirmed by

seven experts, its reliability was measured, and the Cronbach's alpha coefficient was 0.80.

### Data Analysis

Data were analyzed using SPSS software version 22 and AMOS software packages. Statistical characteristics of the participants and research variables were specified using means and standard deviations. The reliability coefficients of the questionnaires were calculated by the Cronbach's alpha coefficient. Structural equation method was utilized to investigate the relationship between variables. Ultimately, analysis of variance (ANOVA) was employed to determine the gender differences.

## 3. Results

### Descriptive Statistics

Mean ages of 7<sup>th</sup> grade boys, 8<sup>th</sup> grade boys, 7<sup>th</sup> grade girl, and 8<sup>th</sup> grade girls were 13.02, 14.01, 13.00, and 13.95 years, respectively. The results of descriptive statistics showed that boys had higher scores compared with girls in perceived competence, enjoyment, in-school physical activity, and out-of-school physical activity. Table 1 shows the mean and standard deviation of research variables.

### Relationship between Variables

#### Boys

Table 2 and 3 show the results of path analysis between exogenous and endogenous variables for

**Table 1:** Means and standard deviations of research variables across age and grade

Students	Perceived competence	Enjoyment	In-school physical activity	Out-of-school physical activity
7 <sup>th</sup> grade boys	46.02 ± 4.74	14.40 ± 1.23	3.21 ± 0.95	3.52 ± 1.20
8 <sup>th</sup> grade boys	46.76 ± 7.55	15.74 ± 0.54	3.82 ± 0.90	4.16 ± 1.34
7 <sup>th</sup> grade girls	45.23 ± 7.87	12.17 ± 1.81	2.63 ± 1.11	2.62 ± 1.17
8 <sup>th</sup> grade girls	45.40 ± 7.59	13.11 ± 1.29	2.83 ± 1.18	2.61 ± 1.17
P values	P<0.001*	P<0.001*	P<0.001*	P<0.001*

ANOVA, \*P<0.001

**Table 2:** Path analysis between exogenous and endogenous variables in boys

Path	b	P
1 Perceived competence - in-school physical activity	0.171	0.021*
2 Perceived competence - out-of-school physical activity	0.240	<0.001***
3 Enjoyment - in-school physical activity	0.167	0.033*
4 Enjoyment - out-of-school physical activity	0.159	0.007**
5 Perceived competence - enjoyment	0.214	<0.001***

Structural Equation Modeling, \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Table 3:** Path analysis regarding the mediating role of enjoyment in boys

Path	b	P
Perceived competence - in-school physical activity	0.122	0.036*
Perceived competence - out-of-school physical activity	0.181	0.022*

Structural Equation Modeling, \*P&lt;0.05

**Table 4:** Path analysis between exogenous and endogenous variables in girls

Path	b	P
1 Perceived competence - in-school physical activity	0.001	0.990
2 Perceived competence – out-of-school physical activity	0.043	0.458
3 Enjoyment - in-school physical activity	0.172	0.001*
4 Enjoyment - out-of-school physical activity	0.165	0.003*
5 Perceived competence - enjoyment	0.071	0.222

Structural Equation Modeling, \*P&lt;0.01

**Table 5:** Path analysis concerning the mediating role of enjoyment in girls

Path	b	P
Perceived competence - in-school physical activity	0.005	0.125
Perceived competence - out-of-school physical activity	0.009	0.224

Structural Equation Modeling, \*P&lt;0.05

boys. The results showed significant relationships between perceived competence and in- and out-of-school physical activity in boys. Furthermore, there were significant relationships between the enjoyment in physical education classes and inside and outside school physical activity in boys. There was also significant relationship between perceived competence and enjoyment in physical education class in boys. Finally, the results showed that the enjoyment in physical education classes mediated the relationship between perceived competence and in- and out-of-school physical activity in boys (Table 3).

#### Girls

Tables 4 and 5 present the results of path analysis between exogenous and endogenous variables for girls. Based on the results, there was no significant relationship between perceived competence and in- and out-of-school physical activity in girls. However, the findings revealed significant relationships between the enjoyment in physical education classes and in- and out-of-school physical activity in girls. There was no significant relationship between perceived competence classes and the enjoyment in physical education in girls. Finally, the results showed that the enjoyment in physical education classes did not mediate the relationship between perceived competence and inside and outside school physical activity in girls (Table 5).

#### Gender Differences

The results of ANOVA showed that boys had a higher perceived competence compared with girls ( $F_{3,596}=16.87$ ,  $P<0.001$ ). Male students further showed higher scores on the enjoyment in physical education classes in comparison to female students ( $F_{3,596}=211.88$ ,  $P<0.001$ ). Finally, boys had higher scores of inside ( $F_{3,596}=37.77$ ,  $P<0.001$ ) and outside school ( $F_{3,596}=56.74$ ,  $P<0.001$ ) physical activity compared to girls.

#### 4. Discussion

Given the importance of physical activity for the long-term well-being of students, the present study was designed to examine the effects of certain psychological factors on the participation of middle school students in inside and outside school physical activity. The present study determined the relationship between perceived competence and enjoyment in PE classes and the participation of middle school students in-school and out-of-school physical activity and gender differences were further reported. This research was based on the theoretical foundations of self-determination (16-22) according to which, people with a higher sense of perceived competence in one activity are more likely to take more pleasure in that activity and have higher intentions to perform it.

The results showed that in boys, perceived competence

in physical education classes was a contributing factor to in- and out-of-school physical activity, which is consistent with the assumptions of self-determination theory (16-22) and previous research on children (24-33). These results might indicate that a higher sense of competence in adolescent students during PE classes increases participation in physical activity. Early childhood research has shown that children with a higher perceived competence are more involved in physical activities compared with those who have a lower perception of competence, a process in which the feeling of pleasure is a determining factor (29, 35-36). This finding can be very useful for school physical educators, enabling them to increase the physical activity of their students through augmenting their perceived competence during PE classes. The results further revealed a significant association between perceived competence and enjoyment in boys, supporting the self-determination theory (16-22). According to this theory, a person perceives himself in an activity is associated with the feeling with which the activity is experienced. In addition, enjoyment was shown to mediate the relationship between perceived competence and physical activity in boys.

On the other hand, the results showed that in girls, the enjoyment in PE classes was an effective factor in in-school and out-of-school physical activity. Moreover, at middle school age, the enjoyment in PE classes played a more important role than the perceived competence in female students' participation in inside and outside school physical activity. The results of the present study also showed the higher importance of enjoyment in participation in physical activity in adolescent girls (29, 35, 36).

Consistent with the results of previous research on primary school students (33, 34), the results of the present study revealed that boys had significantly a higher physical activity in comparison to girls. Social and cultural limitations for the physical activities of girls outside home and school might be one of the important reasons for their lower less participation in physical activity compared with boys (33-34). Male students also had higher scores of perceived competence and enjoyment in PE classes compared with girls. According to the self-determination theory, one possible reason for girls reporting less enjoyment in physical education classes is that they have lower perceived competence in physical education classes.

## 5. Conclusions

Based on the results, it can be concluded that

perceived competence and enjoyment in PE classes are correlated among boys in middle school. In girls, it seems that enjoyment is a more important factor than perceived competence as far as participation in physical activity is concerned. Finally, boys reported a higher perceived competence, enjoyment and physical activity in comparison to girls. These findings are conducive for physical educators in schools. Middle school physical educators should encourage the perceptions of the students regarding their abilities in PE classes, in order to improve their participation in physical activities inside and outside school. Moreover, physical educators should organize more enjoyable and fun sport programs in their PE classes. However, this is usually challenging for physical educators because they often have not enough facilities and time at school.

## Ethical Approval

This study was approved by the Ethics Committee of Islamic Azad University of Aliabad Katoul, Golestan province, Iran (IR.IAU.AK.REC.1398.001). Parents provided written consent for the students to participate in the study.

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## Conflicts of Interest

The authors declared no conflict of interest.

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