

Designing a Structural Model of Psychological Factors Affecting the Development of Motivation towards Participation in Sports among Children

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Received: September 08, 2022; Revised: November 02, 2022; Accepted: November 30, 2022

Abstract

Background: Identifying the factors motivating children to participate in sport activities, such as football, is of great importance. That mentioned, the present study aimed to investigate the internal and external psychological factors affecting the development of children's motivation to participate in football activities.

Method: In this study, we used descriptive-correlation method via structural equation modelling. We recruited 129 male children aged 11 to 14 years old who attended football schools of Tehran, Iran, in 2022. Moreover, the research variables were measured with a self-made questionnaire, including 32 items for assessing eight factors (four internal and four external factors). We also utilized structural equation method via Lisrel for examining the structural relationships among the research variables.

Results: The participants' body mass index (BMI) was in a normal range {median of 16.50(1.45)}. The results showed that both internal factors (attractiveness of sports, $T=4.828$; sense of responsibility, $T=5.618$; challenge spirit, $T=3.117$; sense of advancement, $T=4.909$) and external ones (team climate, $T=2.847$; social encouragement and support, $T=5.108$; content of practice, $T=4.010$; coach support, $T=5.552$) had significant and direct effects on children's motivation to participate in football. Furthermore, the results of model fit revealed the good fit ($RMSEA=0.05$) of our model.

Conclusion: It was found to be necessary that coaches make efforts to meet children's basic psychological needs (including autonomy, competence, and relatedness) in order to increase intrinsic motivation in children.

Keywords: Motivation, Physical activity, Children, BMI, Football

How to Cite: Abdoshahi M, Taleshi M, Ghorbani S. Designing a Structural Model of Psychological Factors Affecting the Development of Motivation towards Participation in Sports among Children. Int. J. School. Health. 2023;10(1):34-40. doi: 10.30476/INTJSH.2023.97532.1273.

1. Introduction

Sedentary lifestyle has been proposed as one of the main risk factors for heart diseases, with their risk of development being twice as high in sedentary people. To address this issue, regular physical activity is regarded as an important health-promoting behavior, preventing or delaying various chronic diseases and premature mortality (1-3). There is a great body of evidence on the improvement of mental health, reduction in depression and anxiety symptoms, satisfaction with life, and improvement of quality of life following regular physical activity (4-6). It has been; however, shown that modern lifestyle coexists with less physical activity, which is also evident in children (7). Research has shown that currently, only 20-25% of girls and 35-40% of boys following the guidelines of the World Health Organization (WHO) do at least 60 minutes of moderate-to-vigorous physical activity per day (8). In Iran, some studies

have also indicated that Iranian boys and girls do not follow the international guidelines regarding physical activity (9-12). Accordingly, children's participation in physical and sport activities has attracted a great deal of scientific attention over the last decades.

Among the sport activities at the world level, special attention has been paid to football, which is due to its impact on social, cultural, economic, and political dimensions (13-15). In addition, compared to other sports, football has the largest number of both athletes and spectators. The development of football in every country should start from childhood or even earlier. Of note, participation in football classes can positively affect children's health. Previous research has shown that a high percentage of children do not participate in sport activities, which can cause harmful consequences for their health, including obesity (16). Nonetheless, research has found that obese children's participation in football can improve

their physical fitness and cardiovascular function. Therefore, in order to encourage them towards football, it is necessary to identify the factors affecting their motivation to play football. Motivation can be undoubtedly one of the most important variables in predicting the continuation of children's participation in sport activities in school and leisure-time (17).

This factor is a hypothetical construct used to describe internal or external forces. Individual differences in motivation are very important. In fact, people not only participate in sportive and physical activities for different reasons, but are also motivated in different ways and in different situations. In this regard, the self-determination theory (18, 19) defines motivation as intrinsic motivation, extrinsic motivation, and demotivation with different degrees. Intrinsic motivation represents the highest degree of self-determination motivation, referring to the conditions in which people freely engage in activities that are interesting and enjoyable for them. On the other hand, extrinsic motivation comes from an external source. While both internal and external motivation show different degrees of willingness, demotivation indicates the absence of motivation. Demotivation is evident when people lack the intention and desire to apply a certain behavior or participate in a particular activity (20, 21).

Several factors can influence children's attitude to participate in sport activities. The present study aimed to design a model of psychological factors affecting the development of children's motivation to participate in sport activities (football specifically). Herein, the psychological components examined included the internal and external factors which were affecting the development of children's motivation to participate in football activities. The internal factors included attractiveness of sports, sense of responsibility, challenge spirit, and sense of advancement. On the other hand, the extrinsic ones were team climate, social encouragement and support, content of practice, and coach support (22-25). Accordingly, this study sought to design a model for internal and external psychological factors affecting the development of children's motivation to participate in football activities.

2. Methods

2.1. Participants

In this paper, we used descriptive-correlation

method with structural equation modelling. The participants included 129 male children aged 11 to 14 years old, attending football schools of Tehran, Iran, in 2022. They were selected using convenience sampling method.

2.2. Instrument

In this study, we used a self-made instrument for measuring the internal and external psychological factors. The questions of this instrument were mostly extracted from the study by Aoyagi and colleagues (22). Of note, attractiveness of sports, sense of responsibility, challenge spirit, sense of advancement, team climate, social encouragement and support, content of practice, and coach support are among the most important internal and external psychological factors (22). Our self-made instrument comprised 32 items, including eight factors (four internal and four external factors), each of which includes four questions scored based on a five-point Likert scale (1=strongly disagree to 5=strongly agree). In the current study, 11 experts corroborated the validity of this questionnaire (CVI=0.90, CVR=0.92) and its reliability was assessed, with a Cronbach's alpha coefficient of 0.90.

2.3. Data Analysis

Medians (IQRs) were utilized for describing the demographic data and research variables. Furthermore, Kolmogorov-Smirnov test was used for testing the normality of the data while for determining the adequacy of sampling and predicting the items of each component, we used Kaiser-Meyer-Olkin (KMO) test. Moreover, through the use of Bartlett's test, the relationship between the items and components was determined, which provided a reasonable basis for factor analysis. KMO should be over 0.700 and the significance of Bartlett's test should be below 0.05 (23). Additionally, structural equation method via Lisrel was utilized for examining the structural relationships among the research variables. P value was set at $P < 0.05$.

3. Results

3.1. Demographic Characteristics

Participants included 129 male children aged 11 to 14 years old, attending football schools of Tehran, Iran, in 2022. Demographic characteristics of our participants included age, weight, height, body mass

index (BMI), and experience in football schools, as summarized in Table 1. We recruited 129 male children with a median of 12.00 (2.00) years old, whose BMI was in a normal range [median of 16.50(1.45)].

3.2. Descriptive Data and Normality Test

Table 2 shows the mean and standard deviation

of the research variables. It also represents the results of normality of the data; as seen, our data were not normally distributed (all $P < 0.05$).

3.3. Factor Analysis

The results revealed that KMO equaled 0.762 and Bartlett's test was 28.450 with $P < 0.001$. Therefore,

Table 1: Medians (IQRs) of demographic characteristics of participants

Age	Weight	Height	BMI
12.00 (2.00)	35.00 (6.30)	140.00 (7.00)	16.50 (1.45)

BMI: Body Mass Index; IQR: Interquartile Range

Table 2: Medians (IQRs) of research variables and the results of normality test

	Attractiveness of sports	Sense of responsibility	Challenge spirit	Sense of advancement	Team climate	Social encouragement and support	Content of practice	Coach support
Mean±SD	3.00 (1.50)	2.50 (1.75)	2.50 (1.00)	2.25 (1.75)	3.00 (1.00)	1.75 (1.25)	2.00 (1.75)	2.75 (1.75)
Normality	0.188	0.193	0.185	0.260	0.172	0.134	0.142	0.236
P value	0.043	0.049	0.030	0.001	0.023	0.020	0.025	0.003

IQR: Interquartile Range

Table 3: Results of factor analysis

Variable	Question	Factor loading	t	P value	Result
Attractiveness of sports	1	0.743	6.270	<0.001	Accepted
	2	0.518	3.888	<0.001	Accepted
	3	0.458	3.187	<0.001	Accepted
	4	0.771	3.957	<0.001	Accepted
Sense of responsibility	1	0.717	4.658	<0.001	Accepted
	2	0.777	3.734	<0.001	Accepted
	3	0.698	3.159	<0.001	Accepted
	4	0.544	2.224	0.027	Accepted
Challenge spirit	1	0.581	2.870	0.009	Accepted
	2	0.879	20.653	<0.001	Accepted
	3	0.861	25.270	<0.001	Accepted
	4	0.644	5.202	<0.001	Accepted
Sense of advancement	1	0.868	12.621	<0.001	Accepted
	2	0.939	24.460	<0.001	Accepted
	3	0.960	25.145	<0.001	Accepted
	4	0.982	84.156	<0.001	Accepted
Team climate	1	0.949	29.353	<0.001	Accepted
	2	0.995	26.289	<0.001	Accepted
	3	0.923	24.024	<0.001	Accepted
	4	0.965	41.956	<0.001	Accepted
Social encouragement and support	1	0.853	11.380	<0.001	Accepted
	2	0.940	46.967	<0.001	Accepted
	3	0.923	24.608	<0.001	Accepted
	4	0.868	21.637	<0.001	Accepted
Content of practice	1	0.807	13.295	<0.001	Accepted
	2	0.748	3.943	<0.001	Accepted
	3	0.824	7.843	<0.001	Accepted
	4	0.872	14.610	<0.001	Accepted
Coach support	1	0.888	11.370	<0.001	Accepted
	2	0.834	7.466	<0.001	Accepted
	3	0.773	9.735	<0.001	Accepted
	4	0.866	12.149	<0.001	Accepted

these results confirmed the usability of factor analysis. Table 3 summarizes the results of factor analysis. In addition, the scree plot is illustrated in Figure 1. As shown, a large proportion of variance (60.1%) is explained by the first three principal components whereas the relatively smaller proportions of variance (24.1%) are explained by the fourth to sixth components.

3.4. Path Analysis

Table 4 and Figure 2 show the results of structural equation modelling. Based on these results, both internal factors (attractiveness of sports, T=4.828; sense of responsibility, T=5.618; challenge spirit, T=3.117; sense of advancement, T=4.909) and external factors (attractiveness of

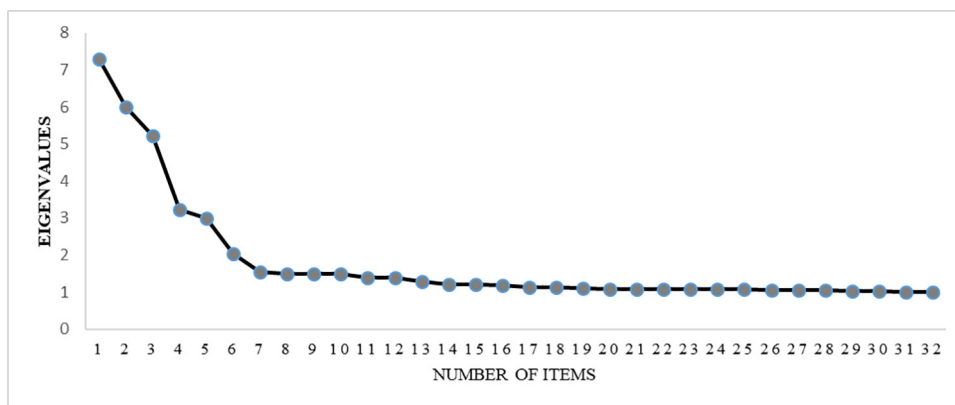


Figure 1: The figure shows the scree plot for determining the principal components.

Table 4: Results of structural equation modelling

Path	β	T value
1 Attractiveness of sports => Development of motivation	0.408	4.828
2 Sense of responsibility => Development of motivation	0.529	5.618
3 Challenge spirit => Development of motivation	0.301	3.117
4 Sense of advancement => Development of motivation	0.421	4.909
5 Team climate => Development of motivation	0.293	2.847
6 Social encouragement and support => Development of motivation	0.584	5.108
7 Content of practice => Development of motivation	0.398	4.010
8 Coach support => Development of motivation	0.502	5.552

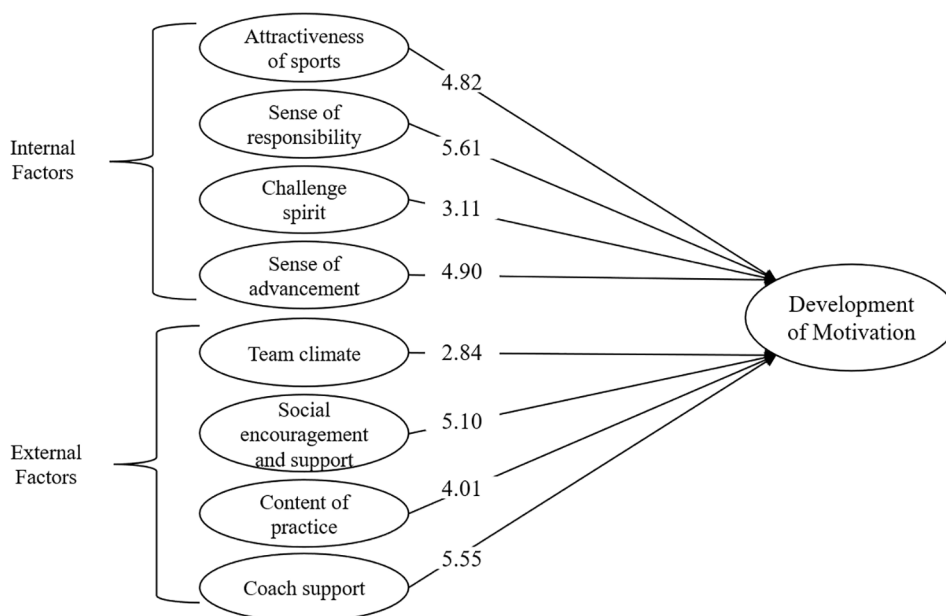


Figure 2: The figure shows the structural equation modelling.

Table 5: Results of model fit

Index	Optimal Range	Obtained Value	Conclusion
RMSEA	<0.08	0.05	Good fit
X ² /df	<3	2.15	Good fit
RMR	Closer to 0	0.03	Good fit
NFI	>0.9	0.91	Good fit
CFI	>0.9	0.92	Good fit

RMSEA: Root Mean Square Error of Approximation; RMR: Root Mean Square Residual; NFI: Normed Fit Index; CFI: Comparative Fit Index

sports, $T=2.847$; sense of responsibility, $T=5.108$; challenge spirit, $T=4.010$; sense of advancement, $T=5.552$) significantly and directly encouraged children to participate in sport activities (football). Table 5 depicts the results of model fit; as it can be seen, our model has a good fit [Root Mean Square Error of Approximation (RMSEA)=0.05].

4. Discussion

Research has consistently shown that children do not adequately participate in physical and sportive activities (7, 9-11). Hence, it is important to find out the factors affecting the development of children's motivation to participate in sport activities, such as football. The present study was therefore to investigate the internal and external psychological factors affecting the development of children's motivation to participate in football activities. Regarding the internal factors, our results showed that attractiveness of sports, sense of responsibility, challenge spirit, and sense of advancement have positive effects on the development of children's motivation to participate in football activities. Attractiveness of sports and sense of advancement were categorized as internal factors, in line with the notion of intrinsic motivation (24-26). In this regard, attractiveness of a particular kind of sport seems to be of great importance because the more interesting an activity is, the more likely are children to participate in it. In addition, when an activity is highly attractive, it is more likely that children feel more responsible for it, thereby being motivated and committed to participate in it. It is noteworthy that football is a type of sport where the sense of competition is very high. Accordingly, it can be expected that people have a higher desire and motivation to participate in this sport. Moreover, football can be improved through practice. The results of this research also indicated that the sense of progress perceived in children motivates them to participate in football. Additionally, a sense of achievement could obviously increase children's

motivation to do sports.

On the other hand, the external factors herein included team climate, social encouragement and support, content of practice, and coach support. These factors were found to positively affect the development of children's motivation to participate in football. Additionally, the content of practice and coach support emerged as external factors associated with coaches' behavior. Previous studies have shown that coaches' efforts to support basic psychological needs (including autonomy, competence, and relatedness) can increase intrinsic motivation (18-21). The components related to the coach, such as coaching style, goal selection, type of exercises, and communication with children, can strongly influence their motivation to participate in sports. When coaches use athlete-oriented styles, such as motivational styles, the basic psychological needs of children are expected to be satisfied, thus the motivation of children to participate in physical activity and sports will increase.

There are some strategies to meet the basic psychological needs in children, for example: 1) giving more choices to children to control their activities during the practice; 2) giving children the opportunity to choose the type of sport exercises during the practice; 3) emphasizing the sense of self-control during the practice; 4) not using command feedback and controlling children's behaviors during the practice; 5) listening to children's questions and giving them appropriate answers during the practice; 6) using supportive expressions during the practice; 7) improving the motivational atmosphere of the practice; 8) explaining the importance of participating in sport activities for children's health; 9) appreciating the positive feelings and self-confidence of the children during the practice; 10) using educational and competency-based feedback during the practice. Therefore, coaches should attempt to enhance children's autonomy, competence, and relatedness

with a need-supportive teaching style to improve content of practice and coach support (18-21).

4.1. Limitations

The limitations of the study included not assessing the socioeconomic status of the participants; thus, further research is needed to present a more comprehensive view of the effects of psychological factors on development of motivation towards sport participation in children. As another limitation of this study, we can state that our data were collected through a self-report, which may have self-reporting bias. However, the findings of the present study may have some practical implications. First, these results can be important for parents, sport coaches, and physical education teachers since they show the important psychological factors which are effective in the development of children's motivation to participate in physical and sportive activities.

5. Conclusion

Our findings indicated that the internal (attractiveness of sports, sense of responsibility, challenge spirit, and sense of advancement) and external (team climate, social encouragement and support, content of practice, and coach support) psychological factors have positive effects on the development of children's motivation to participate in football. Hence, it seems necessary that coaches make efforts to meet children's basic psychological needs (including autonomy, competence, and relatedness) in order to increase intrinsic motivation in them.

Ethical Approval

This research was approved by University Ethics Committee with the code of IR.IAU.AK.REC.1398.001. All students voluntarily attended in this study and written informed consent was obtained from the teachers, students, and parents.

Acknowledgments

We are grateful to all children and their parents who helped us.

Conflict of Interest: None declared.

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