Emotional intelligence in Physical Education students

Inteligencia emocional en estudiantes de Educación Física

Inteligência emocional em estudantes de Educação Física

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ABSTRACT

Emotional intelligence is defined as the ability to know and master one's and/or others' emotions. The objectives of this study were to validate an emotional intelligence instrument in a sample of physical education students from Chile, and to describe the emotional skills of the sample. 226 physical education students from two universities in Santiago de Chile were evaluated. The Emotional Metacognition Trait Scale (TMMS-24) was applied. The results reveal that the instrument, reduced to 19 items, presents three factors that explain 56,8% of the total variance, with a Cronbach alpha of 0,916. In relation to the levels of emotional intelligence, the sample presents high values, without there being significant differences in the dimension's clarity, attention, and repair of the TMMS-24 between women and men. When comparing years of career, there are only differences in the clarity dimension, where 5th year students had higher scores than/as 2nd years. It is concluded that physical education students have high rates of emotional intelligence, with no differences between women and men.

Key words: Emotional intelligence, Emotional skills, Empathy, Emotional understanding, Physical education.

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RESUMEN

La inteligencia emocional se define como habilidades para conocer y dominar emociones propias y de otros/as. Los objetivos del presente estudio fueron validar un instrumento de inteligencia emocional en una muestra de estudiantes de Educación Física de Chile y describir las habilidades emocionales de la muestra. Se evaluaron 226 estudiantes de Educación Física de dos universidades de Santiago de Chile. Se aplicó la Escala rasgo de metaconocimiento emocional (TMMS-24). Los resultados revelan que el instrumento, reducido a 19 ítems, presenta tres factores que explican el 56,8% de la varianza total, con un alfa de Cronbach de 0,916. En relación con los niveles de inteligencia emocional, la muestra presenta valores altos, sin que existan diferencias significativas en las dimensiones claridad, atención y reparación del TMMS-24 entre damas y varones. Al comparar por años de carrera, sólo hay diferencias en la dimensión claridad, donde los/as estudiantes de 5° año poseen mayores puntajes que los/as de 2°. Se concluye que los/as estudiantes de Educación Física poseen altos índices de inteligencia emocional, sin diferencias entre damas y varones.

Palabras Clave: Inteligencia emocional, Habilidades emocionales, Empatía, Comprensión emocional, Educación física.

RESUMO

A inteligência emocional é definida como habilidades para conhecer e dominar emoções próprias e de outros/as. Os objetivos do presente estudo foram validar um instrumento de inteligência emocional em uma mostra de estudantes de Educação Física do Chile e descrever as habilidades emocionais da mostra. Foram avaliados 226 estudantes de Educação Física de duas universidades de Santiago do Chile. Foi aplicada a Escala característica de meta-conhecimento emocional (TMMS-24). Os resultados revelam que o instrumento, reduzido a 19 itens, apresenta três fatores que explicam 56,8% da variância total, com um alfa de Cronbach de 0,916. Em relação aos níveis de inteligência emocional, a amostra apresenta valores altos, sem que existam diferenças significativas nas dimensões clareza, atenção e reparação do TMMS-24 entre mulheres e homens. Ao comparar por anos de carreira, só há diferenças na dimensão clareza, onde os/as estudantes de 5° ano possuem maiores pontuações que os/as de 2°. Conclui-se que os/as estudantes de Educação Física possuem altos índices de inteligência emocional, sem diferenças entre mulheres e homens.

Palavras chave: Inteligência emocional, Habilidades emocionais, Empatia, Compreensão emocional, Educação física.

INTRODUCTION

Emotional intelligence (EI), according to Salovey & Mayer (1990), corresponds to the ability to master feelings and emotions in oneself and with others, allowing one to discern between them and use this information to guide actions and thoughts assertively. Goleman (1995), on the other hand, expresses EI from a doing perspective, mentioning that it allows the development of the competence to control emotions, through tools such as self-control in the face of situations and context. Finally, Bettoni (2006) establishes that EI comes from the theoretical knowledge of the concept, to then apply it in everyday life, therefore, before knowing how to master them, we must understand them in situ and their influence on our lives.

According to Salovey & Mayer (1990), EI is composed of four skills: a) Emotional perception, which corresponds to the ability to perceive and identify emotions in oneself and in others; b) Emotional facilitation, which refers to the ability to use emotions to focus attention and think more rationally; c) Emotional understanding, which is the ability to reflect the capacity to analyze emotions; d) Emotional regulation, which corresponds to the ability to regulate one's own moods and emotions and those of others.

The growing interest that EI has aroused in the professional and scientific fields during the

last two decades has promoted the creation of theoretical models to explain it. Currently, among the most accepted models is the one proposed by Salovey & Mayer (1990) based on the processing of information to understand and regulate emotions. Based on this, Salovey et al. (1995) designed an instrument to evaluate perceived intrapersonal emotional intelligence, better known as the Trait Meta-Mood Scale (TMMS), made up of 48 items grouped into three dimensions: attention to emotions, emotional clarity and emotional repair. Later, the Spanish researchers Fernández et al. (2004) obtained a reduced version of the TMMS, made up of 24 items with a 5-point Likert-type scale, which, like the original, evaluates the dimensions: attention to emotions, emotional clarity and emotional repair. The internal consistency reported by the authors for each of the dimensions was: attention α=.90, clarity α=.90 and repair α=.86, presenting adequate test-retest reliability.

In the research carried out by Taramuel & Zapata (2017), they used this test to measure EI in 177 university students to differentiate the emotional profile of students from different courses at the Faculty of Philosophy of the Central University of Ecuador according to sex. It was concluded that women present better results in the three dimensions (perception, understanding and regulation), especially in emotional perception. Regarding understanding and regulation, the difference in results is slight, but women continue to have better results than men. Following the same line, research such as that of Urrutia-Gutiérrez et al. (2022) examined the differences in EI based on sex and the perceived level of cooperation. They used the TMMS-24 in 126 students from the Primary Degree belonging to the faculties of Education and Sport in Araba and Education, Philosophy and Anthropology of Gipuzkoa of the University of the Basque Country. The results showed that there is a significant difference in emotional clarity, with men showing higher scores. As for the other two dimensions, the group of men show higher scores in emotional repair and women higher scores in emotional attention.

Saucedo et al. (2011) applied the TMMS-24 to 242 medical students, where 46.3% obtained adequate levels of emotional attention, 52.5% of emotional clarity and 60.3% of emotional repair. Men presented better results in the attention and repair factor, and women in the clarity factor. Gutiérrez (2020) evaluated 175 Social Education students, showing that women have better scores in attention and emotional repair, without finding differences in emotional clarity. According to age, differences were observed in clarity and emotional repair, with higher scores in ages younger than and equal to 20 years.

Espinoza et al. (2015) conducted a study with the aim of validating the construct and reliability of the EI scale by applying it to 349 nursing students from two universities in Concepción. The results show that the TMMS-24 test is a reliable and valid instrument for measuring EI in nursing students. Véliz et al. (2019) conducted a study where they used the TMMS-24 to identify the level of emotional intelligence in female entrepreneurs in the Los Lagos Region. For this purpose, the EI scale was applied to 123 women with microenterprises in Los Lagos. The results show that women report predominantly medium-high levels of EI and adequate levels are observed in the different dimensions of intelligence. Del Rosal et al. (2016) evaluated 358 Master's students in Primary Education and Science, revealing that there are significant differences in the level of emotional repair according to sex, and those in Master's in Primary Education have higher scores in the three dimensions of the TMMS-24.

In order to delve deeper into the topic of emotional skills in Physical Education, the objectives of this research arise: a) to validate the TMMS-24 Emotional Intelligence Scale in a sample of students of the Physical Education teaching degree in Chile; b) to describe the emotional skills of the sample and compare them according to sex and year of the degree.

METHODS

Sample

Of an intentional non-probabilistic type. It consisted of 226 Physical Education students from two Universities in Santiago de Chile. The minimum age was 18 and the maximum was 31 years (with a mean of 21.4 ± 2.3). Of the total, 81 were women (35.8%) and 145 were men (64.2%). 64 were in their first year of the degree (28.3%), 45 were in their second year (19.9%), 41 were in their third year (18.1%), 25 were in their fourth year (11.1%) and 51 were in their fifth year (22.6%).

Instruments

A sociodemographic survey was applied, collecting information on the age, sex, and grade of the sample. The Trait Emotional Metacognition Scale (TMMS-24) by Fernández et al. (2004) was applied, which consists of 24 items with a Likert-type response ranging from 1 = totally disagree to 5 = totally agree. The instrument evaluates three dimensions: a) emotional clarity, which corresponds to the ability to know and understand one's own emotions; b) emotional attention, which refers to the ability to recognize feelings and know their meaning; c) emotional repair, related to the regulation of positive and negative emotions.

Procedure

The sociodemographic survey, the Emotional Intelligence Inventory, and the Emotional Metacognition Trait Scale were administered in person to the entire sample. Exploratory factor analyses led to the elimination of five items (Table 1) since they saturated in more than one factor, their communalities were less than .400, their elimination increased the explained variance, and did not significantly affect reliability. During the present study, the ethical principles for medical research with human beings of the Declaration of Helsinki (World Medical Association, 2013) were respected. To participate in the present research, all students signed an informed consent.

Table 1

Items removed from the TMMS after exploratory factor analyses.

Items
1. I pay a lot of attention to feelings.
5. I don't let my feelings affect my thoughts.
22. I care about being in a good mood.
23. I have a lot of energy when I feel happy.
24. When I'm angry I try to change my mood.

Data analysis

To determine the construct validity indices of the Emotional Intelligence Inventory and the Trait Emotional Metacognition Scale, exploratory factor analyses were applied using the principal components method with Varimax orthogonal rotation. For this purpose, the statistical program IBM SPSS version 25.0 for Windows was used. Then, confirmatory factor analyses were performed, using the maximum likelihood (ML) estimation method, the absolute chi-square indices (x^2), the RMSEA (mean of standardized residuals) and the CFI (comparative adjustment). For this purpose, the statistical program SPSS AMOS 26.0 was used. Reliability indices were obtained with the Cronbach's Alpha test.

Descriptive statistics were applied (with means and standard deviations). Normality tests were also performed using the Kolmogorov-Smirnov (KS) test, which yielded a normal distribution of the variables ($p > 0.05$). Therefore, parametric statistics such as t tests for independent samples were used to compare the scores of the instruments according to the sex of the sample. ANOVA tests were also used to compare the scores of the instruments according to the Physical Education course of the sample. Values of $p < 0.05$ were considered significant.

RESULTS

Psychometric properties of the emotional metacognition trait scale

The Kaiser-Mayer-Olkin (KMO) test for the inventory shows a value of 0.903 and the Bartlett sphericity test a p=0.000, so an exploratory factor analysis was performed through principal component analysis with Varimax rotation. The results reveal the existence of three dimensions: a) Clarity from items 7 to 14; b) Attention from items 1 to 6; c) Repair from items 15 to 19. These dimensions explain 56.798% of the total variance. Cronbach's alpha gives a value of 0.916 for the 19 items of the instrument (Table 2).

Table 2

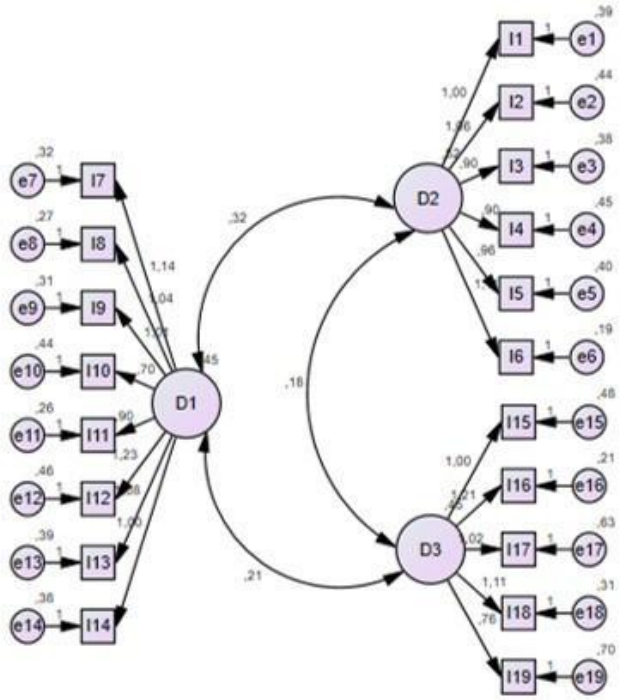
Factors of the emotional metacognition trait scale in the sample of Physical Education students.

Item	Factor 1	Factor 2	Factor 3
7. I am clear about my feelings.	0,783		
8. I can often define my feelings.	0,738		
9. I almost always know how I feel.	0,793		
10. I usually know my feelings about other people.	0,582		
11.I often become aware of my feelings in different situations.	0,714		
12. I can always say how I feel.	0,827		
13. Sometimes I can tell what my emotions are.	0,735		
14. I can come to understand my feelings.	0,672		
1. I usually worry a lot about what I feel.		0,662	
2. I usually spend time thinking about my emotions.		0,703	
3. I think it is worth paying attention to my emotions and mood.		0,619	
4. I think about my mood constantly.		0,845	
5. I often think about my feelings.		0,839	
6. I pay a lot of attention to how I feel.		0,734	
15. Although I sometimes feel sad, I usually have an optimistic outlook.			0,702
16. Even if I feel bad, I try to think about pleasant things.			0,831
17. When I'm sad, I think about all the pleasures in life.			0,760
18. I try to have positive thoughts, even if I feel bad.			0,861
19.If I find myself overthinking things, making them complicated, I try to calm down.			0,556
Explained variance	23,596	18,283	14,920
Cronbach's alpha	0,910	0,890	0,829

Figure 1 presents the final model of dimensions and items for the scale based on the two factors extracted from the exploratory factor analysis. The results showed a significant x^2 (x^2= 400.432; p= 0.000), which is why other values are observed to know the fit of the proposed model. The values of TLI= 0.892; CFI= 0.898 and RMSEA= 0.079 indicate an adequate fit of the model (Maureira, 2016, Morata et al., 2015, Zubillaga & Cañadas, 2021).

Figure 1

Confirmatory factor analysis of the emotional metacognition trait scale.



Emotional skills in the sample

Table 3 shows the scores for each dimension of the Emotional Metacognition Trait Scale. The t tests for independent samples reveal that there are no significant differences between women and men. Table 4 shows the ANOVA tests comparing the scores for each dimension of the scale according to year of study. Differences are only observed in the Clarity dimension, where 2nd year students present lower scores than 5th year students.

Table 3

Comparison of the dimensions of the emotional metacognition trait scale according to the sex of the sample.

Dimensions	Total (n=226)	Female (n=81)	Male (n=145)	*p*
Clarity	29,5 ± 5,7	29,1 ± 5,9	29,7 ± 5,6	0,495
Attention	22,7 ± 4,5	23,1 ± 4,4	22,5 ± 4,6	0,363
Repair	18,4 ± 3,8	18,2 ± 4,2	18,5 ±. 3,5	0,516
Total	70,6 ± 11,2	70,4 ± 10,9	70,7 ± 11,4	0,845

Table 4

Comparison of the dimensions of the trait scale of emotional metaknowledge according to the sample grade.

Dimensions	1st year (n=64)	2nd year (n=45)	3rd year (n=41)	4th year (n=25)	5th year (n=51)	*p*	Tukey
Clarity	29,1 ± 5,8	27,8 ± 5,9	29,0 ± 5,4	30,1 ± 6,0	31,5 ± 5,1	0,026*	5°>2°
Attention	22,3 ± 4,7	22,2 ± 4,9	23,0 ± 4,8	23,5 ± 3,7	23,2 ± 4,2	0,592	-
Repair	18,3 ± 3,9	17,8 ± 4,5	18,1 ± 3,3	19,0 ± 3,1	19,0 ± 3,5	0,448	-
Total	69,7 ± 11,5	67,8 ± 12,1	70,2 ± 10,7	72,6 ± 10,6	73,7 ± 10,2	0,085	-

Table 5 presents the low, medium, and high range scores for each dimension of the TMMS-19 in Physical Education students. For clarity, a high value will be obtained when it is equal to or greater than 33 points (sum of the scores of the seven items 7 to 14), for attention, a high value will be obtained when it is equal to or greater than 26 points (sum of the scores of the seven items 1 to 6), and for repair, a high value will be obtained when it is equal to or greater than 21 points (sum of the scores of the seven items 15 to 19).

Table 5

Score ranges for each dimension and the total emotional meta-knowledge trait scale.

Dimensions	Low	Medium	High
Clarity	<27	28 a 32	>33
Attention	<21	22 a 25	>26
Repair	<17	18 a 20	>21
Total	<66	67 a 75	>76

DISCUSSION

The objectives of this study were to validate the Emotional Intelligence Scale TMMS-24 in a sample of students of the Physical Education teaching degree in Chile; and describe the emotional abilities of the sample, comparing them according to sex and year of study. Regarding the first of these, the TMMS was reduced to 19 items, preserving the three factors that constitute the original test, with 56.8% of the total variance explained and with adequate values of model adjustment in the confirmatory factor analysis. The Cronbach's alpha was 0.916, which shows that the new TMMS-19 is a valid and reliable instrument to assess emotional intelligence in Physical Education students in Chile. These results are similar to those of Espinoza et al. (2015), who showed the existence of three factors in the TMMS-24: attention α=0.80; clarity α=0.79 and regulation α=0.85 with results similar to the original scale, but lower than the present study. Angulo & Albarracín (2018) examined the reliability and validity of a reduced version of the TMMS with 20 items, showing the same three factors explaining 60% of the variance, with Cronbach's alphas greater than 0.80 in the three dimensions. González et al. (2021) conducted a review of the factor structure of the TMMS-24 in an Argentine sample, showing the three original factors with an adequate model fit in confirmatory factor analysis (X2= 803.354, CFI= 0.9384, TLI= 0.931, RMSEA = 0.0778. With Cronbach's alphas for attention= 0.90; clarity= 0.90 and repair= 0.88. All of the above shows results similar to those obtained by the 19-item reduced version of the TMMS in Physical Education students in Chile.

In relation to the second objective, it is observed that, in the emotional skills of the sample, the clarity dimension achieves average values close to 30 points out of a maximum of 40,

the attention dimension reaches values of 23 points out of a maximum of 30 and the repair dimension obtains values close to 18 points out of a maximum of 25. These values indicate medium and high levels in the majority of those evaluated, which could explain why students of this discipline are leaders, motivators, concerned about others, empathetic and able to understand the point of view of others (Maureira et al., 2021), all fundamental elements in emotional intelligence (Salovey et al., 2002) and which account for the high scores of these skills in the sample. One element that draws attention is that no differences are observed in any dimension of the TMMS-19 between women and men, which could be explained by the similarity in gender roles expressed by these students, where women are as feminine as men, and men are less masculine than women (Maureira et al., 2022). These characteristics could influence the self-perception of emotional skills to be similar, since gender roles seem to blur, and the characteristics of empathy, understanding, self-sufficiency, ambition, etc. are increasingly similar among physical education students of both sexes.

Finally, the years in the Physical Education Pedagogy degree do not seem to significantly influence emotional skills, although it is possible to notice small improvements as they approach the 5th year, these are not significant. The improvements could be explained by the fact that the pedagogical training of the students allows them to develop, through countless practical and sports activities, different skills such as teamwork, empathy, collaboration, among others (Maureira et al., 2015, Maureira et al., 2016), directly impacting the increase in emotional intelligence scores. However, the pandemic that affected Chile and the world could have affected these processes, due to the absence of practical group activities, with a predominance of virtual classes (Flores et al., 2021), which could have stagnated the development of emotional skills in the sample, which is evident in the fact that the improvements in emotional intelligence are not significant.

The limitations of the present study include a sample from two universities, which implies that the sample is not representative of the population of physical education students in Chile.

CONCLUSION

It is concluded that the TMMS, reduced to 19 items, is a valid and reliable instrument to assess emotional skills in Physical Education students in Chile. It is also possible to note that the levels of emotional intelligence in the sample present medium and high values, without finding differences according to sex or year of study.

It is recommended to apply the TMMS-19 in Physical Education students from other Universities in Chile, in addition to associating the results with other sociodemographic variables such as socioeconomic level, religious beliefs, educational level of the mother/father, etc., and other variables such as motivation, stress levels, multiple intelligences, etc.

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