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Analysis of multiple intelligences and creativity in university students

Análisis de las inteligencias múltiples y creatividad en universitarios

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Abstract: A challenge of current education is to train competent students to function in a diverse and dynamic society. IQ is not enough to guarantee academic or professional success (Extremera & Fernández-Berrocal, 2006) and must be considered cognitive, social and emotional aspects. The aim of the study was to analyze the degree attained in university students of social work in multiple intelligences, emotional intelligence, creativity and academic performance, as well as their relationship and differences according to sex and the course in a sample of 100 students. Significant differences were found according to the course and relationships between some emotional components and multiple intelligences. Thus, the results found reveal the relevance and relationship between the variables evaluated for the overall performance of university students and therefore, the relevance and need to design interventions aimed at optimizing them in an integrated manner.

Key words: multiple intelligences, emotional intelligence, creativity, academic achievement, university students

Resumen: Un reto de la educación actual es formar a alumnos competentes para desenvolverse en una sociedad diversa y dinámica. El cociente intelectual no es suficiente para garantizar el éxito académico ni profesional (Extremera & Fernández-Berrocal, 2006) y deben considerarse aspectos cognitivos, sociales y emocionales. El objetivo del estudio fue analizar el grado alcanzado en estudiantes universitarios de trabajo social en las inteligencias múltiples, inteligencia emocional, creatividad y rendimiento académico, así como su relación y las diferencias en función del sexo y el curso en una muestra de 100 estudiantes. Se encontraron diferencias significativas en función del curso y relaciones entre algunos componentes emocionales e inteligencias múltiples. Así, los resultados hallados ponen de manifiesto la relevancia y relación entre las variables evaluadas para el rendimiento global de los estudiantes universitarios y, por tanto, la pertinencia y necesidad de diseñar intervenciones dirigidas a la optimización de las mismas de manera integrada.

Palabras clave: inteligencias múltiples, inteligencia emocional, creatividad, rendimiento académico, estudiantes universitarios

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Introduction

Nowadays, in the field of education psychology, one of the main challenges is that of training competent people to flourish in the changing and uncertain society we live in. This is why the education professionals question how to teach their pupils to 'learn to learn' to reach this goal in a independent and efficient way (Martín & Moreno, 2008). For decades now, an almost unanimous agreement exists which recognises that academic and work success are not the only result of a high intelligence quotient (Extremera & Fernández-Berrocal, 2006) which not only is an ability that cannot be modified but which can be developed through training (Gardner, 2001). For this reason academic performance must be tackled in a global and holistic way, including all those variables which have a role in its optimal development. In this sense, social and emotional components should appear together with the purely cognitive aspects as they are not independent from each other. Prestigious authors in the field, like Gardner (1999), de Maschwitz (2001) or Pérez (2001), understand intelligence in this way and they define it as the competence to solve day-to-day problems in a creative and flexible way, arouse new products and modify the acquired knowledge. According to Montes and Lerner (2011), academic performance comprises the interrelation between the learning process and the tangible results in predetermined values such as creativity and multiple intelligences including emotional intelligence.

It is within this holistic view of performance that we frame the present investigation, in which the socio-emotional aspects are considered as the precursors of the integral performance of the individual and of their development in today's society. This way we share the idea that, today, we need to educate socially and emotionally intelligent pupils and, consequently, creative ones. Being intelligent implies, as well as being cognitively intelligent, being creative and efficient, both emotionally and socially (Sternberg, Grigorenko, & Bundy, 2001).

Evolution of the concept of intelligence

More and more there is a consensus on the idea that intelligence is a multifaceted construct that encompasses different kinds of intelligence which give the individual skills to manage all aspects of their life, whether they are academic, work, family or social aspects. Along this line, Gardner (1983) introduces the Multiple Intelligence theory, in which intelligence is considered a compendium of various intelligences (linguistic, logical-mathematical, spatial, musical, body-kinaesthetic, interpersonal, intrapersonal and naturalistic). Each of them develops to a higher or lesser degree in each individual based on their experiences and to their teaching-learning process. Even though it is true that each of these intelligences must be encouraged from the classrooms in all educational levels (Amstrong, 2006; Guzmán, & Castro, 2005) and that some initiatives follow this line (Delgado, 2013; Márquez, Guzmán, & Burgos, 2016; Nadal, 2015), they are concentrated on very specific populations and areas and they are not as widespread as it would be desirable in today's educational system, where more traditional methods prevail (González, 2014).

Research on secondary and university education, such as those carried out by Durán-Aponte, Elvira-Valdés and Pujol (2014), Pérez and Cupani (2008) or Pérez, Cupani and Ayllón (2005) have shown that the eight kinds of intelligence contribute to explain a significant percentage of student performance.

Emotional intelligence

The study of this intelligence has been at its peak during the last few decades due to its repercussion on the life of the individual, having been associated to their way of thinking and behaving and therefore their performance (Pérez & Castejón, 2006; Pulido & Herrera, 2017). One of the better known authors in this field is Goleman (1995), who presents the concept of emotional intelligence as a competence linked to academic and professional success which, therefore, will contribute to the adaptation of the individual to the environment (Extremera & Fernández-Berrocal, 2006). Whereas Bisquerra (2011) defines this skill as the ability to become aware and self-regulate emotions in an independent way. Within that concept, he highlights as basic skills: knowledge, self-regulation, self-sufficiency, and social and life skills.

Several studies (Pérez & Castejón, 2006) have shown the relationship that exists between emotional intelligence and academic success in university and other educational levels students (Sospedra-Baeza, Hidalgo-Fuentes, & Martínez-Álvarez, 2018a; b). Conversely, there are other studies which have not reflected so clearly this relationship (Barchard, 2003; Bastian, Burns, & Nettelbeck, 2005).

Emotional education plays a main role in the education arena from the starter levels through our whole life (Bisquerra, 2011). In the last decades, we have seen work focused on the development of the different emotional abilities appear in different countries and at different educational levels (Bisquerra, 2011; Lopes & Salovey, 2004).

The creative process

With Piaget's introduction of Constructivism, the creative process started to be considered as the synthesis of multiple dimensions and, therefore, as an abstract and complex construct (Esquivias, 2004). Today, the idea that creativity is a basic factor in human development is widely spread, in all contexts and throughout the life cycle, as it allows the person to solve all manner of diverse and complex problems they may face (Blázquez, 2009). More specifically, creativity can be defined as an ability to be developed and optimized through training to promote the creation of original and new products (Runco & Jaeger, 2012). One key aspect of creative thinking is that it is characterised by originality, expressivity and the mental flexibility involved, allowing the person to find new and effective solutions when facing difficult situations (Pizarro, Bedell, & Bloom, 2006).

In the more traditional educational context, creativity has been a variable hardly attended or studied in general (Esquivias, 2004). Despite that, well-known authors in the field, as Amabile (1983), have for decades focused on giving it the main role it has in this process, and little by little, research focused on analysis and evaluation has emerged following these pioneer investigations. Even though it is true that in some of the more modern studies the relationship between creativity and academic performance is ambiguous, the present trend (Bermejo, Ruíz, Ferrándiz, Soto, & Sainz, 2014; Palanniappan, 2007) is that a close and direct connexion exists between creativity and performance in a global sense as well as in the different skills and disciplines (Bermejo, et al., 2014; Hu & Adey, 2002). When talking about intervention, there are programmes designed with the objective of improving the creativity of the students of different educational levels, although they are more frequent in the initial levels (Bermejo et al., 2014). Stable training throughout academic life which efficiently promotes the creative processes of originality, expressivity and mental flexibility, helps and optimizes academic performance as well as personal, social and work performance of students (Prieto, López, Bermejo, Renzulli, & Castejón, 2002).

Similarities and differences between the socio-emotional aspects

The intelligences, including, and with a significant weight, the emotional intelligence and creativity, are basic aspects given their implication and influence in all aspects of life. Moreover, research carried out at different levels and contexts and with wide samples of students show the connexions between said variables (Pulido & Herrera, 2017). Therefore, these aspects should be considered as parts of a whole encouraging their presence and common development with the aim to optimize performance and efficient problem solving (Fernando, Prieto, Ferrándiz. & Sánchez, 2005).

In parallel to the study of the relationship between the afore mentioned variables, a field of study which has been emerging in the last few years is the analysis of possible differences as to the development of multiple intelligences, emotional competencies and creativity in individuals of different gender and age. The results of the works carried out until now show a variety of results and, on occasion, contradicting each other. Thus, with regards to multiple intelligences, there have been found differences based on gender, being women who perform better as to musical and interpersonal intelligences and men in their logical-mathematical intelligence (Llor et al., 2012). There are also studies that show differences, based on gender and age, in the cognitive styles of adults (Muglia, 2009). In addition, there have been found differences in

emotional intelligence based on gender, showing university women better results than their male colleagues (López-Barajas & Vallejo, 2015). In regards to creativity, the results have been different and even contradictory, Esquivias (1997) with Primary Education students and Elisondo and Donolo (2011) with University students, did not find significant differences in the creativity level shown by men or women. Conversely, Bermejo and his collaborators (2014) did find differences among university students. Specifically, they found that the creativity level diminished as their studies progressed, which could point out to a decrease in creativity past the highest pick established by some authors at 16 years of age (Smith & Carlsson, 1990). As for Chen (2013), whose research showed that university men stood out more due to their creativity than the women, was unable to find a relationship between the degree of development of this process and the educational level. These results are consistent with previous findings by Elisondo and Donolo (2011). Therefore the present study reveals the ambiguity that exists in regards to the existence or non-existence of differences in intelligence, emotional skills and creativity based on age, educational level and gender.

Within the theoretical framework presented, it has been highlighted the consensus being gradually formed by all educational agents around the premise that an integral education requires, as well as intellectual development, an intervention focused on encouraging the multiple skills of intelligence, being the emotional and creative aspects, essential, in a transversal way and throughout the life cycle to give answers to the demands of the changing world we live in. Therefore, the present study has been carried out to evaluate, relate and compare the degree of self-efficacy perceived by the students of the Degree of Social Work in regards to each of the multiple intelligences, and in particular, in regards to emotional intelligence, creativity and academic performance. With this aim, the specific objectives established were to:

- Study the degree reached by university students in multiple intelligence, emotional intelligence, creativity and academic performance.

- Evaluate the differences in regards to gender, year of study and performance in the evaluated variables.

- Analyse the existing correlations among the aspects being studied in the research.

Method

Participants

The sample is made of 100 students of the degree of Social Work of the Universitat de València with an age range between 17 and 50 years of age ($M = 20.45$; $DT = 4.45$). From the total of participants, 91 were women (91%) and 9 were males (9%). The students, selected in a sample for convenience, were 72% from the first year of the degree ($Mage = 19.68$; $DT = 4.30$) and 28% from the third year ($Mage = 22.43$; $DT = 4.60$).

Instruments

- *Self-evaluation questionnaire created ad hoc* to collect socio-demographic data (age and gender) and average Baccalaureate mark (average used in this study as indicator of academic performance).

- *Creative Intelligence Test (CREA)*, a cognitive measurement of creativity (Corbalán et al., 2003). This test aims to evaluate the creativity of the subjects through their ability to ask questions about a drawing. Each question means the activation of a new cognitive framework, giving an indirect measurement of the creativity of the subjects (Donolo & Elisondo, 2007). The test is comprised by three different sets each with their corresponding drawings A and B, intended for adolescents and adults; and C used for children. In the three instances, the time applied to the test during which the subjects must ask in writing as many questions about the drawing being used as they are able to, is four minutes. The direct points are transformed into a percentile scale which in turn is interpreted as low (percentile 1 to 25), medium (percentile 26 to 74) or high creativity (percentile 75 to 99). In this study set B was used.

- *Trait Meta-Mood Scale, adapted*. The test TMMS-24 (Fernández-Berrocal, Extremera, &

Ramos, 2004) is the reduced version adapted to Spanish of the TMMS-48 test (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), a scale of self-perceived emotional intelligence through the dimensions of: i) attention to feelings, which represents the degree in which the individual believes they are paying attention to their own emotional states; ii) emotional clarity defined as the perceived ability to correctly identify and understand our own emotions and iii) repairing of emotions or subjective ability to eliminate negative emotions and prolonging positive ones. The Spanish version has the three dimensions of the original scale but the items have been reduced from forty-eight to twenty-four, eight per dimension being measured, which are answered through a Likert Scale of five anchor points (1=completely disagree, 5 = completely agree).

- *Multiple Intelligences Self-efficacy Inventory, Revised (IAMI-R)* by Pérez and Cupani (2008) it gives a self-efficacy measurement in the eight kinds of intelligence posed by Gardner (1999): linguistic (IL), logical-mathematical (ILM), spacial (IE), body-kinaesthetic (ICC), musical (IM), interpersonal (Iinter), intrapersonal (Iintra) and naturalistic (IN). The test has forty-eight items which evaluate the confidence of the subject to carry out correctly different activities related to the eight factors of intelligence assessed (six items per factor) through a Likert Scale of ten anchor points (1= I can't carry out this activity, 10 = I am very sure of being able to carry out this activity correctly)

Procedure

The tests were administered according to their own instructions within the classroom during the students school hours by one of the authors of the study. All students took part voluntarily after having been informed of the reach and aim of the study.

Data analysis

The data was introduced, coded and refined with the SPSS 24.0 statistical pack for Windows. The normality and homoscedastic principles were checked and descriptive and inference statistical analysis were carried out applying Student's *t* -test and Mann-Whitney's U-test to two independent samples based on gender, school year and academic performance based on compliance or non-compliance with test assumptions. For the variable of academic performance the average mark of Baccalaureate of the participants was used, dividing the individuals in two groups (high performance and low performance) based on whether they were above or under the 50 percentile of the variable.

Results

The descriptive statistics of each variable in the whole of the samples, by gender and school year are shown on table 1. In the three dimensions of the self-perceived emotional intelligence (TMMS-24), the subjects of the sample obtain adequate marks, whereas the marks of creativity achieved are low as they are below the 25 percentile. The subjects are more confident in carrying out correctly activities related to interpersonal, intrapersonal and linguistic intelligences. As for gender, women show a higher academic performance than men (*Men* = 6.91; *SD* = 0.80; *Women* = 7.33; *SD* = 0.89), while the marks in the creativity test are also somewhat higher in the women's case. Conversely, men obtain higher marks in the three components of emotional intelligence. As for the school year, the year one students show higher values in creativity than the year three students whereas the year three students show higher marks in the three components of perceived emotional intelligence. The average marks obtained by the year one and year three students in the different multiple intelligences are similar in almost all of them, having the biggest differences in the logical-mathematical, intrapersonal and naturalistic intelligences.

To analyse the differences between the groups the compliance with the principles of normality and homoscedastic were checked. Homoscedastic through the Levene test for the equality of variances and normality with the Kolmogorov-Smirnov test. In the case of compliance with the principles, the Student t-test was applied for two independent samples, while in the case of non-compliance with the principles the Mann-Whitney U-test non parametric alternative was applied.

Table 1
Descriptive statistics by gender and school year

	Gender	*M*	*SD*	School year	*M*	*SD*
Age	Male	19.00	1.41	First	19.68	4.30
	Female	20.59	4.71	Third	22.43	4.60
	Total	20.45	4.54			
Academic performance	Male	6.91	0.80	First	7.36	0.89
	Female	7.33	0.89	Third	7.05	0.86
	Total	7.27	0.89			
CREA	Male	20.22	15.21	First	23.56	17.24
	Female	23.42	17.30	Third	22.04	16.98
	Total	23.13	17.10			
TMMS attention	Male	29.56	5.88	First	27.40	6.70
	Female	27.41	6.88	Third	28.11	7.17
	Total	27.60	6.80			
TMMS clarity	Male	27.11	6.49	First	24.35	6.58
	Female	24.76	6.38	Third	26.57	5.65
	Total	27.97	6.39			
TMMS repair	Male	26.00	9.06	First	24.68	6.37
	Female	24.98	6.04	Third	26.07	6.18
	Total	25.07	6.31			
Linguistic I.	Male	7.57	1.73	First	6.87	1.91
	Female	6.82	1.94	Third	6.93	2.01
	Total	6.88	1.93			
Logical-mathematical I.	Male	5.30	2.96	First	4.48	2.29
	Female	4.09	2.21	Third	3.48	2.19
	Total	4.20	2.30			
Spatial I.	Male	4.65	2.61	First	4.07	2.43
	Female	3.91	2.39	Third	3.76	2.38
	Total	3.98	2.41			
Musical I.	Male	3.19	2.49	First	3.88	2.69
	Female	3.98	2.71	Third	3.99	2.73
	Total	3.91	2.69			
Interpersonal I.	Male	8.30	1.26	First	7.78	1.20
	Female	7.73	1.14	Third	7.79	1.06
	Total	7.78	1.16			
Bodily-kinesthetic I.	Male	4.78	3.06	First	5.43	2.06
	Female	5.49	1.99	Third	5.41	2.22
	Total	5.42	2.10			
Intrapersonal I.	Male	7.43	1.34	First	6.74	1.59
	Female	6.92	1.57	Third	7.57	1.30
	Total	6.97	1.55			
Naturalistic I.	Male	5.54	2.88	First	4.39	1.95
	Female	4.09	1.74	Third	3.78	1.71
	Total	4.22	1.89			

Table 2
Student's t-test by gender

	t	*gl*	*p*	*IC 95%*	
TMMS clarity	1.05	98	0.294	-2.07	6.78
Logical-mathematical I.	1.51	98	0.135	-0.38	2.79
Intrapersonal I.	0.93	98	0.356	-0.57	1.58
Naturalistic I.	1.48	8.59	0.174	-0.78	3.68

There are no statistically significant differences (see table 2 and 3) between men and women in any of the studied variables.

There have been obtained statistically significant differences between year one and year three students in intrapersonal intelligence $t(98)=-2.46$, $p=0.016$, getting a difference in favour of the students of year three between 1.5 and 0.16 points, with a confidence level of 95% (see table 4) and in logical-mathematical intelligence (see Table 5) $Z=-2.01$, $p=0.045$ (see table 5) being the highest perceived self-efficacy in this kind of intelligence in the year one students.

Statistically significant differences have been obtained based on the academic performance of the students (see table 6 and table 7) in logical-mathematical intelligence $t(64)=-2.00$, $p=0.050$ with a confidence level of 95%, being higher the perceived self-efficacy in the case of the students with a high academic performance.

Academic performance relates positively and in a statistically significant way (see table 8) with body-kinaesthetic intelligence.

The components of attention to feelings and emotional clarity of the TMMS-24 scale are related to each other. The components attention to feelings and emotional clarity relate to intrapersonal and interpersonal intelligence, while the repairing of emotions shows a relation to intrapersonal intelligence. The component emotional clarity relates to the multiple intelligences, with the exception of spatial and musical intelligences. The component of repairing of emotions shows a correlation with all intelligences except the logical-mathematical intelligence. Creativity relates to spatial and interpersonal intelligences.

Table 3
Mann-Whitney U-Test by gender

	Academic performance	TMMS attention	TMMS Repair	Linguistic I.	Spatial I.	Musical I.	Interpersonal I.	Bodily-kinesthetic I.	CREA
Mann-Whitney U	192.5	336.50	399.00	323.50	334.50	313.00	297.50	370.50	362.00
Z	-1.2	-0.88	-0.13	-1.04	-0.90	-1.16	-1.35	-0.47	-0.58
Asymp. Sig. (2-tailed)	0.231	0.379	0.899	0.300	0.365	0.245	0.177	0.638	0.564

Table 4
Student's t-test by school year

	t	*gl*	*p*	*IC 95%*	
Academic performance	1.28	64	0.205	-0.17	0.79
TMMS attention	-0.46	98	0.644	-3.72	2.31
TMMS clarity	-1.57	98	0.119	-5.03	0.58
Intrapersonal I.	-2.46	98	0.016	-1.50	-0.16

Table 5
Mann-Whitney U-Test by school year

	TMMS Repair	Linguistic I.	Logical-mathematical I.	Spatial I.	Musical I.	Interpersonal I.	Bodily-kinesthetic I.	Naturalistic I.	CREA
Mann-Whitney U	874.00	981.50	746.50	951.50	991.00	994.00	1000.50	845.50	960.50
Z	-1.03	-0.20	-2.01	-0.43	-0.13	-0.11	-0.06	-1.25	-0.37
Asymp. Sig. (2-tailed)	0.303	0.839	0.045	0.664	0.896	0.914	0.954	0.212	0.713

Table 6
Student's t-test by academic performance (high/low)

	t	*gl*	*p*	*IC 95%*	
TMMS attention	-0.28	64	0.778	-3.65	2.75
TMMS clarity	-0.67	55.68	0.508	-4.00	2.00
Logical-mathematical I.	-2.00	64	0.050	-2.13	-0.00
Intrapersonal I.	0.53	64	0.595	-0.56	0.98
Naturalistic I.	-1.08	64	0.285	-1.54	0.46

Table 7
Mann-Whitney U-Test by academic performance (high/low)

	TMMS repair	Linguistic I.	Spatial I.	Musical I.	Interpersonal I.	Bodily-kinesthetic I.	CREA
Mann-Whitney U	1064.00	1042.50	1019.50	930.50	972.50	1019.00	973.00
Z	-0.30	-0.46	-0.63	-1.28	-0.98	-0.63	-0.98
Asymp. Sig. (2-tailed)	0.761	0.644	0.528	0.199	0.329	0.526	0.327

Table 8

Bivariate correlations between academic performance, creativity, emotional intelligence and multiple intelligences

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Academic performance	1												
2. CREA	.15	1											
3. TMMS attention	.01	-.17	1										
4. TMMS clarity	.02	-.02	.28**	1									
5. TMMS repair	-.01	.14	-.03	.18	1								
6. Linguistic I.	.22	.13	.20	.24*	.02	1							
7. Logical-mathematical I.	.22	.07	.21*	.09	.01	.29*	1						
8. Spatial I.	.22	.17	.07	.13	.11	.18	.30**	1					
9. Musical I.	.22	.11	.14	.22*	-.06	.14	.23*	.17	1				
10. Interpersonal I.	.07	.04	.22*	.46**	.01	.40**	.20*	.04	.12	1			
11. Bodily-kinesthetic I.	.26*	-.06	.07	.09	.22*	.07	.29**	.31**	.17	.13	1		
12. Intrapersonal I.	-.09	-.01	.25*	.59**	.24*	.32**	-.01	.04	-.01	.34**	.11	1	
13. Naturalistic I.	.22	.09	.08	.061	.07	.25*	.24*	.32**	.24*	.12	.45**	.22*	1

**p<.05, **p<.01*

Discussion and conclusions

The main aim of the previously described study was to evaluate, relate and compare the degree of perceived self-efficacy of the students of the degree of Social Works as to each of the multiple intelligences, in particular, in regards to emotional intelligence, creativity and academic performance.

Within our overall objective, we proposed to investigate the questions considered basic for the advancement in the field of the intelligences and creativity in relation to the performance of university students and for this reason we have investigated three aspects of which interesting and ground-breaking results have been obtained, this means a contribution that can be of interest to other studies and the planning of the academic curriculum.

At a descriptive level, we have studied what level the Social Work students have in multiple intelligences, emotional intelligence, creativity and academic performance. From this, and consistently with previous investigations (Martínez, Llamas-Salgado, & López-Fernández, 2016), the students of this educational level show medium levels as to their multiple intelligences, including emotional intelligence and a medium to high performance. This is not the case with creativity, as we have found that the sample students scored low, contrary to the findings of recent research, as the one carried out by Chiecher, Elisondo, Paoloni and Donolo (2018) with engineering students who showed a medium level of creativity or the one carried out by Martínez and his collaborators (2016) in which students from the graphics field showed high levels of this variable. This piece of information is not relevant taking into consideration that the levels of these variables seem to relate to the choice of degree made by the students (Pérez & Cupani, 2008).

The next step taken in our research was the study of the differences that existed based on gender, year of studies and performance, which has given us relevant information, consistent in part with what has been stated by previous authors. Therefore, we have not found differences between the genders and levels of performance in any of the variables analysed, as opposed to previous studies like the one carried out by Llor et al. (2012). Despite the fact that the data of this study has to be taken with a degree of caution in regards to the differences between

men and women, given that the percentage of female participants was higher than the males, it is observed, as it has been considered up to now, that the data is at times contradictory with regards to the differences based on gender in the socio-emotional variables and therefore the interest to investigate and clarify this subject, which has been developing in recent years, should be maintained.

With regards to the educational level of the students, we find that those who were in year three of Social Work showed higher levels of intrapersonal intelligence, which would make us think it increases with age and with the skills they acquire during the first years of the university degree, but they scored lower than their colleagues from year one in logical-mathematical intelligence, which could be due, at least in part, to the lack of subjects related to this field studied in the years of the degree of Social Work included in this study. As we stated in the theoretical introduction of this article, the data found by previous authors is ambiguous in this respect, reason why the findings of this study offer some orientation about this situation which are in line with research like that of Muglia (2009), in which differences related to the cognitive style were found or that of Chen (2013) which didn't find, as in the present study, differences based on creativity. The contribution of the multiple intelligences to academic performance had already been corroborated in previous studies (Durán-Aponte et al., 2014; Pérez & Cupani, 2008; Pérez et al., 2005).

The final objective pursued was to analyse the correlations among the aspects assessed in the study and, referening to that, we find different and interesting data which offers ground-breaking contributions. On the one hand, performance relates to body-kinaesthetic intelligence, a specific detail little known until now. In our study we also found that the different components of the emotional intelligence analysed relate to multiple intelligences. In particular, the degree in which the students perceive they pay attention to their emotions relates to their logical-mathematical intelligence and emotional intelligence in both intra and interpersonal aspects. As for the perception of their ability to identify and understand emotions it relates to their linguistic, emotional and also musical intelligence. Finally, the ability for self-regulation and repairing of positive and negative emotions relates to the musical and intrapersonal intelligence. Consistently with the findings of previous researchers in this field, the socio-emotional variables analysed in this study shouldn't be considered in an isolated manner but as basic components interrelated to efficient problem solving (Fernando et al., 2005).

Due to the realization of this study we have become aware of some limitations that need to be addressed in the near future. On the one hand, the size and uniformity of the sample has not completely allowed the clear investigation and analysis of the relationship between the studied aspects, as well as the differences between men and women and students of different levels, it would be interesting to continue working along this line and increase the number of participants and the variety of university degrees they study in order to give an answer to this ambiguous question.

In summary, from what has been discussed, it is concluded that it is relevant to analyse the socio-emotional variables studied in the present research with two aims, on the one hand, clarify which, in what way and when each of them intervene and, on the other hand, to be able to design intervention programmes focused on the optimisation of university students global performance.

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