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Physical Activity Programs in Shanxi Province Schools in China: Effects of In-School and After-School Delivery on Students' Motivational and Social Outcomes

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Abstract: Effective physical activity (PA) programs may enhance students' awareness, competence, and motivation to participate in PA in the future for their health and mental well-being. The most effective way to accomplish this is through in-school and after-school activities. However, certain obstacles (traditional ways) may prevent some students from gaining these benefits. By eliminating these and other barriers, transforming after-school PA programs into in-school PA programs can enhance access to PA services. Despite this, the change in learning context from after-school to in-school may affect student engagement and program effectiveness by altering the interaction between students and teachers. Self-determination theory was employed to explain how the learning context affects motivation and social outcomes in PA programs for primary school students. The study involved 513 students from 12 different schools in Shanxi Province, China, in 2022. They represented 46.24% girls and 53.76% boys, ranging in age from 9 to 12. Teachers conducted PA programs to motivate students to participate in healthy activities. Assessment of student–teacher interactions, psychological needs satisfaction, and motivation was conducted among PA students through questionnaires. Relationships between students and teachers were incorporated into a structural equation model as direct and mediated determinants of motivation for attendance PA programs. There is agreement between the results and the hypothesized model, which predicts higher levels of psychological need satisfaction and higher levels of intrinsic motivation. In addition, the learning context only negatively affects less-self-determined motivations. Results confirm that positive perceptions of teachers by students play a significant role in promoting incentives for PA program participation in more self-determined manners. Furthermore, innovative strategies to reduce the detrimental effects of long-standing institutional structures and procedures should be considered and incorporated into in-school programs that motivate students to participate in these programs.

Keywords: physical education; schools in China; educational interventions; teachers; policy

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1. Introduction

Optimal programs of physical activity (PA) in childhood are associated with later health and psychological well-being [1,2]. Research on interventional approaches to promoting children's PA participation has proved difficult in the past [3,4]. Incompetent individuals responsible for the provision of PA programs, implementation problems, insufficient intensity of PA, and low adherence may be attributed to this [4,5]. Knowledge of behavior change strategies is necessary for improving this situation [1,6]. Children need to be more physically active because many are not sufficiently active [7]. There is an insufficient level of PA among children of varying ages and in various countries. It is estimated that approximately 60% of European children between the ages of 2 and 9.9 are not sufficiently active [7]. It was previously believed that age and gender were associated with child PA performance [8]. Boys do more PA than girls after the age of five or six, and it drops every year from that point on [9]. It has also been found that

preschool-aged children with more developed initiative functions are more involved in PA, although the explanation for this relationship is unclear [10]. Presently, there is a mixed outcome regarding whether children with normal weight are more active and less sedentary than obese or overweight children [11]. Children in primary schools are rarely examined for such associations [12]. Children's PA levels are associated with their socioeconomic class in inconsistent ways [13]. Several studies have examined the relationship between socioeconomic status and children's levels of exercise and sedentary behavior [14]. Most of these studies were only conducted in high school students and not with primary school students. Children spend a lot of time in primary schools. As far as we are aware, it is unclear how children's in-school and after-school PA patterns change over time. Interest in PA and understanding of its multi-directional benefits have increased over the last few decades [1,2,15]. Nevertheless, research focusing on high school students is still scarce. Children's in-school and after-school PA habits remain unclear.

Self-determination theory plays a significant role at this point [16]. It allows the assessing of whether certain circumstances are conducive or harmful to student health and psychological well-being. It is applicable outside of the traditional environment and in other learning-supportive environments. Through these components, engagement and interest are fostered, which are essential components of PA learning, persistence, and career development [17,18]. Competence, autonomy, and relatedness are the three core tenets of self-determination theory. Competence refers to the ability to achieve desired results through effectiveness and capability [19]. Students who believe in their abilities have higher chances of academic success and gaining a solid understanding of course contents. Self-determination and autonomy refer to the capacity to make choices in accordance with personal values and goals [20]. It is more likely that students with a healthy sense of autonomy will comply with expectations. This is because they feel they have a voice in the process. They appreciate the importance of the work being performed and can work independently. Connectivity and closeness are essential aspects of relatedness [21]. Strongly related students enjoy excellent relationships with their teachers and classmates, feel accepted, and take part in group activities actively. It is hypothesized that the degree to which individuals fulfil the three psychological demands directly determines their motives for participating in an activity or setting.

Self-determination theory can be used to demonstrate the relationship between students' attitudes toward their teachers, their psychological needs, and their motivation to learn. Students' satisfaction with the level of psychological support they receive from their teachers is strongly influenced by teacher support, structure, and involvement [22–27]. Teachers' perceptions of motivation are reliable and positive indicators of greater self-determination in their students [28–31]. Both formal and informal teaching and learning settings have been studied using self-determination theory-based models. Structured learning environments and independence at school are associated with a greater likelihood of students being self-motivated and engaging in goal-oriented activities [32]. Researchers found that the learning environment and characteristics of learning activities are related to self-determined desire for learning when they examined outreach programs in schools [33]. The self-determination theory of learning was also employed to compare the interest and motivation of students in formal and non-formal settings for scientific education [34]. It was revealed that the casual setting encouraged students' independence and stimulated their interest in studying independently.

When teacher interpersonal conduct and less self-determined types of motivation are correlated, and when there are mixed relationships between introjected and external regulations, the correlation is weaker. The mixed associations with introjected regulation explain this [35,36]. Further, psychological needs play an important role in mediating the relationship between perceptions of teachers and motivational patterns [30,37–40]. In contrast, a comprehensive analysis of the theory and a comprehensive evaluation of how learning contexts influence the psychological needs and motivations of students would be provided by testing a model that considers teachers' perceptions, students' psychological needs' satisfaction, and each's motivational regulation. It is also evident that

teachers' engagement with their students is influenced by learning contexts. In terms of psychological need fulfilment and self-determination for work, workplace pressure has a negative impact on teachers, whereas adaptive teaching practices have a positive impact on them [41]. Additionally, how teachers apply the most effective teaching approaches to engage their students is dependent on how they perceive their students' reasons for attending class [41,42]. Consequently, before scaling up a program, it is worthwhile to examine the ramifications of altering the learning context. This is about student–teacher relationships and individual students' educational experiences.

Specifically, this study examined the impact of learning settings (in school and after school) on students participating in primary school PA programs. We investigated the relationship between student views of teachers, satisfaction with psychological needs, and motivation levels. We also studied how learning settings affect these factors. As part of this study, we tested the hypotheses that: (1) positive perceptions of teachers by students would indirectly and directly influence their psychological well-being and motivation to meet self-determined goals; (2) the satisfaction of psychological needs could be directly and positively connected to self-directed motivation regulations; and (3) those incentives that are less self-determined have a non-significant or weak negative relationship with student psychological needs satisfaction and student perception of teachers. Furthermore, the influence of the learning environment on student psychological needs satisfaction, perception of teachers, and motivation regulation was examined via direct and indirect methods in in-school or after-school settings.

2. Methods

2.1. Sociodemographic Characteristics of Participants

The authors collected data from students participating in PA programs from various schools in Shanxi Province in China in 2022. These PA programs involved 513 students from two major ethnic groups (Han% = 99.7% and minority% = 0.3%) from twelve different schools. The gender ratio of these students was as follows: 46.24% girls, 53.76% boys, $mean_{age}$ = 10.52, standard $deviation_{age}$ = 1.10. The number of students participating in PA programs according to age was as follows: 114, 144, 125, and 130, with ages ranging from 9, 10, 11, and 12, respectively. Additionally, participants in the PA program were divided into in-school (287 students) and after-school (226 students) groups (Figure 1).

2.2. Physical Activity Programs

Physical activity program aimed to provide basic PA skills to primary school students from average-income families and diverse racial and ethnic backgrounds by inspiring them to participate in a variety of healthy activities. These activities included but were not limited to walking, dancing, jogging, running, aerobic exercises, raking, acting out stories, playing Wii classroom games, jumping, using resistance bands, Tai Chi, pickle ball, and smart board fitness games.

The authors are affiliated with different schools in China and are involved directly or indirectly with PA teachers and experts, so they invited them to participate in this study. Several of these experts came from educational institutions that served students from a variety of ethnicities, racial groups, and socioeconomic levels. Professional development workshops were organized for PA programs to help teachers guide their students through various PA programs. Those who accepted the invitation participated in these sessions. Teachers were given WeChat-based scan codes that contained basic instructions, along with technical assistance, if necessary, for PA development training. Research findings from earlier iterations of similar programs in the after-school setting have indicated improved student attitudes toward and interest in target-oriented activities [20].

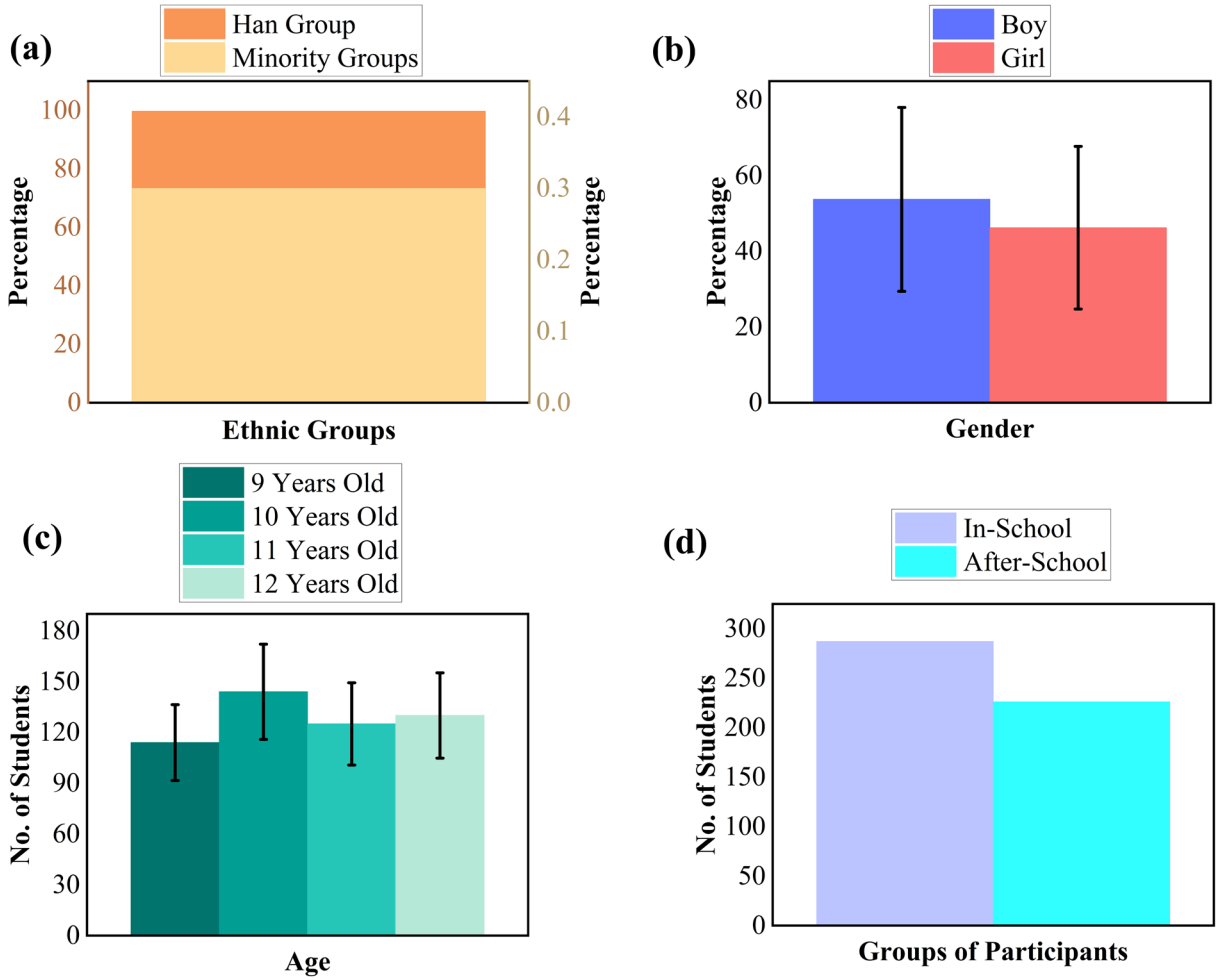

Figure 1. Sociodemographic characteristics (**a**–**d**) of the participants (%). The black vertical line represents the standard deviation.

Teachers decided whether to hold program sessions in- or after school depending on student need, teacher choice, and overall program viability. The implementation of each session could involve integrating the materials into an existing course or serving as an independent unit. The teachers were free to use it at their own discretion as an optional after-school activity. This solution provided teachers with the flexibility to adapt it to the specific needs of their schools and students. Thus, the program implementation framework varied somewhat between schools, but the requirements remained the same.

Every implementation had to last a minimum of eight hours and cover seven lessons. Despite the variability of program duration and the number of times participants met each week varying from implementation to the next, participants in both in-school and after-school settings participated in the program on average for four weeks ($Range_{weeks}$ = 2–6) and met two times per week ($Range_{frequency}$ = 1–4) on average. The learning environment did not affect program duration and frequency. Approximately 30–45 min were allotted to each lesson in the program instruction manual, and PA programs included seven chapters. Several chapters containing numerous lessons were created to give teachers and their students the opportunity to explore a range of subject matters. The objectives of each lesson were clearly stated, and the methods by which they were met were explained using one or more national or state standards. Data collection using a WeChat-based scan code was also covered. The lessons included working examples, puzzles, and comprehension assessments. The program was rolled out with strong encouragement from all educators. Additionally,

teachers were encouraged to incorporate PA called "brain blasts" that required students to work together in a series of synchronized movements so that their blood circulated, and their brains were stimulated. During their PA training, the teachers had plenty of experience with some of these mind-merging techniques.

PA training benefited both teachers and students. These PA professional development programs were taught in small teams, with each team responsible for a particular aspect of the course. In each sub-team, different tasks were recommended, including the execution of the PA, the creation of a flowchart program to facilitate their work, and the development of advertising materials for sharing their experience. The students completed their PA programs by presenting their exercise at the event and demonstrating it. Each school presented its exercise at the end of the session at the host school. During this process, teachers and students had the chance to earn a trophy for PA program achievement and qualify for professional development training.

2.3. Procedures for Data Collecting

WeChat-based scan codes containing access to the aforementioned research data were sent to children and their parents following the aforementioned preliminary steps. Participation in the study was voluntary for all students who attended the sessions in full or in part. Each survey was conducted online throughout the PA program and delivered at the end. Students typically take 20 min to complete the survey. As part of the survey, students were asked their opinions regarding the support, involvement, and structure they received from teachers. In addition, they were asked their thoughts regarding their own autonomy, competence, relatedness, and motivation for the program.

2.4. Measures

The students' perceptions of teachers' autonomy support, involvement, and structure were measured with the help of three subscales from the teachers as a social context short-form questionnaire [43]. For the short-form questionnaire, researchers used the full-length [43], 52-item scale as the basis, selecting the questions that best illustrated the theoretical structure of each behavior. The final eight items of each subscale were scored on a 1–4 scale from 1 (*not at all true*) to 4 (*extremely true*). There has been sufficient evidence that both scales have sufficient reliability and validity in populations of similar ages and backgrounds [25,43]. Students were evaluated according to their judgments of psychological need satisfaction using 16 measures of competence (5 items), autonomy (6 items), and relatedness (5 items) [44]. A seven-point scale was utilized for each measure, in keeping with the nature of the program, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). It has been found that both scales have sufficient reliability and validity in academic settings and across a variety of demographics [25,44]. Additionally, Cronbach's alpha (0.89) indicated that the entire questionnaire was highly reliable for the students in this study.

In order to determine the level of interest in the curriculum, we utilized the Academic Self-Regulation Questionnaire developed by other researchers [45]. We included eight questions for each motivation regulation (external motivation, identified regulation, introjected regulation, and intrinsic motivation). Nevertheless, the prompts were modified to focus on the learning environment rather than the session setting. Items were scored between 1 (*not at all true*) and 4 (*extremely true*), with higher scores indicating greater support for motivation regulation. This questionnaire has demonstrated adequate levels of internal reliability and predictive validity in various samples of students [45,46] and was developed and validated by students from various socioeconomic backgrounds in schools. Data collected for these measurements are included in the Supplementary File.

2.5. Data Analysis

The data analysis was performed using IBM SPSS software (v. 25.0, IBM Corp, Armonk, NY, USA) and AMOS (v. 25.0, IBM Corp, Armonk, Chicago, IL, USA) for the preliminary and main analyses, respectively. A detailed analysis of all data was conducted

before the analysis of the multivariate assumptions was performed as advised by other researchers [47]. All variables were correlated, and descriptive statistics were computed for each group.

It was hypothesized and theoretically tested how students perceive their teachers. Structural equation modeling was used in the main analyses to determine how well psychological needs were met and how motivated students were. In addition, how each variable might have been affected by the learning environment. The model is shown in Figure 2 as a "mediational chain". The attitude of students toward their teachers was directly related to their learning environment, which in turn predicted how effectively their psychological needs were met, which in turn determined the effectiveness of each motivational regulation. Consequently, the impact of learning context may indirectly influence students' motivation by affecting how they perceive their teachers and whether their psychological needs are met. It is also possible that how students perceive their teachers will directly impact how motivated they are. This is accomplished through the satisfaction of their psychological needs. The learning context is likely to remain a strong factor in how teachers are perceived, even when indirect effects are considered [48]. Therefore, these unmediated effects were incorporated into the model as a straight line extending from each variable to the ones following it. In addition, the learning environment has been identified as a direct predictor of motivation regulation and psychological needs satisfaction. By examining the relationships between the learning context and the other lines of the model, the effect of learning context is demonstrated.

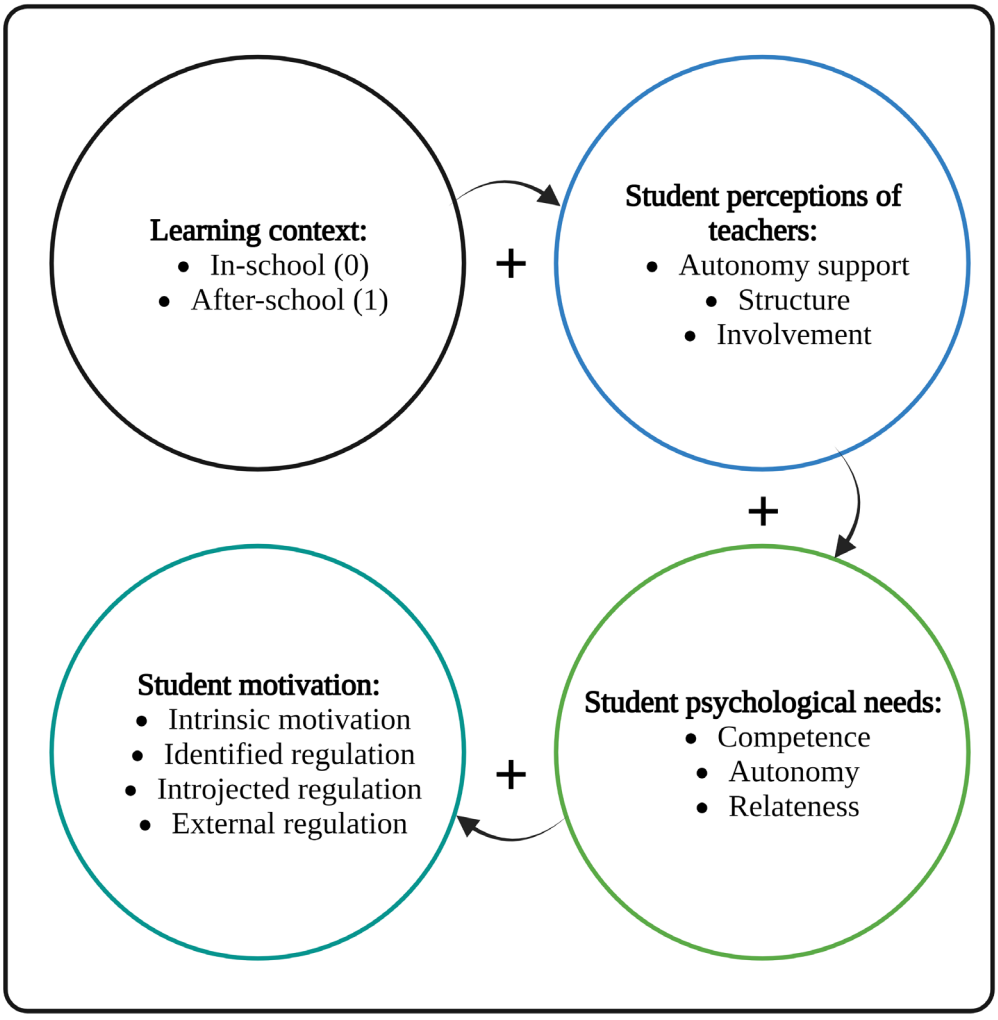

Figure 2. Self-determination theory-based conceptual model used in this study.

Learning environment participation was presented as a dummy-coded variable, with 0 indicating in-school participation and 1 indicating after-school participation. Teacher-student relationships and satisfaction with psychological needs were each treated as latent variables with three manifest indicators representing their historical and theoretical dimensions. Motivating beliefs of students were modelled as latent variables with a single manifest indicator, which was the mean score for all items. Bias-corrected bootstrap-generated 95% confidence intervals were used to evaluate all indirect effects. Additionally, the magnitude and explanation of variation in each dependent variable was considered. It has been determined that the overall measurement and structural model fit are determined by determining root mean square error (RMSEA) levels less than 0.08, Comparative Fit Index (CFI) thresholds greater than 90, and Tucker–Lewis coefficient (TLI) thresholds greater than 90 [48].

3. Results

3.1. Preliminary Analyses

The data appeared generally normal and linear in preliminary analyses. Table 1 includes the means, standard deviations, correlations, and internal consistency for each learning setting used. In this study, students' perceptions of autonomy correlated positively with their learning context (0 = in school and 1 = after school), but they experienced negative correlations with their perceptions of internal and external regulation. It was, therefore, found that after-school settings were associated with higher degrees of autonomy as well as a lower level of both internal and external regulation. Additionally, there were substantial and positive Pearson correlations between student opinions of their teachers, self-determined motivation regulation, and psychological need fulfillment. A negative association was also found between student perceptions of autonomy support and external regulation and teacher involvement. Similarly, a negative correlation was observed between perceptions of autonomy and external regulation, while a positive correlation was also observed between perceptions of competence and introjected control. A significant and positive correlation was found between both internally generated regulations and externally generated regulations and motivations. Regulations that were identified had significant and positive correlations with regulation that was generated both internally and externally. Both implementation contexts tended to have positive responses from students, with most of them near the top of the scale. There were relatively low reports of introjected motivations (Means (M) = 1.83–1.99) and external regulation (M = 2.31–3.11) among both contexts, and they were closer to the middle of the scale than more self-determined motivations (M = 2.79–4.11). Internal consistency was demonstrated on all scales. It was necessary to analyze latent variables related to relationships between students and teachers, involvement, autonomous support, and structure before the structural model was validated. Additionally, the satisfaction of psychological needs was examined. The latent variables were tested for their relationship to autonomy and competence. Indicator loadings ranged from 0.61 to 0.79, with RMSEA of 0.10, TLI or CFI of 0.95, and significance values ($p < 0.01$) for the model.

Table 1. Descriptive statistics along with correlations, and Cronbach's Alpha.

	1	2	3	4	5	6	7	8	9	10	11
1. Learning context											
2. Teacher autonomy support	0.06	**0.69**									
3. Teacher involvement	0.08	0.61 *	**0.81**								
4. Teacher structure	−0.03	0.72 *	0.67 *	**0.78**							
5. Autonomy	0.17 *	0.61 *	0.48 *	0.49 *	**0.81**						
6. Competence	0.09	0.39 *	0.49 *	0.43 *	0.59 *	**0.78**					
7. Relatedness	−0.07	0.37 *	0.47 *	0.45 *	0.51 *	0.51 *	**0.90**				
8. Intrinsic motivation	0.13	0.45 *	0.41 *	0.39 *	0.52 *	0.63 *	0.56 *	**0.79**			
9. Identified regulation	−0.06	0.51 *	0.40 *	0.45 *	0.51 *	0.47 *	0.49 *	0.69 *	**0.81**		
10. Introjected regulation	−0.23 *	−0.06	0.09	0.09	0.08	0.17 *	0.09	0.31 *	0.41 *	**0.82**	
11. External regulation	−0.25 *	−0.28 *	−0.15	−0.19 *	−0.17 *	−0.07	−0.06	−0.06	0.17 *	0.69 *	**0.80**
In-School $_{\text{Mean}}$		3.23	3.19	3.25	4.88	4.71	4.86	2.79	2.91	1.99	2.31
In-School Standard Deviation		0.49	0.48	0.61	0.98	1.12	1.09	0.88	0.71	0.43	0.63
After-School $_{\text{Mean}}$		3.27	3.27	3.29	4.79	4.91	4.89	4.11	3.29	1.83	3.11
After-School Standard Deviation		0.55	0.49	0.47	0.81	0.87	0.93	0.86	0.69	0.57	0.86

* The correlation is significant at the 0.05 level, and in bold on the diagonal is Cronbach's reliability coefficient.

3.2. Main Analyses

Figure 3 presents the structural equation model results, as well as statistics related to the model used. In terms of psychological needs, the model predicted 19% of variance, whereas regarding motivation regulations, it predicted 5–41% of variance. In order to understand how students perceive their teachers and motivation is regulated, a number of hypotheses and empirical relationships have been proposed. There were significant, direct, and positive relationships between students' overall perceptions of teachers and their satisfaction with their psychological needs ($p < 0.05$, $\lambda = 0.51$), identified regulation ($p < 0.05$, $\lambda = 0.25$), and intrinsic motivation ($p < 0.05$, $\lambda = 0.21$). Furthermore, it has a direct, negative, and significant association with external regulation ($p < 0.05$, $\lambda = -0.19$). It was not significant that teacher perceptions were associated with introjected regulation ($p < 0.05$, $\lambda = -0.03$).

Students' psychological needs and desire for satisfaction are linked. Among individuals with high satisfaction levels, identified regulation ($p < 0.05$, $\lambda = 0.39$) and intrinsic motivation ($p < 0.05$, $\lambda = 0.46$) were positively correlated with satisfaction, while introjected regulation was positive but weakly correlated ($p < 0.05$, $\lambda = 0.17$). External regulation was not significantly related to psychological need satisfaction ($p < 0.05$, $\lambda = -0.00$). Apart from the significant direct associations, psychological needs mediated the associations between students' perceptions of their teachers and introjected regulations ($\beta = 0.08$, 95% CI = 0.3, 0.18), identified regulations ($\beta = 0.21$, 95% CI = 0.12, 0.23), and intrinsic motivations ($\beta = 0.19$, 95% CI = 0.23, 0.34). Moreover, external regulation did not exert a mediating effect ($\beta = -0.00$, 95% CI = −0.09, 0.08). Students' perceptions of introjected ($p < 0.05$, $\lambda = -0.25$) and external regulation ($p < 0.05$, $\lambda = -0.31$) were directly associated with the learning context in the model used in this study. Neither teacher perceptions ($p < 0.05$, $\lambda = 0.07$), intrinsic motivation ($p < 0.05$, $\lambda = 0.03$), psychological need satisfaction ($p < 0.05$, $\lambda = 0.06$), nor identified regulation ($p < 0.05$, $\lambda = -0.09$) were significantly influenced by the learning context. Only a weak association was found between indirect associations with learning context, apart from a positive but non-significant relationship between intrinsic motivation and learning context ($\beta = 0.09$, 95% CI = 0.06, 0.21).

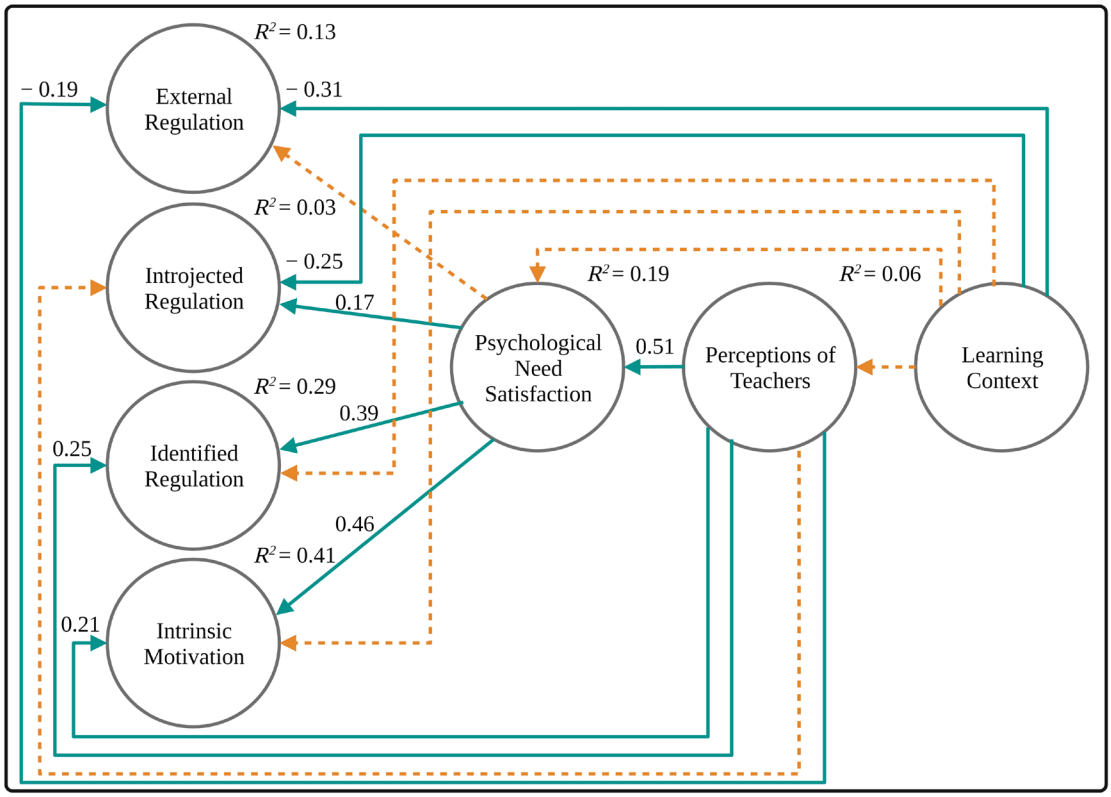

Figure 3. Analysis of the results of a structural equation model based on self-determination theory to examine how physical activity programs effect on students' motivational and social outcomes. Solutions that are standardized are reported. Significant paths are highlighted in dark cyan, while non-significant paths are highlighted in orange. Analyses include indirect associations, but they are not depicted. In the final model, the effects of gender and race/ethnicity were excluded since they were not significant. P_{close} = 0.05; TLI = 0.95; RMSEA = 0.05; CFI = 0.92.

4. Discussion

It is possible to provide essential additional PA education to more children by incorporating after-school programs into schools without incurring the significant costs associated with designing and implementing initiatives. It is believable that reaching a wider audience can have significant long-term effects, since these programs provide PA skills, stimulate interest in PAs, and, ultimately, encourage PA careers. Nevertheless, self-determination theory suggests that changes in the learning context can impact the success of such programs [20]. Studying the possible effects of the learning context on a theory-based self-determination model was the objective of the current study. The findings showed that students' opinions about their PA teachers influence their psychological needs and self-determined motivations. In addition, students who fulfilled their psychological needs were more likely to exhibit self-determined motivation. It was found that psychological need fulfillment predicted introjected regulation significantly and positively. In contrast, students' views of teachers were significantly and negatively related to external regulation. Furthermore, children were satisfied with their psychological need fulfilment. It should be noted that students in both contexts shared similar perspectives on their teachers and psychological needs satisfaction, as well as independent motivational types.

There is substantial evidence that the theory-based approach is effective, as researchers have shown that students' reactions to teachers' autonomy support, structure, and involvement predict their assessments of competence, motivation, relatedness, and autonomy [29,31]. It has been shown that psychological need fulfillment predicts motivation regulations and is positively related to the perceptions of investigated people in similar-

aged groups [49–52]. Connecting students to their classmates involves offering them opportunities for choice. This also includes fostering their perception of control, positive relationships within the social group, and setting rules and expectations that guide their behavior and success. Group interaction allows them to feel more socially connected, more effective, and more capable of taking independent actions on their own. Students are more likely to participate once they make a positive impression. In general, students describe participating in activities as enjoyable and aligned with their own motivations and interests. The reason for reporting participation is to avoid punishment or receive reward. These types of results are essential for program managers and teachers in the PA context. This is because they allow them to pinpoint the precise processes taking place in the learning context. These processes contribute to students' perceptions of and engagement in PA.

Students are more likely to engage in and pursue similar learning opportunities when teachers facilitate a positive learning environment by utilizing these desirable behaviors [53]. Teachers can avoid unfavorable learning experiences of their students, or prevent them from participating out of guilt, fear of punishment, or desire for a reward. Several factors make in-school and after-school PA programs successful, including the fact that students actively seek opportunities to expand their knowledge and practice in various environments [54]. Research on the importance of motivation in scientific education at schools has demonstrated that it is possible to enhance intrinsic motivation. It correlates directly with task engagement and achievement [55–58]. When students perceive autonomy-supportive, structured practices and are involved in the learning process, there is an association between intrinsic motivation and identified regulation. It is evident from the results presented here that educators play a significant role in laying the foundations for future participation in PAs.

Observations indicate that students' autonomy, relatedness, and perceptions of competence were effective predictors of their identified regulation and intrinsic motivation. Clearly, the pathways demonstrate that when students feel more successful, act in accordance with their own goals and will, and aspire to be connected to others, they will participate in activities for fun and acquire skills that will make them feel more confident about themselves [16]. As in the past, psychological needs have very little influence on motivation regulations that are less self-determined [20]. Studies have shown that introjected regulation can enhance motivational results and lead to internalization—likewise, the ability to choose self-determined types of motivation [36]. It is well established that psychological needs are strongly related to self-determined motivation. These results demonstrate the necessity of developing student autonomy, competence, and relatedness to promote task-based learning and motivational well-being. Positive associations between psychological needs and self-determined forms of motivation point to this benefit [17].

It is accepted that the social circumstances in which learning occurs influence students' views of their teachers. This influences the extent to which their psychological needs are met and how they are motivated in both healthy and unhealthy ways. Students' perspectives were predicted by the learning context—whether it was an in-school or after-school program—both directly and indirectly. Students in both settings reported that their teachers displayed involvement, support, autonomy, and structure while running the program. In addition, they displayed the same perception of satisfying psychological needs when attending the program. Students can associate participating during the school day with guilt or external control. Participating in school may also result in reward or punishment. The correlation between context and less self-determined motivation regulations supports this finding. There was a consistent pattern of self-determined motives across situations, including enjoyment and personal need.

Limitations and Considerations for Future Research

There is evidence that the motivations, expectations, and relationships between students and teachers in a particular situation can affect the way teachers respond to students, affecting their learning outcomes [41,42]. The present study found that students' opinions

about of teachers were consistent regardless of setting. In this sample, teachers were seen as supportive of student involvement, autonomy, and structure. This was regardless of expectation differences in in-school and after-school settings. Future studies may examine various learning environments and initiatives. It occurs when teachers do not develop their own PA program on their own. It has been shown that teachers who are compelled to provide a program are more inclined to engage their students in less desirable interpersonal behavior that negatively affects students. The absence of autonomy can also undermine students' motivation and prevent them from participating in a program.

The impact of motivational, intrapersonal, and social aspects may be useful for practitioners and academics in assessing the learning environment of PA programs. Studies in the future may examine what happens when people acquire context-dependent motivation and take into account the most typical results of motivation rules. The hypothesized predictive power of suppressed views of autonomy, competence, and relatedness should be tested in future research regarding the effect of learning context on students' motivation management strategies [59]. Through the inclusion of interview data from students, we may be able to gain insight into what motivates students, what assists them in succeeding in school, and what inhibits their learning, all of which may contribute to improving their educational experience. Students are greatly influenced by their peers, so educators must consider how their relationships with their peers affect their development in both in-school and after-school settings.

It is also considered a drawback that this study is observational in nature. It would be more rigorous to test the theory if there were differences between students and teachers in their perceptions. Students' ability to predict changes in their perception of their own psychological need satisfaction and motivation in various learning situations is crucial. Furthermore, teachers were given the option to implement the program either during or after school with the observational design used in this study. The learning context may influence the predictability of variables in the model in a manner not considered in the present design. This is if the program implementation is not randomly assigned.

5. Conclusions

This study emphasizes the significant role that students' perceptions of their teachers and the extent to which how their psychological needs are met translates into their motivation to participate in the physical activity program. The research also indicated that the learning environment plays a significant role in determining student engagement. Our results can be used in the development of strategies to promote physical activity among school-aged students.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su15108080/s1, Student Survey.

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