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Relationship between stressful life events and emotional intelligence in Mexican adolescents: Male vs. female comparative study

Marcela Veytia-López,¹ Esther Calvete,² Nicolás Sánchez-Álvarez,³ Rosalinda Guadarrama-Guadarrama¹

¹ Centro de Investigación en Ciencias Médicas (CICMED) Universidad Autónoma del Estado de México, Toluca, México.

² Departamento de Personalidad, Evaluación y Tratamiento Psicológico. Facultad de Psicología Universidad de Deusto, Bilbao, España.

³ Departamento de Psicología Evolutiva y de la Educación. Facultad de Psicología, Universidad de Málaga, Málaga, España.

Correspondence:

Marcela Veytia-López
Centro de Investigación en Ciencias Médicas, Universidad Autónoma del Estado de México.
Jesús Carranza No. 205,
Col. Universidad,
CP. 50130. Toluca, México.
Phone: [52] 722 219 - 4122
Email: mar_veytia@uaemex.mx

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ABSTRACT

Introduction. Adolescents can present high levels of stress when faced with various biopsychosocial changes, affecting their daily activities and influencing the initiation and development of risk behaviours and/or a mental disorder. Therefore, it is important to identify protective factors against stress, such as emotional intelligence, for adolescents. **Objective.** Determine the effect of stressful life events (SLE) and perceived emotional intelligence (PEI) on the stress level in adolescent high school students and identify differences by sex. **Method.** Cross-sectional study, 1 417 adolescents (57% women and 43% men), with an average age of 15.90 ($SD = .91$), who were evaluated in levels of PEI, SLE, and stress perceived. **Results.** The results show high rates of stressful events experienced. Attention to emotions increases the perception of stress in both sexes, while clarity and emotional repair have a stress-reducing effect on women. **Discussion and conclusions.** The results suggest that the PEI is determinant in the emotional self-control and the adaptive capacity of the adolescent to face stressful situations.

Keywords: Stressful life events, perceived emotional intelligence, adolescents.

RESUMEN

Introducción. Los adolescentes pueden presentar altos niveles de estrés cuando se enfrentan a diversos cambios biopsicosociales, que afectan sus actividades diarias e influyen en el inicio y el desarrollo de conductas de riesgo y/o trastornos mentales. Por lo tanto, es importante identificar en los adolescentes los factores de protección contra el estrés, como el caso de la inteligencia emocional. **Objetivo.** Determinar el efecto de los sucesos vitales estresantes (SVE) y de la inteligencia emocional percibida (IEP) sobre el nivel de estrés en los adolescentes estudiantes de bachillerato e identificar las diferencias por sexo. **Método.** Estudio transversal, con una muestra de 1 417 adolescentes (57% mujeres y 43% hombres), con una edad media de 15.90 ($SD = .91$), a los que se evaluó en niveles de IEP, los SVE y el estrés percibido de dichos SVE experimentados. **Resultados.** Los resultados muestran altos índices de eventos estresantes experimentados. La atención a las emociones incrementa la percepción de estrés en ambos sexos, mientras que la claridad y la reparación emocional tienen un efecto amortiguador del estrés en mujeres. **Discusión y conclusión.** Estos resultados sugieren que la IEP resulta determinante en el autocontrol emocional y la capacidad adaptativa del adolescente para afrontar situaciones estresantes.

Palabras clave: Sucesos vitales estresantes, inteligencia emocional percibida, adolescentes.

INTRODUCTION

Throughout the life cycle of the human being, it is observed that the presence of situations, stimuli, or circumstances that occur unexpectedly and cause changes or readjustments in the life of the person (Ruiz & Valdivieso, 2002). Currently, a vision about adolescence considers it a particularly vulnerable period for the experimentation of difficulties for development, mainly related to three areas: conflicts with parents, emotional instability, and risk behaviours (Jiménez García, Menéndez Álvarez-Dardet, & Hidalgo García, 2008; Oliva, 2003).

Psychosocial stress has been conceptualized as any fact or circumstance that occurs in the life of people with the potential to alter their current mental state or physical well-being regardless of age (Goodyer, 2001). Within this psychosocial stress, stressful life events (SLE) are defined as those vital events that alter the maintenance mechanisms of cognitive, emotional, and physiological stability, challenging their coping resources (Ingram, Miranda, & Segal, 2006). SLE may come from any area of life such as family, academic, social, economic, work, couple, among others, giving a significant increase in the frequency during the adolescence stage (Goossens, 2006).

In studies carried out in Mexico in high school and university students on stress, it has been found that 92% of the population has experienced academic stress with a medium-high intensity, presenting problems of concentration, restlessness, anxiety, and distress (Macías & Quiñónez, 2007), besides being a predictor of chronic stress (Pozos-Radillo, de Lourdes Preciado-Serrano, Acosta-Fernández, de los Angeles Aguilera-Velasco, & Delgado-García, 2014). It has become clear that the accumulation of these events acts as a risk factor for emotional adjustment (Jiménez García et al., 2008). Faced with incorrect or passive coping strategies, the presence of stressful life events can lead to chronic stress, increase the chances of the appearance of negative emotional states, and develop a mental disorder (Fernández-Berrocal, Ramos, & Extremera, 2001; Lizeretti, Extremera, & Rodríguez, 2012; Sokratous, Merkouris, Middleton, & Karanikola, 2013).

In addition, emotions play a very important mediating role in potentially stressful situations (Limonero, Tomás-Sábado, Fernández-Castro, & Gómez-Benito, 2004). Faced with the stress load, students often manage coping strategies such as problem solving, being positive, and assertive skills, which are related to emotional intelligence (EI) (Garaigordobil & Peña, 2014; Rey, Extremera, & Pena, 2011). Several studies have found negative relationships between stress levels and clarity and regulation of one's emotions (Extremera, Durán, & Rey, 2009; Ramos, Fernández-Berrocal, & Extremera, 2007).

Emotional Intelligence EI is a term proposed by Goleman (2002), which refers to the ability to recognize one's

own feelings, those of others, and the motivation and proper management of intra and interpersonal relationships. Currently, due to the great interest of various researchers, EI has been gaining strength in the psychological field, for its study in the educational, labour, clinical, and social fields (Belova, Sabirova, & Malykh, 2014; Salguero, Fernández-Berrocal, Ruiz-Aranda, Castillo, & Palomera, 2011). Recently it has been defined as a skill and at the same time a deliberate process, which requires an effort to attend and perceive feelings in an appropriate and precise way, the ability to assimilate them, understand them adequately, and the ability to regulate and modify voluntarily one's own mood or that of others (Koole, 2009).

In recent years, several studies have been carried out with the objective of explaining the role of EI in the regulation of emotions in adolescents; some of the findings found in this age group indicate that adolescents with a higher score in EI report greater awareness and control of their own emotions (Mayer, Salovey, & Caruso, 2008; Veytia López, Fajardo-Gómez, Guadarrama, & Escutia, 2016). In contrast, adolescents with significantly lower scores on EI have high scores on physical and verbal aggressive behavior, hostility, and anger (Inglés et al., 2014). In addition, when adolescents show a greater ability to perceive emotions in others, they have a higher level of self-confidence, and less feeling of disability and social stress (Salguero et al., 2011).

It has been observed that there are individual factors that contribute to differences in EI in adolescents, such as sex, socioeconomic status (Resurrección, Salguero, & Ruiz-Aranda, 2014), parental practices (Argyriou, Bakoyannis, & Tantaros, 2016), and academic performance (Kokkinos & Vlavianou, 2019). In relation to sex differences in EI, it has been found that women experience more positive and negative emotions and with greater intensity than men (Grossman & Wood, 1993). Sánchez-Núñez, Fernández-Berrocal, Montañés, & Latorre (2008) report that this is because society defines the emotional stereotypes of genders differently.

In relation to EI, López-Barajas, Ortega Álvarez, and Moreno Romero de Ávila (2010) reported that women have more attention to emotions, while men tend more to emotional regulation, with no differences in the dimension of emotional clarity. According to the stress response, style model women tend more to rumination responses and men tend to distracting responses (Abela & Hankin, 2009). That is, in the case of women, the stress response tends to repeatedly focus attention on the feelings and possible consequences of the negative mood without taking any action to change the feelings or solve the problem that causes them. It has also been observed that girls show higher scores in attention to their feelings and, in turn, a greater perception of stress than boys. On the other hand, boys seem to show higher scores in regulating their emotions (Pacheco, Durán, & Rey, 2007).

The above findings suggest that there are sex differences in the mechanisms to cope with stressful events. Unfortunately, to date, research on emotional skills and stress has not deepened these differences, relevant to the development of intervention programs. Due to the scarcity of studies focused on the relationship of stressors in the lives of adolescents and the skills used to deal with such situations in Mexico. The present study main objective is to determine the effect of stressful life events (SLE) and perceived emotional intelligence (PEI) on the stress level in Mexican high school adolescent students and identify the differences by sex. This general objective includes the following one a) to identify the prevalence of stressful life events by sex; b) to examine gender differences in stressful events and emotional skills; c) to analyse the association between emotional intelligence, stressful life events and the perception of stress by sex.

According to the scientific literature on stress and emotional skills, we expect to find results that indicate a greater perception of stress in women, and a greater attention to their feelings, whereas men are expected to present higher scores in clarity and emotional repair. It is also expected to find differences between both sexes in the relationships between emotional abilities and the perception of stress of different stressful events. Finally, we expected that PEI components moderate the association between SLE and perceived stress.

METHOD

Study design

Cross-sectional study.

Participants

The sample in this study was non-probabilistic by convenience and was made up by 1 417 high school adolescent students from three public institutions of the Estado de México. The ages of the participants were between 14 and 19 years of age, of which 57% were women and 43%, men. Data were collected between October 2015 and December 2016.

Measurements

Questionnaire with sociodemographic data: sex, years of age, *Trait Meta-Mood Scale* (TMMS-48; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) reduced version (TMMS-24; Fernández-Berrocal, Extremera, & Ramos, 2004). This test refers to the perceptions that people have about their own emotional abilities, which is why it will be called Perceived Emotional Intelligence. The scale is composed by

three sub-factors: attention, clarity, and repair. The internal consistency of this scale for this study showed levels like the original version, with an alpha of .90 for attention, a .92 for clarity, and a .90 for repair.

Adolescents Life Events Questionnaire (ALEQ) (Hankin & Abramson, 2002), in its short Spanish version (Calvete, Orue, & Hankin, 2015). ALEQ evaluates life events that, in general, tend to occur among adolescents, including academic / family problems / achievements, difficulties in romantic relationships, and friendship. For each event, the participants indicated whether the stressful life events had occurred or not in the last six months; if the answer was affirmative case, they also had to indicate the perceived stress level on a four-point likert scale. Within the present application of the questionnaire ALEQ, an item was added referring to adolescent pregnancy considered a stressor reaching high indexes in Latin America (Muñoz & Oliva, 2009). The internal consistency indices for the dimensions of the scale are .85 for the academic problems/ achievements; .92 for family problems; .67 for difficulties in couple relations; .91 for difficulties in social relations or friendship; .64 for personal difficulties; and .76 for the total perceived stress dimension.

Procedures

Authorization was obtained from the authorities of high school centres for the application of the instruments. The participants were those who returned the letters of consent and informed consent. Those who did not sent back both letters were excluded, and incomplete instruments were eliminated. The application was in groups in the class schedule with an approximate duration of 30 minutes. We counted on the support of three applicators students of the bachelor's in psychology previously trained in the handling of the instruments.

Statistical analysis

To know the frequency of the sociodemographic variables of the sample, a descriptive analysis was made. To identify if there were differences in the dimensions of the SLE (in number and level) and the dimensions of the PEI between men and women, Student's t-tests were performed. The Pearson correlation coefficient analysis was used to identify the relationship between the level of stress and the dimensions of the PEI. The Z test, based on Fisher's (1921) was used to find significant differences in the magnitude of the correlations between men and women.

Finally, to evaluate the role of PEI in the relationship between perceived stresses, a moderation analysis was performed by hierarchical regression through the interaction of the number of SLE and the dimensions of PEI. The analyses were performed with the statistical package SPSS version

Table 1

Comparison of means between perceived stress level by dimension and PEI factors in male and female adolescents ($n = 1\,417$)

Dimension	Men		Women		<i>t</i>	CI 95%		<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
SLE Academic	2.18	.78	2.45	.83	-5.91	.17	.35	<.001
SLE Family	2.09	.72	2.35	.74	-6.24	.17	.33	<.001
SLE Romantic relationships	2.15	1.01	2.20	.97	-.80	-.07	.19	.420
SLE Social/friendship	1.89	.66	2.12	.70	-6.12	.15	.30	<.001
SLE Personal	2.19	.91	2.43	.92	-4.36	.13	.34	<.001
SLE perception stress	2.04	.64	2.28	.65	-6.81	.017	.31	<.001
PEI Attention	1.54	.86	1.76	.84	-4.85	1.05	2.49	<.001
PEI Clarity	2.26	1.00	2.16	1.01	1.71	-1.59	.10	.087
PEI Repair	2.50	.96	2.56	.98	-.998	-.40	1.24	.317

Note: SLE = Stressful Life Events; PEI = Perceived Emotional Intelligence.

21. Confidence intervals were set at 95% and the alpha value at .05.

Ethical considerations

The Ethics Committee of the Centro de Investigación en Ciencias Médicas from the Universidad Autónoma del Estado de México approved the project.

RESULTS

Descriptive statistics

Participated 1 417 high school adolescent students, of whom 57% were women; with an average age of 15.83 ($SD = .86$). Regarding high school grade, the percentage of women in first grade was 29.7%, 41.2% for the second, and 29.33% for the third. On the other hand, in the case of men, it was 29.7%, 34.2%, and 36.1%, respectively. Additionally, 69.3% of women and 64.5% of men were currently studying in the morning shift; and 93.4% of women and 90.8% of men were currently living with their parents.

The 99.3% of the sample of women reported having experienced stressful events in the last six months, while the percent in men was 97.6%.

When analysing the significant differences by sex between the perceived stress levels of the SLE experienced by adolescent men and women (Table 1), it was found that women presented higher levels of SLE, academic, family, social or friendship, personal stress, and total stress than men. Regarding the PEI, women presented significantly higher scores than men in attention dimension.

Correlation analysis

Considering the previous differences, the relationship between the dimensions of PEI and stress levels for men and women was examined independently (Table 2). It was found that the attention dimension of the PEI correlates positively with all the dimensions of the SLE and with the total perceived stress of the SLE in both men and women. The magnitude of the correlation between attention and SLE in the dimension of social or friendship and personal problems was significantly greater in men than in women. Regarding the relationship between clarity and SLE and perceived to-

Table 2

Pearson's correlation analysis between the dimensions of the PEI and the levels of perceived stress

SLE	Attention			Clarity			Repair		
	Men	Women	<i>Z</i>	Men	Women	<i>Z</i>	Men	Women	<i>Z</i>
Academic	.22**	.14**	1.54	.09*	-.10**	3.67**	.15**	-.05	3.81**
Family	.20**	.18**	.40	.05	-.08*	2.51*	.08*	-.06	2.77**
Romantic	.24**	.15**	1.80	.05	-.08	2.72*	.10*	-.15**	4.92**
Social/friendship	.29**	.16**	2.45*	.12**	-.04	3.26**	.11**	-.06	3.39**
Personal	.24**	.12**	2.23*	.05	-.18**	4.44**	.11*	-.13**	4.67**
Stress total	.28**	.19**	1.81	.09*	-.10**	3.73**	.13**	-.07*	3.99**

Note: *Z*-score for the difference between two correlations (Fisher, 1921). * $p \leq .05$; ** $p \leq .01$.

Table 3
Analysis of hierarchical moderation for perceived stress

<i>Perceived stress</i>	<i>R²</i>	<i>B</i>	<i>S. E.</i>	<i>β</i>	<i>t</i>	<i>CI 95%</i>	<i>R² Change</i>
Step 1	.05						$\Delta R^2 = .055, F(2, 1395) = 23.40^{***}$
Sex		.24	.04	.18	6.84***	-.31 -.17	
Age		.01	.02	.01	.64	-.02 .05	
Step 2	.26						$\Delta R^2 = .212, F(3, 1395) = 120.98^{***}$
Stressful events		.21	.01	.41	17.49***	.02 .02	
Step 3	.32						$\Delta R^2 = .063, F(6, 1395) = 72.74^{***}$
Attention		.19	.01	.19	7.94***	.01 .02	
Clarity		-.01	.01	-.06	-1.88	-.01 .01	
Repair		.01	.01	.01	.45	-.01 .01	
Step 4	.33						$\Delta R^2 = .008, F(9, 1395) = 49.64^{***}$
SLE x Attention		.01	.03	.15	2.83**	.01 .01	
SLE x Clarity		-.01	.03	-.09	-1.15	-.01 .01	
SLE x Repair		.01	.03	-.02	-.32	-.01 .01	

* $p < .05$; ** $p < .01$; *** $p < .001$.

tal stress, men showed significant and positive relationships for SLE academic, social or friendship and total stress. In women, significant but negative relationships were found for clarity and stressful academic events, family, personal, and total stress. Finding differences in the magnitude of the correlations between men and women in clarity relationships and stressful academic events, family, couple, social or friendship, personal, and total perceived stress. Finally, the results showed significant and positive correlation indexes for men between the dimension of reparation and stressful academic events, family, couple, social or friendship, personal stress, and total perceived stress. In women, significant and negative correlation indexes were found between the repair and the SLE of couple, personal, and total perceived stress. At the same time, significant differences were found in the magnitude of the correlations between men and women in the relationship between the repair and all the SLE, as well as with the total perceived stress.

Moderation analysis

In order to know the role of PEI in the relationship between the number of SLE and the level of stress perceived by the SLE, a moderation analysis was carried out. Age and sex were included as covariates in step one, the number of SLE were introduced in step two and the sub-factors of PEI were included in step three. Finally, the interactions between the number of SLE and the sub-factors of the PEI step four were included.

The model explained 33% of the variance of perceived stress (Table 3). Socio-demographic factors predicted 5% of the variance of perceived stress, while the number of SLE explained 21%. Including the sub-factors of the PEI, 32% of the variance of the perceived stress was explained to the model, being the attention variable the one that was statistically significant. In the interactions, a significant effect of the number of stressful life events was found by the atten-

Table 4
Analysis of sex moderation for the association between emotional intelligence and perceived stress

<i>Perceived stress</i>	<i>R²</i>	<i>B</i>	<i>S. E.</i>	<i>β</i>	<i>t</i>	<i>CI 95%</i>	<i>R² Change</i>
Step 1	.02						$\Delta R^2 = .023, F(2, 1414) = 17.75^{***}$
Sex		.21	.03	.15	5.82***	.25 .55	
Age		.03	.02	.04	1.73	-.01 .09	
Step 2	.10						$\Delta R^2 = .097, F(5, 1411) = 31.57^{***}$
Attention		.03	.01	.30	10.86***	.11 .47	
Clarity		-.01	.01	-.13	-3.78***	.03 .48	
Repair		-.01	.01	-.02	-.71	-.02 .19	
Step 3	.11						$\Delta R^2 = .107, F(8, 1408) = 22.29^{***}$
Sex x Attention		.01	.01	-.01	-.01	-.21 .21	
Sex x Clarity		-.01	.01	-.11	-.85	-.37 .15	
Sex x Repair		.01	.01	-.37	-2.61*	-.65 -.09	

* $p < .05$; ** $p < .01$; *** $p < .001$.

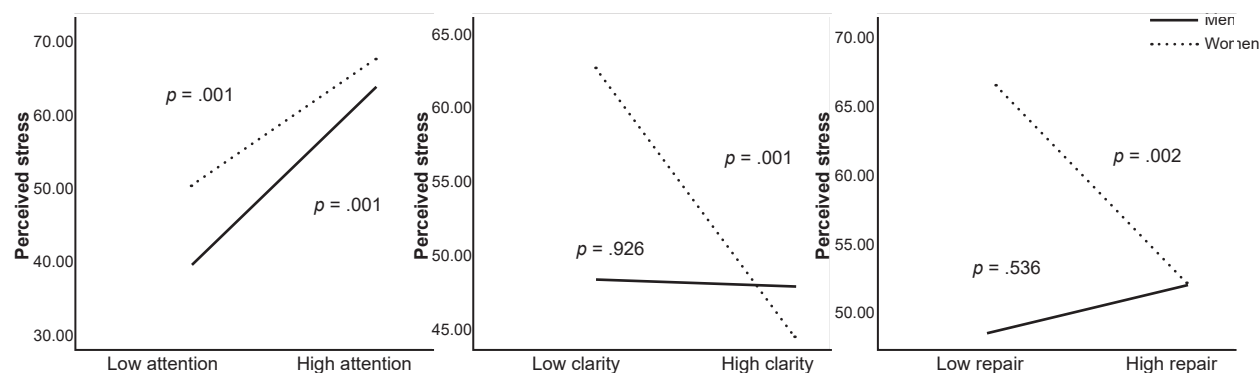


Figure 1. Differences in attention on the perception of stress.

tion that had an added effect in explaining the variance of perceived stress.

To examine the influence of sex and the sub-factors of the PEI on perceived stress, we conducted moderation analyses to tests whether sex moderated the effect of sub-factors of the PEI on perceived stress. In the first step, age and sex were entered as covariables. The sub-factors of the PEI were entered in the second step. At last, the sub-factors of the PEI x sex interactions were included in the third step. For predicting perceived stress, a total of 11% of the variance was explained by final model (Table 4). The sex x repair interaction explained a significant amount of the variance in perceived stress. We used Dawson (2014) to graphically represent the moderating effects. As shown in Figure 1, there are significant differences in the scores of perceived stress for individuals with low and high attention in both sexes, while the differences for clarity are only significant for women, the same as for regulation scores. In men, no significant differences were found in the scores on perceived stress, differentiating for low and high clarity and regulation.

DISCUSSION AND CONCLUSION

The goal of this study was to determine the effect of stressful life events (SLE) and perceived emotional intelligence (PEI) on the stress level in Mexican high school adolescent students and identify the differences by sex. We found a moderation effect for levels of attention to emotions for both men and women, where a high level of attention implies higher levels of perceived stress. In turn, a high clarity and emotional repair show lower levels of perceived stress only in women. The research confirms the role of PEI; this indicates that emotional skills and stress levels have a close relationship, placing EI in a decisive role for emotional self-control and the individual's adaptive capacity to deal with stressful situations (García-Sancho, Salguero, & Fernández-Berrocal, 2015). In addition, EI has been shown to facilitate greater adaptation to stress with effective coping strategies, helping to understand, accept, and adapt daily

stress. As a result, adolescents with adequate PEI are better able to regulate negative moods and prolong positive ones, while having better reflective and active coping strategies (Martínez, Piqueras, & Inglés, 2011).

Another objective of this study was the identification of the prevalence of stressful life events in Mexican adolescents, finding high rates of stressful experiences lived and related to family, personal, social relationships, and the academic field. These results coincide with similar findings found in the previous literature on the subject (Garaigordobil & Peña, 2014; Oliva Delgado, Jiménez Morago, Parra Jiménez, & Sánchez-Queija, 2008; Veytia López, González-Arratia, Andrade, & Oudhof, 2012); where experiencing a greater number of stressful situations may involve suffering higher levels of stress in adolescence (Jiménez García et al., 2008). Emotion management mitigates the negative effects of stress, cushioning the impact of stressful events (Salovey, Stroud, Woolery, & Epel, 2002).

At the same time, men showed a greater number of stressful life events related to the couple, which differs from what was found in the previous literature (Jiménez García et al., 2008). Regarding gender differences in stress levels caused by stressful life events and emotional skills, the results showed significant levels of stress in women caused by academic, personal, family, social, or friendship problems, and general higher perception of stress than men. These differences may be due to the fact that women have greater emotional and cognitive vulnerability, and experience greater problems of internalization, depression, and anxiety than men (Casullo & Fernández Liporace, 2001; Giménez, Vázquez, & Hervás, 2010; Gómez-Maquet, 2007).

In this study, significant differences were found between men and women in attention to emotions. It may indicate that women have ruminative processes on their affective and emotional states related to depression and anxiety (Ramos et al., 2007). Regarding the association between emotional intelligence, stressful life events and the perception of stress, the results showed positive and statistically significant correlations between the attention dimension and the stress levels of all stressors, both in men and women,

although these associations were weak ($< .30$). Also, it was observed that low scores in clarity and emotional repair are associated with higher levels of stress in adolescent women. In addition, it was found that women presented negative relationships between clarity and emotional reparation and the stress perceived by the different Stressful Life Events (SLE). These associations suggest a greater influence of the emotional skills in women on SLE (Pacheco et al., 2007).

In turn, men display low emotional attention and average scores in clarity and emotional repair, aspects that, although they denote adequate PEI, should be examined in detail in future studies, because it has been documented that men self-report a perceived emotional intelligence superior to that shown in execution tests (Gartzia, Aritzeta, Balluerka, & Barberá, 2012; Sánchez-Núñez et al., 2008). It is noteworthy, however, that findings indicate low-moderation magnitude correlations but significant with SLE subscales: therefore, these results must be taken into consideration appropriately.

In this way, it is concluded that PEI in adolescents minimizes the likelihood of develop negative emotional states, in the presence of SLE in life (Sanz Rodríguez et al., 2009). This is important given that adolescents experience several stressful life events, so they are at greater risk of the presence of depression symptoms (Veytia López et al., 2012), higher levels of anxiety, and low self-concept and irritability (Martínez et al., 2011). This research considers that attention dimension of PEI in adolescents, especially in women, could modulate stressful life events in perceived stress.

Throughout the present research, it was possible to document the importance of the study of negative moods such as stress in adolescents. It has been shown that over the years both the circumstances that favour the development of this and those that make it difficult tend to change (Jiménez García et al., 2008) so that detection and proper management in early stages can prevent in adulthood suffer some emotional disorder (Calvete & Estévez, 2009). In addition, the identification in adolescents of positive psychological factors such as emotional intelligence is important since it can act as a tool that favours emotional adjustment (Salovey et al., 2002). Although it has been referred throughout this investigation, the possible biopsychosocial factors that give rise to levels of emotional intelligence higher and/or lower, such as the educational, labour, clinical and social (Belova et al., 2014; Limonero et al., 2004; Salguero et al., 2011). It is still fundamental to expand the variety of studies on the subject. Therefore, it is suggested to continue documenting the effects of PEI as a positive factor in order to have as much scientific evidence as possible about the important role it plays in the development of adolescent mental health, increasing the possibilities of promoting optimal mental health to this population in future ages. The limitations that may affect this type of studies must be taken into account, since by being of a transversal nature, the temporal relationship between cause and effect is not verifiable. On

the other hand, because the sample analyzed only included adolescent students from three public high schools, the results cannot be generalized to adolescents of the general population or to young people who study in private schools. Likewise, it should be noted that this research also has important strengths since this study evaluates the presence of emotional intelligence perceived in adolescents, a variable that has been studied very little in this age group.

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Conflict of interests

The authors declare that they have no conflicts of interest.

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