

Influences of Physical Education Teachers' Relatedness Support on Students' Psychological Needs and Motivation toward Learning

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Abstract: The teacher's role that promotes students' motivation for instruction is vital as a social factor, and the satisfaction of relatedness needs is an essential factor for humans to communicate and interact socially. The purpose of this study was to examine the influences of teachers' relatedness support on students' psychological needs and motivation toward learning during physical education (PE) class. A sample of 278 middle school students in North Jeolla Province of Korea participated in the study for measuring the level of relatedness support of PE teachers as well as students' psychological needs and motivation toward learning. Descriptive statistics, reliability, and the correlation of the variables were examined using the collected data. The path analysis was performed based on the structural model to verify the relationship between the variables. The bootstrap method was applied to verify the significance of the parameters. Results showed that teachers' relatedness support was positively correlated with students' psychological needs. Additionally, students' psychological needs were positively correlated with their motivation toward learning. Moreover, students' psychological needs play a mediating role in the relationship between teachers' relatedness support and students' motivation toward learning. Accordingly, PE teachers should establish learning strategies and environments that support relatedness to promote students' psychological needs and motivation toward learning.

Keywords: *Relatedness support, Psychological needs, Motivation toward learning*

1. Introduction

Students' positive emotional experience in physical education classes is influenced by smooth communication and friendly exchanges between the teacher and students [1]. Also, students' emotional experience is determined by the teacher's interaction with the students and the quality of the relationship. In particular, the relatedness between teacher and students serves as an important driving force in enhancing students' study motivation and level of academic achievement, is a medium for achieving class goals and promotes efficient learning outcomes [2].

To summarize, while studies based on self-determination theory have regularly been conducted to investigate teachers' autonomy support and competence support in physical education classes [3,4], only a small number of studies have been done sporadically on physical education learning environments supporting teachers' relatedness [5]. Studies on relatedness and relatedness support in physical education classes have been conducted in terms of emotional support [6], Teachers' interpersonal relationships [7], environments that provide cooperative learning [8], and understanding others (students) from a mutually understanding perspective [5]. A stable relationship between teachers and students in physical education classes is of paramount importance for the operation of classes and the achievement of students' learning goals. Thus, exploring students' internalization processes of participation motivation based on physical education teachers' relatedness support will provide important insights for improving students' performance [9] in and the quality of physical education classes.

The purpose of this study is to verify the structural relationship between students' perception of physical education teachers' relatedness support and their psychological needs and learning motivation. The research hypotheses for achieving this objective are as follows. First, the students' perception of relatedness support provided by physical education teachers

will affect students' psychological needs. Second, the psychological needs that students experience will affect their motivation for learning. Third, each psychological need will mediate between relatedness support and learning motivation.

2. Methods

2.1. Participants

In this study, data were collected using a random sampling method to achieve the study's purpose. The subjects are 14 to 16-years-old students from five selected middle schools in North Jeolla Province of Korea. The survey was conducted from September 2019 to November 2019 and consented to by the students and their parents, who were informed of the study's purpose, intent, and ethics. Among the collected questionnaires, valid samples of 278 copies (137 males and 141 females) were used in this study, excluding 12 copies of questionnaires with either unsatisfactory responses or unanswered questions. Students and parents were informed that the collected personal data would not be used for any purpose other than the survey statistics.

2.2. Measures

The research tool used here is the questionnaire. The validity and reliability of questionnaires as research tools have been proven in prior global research, and are deemed suitable for studies such as this. Two questionnaires were used here. Each question consists of a 5-point rating ranging from 1 (strongly disagree) to 5 (strongly agree).

First, the scales developed by [6] and [10] were used to measure teachers' relatedness to support teaching behaviors in physical education classes. These measures are widely used in studies in physical education fields [11,12] and have been verified for reliability and validity. The following is an example of a question on relatedness support (there are four questions) with possible responses: "The teacher in physical education class ... 'Tries to respect and understand me'; 'Respects my thoughts and opinions and listens to me well'."

Second, to measure students' psychological needs in physical education classes, a measure of autonomy, competence, and relatedness was used, each consisting of four questions. The degree of students' autonomy was measured by using the measure of autonomy used by [13] and [14]. Examples of questions and possible responses on autonomy include: "In physical education classes ... 'I am given the choice and opportunity to engage in the activities I prefer'; 'I take part in class because I like it and want to'." The measures used in studies by [15] and [16] were used to measure competence. Examples of questions on competence include: "In physical education classes ... 'I'm pretty good at sports': 'I think I'm pretty good at physical education'." The measure of relatedness used by Richard & Vallerand [17] was used to measure the desire for relatedness. This measure is widely used internationally [15,18] and is suitable for measuring the desire for relatedness based on self-determination theory [19]. Examples of responses to questions on relatedness include: "I feel comfortable" and "I feel I am receiving attention."

Third, to measure students' learning motivation in physical education classes, this study used questions on the factor of effort developed by [20] which are sub-factors of motivation measure within learning, and the factors of pleasure and fun used in [21]. The learning motivation factor section consists of four questions, and examples of responses include "I do my best in physical education" and "Physical education is fun and I enjoy activities."

2.3. Data Analysis

The collected data were analyzed using IBM SPSS 23.0 and IBM SPSS AMOS 23.0. Descriptive statistical analysis, reliability analysis, and correlation analysis were performed on the measured variables, and path analysis was performed according to the structural model to verify the relationship between each variable. The bootstrap method was used to determine the impact of

teachers' relatedness on psychological needs and internal motivation. Lastly, 5,000 bootstrapping data samples generated from the original data were used for parameter estimation to verify the significance of the parameters. The bootstrap was used at the confidence interval of 95%.

3. Results

3.1. Reliability, and Correlation Analysis

According to Table 1, the reliability for relatedness support (0.797), which is a social factor based on self-determination theory, the autonomy of psychological need satisfaction, which is a motivation factor (0.936), competence (0.844), relatedness (0.855), and learning motivation based on locus of causality (0.758) all proved acceptable. Regarding the results of the correlation analysis, teachers' relatedness support, basic psychological needs, and all the sub-factors of learning motivation showed a significant positive correlation ($p < 0.01$).

Table 1. Reliability (Cronbach's alpha), and correlation analysis

Variables	1	2	3	4	5
Relatedness support	1				
Autonomy	0.479**	1			
Competence	0.598**	0.587**	1		
Relatedness	0.403**	0.482**	0.515**	1	
Class motivation	0.342**	0.505**	0.469**	0.473**	1
α	0.797	0.936	0.844	0.855	0.834

** $p < 0.01$, SD=Standard Deviation

3.2 Cause-and-Effect Analysis and Mediated Effect Analysis

To determine the suitability of the research model, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root means square residual (SRMR) were used as criteria for judgment [22]. The goodness fit index (GFI) of the research model was $Q=1.815(x^2=295.852, df=163, p < 0.001)$, $TLI = 0.950$, $CFI = 0.957$, $RMSEA = 0.053$, and $SRMR = 0.0633$, showing that all the indexes met the standard value.

Table 2. Hypothesis test results

Path	Est.	SE	CR(t)	Effects		
				Total effect	Direct	Indirect
Autonomy ← Relatedness support	1.206	0.147	8.231***	1.206	1.206	
Relatedness ← Relatedness support	0.766	0.114	6.701***	0.766	0.766	
Competence ← Relatedness support	1.017	0.124	8.174***	1.017	1.017	
Class motivation ← Autonomy	0.374	0.090	4.156***	0.374	0.374	

Class motivation	←	Relatedness	0.415	0.117	3.539***	0.415	0.415
Class motivation	←	Competence	0.457	0.211	2.167*	0.457	0.457
Class motivation	←	Relatedness support	-0.325	0.339	-0.959	0.908	-0.325 1.233***

*** $p < 0.001$, * $p < 0.05$, Est.=estimate, SE=standard error.

As the hypothesis test results show (Table 2), teachers' relatedness support in physical education class is an important predisposing factor for predicting students' psychological needs. The relatedness support of physical education teachers had a significant effect on the three psychological needs: autonomy ($\beta = 1.21$, $p < 0.001$), relatedness ($\beta = 0.77$, $p < 0.001$), and competence ($\beta = 1.02$, $p < 0.001$). In addition, the three psychological needs had a significant effect on learning motivation (autonomy: $\beta = 0.37$, $p < 0.001$; relatedness: $\beta = 0.41$, $p < 0.001$; competence: $\beta = 0.46$, $p < 0.001$). However, the relatedness support of physical education teachers did not have a significant effect on learning motivation ($\beta = -0.33$, $p > 0.05$).

3.3 Mediated Effect Analysis

A significance test of the indirect effect showed that psychological needs' indirect effect was significant (1.233, $p < 0.001$) in the relationship between teachers' relatedness support and learning motivation [23]. This can be seen in Figure 1, which shows the structural relationship between variables based on theory. It shows that in physical education classes, the higher the teacher's relatedness support, the higher the satisfaction of students' psychological needs, which has a positive impact on their motivation.

Physical education teachers' relatedness support presented in this study had a positive effect on the three psychological needs autonomy, competence, and relatedness; autonomy, competence, and relatedness had a positive effect on learning motivation. Also, autonomy, competence, and relatedness played a mediating role in the relationship between teachers' relatedness support and learning motivation. However, teachers' relatedness support did not directly affect the learning motivation. Therefore, teachers should create and apply teaching methods and strategies to help reduce or minimize social factors (i.e., indifference, neglect, coldness, etc.) that can impact a social (learning) environment.

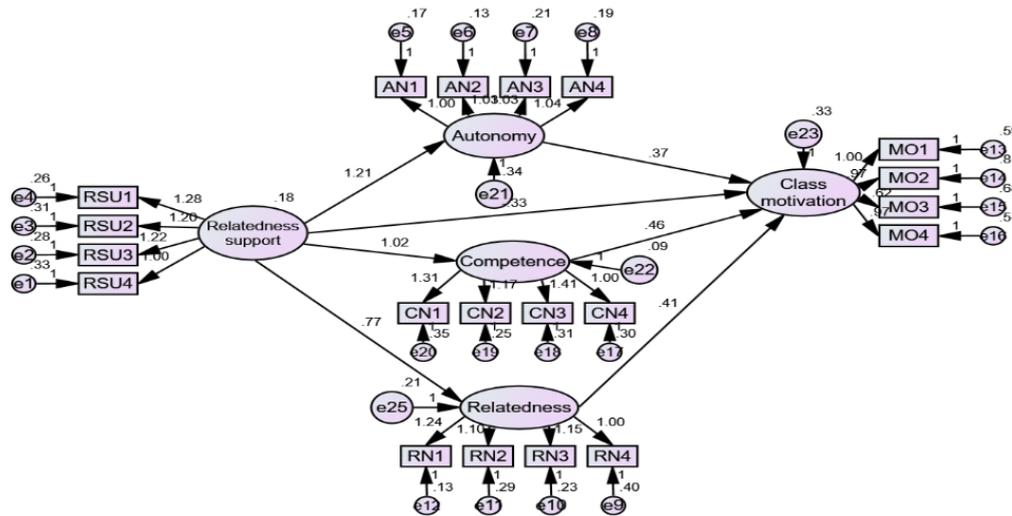


Figure 1. Result in a structural equation model analysis

4. Discussion

Teachers' relatedness support in physical education class had a positive effect on students' basic psychological needs of autonomy, relatedness, and competence. Depending on the quality and degree of relatedness support by teachers or leaders in a physical education class and sports environments, the learner's psychological needs satisfaction and attitude revealed considerable differences. Friendly communication, understanding, empathy, and enthusiasm provided by teachers during physical education classes led to the satisfaction of students' psychological needs and high levels of participation in classes [24]. When physical education teachers who teach classes provide students with a learning environment that looks at student activities from the perspective of students, communicate with friendly conversations, and present tasks suitable for students' levels, students can enhance the psychological need of relatedness through positive experiences [1]. Students internalize values, attitudes, thoughts, and ideas into their self through the formation of meaningful relationships with teachers, and this plays an important role in promoting students' motivation and developing positive emotions [4]. There is a dearth of research on the satisfaction of psychological needs depending on teachers' (or leaders') relatedness support in physical education classes and sports education, but teachers' relatedness support generally (mutual respect, consideration, encouragement, understanding, and empathy) was a factor that could satisfy the basic psychological need of each student for respect and being recognized by the teacher.

Students' basic psychological needs of relatedness, autonomy, and competence had a significant impact on learning motivation. It was confirmed that the satisfaction of these psychological needs in physical education classes is related to internal learning motivations that bring out high levels of class participation and academic achievement. The higher the degree of satisfaction of psychological needs (relatedness, autonomy, and competence) in sports and classroom environments, the greater the likelihood of internalizing internal motivation [25]. Studies on the intention of high school students to participate in physical education classes showed that students who perceived that their teachers met their psychological needs had a high internal motivation and willingness to participate in physical education classes [16]. The basic psychological needs of students satisfied in class situations are directly or indirectly related to subjective happiness, positive emotional experience [19], self-determination motivation [13], etc. Students work harder on learning activities when their relatedness needs are met. They participate more in class and feel less bored and anxious about learning [26]. Concerning autonomy, the teacher's supportive relationship influences the student's help-seeking behavior, with the result that in the classroom environment students ask the teacher more questions and for appropriate help.

Relatedness support behavior by teachers in physical education classes was shown to contribute to the formation of students' learning motivation mediated by the satisfaction of their psychological needs. When teachers provide personalized guidance and feedback to meet the psychological needs of individual students in the classroom, students will be emotionally stimulated and will experience more positive emotions such as pleasure, interest, satisfaction, and competitiveness. This subjective sense of happiness and positive emotional experience can lead to students' participation and immersion in classes. The quality of students' participation in class and learning varies depending on the level of satisfaction they experience regarding relatedness [27]. Teachers should promote students' motivation to learn by providing teaching methods and class contents that consist of a wide range of choices and decision-making on learning activities, and feedback that can satisfy students' basic psychological needs of autonomy, relatedness, and competence.

5. Conclusion

The relationship between teachers and students in class affects the process and results of learning as well as communication. The quality of the relationship and communication vary depending on how the relationship between the teacher and the student is formed. In a classroom where teacher-student relations are unilateral or subject to excessive norms, it is difficult to maximize students' potential skills and students are not actively engaged in carrying out or solving tasks. Depending on whether students meet their basic psychological needs or not, it directly or indirectly affects their motivation, attitude, and academic achievement. To meet students' basic psychological needs, teachers should improve their teaching and learning strategies, class operation, and methods to create a teaching environment that strengthens teachers' relatedness support to enhance students' self-determination.

Based on the results of this study, the following suggestions are made for follow-up research. To enable teachers and students to communicate with each other and have positive experiences, it is necessary to develop and apply a relatedness improvement program that can support teachers' relatedness and verify its effectiveness. Also, expanding studies that can prevent and reduce the problem behavior (such as antisocial behavior) that can occur between teachers and students in physical education classes and expanding studies that suggest useful ways to solve these problem behaviors desirably will improve the relatedness between teachers and students.

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