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PERCEIVED COMPETENCE AND ENJOYMENT IN PHYSICAL EDUCATION AMONG 6TH-GRADE STUDENTS – A CONTEXT-SPECIFIC APPROACH

Eva Leibinger[1i],
Rebekka Krogedal[2]
[1]Department of Education and Sport Sciences,
University of Stavanger,
4036 Stavanger, Norway
[2]Buggeland Primary School
&
WANG UNG Private School,
Sandnes, Norway

Abstract:
This cross-sectional study aimed to investigate 6th-grade students` perceived competence (PC) and enjoyment in physical education (PE) across three different contexts: basketball, dance and outdoor activities. We used the Intrinsic Motivation Index (IMI) to measure PC, alongside the modified Satisfaction in Sport Scale, following teaching sessions with basketball, dance and outdoor activities as contexts for 6th-graders (N=37). Girls reported significantly higher PC in dance compared to boys, while no significant differences were found in basketball and outdoor activities. Girls showed significantly higher PC scores in outdoor activities compared to basketball, whereas boys scored significantly lower in PC for dance compared to basketball and outdoor activities. PC in PE accounted for 25% of enjoyment among 6th-grade students. The results provide a more nuanced understanding of the complexities surrounding PC and enjoyment in PE. Preparing and implementing each teaching session with carefully selected content, teaching methods and organizational forms may contribute to a high level of mastery and enjoyment, which in turn may enhance positive motivational processes and foster lifelong interest in physical activity among students.

Keywords: mastery, joy, basketball, dance, outdoor activity, primary school students

1. Introduction

Competence is a psychological nutrient and a critical resource (Ryan, 1995) for individuals` development and well-being, with strong implications for basic

[i] Correspondence: email eva.leibinger@uis.no

motivational science and applied practices (Ryan & Deci, 2017), such as school physical education. From the perspective of self-determination theory, which emphasizes the active and growth-oriented nature of the human organism (Ryan & Deci, 2000), and in the light of the core values in physical education, such as motor learning, motor competence and the lifelong joy of physical activity (e.g. national standards and curricula around the world), it is clear that acquiring, developing and mastering a wide range of movements and activities is key to promoting well-being. Furthermore, perceived competence in the motor domain is a part of self-perception (Harters, 1982), where individuals have a general feeling of being capable of performing motor tasks and controlling their environment and situations. General thoughts as well as specific ones both contribute to perceived competence in the motor domain. In practice, an individual may think of themselves as a poor runner or have a more specific self-assessment, such as "I am slow and clumsy in running".

Enjoyment is associated with general feelings such as pleasure, liking and fun, and it can be derived from internal sources (e.g. activity itself or mastering) or external sources (e.g. evaluation from significant others) (Hashim et al., 2008). Judgements of physical and motor competence and enjoyment of the activity are two of the most important driving forces behind participation and retention in an activity (Ryan & Deci, 2017). Therefore, nurturing enjoyment and perceived competence in physical education (PE) is crucial for fostering a lifelong interest in physical activities (The Norwegian Directorate for Education and Training, 2020). Lyu and Gill (2011) highlight the need for research that examines both perceived competence and enjoyment in PE from gender-based and context-specific perspectives.

1.1 Perceived Competence (PC) in Physical Education

In early childhood, children explore and develop skills for the joy and satisfaction that come from mastering motor tasks. However, there is a lack of children's ability to accurately assess their level of fundamental motor skills competence (Stodden et al., 2008). By middle childhood, children have a more sophisticated cognitive capacity than before, resulting in a closer coherence between their perceived motor skill competence and their actual motor skill competence (Stodden et al., 2008). According to Wang and Liu (2007), children`s and adolescents` motivation towards activity is influenced by their belief in their own abilities. These findings relate to a general view on perceived competence, while context-specific measures are lacking. A study by Lyu and Gill (2011) showed gender differences regarding perceived handball competence and perceived physical competence. Furthermore, research considering relevant contextual factors is needed (Van der Berge et al., 2014).

1.2 Enjoyment in Physical Education

A Norwegian survey showed that 93% of 10-12-year-olds and 84.5% of 13-15-year-olds like PE well or very well (Moen et al., 2018). Girls tend to like the subject less as they get older, particularly from 5th to 7th grade (Moen et al., 2018). Korean boys scored generally

higher on enjoyment in PE compared to girls (Lyu & Gill, 2011). Competitive activities lead to dissatisfaction and lack of enjoyment among girls with low physical fitness, while this is not the case for boys with low physical fitness (Bjerke et al., 2016). Singaporean girls with adaptive motivational patterns (such as believing in skill improvement through practicing) enjoy PE lessons more than girls with maladaptive motivational patterns (Wang & Liu, 2007). Bjerke et al. (2016) pointed out that the context of an activity is pivotal in relation to students` enjoyment in PE. Moreover, the literature is deficient in comparing students` enjoyment in different PE contexts.

1.3 Relationship between Perceived Competence and Enjoyment in Physical Education

From a hedonic perspective, well-being is seen as happiness or a positive mood that human beings strive towards. Competence, along with autonomy and relatedness, should be understood as critical antecedents of well-being rather than its indicators (Ryan & Deci, 2000). This theoretical landscape provides a background for examining the relationship between perceived competence and enjoyment in physical education. Previous studies among British and Singaporean students have shown that PC is a strong predictor of enjoyment (Biddle et al., 2003; Spray et al., 2006; Wang & Liu, 2007). Students with lower PC scores show lower enjoyment in PE compared to students with higher PC scores; however, gender appears to have a moderator role. Boys` enjoyment has remained relatively stable over time, while for girls, lower PC is related to a decrease in enjoyment in PE over time (Cairney et al., 2012). These studies have generally focused on PE classes as a whole, where the context-specific view is missing. Considering previous empirical studies and the highlighted research gap, the present study aims to answer the following research questions: 1) How do perceived competence and enjoyment in PE among 6th-grade students vary in the context of basketball, dance and outdoor activities? 2) At which grade can perceived competence predict enjoyment in PE among 6th-grade students?

2. Methodology

2.1 Design and Participants

The present study has a cross-sectional design, with a total, 37 sixth-grade students (age = 11 years, 38% male and 62% female) from 2 classes of a public primary school in southwest Norway. Utilizing a convenience sample, these classes were selected purposively in collaboration with the school principal and PE teachers. 36 students completed the survey in the basketball and dance context, while 33 students provided answers regarding the outdoor activity context. Missing answers were due to students` absence from school due to illness. Written informed consent was obtained from the parents and the PE teachers. The project was evaluated by the Norwegian Agency for Shared Services in Education and Research (Sikt, Ref. no. 512441).

2.2 Measures

The subscale measuring students` perceived competence (PC) contains four items derived from the Intrinsic Motivation Index (IMI), with responses indicated on five-point Likert scales ranging from "don`t agree at all" (1) to "agree completely" (5). The Norwegian version, developed by Ommundsen (2001), and has previously shown a one-factor structure with a satisfactory internal consistency (Cronbach`s alpha was .7). In the present study, the items were slightly modified to fit each context, e.g., "*I am pretty skilled at doing basketball*" or "*I cannot handle the activities in dance*" (reversed). In our study, the Cronbach`s alpha was .81.

Enjoyment was measured using the Norwegian version of the Satisfaction in Sport Scale. The eight slightly modified items were introduced with "*When taking part in basketball or dance or outdoor activities in PE…*" followed by descriptions of enjoyment, e.g. "*I usually enjoy the PE lessons*", and boredom, e.g. "*I usually wish the class would end quickly*" (reversed). Responses were given on a five-point Likert scale ranging from "don`t agree at all" (1) to "agree completely" (5). An earlier study by Ommundsen (2001) showed a Cronbach`s alpha of .88, while in the present study, this value was .87.

The wording of items is provided in the Appendix for both scales.

2.3 Procedure

Data collection was carried out over three different days during school hours within PE lessons. As the items were linked to specific contexts, we planned a session for each context (basketball, dance and outdoor activity) together with the PE teacher. While the PE teacher conducted the lessons, one of the researchers was available to administer the survey in a paper-and-pencil format right after each session. Context-specific responses were linked together with students` ID numbers created for this project.

2.4 Analysis

Analyzing the patterns of missingness found that less than 5% of all values are missing, mostly due to students` sickness. Supplementary material shows details about missing value analysis. We computed the means and standard deviations for each subscale, separately for girls and boys, as descriptive statistics using IBM SPSS 31 (SPSS inc., Chicago, IL, USA). Due to the low sample size and the skewed distribution of the data, we used the Mann-Whitney U test and the Friedman test to investigate how perceived competence and enjoyment in PE vary in the context of basketball, dance and outdoor activities among girls and boys. We considered a p-value of less than .05 as statistically significant, while Cohen`s d value was calculated for effect size. We used simple linear regression analysis, including data from all three contexts together, to evaluate the extent to which perceived competence could predict enjoyment in PE. Due to the low sample size, we utilized the adjusted R-square statistic to provide an estimate of the true population value (Tabachnick & Fidell, 2013).

3. Findings

Descriptive results are presented in Table 1, while more details are presented in the supplementary material.

Table 1: Descriptive results of the pooled data

		Girls (n=23)		Boys (n=14)	
	Context	**Mean ± SD**	**Median**	**Mean ± SD**	**Median**
Perceived competence	Basketball	3.78 ± 0.50	3.75	3.95 ± 0.80	4.00
	Dance*	4.00 ± 0.62	4.00	2.94 ± 0.61	3.00
	Outdoor activity	4.06 ± 0.44	4.00	4.25 ± 0.61	4.13
Enjoyment	Basketball	3.69 ± 0.10	3.75	3.86 ± 0.81	3.88
	Dance*	3.83 ± 0.69	3.75	3.07 ± 0.44	3.13
	Outdoor activity	3.83 ± 0.68	3.88	3.77 ± 0.82	3.75

SD= standard deviation.
*Significant difference across gender at p<.001, Mann-Whitney U test.

The lowest PC score for boys was in the dance context (2.94± 0.61), while the highest PC score for boys was in the outdoor activity context (4.25± 0.61). Enjoyment scores varied between 3.07 and 3.86. Comparing boys` and girls` scores, we found a significant difference in both scales regarding the dance context. Girls scored significantly higher in both PC and in enjoyment in the dance context compared to boys.

Table 2: Results of the related-samples Friedman`s two-way analysis of variance in perceived competence (PC) for girls and boys

	Friedmann test			
Girls (n=23)	4.39	df=2	p=.112	
Pairwise comparisons	Test statistic	Std. Error	Adj. sig.*	Effect size (d)
PC in basketball – PC in dance	-0.46	.30	p=.365	0.39
PC in basketball – PC in outdoor activity	-0.52	.30	p=.231	0.60
PC in dance – PC in outdoor activity	-0.07	.30	p=1.00	0.11
	Friedmann test			
Boys (n=14)	19.85	df=2	p<.001	
Pairwise comparisons	Test statistic	Std. Error	Adj. sig.*	Effect size (d)
PC in basketball – PC in dance	1.29	.38	p=.002	1.42
PC in basketball – PC in outdoor activity	-1.50	.38	p=1.00	0.42
PC in dance – PC in outdoor activity	1.31	.38	p<.001	2.15

df = degrees of freedom; Std. Error = Standard Error, Effect size expressed with Cohen`s d.
*Significance value has been adjusted by the Bonferroni correction for multiple tests.

There was no significant difference in the PC scores across the three contexts for girls (χ^2 (2, n=23) = 4.39, p=.112). The results of the Friedman Test indicated a statistically significant difference in PC scores across the three contexts (basketball, dance, outdoor activity, χ^2 (2, n=14) = 19.85, p<.001) for boys. A closer investigation of the pairwise

comparison (post-hoc test with Bonferroni correction for multiple tests) showed that boys scored significantly lower in PC in the dance context compared to basketball and outdoor activities. Both differences had a large effect size, respectively, d=1.42 and d=2.15.

A significant regression was found (F (1, 109) =37.87, p<.001), along with an adjusted R^2 value of .25, indicating that perceived competence explained approximately 25% of the variance in enjoyment in these activities. The regression equation was enjoyment = 1.67 + 0.53 (PC). This means that for each one-point increase in perceived competence, the predicted enjoyment increased by approximately 0.53 score. Confidence intervals indicated that we can be 95% certain that the slope to predict enjoyment from perceived competence is between 0.36 and 0.70.

4. Discussion

The first aim of our study was to examine how perceived competence and enjoyment in PE among 6th-grade students vary in the context of basketball, dance and outdoor activities.

4.1 Perceived Competence

The relatively high scores in PC for our subjects, given the five-point Likert scale, are expedient, as earlier research highlighted that children`s and adolescents` belief in their own abilities is pivotal for the motivational processes in PE (Wang & Liu, 2007). The only exception was the boys` score in PC in dance. The low score means that boys are not satisfied with their performance in dance, feeling they are not good at it and cannot handle the various activities in dance. We revealed that girls scored significantly higher in dance context on both scales compared to boys. 65% of the girls in this study marked "*quite agree*" or "*completely agree*" on the item "*I think I`m pretty good at dance*", but none of the boys did. This result can be interpreted in the light of their free-time activity preferences, where dance is one of the most popular activities among girls (Sandvik, 2015). Furthermore, dance can be seen as a feminine activity, and children may develop positive perceptions of characteristics associated with certain social categories within their own gender (Powlishta et al., 2001).

Girls and boys scored similarly in PC in basketball. As one of the dominant contents in PE (Moen et al., 2018), the role and the delivery of ball games within school PE are frequently discussed in the literature (e.g. Stolz & Pill, 2013; Miller, 2015; Silva et al., 2021; Yan et al., 2023). Basketball is an activity where it is advantageous to be taller, stronger and have better endurance. However, the physical differences, such as height, weight and aerobic capacity between girls and boys are not salient at this age. Basketball seems to be a gender-neutral activity in this age group, with boys favoring soccer and girls preferring handball as their leisure-time ballgames in Norway (Sandvik, 2015). Regarding the third context, we found no significant differences between girls` and boys` scores in PC and enjoyment in outdoor activity. In the light of the Norwegian outdoor tradition, outdoor activities may appeal to and challenge both genders similarly among

our participants. Earlier studies also highlighted novelty and enjoyment as important outcomes in outdoor adventure education regardless of students' gender (Sutherland & Legge, 2016; Lamoneda et al., 2022). Considering that children`s and adolescents` beliefs in their abilities influence their motivation towards activities (Wang & Liu, 2007), we can assume that both girls and boys may develop a nourishing motivational background in both basketball and outdoor education in PE. However, it appears that boys may miss a critical source, perceived competence (Ryan, 1995; Ryan & Deci, 2017), which may lead towards maladaptive motivational patterns in dance activities.

4.2 Enjoyment

In our study, girls and boys scored higher in enjoyment across all three contexts than at the midpoint of the Likert scale. These results may reflect that the subjects find fun and enjoyment in PE lessons, which may encourage them to practice these activities outside school. However, we discovered gender differences in enjoyment scores within the dance context, with girls scoring higher than boys. None of the boys in the sample agreed with the item "*When I have dance, I usually find taking part in the PE lesson interesting*". Furthermore, 65% of the girls in this study marked "*quite agree*" or "*completely agree*" on the item "*When I have dance, I usually enjoy taking part in the PE lesson*", compared to only 28% of the boys. No significant differences were found between girls and boys in the two other contexts. Contrary to our findings, Lyu and Gill (2011) found that boys generally scored higher on enjoyment in PE compared to girls. Our study indicates that the feeling of fun and enjoyment may vary across different contexts. This can be explained by examining how activities appeal differently to girls and boys. Additionally, there may be a gender difference in the value placed on PE content. Most boys prefer ball sports and outdoor activities, while most girls prefer dance-related content in PE (Moen et al., 2018). Bjerke et al. (2016) highlighted that the context of an activity is crucial in relation to students` enjoyment in PE. Ryan and Deci (2017) acknowledge enjoyment of an activity as a significant motivator for participation and continued engagement in activities, raising concerns about boys` relatively low enjoyment in dance.

4.3 Relationship between Perceived Competence and Enjoyment in Physical Education

The second aim of this study was to investigate the extent to which perceived competence can predict enjoyment in PE among 6th-grade students.

Our analysis grounded both theoretically (Ryan & Deci, 2000; Ryan & Deci, 2017) and empirically (Biddle et al., 2003; Spray et al., 2006; Wang & Liu, 2007), showed that perceived competence explains 25% of the variance in enjoyment. Experiencing progression in various motor tasks (basketball, dance, outdoor activity), mastering several movements with self-confidence, and being capable of overcoming challenges in the motor domain are all crucial to nurture enjoyment in activity. However, the ambitious purpose of school PE - lifelong joy of physical activity - may seem unattainable if students` perceived competence in the motor domain is impaired. To facilitate mastery experiences, it is crucial to know our students and understand how they learn in the

motor domain. We believe that PE teachers can promote students` perceived competence and enjoyment in PE by seeking variation in both pedagogical approaches and contexts. Planning competitive activities can be counterproductive for enjoyment (Bjerke et al., 2016), while cooperative learning activities can be favorable for motivational patterns (Fernández-Espínola et al., 2020). Our findings could provide valuable insights for PE teachers to tailor their lessons to enhance student engagement and satisfaction across various activities. PE teachers need to be aware of their impact on their students` experiences and how it may decrease or increase the likelihood of physical activity participation outside of school or later in life.

4.4 Strengths and Limitations

Given the scarce literature regarding empirical research in Norwegian primary physical education (Løndal et al., 2021), a strength of this study was the collection of data from 6th-graders, who possess relatively sophisticated judgment about their own motor skill competence (Stodden et al., 2008). However, our relatively small sample size limits the generalizability of our findings. For greater validity, data collection was conducted in an authentic context, providing students with context-specific (basketball, dance and outdoor activity) experience right before they completed the well-known and widely used questionnaire. Due to the cross-sectional nature of our data, our findings should be interpreted with caution. Additionally, we acknowledge other important factors, such as the learning climate, students` attitudes towards school and school PE, which can all play crucial roles in how students report their perceived competence and enjoyment in PE.

5. Conclusion

Perceived competence and enjoyment in PE among 6th-grade students vary in a certain way. While girls experience higher perceived competence in outdoor activity compared to basketball, boys perceive significantly less competence in dance compared to both outdoor activities and basketball. In our study, perceived competence accounted for 25% of enjoyment in PE.

To be aware of the variation of students` perceived competence within different contexts and its contribution to enjoyment helps PE teachers to plan, carry out and evaluate their teaching. Preparing and implementing each teaching session with carefully selected content, teaching methods and organizational forms may contribute to a high level of mastery and enjoyment, which in turn may enhance positive motivational processes among students.

Declarations

Ethics Approval and Consent to Participate

The project was evaluated by the Norwegian Agency for Shared Services in Education and Research (Sikt) in Norway. Written informed consent from the participants and their parents or caretakers was obtained prior to data collection.

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Consent for Publication
Not applicable.

Availability of Data and Material
The dataset is available from the corresponding author on reasonable request.

Authors' Contribution
Each author has contributed to the conception and design of the work. RK collected the data, RK and EL conducted the analysis, and EL wrote the first draft of the paper. All authors participated in writing the paper and approved the final version.

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About the Authors
Eva Leibinger is an Associate Professor in Education and Sport Sciences at the University of Stavanger. She holds a Ph.D. in Physical Education from the Hungarian University of Sport Science. Leibinger has research topics such as students` learning in physical education, physical education teachers` professional development and school physical activity.

Rebekka Krogedal is a physical education teacher for primary and lower secondary students in Norway. She is newly graduated and has 3 years' teaching experience.

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