

Vaquero-Solís, M.; Amado Alonso, D.; Sánchez-Oliva, D.; Sánchez-Miguel, P.A.; Iglesias-Gallego, D. (2020) Emotional Intelligence in Adolescence: Motivation and Physical Activity. Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte vol. 20 (77) pp. 119-131 [Http://cdeporte.rediris.es/revista/revista77/artinteligencia1127.htm](http://cdeporte.rediris.es/revista/revista77/artinteligencia1127.htm)
DOI: 10.15366/rimcafd2020.77.008

ORIGINAL

EMOTIONAL INTELLIGENCE IN ADOLESCENCE: MOTIVATION AND PHYSICAL ACTIVITY

INTELIGENCIA EMOCIONAL EN LA ADOLESCENCIA: MOTIVACIÓN Y ACTIVIDAD FÍSICA

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Código UNESCO / UNESCO code: 610204 (Psicología Escolar) / School psychology.

Clasificación del Consejo de Europa / Classification of the Council of Europe: 15 Psicología del Deporte / Sports Psychology.

Recibido 7 de mayo de 2018 **Received** May 7, 2018

Aceptado 1 de diciembre de 2018 **Accepted** December 1, 2018

ABSTRACT

The aim of this research was to examine the relationship between motivation, physical activity and emotional intelligence, and test in which degree physical activity influences on emotional intelligence. A sample size of 431 individuals (12-16 years old) from different schools participated in the study. Levels of self-determination, physical activity and emotional intelligence were assessed. Results showed significant relationships between physical activity, levels of self-determination and interpersonal, adaptability and mood state dimension from the emotional intelligence. Moreover, regression analysis revealed that physical activity levels predicted interpersonal, adaptability and mood state dimensions from the emotional intelligence. In conclusion, our study highlights the

importance of mood and emotional adaptability, accompanied by more self-determined levels of motivation, in the performance of physical activity.

KEYWORDS: Motivation, Physical Activity, Emotional Intelligence, Adolescents.

RESUMEN

El propósito de esta investigación fue analizar las relaciones entre la motivación, actividad física y la inteligencia emocional, y determinar en qué medida incide la actividad física en la inteligencia emocional. Participaron un total de 431 sujetos (12-16 años) de distintos centros educativos. Se valoraron los niveles de autodeterminación, niveles de actividad física y la inteligencia emocional. Los resultados mostraron relaciones significativas de carácter positivo entre la actividad física, los niveles de motivación más autodeterminados y las dimensiones interpersonales, adaptabilidad y estado de ánimo de la inteligencia emocional. Además, los análisis de regresión mostraron que los niveles de actividad física predecían la dimensión interpersonal, adaptabilidad y estado de ánimo de la variable inteligencia emocional. Como conclusión, nuestro estudio destaca la importancia que presenta el estado de ánimo y la adaptabilidad emocional, acompañada de los niveles de motivación más autodeterminados, en la realización de la actividad física.

PALABRAS CLAVE: Motivación, Actividad Física, Inteligencia Emocional, Adolescentes.

INTRODUCTION

There is a growing trend of studies related to the management of emotions in recent years (Al Sudani and Budzynska, 2015, Singh, 2017) in a wide variety of contexts such as education (Ferrando et al., 2011), sports (Laborde, Dosseville & Allen, 2016), labor (Njoroge & Yazdanifard, 2014), or health (Fernández-Abascal & Martín-Díaz, 2015). In this line, the management of emotions has been related to a multitude of psychosocial variables such as self-esteem (Ruvalcaba-Romero, Fernández-Berrocal, Salazar-Estrada, & Gallegos-Guajardo, 2017), motivational processes (Cera, Almagro, Conde, & Sáenz-López, 2015), and prosocial behaviors (Martin-Raugh, Kell, & Motowildo, 2016). Focused on the educational context, the number of researches that give greater importance to the emotional quotient in detracting of the intellectual quotient is increasing (Costa & Faria, 2015). In this line, the concept of emotional intelligence (EI) refers to that skill focused on the processing of emotional information that unifies emotions and reasoning, allowing to use these emotions in the realization of a more effective reasoning (Mayer & Salovey, 1997). This concept encompasses individual processes such as the perception of emotions, the use of emotions, the regulation of them and their management (Mayer, 2001).

In this sense, the school context is a place to generate values and adaptive behaviors. However, the educational domain can be a context where aggressive and antisocial behaviors emerge (Del Rey & Ortega, 2008, Smith, 2004). Therefore, the work of EI in the educational context is important since there are multiple benefits obtained from it, such as the improvement of physical and mental health (Fernández-Berrocal & Extremera, 2016; Zamarripa, Castillo, Tomas, Tristan, & Álvarez, 2016), greater personal and social well-being (Castillo, Almagro, García, & Buñuel, 2015), increased prosocial behavior (Romero, Guajardo & Nava, 2017) and better academic performance (Ferrando et al, 2011).

This study has been developed from two conceptual frameworks that have been based on the benefits of physical activity as a link between both: on the one hand, EI is intended to work under the Bar-On model (2000), where competencies and skills belonging to EI are grouped into five main social and emotional skills: interpersonal skills, intrapersonal skills, adaptability, stress management and mood state. According to this issue, important research suggests that the term IE is associated with future success in life (Goleman, 2000, Salovey & Mayer, 1990; Joseph & Newman, 2010), mental and physical health (Ader, 2001) and adaptive behaviors and social skills (Mayer, Salovey, & Caruso, 2008). Moreover, the concept EI has been related sometimes to physical activity (Al Sudani & Budzynska, 2015; Bhullar, Schutte, & Malouff, 2013; Cechini, Méndez-Giménez, & García Romero, 2018; Ladino, González-Correa, González-Correa, & Caicedo, 2016; Li, Lu, & Wang, 2009; Singh, 2017, Zysberg & Hemmel, 2017), improving mood state and stress management (Newman, Joseph, MacCann, 2010). Also, there are not many researchers who have managed with the importance of this on the emotional state (Saleem & Mahmood, 2013, Singh, 2017). However, previous studies indicate that the performance of physical activity promotes the development of self-esteem, self-

concept and self-confidence (Biddle & Asare, 2011), as well as the sense of well-being, decreased anxiety and improved communication and empathy (De Benito & Lujan, 2013, Ros, Moya-Faz & Garcés de los Fayos, 2013). On the other hand, other studies have also linked EI with motivation (Perreault, Mask, Morgan, & Blanchard, 2014; Petrides, 2010), showing in their studies the importance of self-determined motivation in the management of emotions. In this line, Goleman (1995) revealed that motivation is one of the basic principles that make up emotional intelligence. Taking into account this previous issue, this research has also been contextualized under the principles of the theory of self-determination (Deci & Ryan, 2000), a macro-theory of personality and which proposes how context can influence the reasons for doing certain activities. This theory focuses on the extent to which behaviors are voluntary or self-determined, arguing that motivation is a continuum of self-determination, differentiated between autonomous motivation (intrinsic and identified regulation), controlled motivation (introjected and external regulations) and demotivation. The intrinsic regulation constitutes the highest level of motivation, in which the development of the activity in itself constitutes the objective and the gratification, also raising feelings of competence and self-performance. The identified regulation refers to the involvement in a certain activity by the positive assessment that is made of it. Within the controlled motivation is the introjected regulation, associated with people who perform an activity to avoid feelings of guilt with the aim of improving the personal ego or pride. Next, there is the external regulation that refers to the performance of an activity to get an external reward or to avoid punishment. Finally, amotivation represents the absence of both intrinsic and extrinsic motivation (Deci & Ryan, 2000). Thus, there are numerous studies that address the influence of motivation on the level of physical activity (Murcia, Silva, Pardo, & Hernández, 2016; Ruiz, Ortiz-Camacho, García-Montes, Baena-Extremera, & Baños, 2018; Solomon-Moore, Sebire, Thompson, Zahra, Lawlor, & Jago, 2017, Texeira, Carraca, Markland, Silva & Ryan, 2012). However, the available literature on physical activity and EI in the educational field is not as extensive (Al Sudani & Budzynska, 2015, Ferrándiz, Hernández, Bermejo, Ferrando & Sainz, 2012, Ladino et al., 2016; Li, Lu & Wang, 2009,), and much less are the studies that work together on the motivational level, physical activity and EI (Cera, Almagro, Conde, & Sáenz-López, 2015; De Benito & Lujan, 2013).

The purpose of our research has been to test the relationships among types of motivation, levels of physical activity and EI. Specifically, the objective of our research was to know to what extent the motivation towards physical activity predicted levels of physical activity, and is in turn to EI.

The following hypotheses were established:

H₀. The most self-determined levels of motivation will be related to a greater practice of physical activity and will be associated in a positive way to the levels of emotional intelligence.

H₁- Those types of motivation that are less self-determined will be related to a lesser practice of physical activity and will be associated in a negative way to emotional intelligence levels.

H₂. The more self-determined levels of motivation will predict a greater practice of physical activity and higher EI.

METHOD

Participants

A total of 431 Spanish students of Compulsory Secondary Education (CSE) aged between 12 and 16 years ($M = 13.54$; $SD = 0.99$), both male ($N = 209$; 48.5%) and female ($N = 222$; 51.5%) participated in this investigation. They belonged to different schools of the Autonomous Community of Extremadura (Spain). The sample was selected through a sampling of intentional selection by conglomerates taking into account the availability of the researcher and the geographical area.

Instruments

Type of motivation towards physical activity. The Spanish version was used (Moreno, Cervelló, & Martínez, 2007) of the Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2, Markland & Tobin, 2004). This questionnaire is composed of 19 items grouped into 5 factors, which begin with the initial phrase "I exercise...". The factors refer to intrinsic regulation (4 items, ie "Because I think exercise is fun"; $\alpha = 0.84$), identified regulation (4 items, ie "Because I value the benefits of physical exercise"; $\alpha = 0.69$) introjected regulation (3 items, ie "Because I feel guilty but the practical"; $\alpha = 0.70$), external regulation (4 items, ie "Because others tell me I should do it"; $\alpha = 0.70$) and amotivation (4 items, ie "I do not see why I have to do it"; $\alpha = 0.72$). The answers to the questionnaire were made on a Likert scale that varies from 1 to 5, where 1 corresponds to *nothing true* and 5 to *totally true*.

Levels of physical activity. Physical activity was analyzed through the Physical Activity Questionnaire for adolescents (Physical Activity Questionnaire for Adolescents: PAQ-A) (Kowalsky, Crocker, & Kowalski, 2004). This questionnaire is composed of 9 items that assesses the level of physical activity that adolescents performed in the last 7 days, using a Likert scale of 5 points: during his free time, during physical education classes, as well as at different times during the days of class (lunch, afternoons and nights), and during the weekend. The result is a score of 1 to 5 that allows establishing a graduation in the level of physical activity (Martínez-Gómez et al., 2009). The final score is obtained from the arithmetic mean of 8 of the 9 items, since the last item assesses whether the participant was ill during the last week (Martínez-Gómez et al., 2009). Finally, the Cronbach alpha coefficient obtained for the present sample was ($\alpha = 0.79$).

Emotional intelligence. The Inventory for the Emotional Quotient in Young People (Emotional Quotient inventory: Young Version: EQ-i: YV), validated in Spanish by Ferrándiz, Hernández, Bermejo, Ferrando, & Sainz (2012), has been used (Bar-On & Parker, 2000) to assess EI in adolescents. This version is

composed of 54 items divided into five dimensions. The reliability analysis revealed the Cronbach alphas for each of the dimensions: intrapersonal (6 items, ie "It is easy for me to tell people how I feel"; $\alpha = 0.70$), interpersonal (12 items, ie "I understand well how other people feel"; $\alpha = 0.73$), adaptability (10 items, ie "It's easy for me to attend to new things"; $\alpha = 0.80$), stress management (12 items, ie "I can be calm when I'm angry"; $\alpha = 0.70$) and general mood (14 items, ie "I am happy"; $\alpha = 0.85$). In addition, this scale adds six items created by the author to measure the degree to which individuals respond at random or distort their responses according to the effect of social desirability. The answers to the questionnaire were done with a Likert scale of 4 points, where 1 was *very rarely* and 4 *very often*.

Procedure

The elaboration of this study has been developed in several phases. In the first place, we contacted with collaborating schools, and it was explained that the questionnaire was completely anonymous, so the identity of the participants was not compromised. Regarding the ethical standards, the study was previously approved by the ethical committee of the University of Extremadura. In addition, all participants were treated under the ethical principles and code of conduct of the *American Psychological Association* (2002) for this type of research. Teachers, fathers and mothers were asked for permission, and they were explained what the study would consist of and what variables would be tested. The procedure carried out by the researcher was to present himself, to explain briefly what the questionnaire would do and to make it clear that it was not an evaluation test so that the students were as sincere as possible. The approximate time for completing the questionnaire was 25 minutes.

Statistical Analysis

The statistical package SPSS 23.0 was used to conduct data analysis, which different tests were carried out to determine the nature of the data, the kolmogorov-Smirnof test for independent samples, the Rachas random test, the homocedasticity test or equality between variances of Levene and the nature of the parametric data. Subsequently, descriptive statistics and bivariate correlations were analyzed for all study variables in order to evaluate the significance of the relationships between the variables. Finally, linear regressions analysis were developed in order to check the predictive capacity of one variable over another.

Descriptive statistics and correlation analysis.

In table 1, the descriptive statistics and bivariate correlations are shown. In general, the dimensions of mood ($M = 4.09$; $SD = 0.55$) and interpersonal dimension ($M = 4.06$; $SD = 0.46$), belonging to the EI, presented values higher than the rest of dimensions. Likewise, the intrinsic regulation ($M = 4.00$; $SD = 0.93$) and identified regulation ($M = 3.55$; $SD = 0.77$) presented the highest average scores in the types of motivation.

In addition, the correlation analysis showed positive and significant associations between physical activity and the interpersonal dimension ($r = 0.19$; $p < 0.01$), adaptability ($r = 0.21$; $p < 0.01$), and mood state of the EI ($r = 0.23$; $p < 0.01$). Likewise, there is a strong correlation between physical activity and the more self-determined dimensions of motivation ($p < 0.01$). In contrast, external regulation was significant and negatively associated with physical activity ($r = -0.11$; $p < 0.01$), adaptability ($r = -0.11$; $p < 0.01$), intrinsic regulation ($r = -0.27$; $p < 0.01$), and identified regulation ($r = -0.16$) of the motivation. Regarding amotivation, it was significant and negatively related to the physical activity, interpersonal, adaptability, intrinsic, identified ($p < 0.01$) and introjected ($p < 0.05$) variables of motivation, while positively related to stress management ($p < 0.05$) and external regulation ($p < 0.01$).

Tabla 1. Descriptive statistics and Correlation analysis of the studied variables

VARIABLES	1	2	3	4	5	6	7	8	9	10	11
1.PAQ-A	-	0.02	0.19**	-0.05	0.21**	0.23**	0.42**	0.40**	0.22**	-0.11*	-0.22**
2.Intra	-	-	0.32**	0.01	0.23**	0.32**	0.10*	0.11*	0.13**	0.05	0.01
3.Inter	-	-	-	0.04	0.32**	0.30**	0.21**	0.32**	0.15**	-0.06	-0.21**
4.M. Stress	-	-	-	-	0.02	-0.11*	-0.14**	-0.10*	0.06	0.04	0.12*
5. Adaptability	-	-	-	-	-	0.36**	0.23**	0.26**	0.09*	-0.11*	-0.15**
6. Mood State	-	-	-	-	-	-	0.30**	0.33**	0.06	-0.07	-0.07
7.R. Intrinsic	-	-	-	-	-	-	-	0.63**	0.12*	-0.28**	-0.48**
8. R. Identified	-	-	-	-	-	-	-	-	0.34**	-0.17**	-0.43**
9. R. Introjected	-	-	-	-	-	-	-	-	-	0.24**	-0.03
10.R.External	-	-	-	-	-	-	-	-	-	-	0.43**
11.Amotivation	-	-	-	-	-	-	-	-	-	-	-
12. <i>M</i>	2.79	2.85	4.06	2.57	3.51	4.09	4.00	3.55	2.53	1.74	1.62
13. <i>SD</i>	0.67	0.83	0.46	0.55	0.60	0.55	0.93	0.77	1.06	0.79	0.76
14. α	0.79	0.70	0.73	0.70	0.80	0.85	0.84	0.69	0.70	0.70	0.72

** $p < 0.01$, * $p < 0.05$

Regression Analysis

Table 2 shows the results of the lineal regression analysis conducted, through the introduction method, including physical activity as a dependent variable and the types of motivation as predictors. The model explained 23.7% of the total variance, where the intrinsic regulations ($b = 0.23$; $p < 0.01$), identified ($b = 0.10$; $p < 0.01$) and introjected ($b = 0.10$; $p < 0.05$) positively and significantly predicted PA ($p < 0.05$), while external regulation had a negative prediction ($p < 0.05$).

Also, the regression analysis is explained by the following equation ($Y = 1.316 + 0.036x_1 + 0.012x_2 + 0.102x_3 + 0.102x_4 + 0.229x_5$), where Y is the constant AF, and (X_1, X_2, X_3, X_4, X_5) are the rest of the predictor variables of the model.

Table 2. Linear regression analysis Physical Activity-Emotional Intelligence

Variables	Physical Activity				
	B	R ²	β	T	P
		0.24			
1.R. Intrinsic	0.23		0.32**	4.36	0.00
2.R. Identified	0.10		0.13*	3.59	0.03
3.R. Introjected	0.10		0.16*	2.03	0.01
4.R. External	-0.12		-0.01	-2.34	0.28
5. Amotivation	0.03		0.04	0.53	0.59

** p < 0.01, * p < 0.05

In the following regression analysis (table 3), each of the EI variables was included as a dependent variable, and physical activity levels as a predictor. The results of the regression analyzes developed for the dimensions mood (b = 0.19; p<0.01), adaptability (b = 0.19; p <0.01) and interpersonal (b = 0.12; p <0.01) showed positive and significant values (p <0.05) and explained 5%, 4.3% and 3.2% of the total variance, respectively. On the other hand, the results of the regression analysis for the stress and intrapersonal dimensions showed non-significant values (p> 0.05), and explained 0.1% and 0.3% respectively of the total variance.

Table 3. Linear regression analysis Physical Activity-Emotional Intelligence.

Mood State					
Variables	B	R ²	β	T	P
1.P. Activity	0.19	0.50	0.23**	4.77	0.00
Stress Coping					
Variables	B	R ²	β	T	P
1.P. Activity	-0.05	0.01	-0.06	-1.26	0.21
Adaptability					
Variables	B	R ²	β	T	P
1.P. Activity	0.19	0.43	0.21**	4.41	0.00
Interpersonal					
Variables	B	R ²	β	T	P
1.P. Activity	0.12	0.32	0.18**	3.79	0.00
Intrapersonal					
Variables	B	R ²	β	T	P
1.P. Activity	0.09	0.03	0.08	1.55	0.12

** p < 0.01, * p < 0.05

DISCUSSION

Based on the theoretical framework of the Self-Determination Theory (Deci & Ryan, 2000) and the model of EI proposed by Bar-On (2000), our main objective has been to test the relationships that take place between the motivation, physical activity and EI. Therefore, in relation to the first hypothesis, it was postulated that the most self-determined levels of motivation would be related to a greater practice of physical activity and be associated in a positive way to emotional intelligence. In this regard, our findings showed a greater relationship between more self-determined levels and physical activity. These

results are consistent with those found by Cera et al.(2015) who confirmed the importance of self-determined motivation in the practice of PA. In this sense, those students who perform physical activity just for the sake of enjoyment and gratification will present a more self-determined motivation (Deci & Ryan, 2000).

In reference to the relationship of positive character produced between levels of motivation, physical activity and emotional intelligence, the results are consistent with those found in previous studies such as Benito and Lujan (2013), which confirmed the existing relationship between levels of motivation and EI, and adds that EI levels were higher for sports practitioners than for those who only did physical education.

This fact can be explained through the satisfaction of basic psychological needs (Deci & Ryan, 2000), where the satisfaction of relatedness can be closely related to the intrapersonal and interpersonal dimensions of the model (Bar-On, 2000). Thus, a student who is correctly related to their peers, will have greater EI and will have a more receptive attitude to the performance of physical activity (Cera et al., 2015). Similarly, Sánchez-Gutiérrez and Araya (2014) supported the relationship between physical activity levels and EI, where EI levels were higher in those people who showed the highest level of physical activity. However, Ladino, et al., (2016) in their study showed that physical education produced changes in EI, but these changes did not become significant.

On the other hand, in reference to the second hypothesis, it was postulated that the lower levels of motivation would be related to a lower practice of physical activity and lower levels of EI. In this sense, our study showed negative and significant relationships between physical activity and external regulation. In relation to this issue, Murcia et al. (2016) showed that some external reasons, such as social motives and the image or physical appearance, are related to a high physical-sporting practice.

Regarding the extrinsic motivation of the lower levels of EI, our results showed no significance differences except for the adaptability dimension. Previous studies indicated that extrinsic motivation levels are related to those more maladaptive behaviors (Zamarripa et al., 2016).

Regarding the third hypothesis, where a series of predictions produced between levels of motivation was postulated, which would predict a greater practice of physical activity, and would conduct to a greater EI. Our results showed, on the one hand, that a strong role of the most self-determined levels of motivation act as predictors of physical activity levels. These results are consistent with the previously findings (Ruiz et al., 2018; Solomon-Moore et al., 2017; Texeira et al., 2012), where it is widely demonstrated that levels of motivation predict physical activity.

On the other hand, regarding the role of physical activity as a predictor of EI levels, the results showed significant values for the dimensions of mood state, interpersonal and adaptability. These data showed that adolescents who perform more physical activity revealed higher scores for the dimensions

mentioned above. Previous studies (Al Sudani & Budzynska, 2015; Singh, 2017) suggested that high levels of physical activity have an increase in the level of EI. Similarly, in reference to the adaptability, mood state and interpersonal dimensions, Zysberg and Hemmel (2017) showed that the management of emotions and the interpersonal factor is associated with physical activity. In this line, Castillo et al. (2015) pointed out that physical activity can be better associated with certain aspects of emotional intelligence and less with others. In addition, in contrast to our results, a study of a similar nature (Li et al., 2009) concluded that physical education may not be the determinant of EI, but rather, on the contrary, EI predicts the levels of physical activity.

CONCLUSION

According to the results obtained, our study has emphasized the importance of the motivational level on the maintenance of physical activity levels, and the impact of these on EI. In this regard, this study presents some limitations such as the cross-sectional nature of our research, which has not allowed to establish cause-effect relationships. In addition, it is important to highlight the difficulty that can cause in the students' comprehension terms of the instrument that valued EI. Despite these limitations, our results have led us to conclude on the importance of physical activity levels on some of the dimensions that encompass emotional intelligence, such as adaptability, mood state, and interpersonal intelligence, dimensions that have a high presence in the context of physical-sport activity, and promote the proliferation of relatedness and the acquisition of a good mood. Therefore, we consider it necessary to develop more studies and intervention applications that take into account other variables closely related to emotional intelligence, such as basic psychological needs, well-being and the contexts where physical activity takes place.

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