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*Original Article*

## Psychometric properties of Persian version of the coach-created Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C)

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### Abstract

**Introduction:** The motivational climate relates to the athlete's perception of the modes, structures and expectations of a situation that directs the growth of specific goal-oriented through the transfer of self-directed and motivational motivations. The purpose of this study was determining validity and reliability of the Persian version of the coach-created Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C).

**Materials and Methods:** In this research, 335 boys and girls (boys: 235 and girls: 100) with skill various levels were selected to complete the Persian version of the coach-created Empowering and Disempowering Motivational Climate Questionnaire, randomly. Confirmatory factor analysis based on structural equations was used for validation of the structure of the questionnaire, the Cronbach alpha coefficient was used for internal consistency of the questionnaire, and intra-class correlation coefficient under test-retest method was used to study the temporal reliability of items.

**Results:** The results showed that the brief resilience Scale had acceptable fit index (RMSEA=0.07, CFI=0.88, TLI= 0.86), internal consistency and temporal reliability (0.77), indicating good validity and reliability of the Persian version of the coach-created Empowering and Disempowering Motivational Climate Questionnaire.

**Conclusion:** Based in the results, the Persian version of the coach-created Empowering and Disempowering Motivational Climate Questionnaire has acceptable validity and reliability among Iranian adults and has potential to be as valid and reliable instrument the usability by trainers, and researchers.

**Keywords:** Achievement, Athletes, Motivation, Psychometric, Self-determination

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### Introduction

One of the factors that persist in performing an activity is motivation (1). The motivational climate relates to the athlete's perception of the modes, structures and expectations of a situation that directs the growth of specific

goal-oriented through the transfer of self-directed and motivational motivations (2). The motivational climate created by the trainer was initially presented in research based on achievement goal theory (3). According to the

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achievement goal theory, the motivational climate created by the coach is related to what the coach does, what he says and how he organizes the environment in training and competitions (4). Some coaching behaviors that have a motivational relation are identified in the self-determination theory.

According to the self-determination theory, the degree to which we see good or bad performance and good and bad is dependent on the area in which the social climate of the psyche supports or fulfills the three inward psychological needs.

The three psychological needs suggested by the theory of autonomy include competence, independence, and communication (5). The coach's behavior is positively and significantly related to motivation (6). Based on self-determination theory, a motivational sequence (social factors, psychological mediators, motivation and outcome) provides that where, under the influence of environmental factors is social. These factors will strengthen or weaken their motivation. At the mastery climate, people are working hard and looking for advancement and improvement in skills and participatory learning, which is very valuable to the instructor (7). While he compares himself with others in ego climate, and valued competence as being worthwhile and being best against others (8). Juvenile coaching involves rewards and punishment, and threats and excessive control (9). In the support space, the independence of the athlete's superiority is determined, their views and emotions are considered, they make important choices and are welcomed in their decisions when and where possible (10). Independent support behavior can be provided in a variety of ways, such as offering options in a specific framework, providing arguments for activity structures, recognizing the attitudes and attitudes of the athlete, and providing feedback. Among other things, strategies for attracting athletic enthusiasts and admirers of athletes to conduct a desirable, non-supportive attitude can be mentioned (11). The results showed that self-care coaching behaviors can lead to sports commitment. Kids do not leave sports because they are not happy. Coaches should encourage and treat negative behaviors, criticisms and constructive training in relation to the positive behaviors of children (12). Over the past 30 years, much of the research on sports psychology has confirmed that the performance, motivation, welfare and continuous participation of athletes in sport are influenced by a wide range of factors

related to the trainer. There is considerable evidence that the social, psychological climate or the "motivational climate" created by the instructor in diversity in athletic knowledge, influence, and behaviors. Researchers have repeatedly stated the need for a valid psychological tool that can measure a wide range of mental skills. Many methods have been developed to evaluate the characteristics and effects of mental skills on performance enhancement. In the meantime, psychological questionnaires have attracted more attention among researchers. Additionally, the nature of assessment and measurement of mental skills has led researchers to develop and expand multiple psychological tests (13). The EDMCQ-C's questionnaire on supportive and impulsive motivation is 32 questions, of which 17 questions assess the strength of the climate and the weakness of the 15 questions, and has 5 factors (self-discipline, autonomy, coaching control and social support) is. (14). the internal consistency in the original version for each of the factors was obtained 0.81, 0.80, 0.64, 0.73, and 0.448 respectively (14). Positive or reinforcement dimension includes sub-quotient, support-independence and social-support subscales, each of which has 9, 5, 3 questions, respectively. Also, the negative or weak side includes sub-scales of self-control and coach control. Each of these subscales has 7 and 8 questions, respectively. The internal consistency level for the reinforcing and the weakening motivating factor was 0.87 and 0.86, respectively. Also, absolute fitness indices (RMSEA=0.03, CFI=0.95, TLI=0.95) indicate that this questionnaire has acceptable and acceptable fit (14). For each question, the Lickert value response spectrum is considered to be worthwhile, and each question reflects the amount of consent and opposition of the individual. The statistical sample of this study included teens from sports teams in England and Wales. Although the validity and reliability of the original version of the empowerment and the empowerment motivation questionnaire developed by the coach by Appleton et al. have been reviewed and approved, but the validity of the questionnaire of the strengthened and weakened motivational space questionnaire created by the coach has not been studied in Iranian society until now.

Therefore, the present study aims to determine the validity and reliability of the Persian version of the questionnaire of the strengthened and

weakened motivational climate created by the instructor and will seek to answer the question whether the Persian version of the questionnaire among Iranian athletes and coaches of the construct validity and has the reliability (internal and time reliability) good or bad?

### Materials and Methods

The statistical population of the present study consisted of athlete students studying in Tehran during 2016-2017, among whom 335 (235 boys and 100 girls) were random cluster method selected. There are several recommendations in conjunction with specimen selection. So that sample selection is less than 100 cases and recommends for very small models. But the numbers range from 100 to 200 are modest, and they are recommended in models that are not very sophisticated. But in cases where the sample number is more than 200 people, this number is large and proportionate to most of the models. Therefore, in order to determine the necessary sample, in the study of factor analysis, 10 subjects were need for each question (15). Individuals selected as statistical samples should have adequate mental and physical health.

#### Research instrument

The instrument used in this study is a Persian version of the Motivational Questionnaire developed by the coach (Appleton et al., 2016) designed to measure the motivation of the adolescent athlete (14). The Coordinator's Motivational and Motivational Motivation Questionnaire includes 32 questions, of which 17 questions assess the strength of the climate and the 15 questions about the weak climate, and has 5 factors (self-orientation, autonomy, coaching control and social support). Strengthening climate includes sub-quotient, support-independence and social-protection subscales, each of which has 9, 5, 3 questions, respectively. The weakening climate also includes self-centered and co-controller subscales.

Each of these subscales has 7 and 8 questions, respectively. For each question, the Lickert spectrum's value is considered to be the value of each question indicating the degree of agreement and opposition of the individual. The Persian version of the Motivational Questionnaire developed and supplemented by the coach was distributed and completed. Respondents were confident that their response would be confidential and would be used only for research

purposes. They were also informed that there were no false or correct answers. The average amount of homosexuality for the enhancement and weakening motivating factor was 0.87 and 0.86, respectively. Also, absolute fitness indices (RMSEA=0.03, CFI=0.95, TLI=0.95) indicate that this questionnaire has acceptable and acceptable fit (14).

In the present study, in the first stage, a number of experts and translators confirmed the translation and re-translation method, the formal validity and accuracy of the Persian translation of the supportive and weakening motivational climate questionnaire developed by the trainer. It was also assured to the people that their information would remain confidential and will only be used for the scientific purposes of the current study. In addition to preventing the bias of social utility or sociability in the athlete's adolescents, they were informed that the results of the research had no effect on their selection and selection in the field of sports, and no correct or false answers that were made to the questions of the Persian version of the Joe's Questionnaire. There is no supportive and weakening incentive created by the coach (16,17). The statistical methods used in this study were descriptive and inferential statistics. Descriptive statistics were used to calculate the central indexes and dispersion (18,19). Also, according to structural equation, experts, when the researchers have a given model, the statistical method used in the stage should be a confirmatory factor analysis. Not exploratory, a confirmatory factor analysis method based on the structural equation model was used to investigate and confirm the validity of the Persian version of the reinforced and weakened motivational climate questionnaire developed by the instructor.

The internal consistency of the scale was determined using Cronbach's alpha coefficient. In the following, the intrinsic correlation coefficient (ICC) was used to determine the time stability (20). To perform the above statistical calculations, SPSS 20 and LISREL 8.8 software were used.

### Results

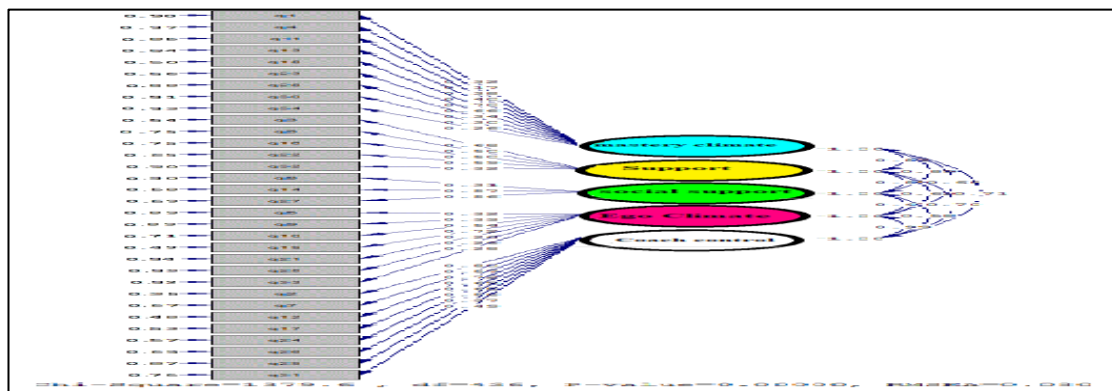
At this stage, the demographic characteristics of athletes are presented in Table 1. Then, using a confirmatory factor analysis, the constructive validity of the questionnaire of the reinforced and weakening motivational space created by the coach is discussed.

**Table 1.** Demographic characteristics of female and male samples

F (%)	Sample	Gender
29.85%	100	Female
70.15%	235	Male

As shown in Table 1, a total of 335 participants who were adolescents, strengthen and weaken questionnaire motivational climate created by coach completed accurately. The number of girls was lower than that of boys. Since the structural equation modeling specialists do not have a common view on the use of different fitness indicators, it is not clear

which fitness index is preferable to other indicators, suggesting that it is better to use a combination of indicators in each class (21,22). Specialists in this field have provided acceptable values for each of the indicators. First factor analysis factor The results of the first-order confirmatory factor analysis indicated that the Persian version of the Persian version of the questionnaire of the empowered and empathic motivational space created by the instructor in the adolescents was appropriate and all the numbers and parameters of the model were significant. The fit indices of the model of measurement are shown in the table, which indicates the relative importance of this model.



**Diagram 1.** Initial model of standard estimation (EDMCQ-C)

As shown in Table 2, CPI and T. indices are shown. The LAI is less than 90 hundredths, the .JF.I. and PPI.A.I. Indices are between zero and one (over five hundredth) and the coded index is eight hundredths, indicating the relative fitness indices (proportionality) and, therefore, fit the relative measurement model. The ratio is two hundred and fifty. There is no agreement on acceptable values in the case of the X-ray to DFF, but most researchers have proposed a lower value than three. The t-test was used to examine the relationship between the observed variables (questions) and the variables (indices). The T-index of the relationship between questions with relevant subscales shows that the value of T in all questions is higher than two, which indicates that there is a meaningful relationship between the relevant questions and the related ones. This means that the questions are able to predict the factors. A closer examination of the parameters of the estimation of the parameters of each of the questions related to the factors shows that in the problem-solving climate, the question of the

eighteen (the 70-th factor and the quantity of 13.99), in the factor of support-independence independence, question three (68th- hundred in the social climate of the social support, the question of fourteen (factor load is 57.7 hundredth and the amount of 39.9 this tenth), in the self-orientation factor of the factor, the question of nineteen (factor load is 72 hundredth and the amount of T 59.13) and in the control factor of the question two (Factor 80) and the most important predictor variables in their actions.

**Table 2.** Fitting indicators of the first order confirmatory factor analysis model (EDMCQ-C)

Observed values	Fit indices
1379.60	$\chi^2$
436	Df
0.00	p
0.31	df. $\chi^2$
0.84	TLLNNFI
0.86	CFI
0.08	RMSE
0.66	PGFI

Second factor analysis

In order to achieve a more precise factor structure, a second-order confirmatory factor analysis method was used. In this method, second order factors are factors of the first order model. This method is used to study the suitability of the scale factor structure. As previously mentioned, the questionnaire on empowerment and empowerment created by a mentor in adolescents, including five factors of the problem-solving climate, the climate of support-independence, the social support climate, self-centeredness and coach control, are among the issues. In order to confirm the construct validity of the questionnaire, the reinforcement and weakening motivational space created by the trainer in adolescents and the second-order confirmatory factor analysis was used to verify the relationship between the factors confirmed on the first level. The results showed that the second model of measuring the empowered and weakened motivational space questionnaire created by the instructor in the adolescents and all the numbers and parameters of the model was significant. The fitting indices of the measurement model are shown in Table 3.

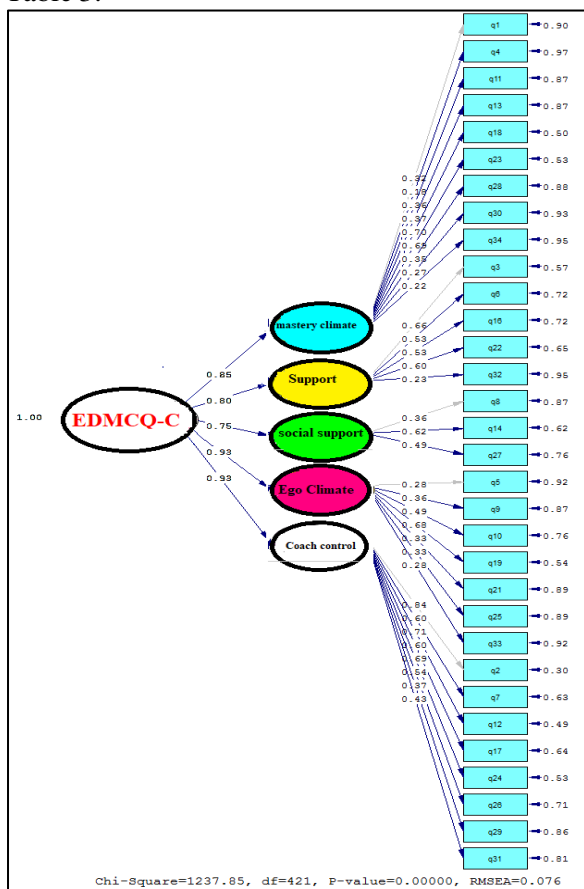


Diagram 2. The second-order model of standard estimation

Table 3. The fitting indices of the second order confirmatory factor analysis model (EDMCQ-C)

Observed values	Fit indices
1237.85	$\chi^2$
421	Df
0.00	P
2.94	df. $\chi^2$
0.86	TLI.NNFI
0.88	CFI
0.07	RMSE
0.65	PGFI

According to the results of Table 3, the values of fitness indices of the second-order measurement model of the second grade of the strengthened and weakened motivational climate questionnaire developed by the instructor are better than the first one. Like the first-order model, the values of the T-index for the relationship between the factors with higher factors in the second-order model are all higher than two, which suggests a significant relationship between them. In sum, the results of the first and second factor analysis results of the reinforced motivational space questionnaire and the weakness created by the trainer showed that this scale has a relative mechanism of narrative in the Iranian teenage community. Internal consistency: The results of Cronbach's alpha coefficient for determining the internal consistency of the questionnaire of the reinforcement and weakening motivational space questionnaires developed by the instructor are shown in the table. The internal consistency (Cronbach's alpha coefficient) was obtained for a total of 77 hundredths and, the internal consistency of other scale factors is acceptable and acceptable (alpha higher than 70%). Therefore, the questionnaire of the strengthened and weakening motivational space created by the coach and its agents has a desirable and acceptable internal consistency.

Table 4. The result of the Cronbach's alpha coefficient for determining the internal consistency of the questions (EDMCQ-C)

Cronbach's alpha	Number of questions	Subscales
0.74	9	Mastery climate
0.70	5	Support – independence
0.75	3	Social support
0.73	7	Ego climate
0.70	8	Coach control

## Discussion

The present study was conducted to investigate the psychometric properties of the Persian version of the empowerment and a weakening motivational climate questionnaire developed by the trainer in the male and female adolescent society. The results of the confirmatory factor analysis showed that the multi-factor model of the Persian version of the empowerment and the empowerment motivational space questionnaire developed by Athleton et al. has a good fitness and fit (14).

As shown in Tables 3, the CFI and TLI indices were 0.88 and 0.86, respectively, and the RMSEA index was 0.77 and the index of  $\chi^2/DF$  was 2.94, indicating the structural validity and the relative fitness of the Persian version is a question of the supportive and weakening motivational space created by the coach. Therefore, confirmation of the Persian version of the questionnaire of the reinforced and weakened motivational climate of the questionnaire created by the instructor was unchanged in the number of questions arising from the proper translation and converting the terms between the two English and Persian languages and the evaluation of the motivation of Iranian adolescents using the Persian version of the motivational factor questionnaire and the weakness created by the coach makes an accurate understanding of the questions in a similar way to the English version. The results of this study are similar to the results of Appleton et al., which is to some extent consistent with the design and psychometric of the original version of the reinforced and weakened motivation space questionnaire developed by the instructor (14). There are 32 questions in English version, which does not change the number of Persian version of English version.

The validity of the multiplicative motivational space questionnaire Appleton et al. based on the confirmatory factor analysis for each 32 questions, the factor loadings between 0.51 and 0.79 hundredth have been reported, which are obtained in comparison with the standardized loadings factor load range of questions. In the present study (0.18-0.84), these values are larger, which indicates that the questions in the original version of the multivariate motility questionnaire of Appleton et al. compared with the Persian version (present research) of strong association Terry enjoys. Probably, one of the reasons for the results of the research is

different from Aptelten et al. This study was a sample volume used in the main research. As a result, the statistical population of the study, Appleton et al. included 2273 adolescents. Considering that the required sample in the factor analysis studies, 5-10 subjects were proposed for each questionnaire question (21,23).

Therefore, the sample used in the present study is 335 people (each question is 10.46). Another justification, which can be said in addition to these slight differences, is the perception and interpretation of respondents with different mother tongues (for example, Persian speakers versus English speakers) to these questions. Accordingly, researchers have emphasized the cultural differences between individuals from different societies and mother tongues in understanding and interpreting different psychological structures (24). In another part of the present study, the internal consistency of the Persian version of the questionnaire on empowerment and empowerment created by the instructor was developed in the adolescents. Therefore, the results of the internal consistency of the Persian version of the empowerment and weakening motifs questionnaires developed by the trainer using the Cronbach alpha coefficient It says that this tool has a favorable internal consistency (0.77). The Cronbach's alpha in the Persian version was 0.74 in the self-orientation factor, 0.73 in the self-orientation factor, 0.75 in the social support factor and 0.75 in the co-controller control and support independence.

The results of this section of the study are in line with the results of Appleton et al. evaluated the Persian version of the Persian version of the reinforced and weakened motivational space questionnaire by using the exploratory structural equation modeling model and the internal consistency of this tool was measured using the Cronbach's alpha and its time stability through the internal correlation coefficient. The Cronbach's alpha coefficient, the version of Multivariate Motility Space Questionnaire (2016) for self-directed, self-directed, autonomous, coaching and social support factors were 0.81, 0.80, 0.64, 0.73, 0.448 Obtained (14).

The reinforcement dimension includes sub-quotient, support-independence and social-support sub-scales, each of which has 9, 5, 3 questions, respectively. Also, the weakness later includes sub-measurements of self-control

and coach control. Each of these subscales has 7 and 8 questions, respectively. The internal consistency level for the reinforcing and weakening motivating climate was 0.87 and 0.86, respectively. Among the main research constraints, the sample of male teens was higher than that of girls. Therefore, further studies should be conducted specifically to examine the psychometric properties of girls' scores in the questionnaire on empowerment and suppression created by the coach. The further limitation of the study was that the multidimensional nature of the data (for example, the presence of athletes in the team) was not considered. Due to the fact that the multilevel nature of the data was not considered, the limited number of teams in each parameter was more complex models (for example, the modeling of two-factor exploratory structural equations). While multilevel analysis is not feasible in the modeling of exploratory structural equations, so in order to overcome this problem, a variety of sports teams should be used in future studies. In the present study, the reliability of the Persian version of the empowerment and weakening motivational questionnaire developed by the instructor was examined and based on the results of the correlation coefficient of the Persian version of empowerment and weakening motifs questionnaire developed by the trainer (0.77), which was higher than the amount of accept (70.0). The resulting number indicates the reliability of the time or the ability to repeat the results. The study of literature in relation to the

Persian version of the questionnaire of the reinforced and weakened motivational space created by the coach showed that no research has been able to investigate the temporal reliability of the scale, and this study is the first attempt to obtain this characteristic.

One of the limitations of the research is the lack of proper access to athlete girls. It was also very difficult to reach the athletes of the national team, and examples of elite people were limited in this research. It is suggested that in future studies, other types of the construct validity of this tool should be considered. It is suggested to trainers and researchers to use this tool to measure and assess the Empowering and Disempowering Motivational Climate created by the coach, and the role of various coaching methods in creating it.

### Conclusion

In summary, the results of the present study suggest that the coach-created Empowering and Disempowering Motivational Climate Questionnaire has acceptable validity and reliability among Iranian adults and has potential to be as valid and reliable instrument the usability by trainers, and researchers.

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