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Emotional intelligence and practice of organized physical-sport activity in children

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Abstract: Taking into account Bar-On's postulations about social-emotional intelligence, the aim of the current work is to find out the differences in the five dimensions of this intelligence between children that practice organized sport and those children that do not practice it at elementary school level, to show that an increasing in the number of hours per day performing this activity causes differences in some of these dimensions. Hence, a sample of 940 children from elementary schools, ranging in age from 6 to 12 years old, attending different schools from the Autonomous Community of Extremadura (Spain), was used. Results showed that children who practiced organized sport had better coping abilities for stress, adaptability, and mood states, and that they are more emotionally intelligent than those who did not. Moreover, children who practiced for fewer hours daily (up to 2 hours) had better stress coping than those who practiced more. To conclude, it is important to promote the sport federative practice in elementary education, in order to ensure that children learn to better regulate and manage their emotions, without increasing it to an excessive number of hours per day, which may generate greater stress that might be difficult to control.

Keywords: emotional intelligence, organized sport, children, elementary education

1. Introduction

This research emerged from a curiosity to find out the practical processes that influence the emotional intelligence developed by children during elementary education. This stage is crucial because students are full of emotional energy and feel the necessity of communicating their feelings and emotions, but lack the skill to control and use adequate resources to communicate in situations concerning their affective needs. Children are still developing their nervous systems, as well as their physiques and personalities, so this potential should be taken advantage of to maximise their capacities and competences (Agnoli et al., 2012; Hansenne & Legrand, 2012; Torrente, Rivers, & Brackett, 2016).

In this regard, emotional intelligence makes us aware of our emotions, understand the feelings of others, tolerate pressure, and adopt an empathetic attitude that aids general personal development (Bar-On, 1997; Bar-On & Parker, 2000). Bar-On (2000, 2006) postulates the concept of social-emotional intelligence as competencies, skills and facilitators that give us, at emotional and social level, an understanding of our expressions, through the understanding of them in our peers and through the daily interactions. These competencies and skills were grouped into five dimensions in order to study the social-emotional dimensions of students: intrapersonal (skills for understanding our emotions

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and communicating them to others), interpersonal (skills for understanding and appreciate others' emotions), stress management (skills for managing and controlling our emotions), adaptability (flexibility and efficacy in solving conflicts) and general mood (skills for keeping a positive attitude in life) (Ferrándiz, Hernández, Bermejo, Ferrando, & Sáinz, 2012).

Thus, the promotion of emotional education in children should not only be a fundamental aim of formal education, but in all contexts in which children develop, because their feelings of happiness, pride, respect, involvement, etc., are strengthened, as well as self-esteem and confidence, increasing their physical and mental health (Lyubomirsky, 2008). Therefore, it is important to take into account other parallel activities such as extracurricular activities, playing with friends, playing sport, and others types of activity that promote physical and mental mobility, because satisfactory participation in such activities aids the general welfare of children (Bhullar, Schutte, & Malouff, 2013).

Of these activities that run parallel to the educational domain, and which may promote emotional intelligence at early childhood, this work focuses on the practice of organized physical-sport activity. Firstly, this is because it has benefits from an integral perspective (Amado, Mendo, León, Mirabel, & Iglesias, 2018). At a physical level, several studies have shown that it is essential in order to maintain a style of life that ensures population health and reduces the risk of a great number of illnesses (Katzmarzyk et al., 2015; Lemanne, Cassileth, & Gubili, 2013; Lin, Rau, & Lin, 2015; Ten Hoor et al., 2016). At a cognitive level, it is closely related to academic performance in children and adolescents (Gligoroska & Manchevska, 2012; Singh, Uijtdewilligen, Twisk, Mechelen, & Chinapa 2012). At a psychosocial level, physical activity is associated with emotional development (Hogan, Catalino, Mata, & Fredrickson, 2015; Stenseng, Forest, & Curran, 2015; Wichers et al., 2012).

Secondly, the practice of organized physical-sport activity represents a method for personal improvement and increasing relatedness to others so both intrapersonal and interpersonal elements have a direct application (Mendo, Polo, Amado, Iglesias, & León, 2017). The knowledge of oneself, the self-regulation of emotions, self-motivation, social skills, and empathy are tools that every athlete manages to a greater or lesser extent, at both a conscious and subconscious level, and these aspects are all associated to a greater or lesser extent with emotional intelligence (Ros, Moya-Faz, & Garcés de los Fayos, 2013; Sevdalis & Raab, 2014).

Furthermore, when talking about sport at a competitive level, where training and competitive achievement are rewarded, the elements previously indicated are intensified. The exigencies and demands on competence are greater, and some aspects, such as professionalism, excellence, pressure, and personal aspirations, start to have an influence. Therefore, it is necessary to learn how to positively manage emotions to reduce potential negative influences on decision making and performance (Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014; Ros et al., 2013).

In accordance with this, as was indicated by Arruza, González, Palacios, Arribas, and Telletxea (2013), several researchers have studied emotional intelligence associated with sport through concepts such as eating disorder (Costarelli & Stamou, 2009), precompetitive anxiety (Lane, Thelwell, Lowther, & Devonport, 2009; Lu, Ya-Wen, Shuk-Fong, & Williams, 2010), motivational climate, motivational orientation, and psychological welfare (Nuñez, León, González, & Martín-Albo, 2011). Other studies have attempted to show the importance that control over emotions has for the practice of organized physical-sport activity (Eaton, 2015; Laborde, Dosseville, & Allen, 2015; Laborde, Dosseville, Guillén, & Chávez, 2014; Laborde et al., 2014; Lane et al., 2010), revealing in their results that emotional intelligence and the practice of sport are closely related.

Thus, the aim of this study was to find out the differences in the five dimensions of social-emotional intelligence between children that practice organized physical-sport activity and those that do not during their elementary education, because it is important to observe whether any of these dimensions increase when children play sport or compete out of the curricular time. Furthermore,

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the work aims to test whether the number of hours of daily sporting practice, by those children that play competitive sport, cause differences in any of these dimensions, with the purpose of studying the reasons and incidence later.

2. Materials and Methods

The current research was done with a quantitative methodology and a cross-sectional design.

2.1. Participants

A total of 940 students in elementary education, both males (N = 508) and females (N = 432), ranging in age from 6 to 12 years old (M = 9.97; SD = 1.64), participated in the study. Individuals belonged to eight public schools of Extremadura (Spain) which promoted the practice of organized team sports of moderate intensity (e.g., basketball, football, handball, volleyball), from the first and second levels (6-8 years, N = 216), third and fourth levels (8-10 years, N = 304), and fifth and sixth levels (10-12 years, N = 420) of elementary education. The selection of the sample was conducted through multistage sampling by conglomerate and random selection in the schools with different groups in the previously indicated levels within elementary education. There were no drop-outs.

Regarding the sample selection, it is important to note that the Spanish educative system is structured in different stages and levels of learning. The stage of elementary education comprises six academic courses that include children ranging in age from six to twelve years old. The main aims of this stage are to achieve autonomy to perform and the obtaining of learning: talk, read, write and mental calculation (Ley Orgánica Española, 2/2006). On the other hand, at cognitive development level in the stage of 6-12 years old there is the beginning of a new intellectual phase and this fact supposes a crucial step in the cognitive development, where the change character, unstable and subjective of the thought is improved, changing into a thought with greater stability and coherence (Piaget, 1950). Therefore, from the point of educative and cognitive development view, the stage from six to twelve years old is very homogeneous.

2.2. Instruments

Emotional intelligence. "Emotional Quotient Inventory: Young Version (EQ-i: YV)" by Bar-On y Parker (2000), validated in Spanish by Ferrándiz, Hernández, Bermejo, Ferrando, & Sáinz (2012) was used to measure emotional intelligence in children in elementary education. This instrument has 60 items that compose the global factor entitled "emotional intelligence", divided into five dimensions: intrapersonal (6 items: emotional self-awareness, assertiveness, personal respect, self-performance, independence), interpersonal (12 items: interpersonal relationships, social responsibility, empathy), coping with stress (12 items: tolerance to stress, control of the impetus), adaptability (10 items: problems resolving, evaluation of reality, flexibility), and mood state (14 items: happiness, optimism). These dimensions are formed by a defined number of 60 items, as well as six items that composed a scale of positive impressions, created by the author with the aim of assessing the degree that individuals answered randomly or distorted their responses, regarding the effect of social desirability. Responses were rated on a 4-point Likert scale, including 1 (never), 2 (sometimes), 3 (hardly ever) and 4 (always). The instrument showed adequate internal consistency for the total items that composed the global factor of emotional intelligence, with a Cronbach Alpha of .84, as was previously indicated other authors (Bar-On & Parker, 2000; Parker et al., 2004). Cronbach Alpha indexes (α = .84) and compound reliability (FC = .80) showed the adequate final global reliability of the EQ-i: YV, with an extracted median variance (VME) of .50. Moreover, the dimensions of factors of the questionnaire had an acceptable reliability and VME ≥ .50 [Intrapersonal (α = .67, FC = .82, VME = .50); Interpersonal (α = .70, FC = .90, VME = .56); Coping with stress (α = .69, FC = .87, VME = .56); Adaptability (α = .73, FC = .88, VME = .54); Mood state (α = .72, FC = .91, VME = .57].

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Lastly, it is important to note that the following items: 6, 15, 21, 26, 28, 33, 37, 46, 49, 53, 54, and 58 were planned in a negative form, so their scores were inversely codified with the aim of aiding data analysis.

Practice of organized physical-sport activity. The practice of organized physical-sport activity was assessed in terms of affiliated practice, due to the commitment and assiduousness it requires (Isoma, Rial, & Vaquero-Cristóbal, 2014). Federative sport is it a form of competitive sport that is institutionalised, recognised, performed within the norms and rules of a federation, and is undertaken in accoredance with official training and competition (Burriel, Camps, Carretero, Landaberea, & Montes, 2006). To measure this variable, a question was created: Do you train or compete? This was answered on a dichotomy scale (Yes/No). This was followed by a question about the quantity of daily practice hours: How many hours do you practice daily? This was divided into two levels: up to 2 hours daily, or 3 or more hours daily. The division into these two levels was mainly due to the age of the children, with the aim of simplifying the range of responses to ensure the understanding of participants. Therefore, a daily frequency of practice of 2 hours per day would be considered typical, when referring to physical activity in sporting federative practice, where there are a minimum of demands, and more than 3 hours daily would be considered to be very specialised practice.

2.3. Procedure

Where ethical rules are concerned, the study received the approval of the Ethics Committee of our university. All participants were treated in agreement with the ethical guidelines of the American Psychological Association with respect to consent, confidentiality, and anonymity of answers. Before carrying out the research study, all potential participants were informed about the process that they were going to follow, placing emphasis on the fact that participation was voluntary and that the data would be dealt with in a confidential manner. Moreover, informed written consent was obtained from parents and the head teachers of the schools on behalf of the child participants involved in the study.

A protocol was developed with the aim of ensuring similarity in data collection. Firstly, different schools were contacted, explaining the reason for their selection, and an appointment was made with the head of the school, with the purpose of clarifying any doubts about aims, time, and levels that may be involved in the research. After acceptation of the proposal, the head of the school established an appointment with the supervisors and a date for data collection was set. Furthermore, an informed consent form was sent to all participants to be filled in by their parents or legal guardians, authorising their participation in this research, due to the fact that the participants were children aged from 6 to 12 years old.

Before the collective administration of the questionnaire in the dates set the main researcher briefly explained the procedure, as well as the instructions for completing the questionnaires, informing all participants in the study that the data were anonymous and confidential. The duration of the data collection was 30-40 minutes per class, where the main researcher was always in the class to clarify any queries that might arise during the process.

After data collection had been performed for every classroom, a brief informal interview with supervisors was conducted, to indicate aspects or strange variables to take into account for some students, as well as an interview with the head of school when the process was finished, with the aim of thanking them and explaining the process of making the data available should they desire.

2.4. Data Analysis

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Data analysis was quantitative. The IBM statistical programme SPSS 21.0 was used for data analysis. Initially, descriptive analysis and contrast proofs were conducted, as well as proofs of the size effect (Cohen's d). To begin with, we used the K-S test for independent samples to verify the normality of the groups, the Rachas test for randomness, and Levene's test for the homoscedasticity or equality between variances (findings: $p > .05$ for all measurements). The nature of the data was verified as being parametric, so parametric tests were chosen to be applied during the data analysis. Following this, an analysis of the descriptive statistics of the variables was conducted, showing the mean and standard deviation of all of them, and a t-test of an independent sample was performed, with the aim of examining the differences between emotional intelligence levels in individuals who did or did not practice federative sport. To find out whether they train or compete out of the curricular time, a dichotomy scale question (Yes/No), was asked. Lastly, with the aim of finding out, within the group of children that participate in physical activity, the differences between the levels of emotional intelligence regarding the hours of sporting practice (divided into two groups: up to 2 hours/ 3 or more hours), a t-test for an independent sample was developed.

3. Results

With the aim to know whether there are differences in the scores obtained in the EQ-i: YV regarding age, a comparison of means ANOVA was developed [Intrapersonal ($F(5,938) = .765$, $p = .465$); Interpersonal $F(5,938) = 1.622$, $p = .198$); Coping with stress $F(5,938) = .587$, $p = .556$; Adaptability $F(5,938) = -1.389$, $p = .165$); Mood State $F(5,938) = .187$, $p = .830$)]. Furthermore, with the purpose to test if there is differences respecting gender, a comparison of means t-test was conducted [Intrapersonal $t(938) = 1.271$, $p = .204$); Interpersonal $t(938) = 1.729$, $p = .095$); Coping with stress $t(938) = -.904$, $p = .366$); Adaptability $t(938) = 1.622$, $p = .198$); Mood State $t(938) = 1.652$, $p = .103$)]. ANOVA and T-test did not show any differences $p \leq .05$ in none of the five factors of the EQ-i: YV, showing the equivalence respecting participants´ age and gender.

Following, Table 1 shows the results of the descriptive statistics (mean and standard deviation) for all factors of emotional intelligence regarding the practice or not of organized physical-sport activity (whether they train or compete outside of curricular time (Yes/No)). Moreover, the t-test was developed to examine whether there were significant differences in the different factors of emotional intelligence regarding the practice or not of physical activity/sport outside of curricular time. Here it is important to note the existence of statistically significant differences in three of the five factors that comprise emotional intelligence, as well as the total score, for which children that practiced had higher scores in all cases. Significant differences were found in coping with stress ($p < .05$), adaptability ($p < .01$), mood state ($p < .01$), and total score of the EQ-i: YV ($p < .01$).

Table 1. T-test of the differences between emotional intelligence factors regarding sport practice.

Emotional intelligence	Train/compete	N	*M*	*SD*	*t*	*p*	*d*
F1 Intrapersonal	Sí	582	15.11	3.50	.319	.750	-0.02
	No	356	15.04	3.37			
F2 Interpersonal	Sí	583	39.25	5.09	1.294	.196	-0.09
	No	355	38.81	5.07			
F3 Coping with stress	Sí	583	32.16	6.04	2.086	**.037**	-0.14
	No	355	31.30	6.38			
F4 Adaptability	Sí	582	30.12	4.87	3.274	**.001**	-0.22
	No	354	29.04	4.97			
F5 Mood State	Sí	583	48.46	5.50	2.829	**.005**	-0.19
	No	356	47.37	6.06			

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Total score	Sí	581	165.09	16.53	3.037	**.002**	-0.21
	No	352	161.71	16.31			

To provide comprehensive information, size effect proofs were calculated (Cohen, 1977). These analyses can be used to find out whether the results are useful or relevant, as sometimes a result may not be statistically significant, but can have practical significance (Kirk, 1996). In accordance with this, a small size effect (≤ .21) has been found in the total score and the factors of coping with stress, adaptability, and mood state.

Secondly, for differences in the factors of emotional intelligence relating to the numbers of hours of daily practice, a t-test was developed and conducted. Table 2 shows the results of this analysis, where the existence of significant differences was shown ($p < .05$), as well as a small size effect ($d = 0.27$), for the coping with stress factor of emotional intelligence, where those individuals that practiced for a lower number of hours per day (up to 2 hours) had a greater mean score.

Table 2. T-test of the differences between emotional intelligence factors regarding the number of hours of daily practice.

Emotional intelligence	¿How many hours a day do you practice sport?	N	*M*	*SD*	*t*	*p*	*d*
F1 Intrapersonal	Up to 2 hours	525	15.08	3.50	-.882	.378	0.11
	3 or more hours	60	15.50	3.56			
F2 Interpersonal	Up to 2 hours	526	39.21	5.08	-.439	.661	0.06
	3 or more hours	60	39.52	5.06			
F3 Coping with stress	Up to 2 hours	526	32.31	6.01	1.983	**.048**	-0.27
	3 or more hours	60	30.68	6.25			
F4 Adaptability	Up to 2 hours	525	30.10	4.76	-.024	.981	0.00
	3 or more hours	60	30.12	5.66			
F5 Mood State	Up to 2 hours	526	48.55	5.44	1.232	.219	-0.16
	3 or more hours	60	47.63	5.82			
Total score	Up to 2 hours	524	165.24	16.42	.797	.426	-0.11
	3 or more hours	60	163.45	17.35			

4. Discussion

The aim of this study was to find out the differences in the five dimensions of social-emotional intelligence between children that practice organized physical-sport activity and those that do not at the elementary education level.

The results showed the existence of statistically significant differences in the dimensions of coping with stress, adaptability, and mood state, as well as the total score for emotional intelligence. Values were higher in all cases for children who practiced organized physical-sport activity than for those children that did not. This outcome highlights that children in elementary education that practice organized physical-sport activity outside of curricular time were better at coping with stress, adaptability, mood state, and definitely had higher emotional intelligence than those children that did not. Previous studies have also shown that those individuals that practice organized physical-sport activity revealed greater levels of emotional intelligence (Coe, Pivarnik, Womack, Reeves, & Malina, 2006; Laborde et al., 2015; Laborde, Lautenbach et al., 2014; Tomporowski, Lambourne, & Okumura, 2011).

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Specifically regarding adaptability and coping with stress, physical activity and sport require children to continuously adapt to different situations and practice contexts, which aids flexibility in conflict resolution and teaches them to manage and control the emotions (Coe, Pivarnik, Womack, Reeves, & Malina, 2006; Laborde et al., 2015; Laborde, Lautenbach et al., 2014; Tomporowski, Lambourne, & Okumura, 2011). Children that exercise these dimensions through physical activity and sport are more emotionally intelligence, which has been associated with better personal and social adjustment (Mayer, Roberts, & Barsade, 2008), and important variables such as self-esteem and welfare (Brackett & Mayer, 2003). Hence, the management of emotions is fundamental for evaluative development, as people with greater emotional intelligence not only have a greater capacity to perceive, understand and regulate emotions. They are also able to generalise personal welfare, and so develop their social, familiar and private relationships (Salguero, Fernández-Berrocal, Ruiz-Aranda, Castillo, & Palomera, 2011).

Regarding mood state, understood as a skill for enjoying life, integrating at the same time happiness and optimism, Bar-On considers it to be the most important dimension of emotional intelligence because, apart from being an essential element of interaction with others, it is a motivational tool in problem resolution and tolerance of stress (Bar-On, 1997; Bar-On & Parker, 2000). Regarding this issue, the practice of physical activity and sport was shown to aid the mood state of children, because they experience more motivation, interest, satisfaction, self-esteem and improvement in different situations, both in sport and in life in general (Babic et al., 2014; Solanki & Lane, 2010; Sebire, Jago, Fox, Edwards, & Thompson, 2013).

On the other hand, and complementary to the main aim of the work, another purpose of the research was to examine whether there were differences in some dimensions of emotional intelligence in those children that played federative sport, with respect to the amount of daily sporting practice. The results showed that children who practiced for a maximum of two hours per day had a greater ability to cope with stress than those children who practiced for three or more hours a day. These results suggest that as the number of daily hours of federative practice increases, the ability to cope with stress decreases.

These outcomes might be caused by the fact that being exposed to federative sporting practice with a higher frequency, characterised by the exigencies of professionalism, excellence, pressure, and continuous improvement causes greater stress or anxiety (Elliott, Polman, & Taylor, 2014; Nicholls, Polman, & Levy, 2012; Scott, Hamilton, Schutte, & Brown, 2016), which can lead to a greater difficulty in controlling and managing emotions in a positive way. Moreover, the increase in frequency of daily practice may cause children to see this activity as being in conflict with other social roles at this stage, such as at school, or with friends or family (Boiché & Sarrazin, 2007), and so they may find it harder to control the pressure, and as a result feel more annoyed or upset than those individuals who practiced for fewer hours and had more time to develop in other contexts.

After performing the study, certain limitations that have arisen must be taken into account. The main limitation of the study was the negation of several educative schools to contact with them to participate in the study, and therefore, we can cover a great number of schools and participants. Another problem emerged in the data collection, being necessary a high effort by researches and teachers to guide, orientate and involve participants. The issue is that most of the schools belonged to rural places and included a great number of foreign children, who have emigrated with their family from other countries. This was associated with a low academic level respecting the lecture and comprehension of the questionnaires written in Spanish, promoting in the study some experimental deaths.

With the aim to mitigate these limitations, in a future we base on the necessity that responsible teachers of each classroom have a commitment to work with those foreign children that necessity a translation or interpretation of the questionnaires. Hence, data collection would be longer in time but

we could guarantee that the study aimed to include all children that constitute the current reality of elementary education. Furthermore, another prospective of future would be interesting to add another variable in this work and extent the sample, studying the relationship between physical activity and sport practice and cognitive intelligence in the different levels of elementary education. Thus, we could assess that the physical activity and sport practice positively promote academic performance in children, and later we would extent these results to all sample with the aim they realize that sport practice is not incompatible with academic context, but totally contrary, it is compatible and beneficial.

5. Conclusions

The main conclusion of the current research is that emotional intelligence is beneficial with the practice of federative physical activity and sport out of the curricular time in elementary education. Specifically, children who practiced sport showed greater coping stress, adaptability and mood state than those individuals that did not practice. Moreover, another conclusion to emphasize is that a high number of diary hours of physical activity and sport (three or more hours a day), when is referring to trainings and competitions, would incidence on a lower coping stress comparing to those participants that practiced less hours.

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