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Short- and Midterm Effects of Emotional Intelligence Training on Adolescent Mental Health

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A B S T R A C T

Purpose: To analyze the effects that an emotional intelligence (EI) educational program based on the EI ability model had on adolescent mental health immediately and 6 months after completion of the training.
Methods: A pretest–posttest quasi-experimental design with a treatment and a control group was used; 479 Spanish adolescents (47.4% male, mean age of 13 years) were involved in the study. Adolescents were recruited through several schools in three Spanish cities. The 2-year training program involved 24 sessions lasting 1 hour each, conducted ′weekly during 6 months of 2009 and 2010. Data on psychological adjustment, mental health, and negative affect were collected at baseline, at the end of the training program, and 6 months later. Data were analyzed by multivariate analysis of covariance.
Results: Students who participated in the EI educational program reported fewer clinical symptoms compared with students in the control group, and these differences persisted 6 months after the conclusion of the program.
Conclusions: These results suggest that EI programs created to develop skills in perceiving, facilitating, understanding, and managing emotions can be effective at promoting mental health in adolescents.

IMPLICATIONS AND CONTRIBUTION

An EI training program, based on the ability model of EI, is effective at promoting several skills related to mental health in adolescents, and these results persist at least 6 months after our intervention. EI skills seem to be an important factor in the prevention of psychological disorders.

The promotion of adolescent mental health in schools is important because adolescents who are healthier mentally are also healthier physically [1]. In addition, they engage in fewer risky behaviors and demonstrate more socially positive behaviors. Conversely, adolescents with mental health problems, such as depression, are more likely to engage in risky behaviors [2,3]. Many mental health disorders often appear during adolescence, including mood disorders, impulse control disorders, anxiety disorders, substance abuse problems, and eating disorders [4].

One cause of these mental health problems is the inability to manage emotional states. In this sense, the intelligent use of emotions is considered essential for one's physical and psychological adaptation [5–7]. People differ in their abilities to process and use emotional information. These abilities have been conceptualized under the general term of emotional intelligence (EI), which is defined as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" [5]. The theory of EI suggests that emotions make cognitive processes adaptive and that individuals can think rationally about emotions.

EI abilities help to promote mental health in two different ways. First, on an intrapersonal level, EI will allow people to

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reduce the intensity and frequency of negative moods caused by adverse everyday life events [8–10]. There is some evidence suggesting that EI may protect from stress and may help to maintain positive mood [11,12], which has obvious implications for the prevention of depressive and anxious states. EI abilities help people to deal effectively with unpleasant emotions, thereby increasing mental and physical health. The individual differences related to perception, understanding, and regulation of our emotional world support evidence of people's vulnerability to depression, stress, anxiety, psychosomatic symptoms, and substance abuse, which lead to more severe mental disorders. Second, adolescents highly skilled at perceiving, understanding, and managing others' emotions tend to have more supportive and satisfied relationships with family and peers [13], which may protect them from psychological problems such as depression or suicidal ideation [14,15].

Previous studies have shown that adolescents with high EI scores present fewer episodes of anxiety and depression, fewer school problems, and few externalizing problems [15]. These data reveal the importance of appropriate emotional management to achieve healthy, positive development, and they suggest that EI helps protect against serious psychological problems among adolescents.

According to the ability model of EI, emotional knowledge and abilities that make up EI can be taught and developed [16]. Although many programs are available to promote adolescent health in school [17], the theoretical and empirical bases of most training programs are unclear, and their effects are often not rigorously evaluated [18]. Typically, these programs focus on a variety of emotional and social competencies, such as self-awareness, self-management, empathy, and problem solving [19]. There is little published research about the effectiveness of these programs on real-life outcomes, and even less has been written about "pure" EI programs based on the ability model [20,21]. The few such programs described in the literature have shown promising results with middle school students [16,21,22]. In fact, if interventions such as training programs are to reduce levels of mental illness, they need to begin as early as possible, and preventive interventions should ideally be provided before developing significant symptomatology.

The main goal of the present study was to analyze the effects of a 2-year educational EI program on promoting mental health in adolescents and to assess the stability of those effects. The emotional intelligence training (INTEMO) program is based on the ability model of Mayer and Salovey [5]. In this study, we analyze the effect of the INTEMO program on diverse indicators of mental health using a pretest–posttest quasi-experimental design involving a treatment and a control group. We hypothesized that students who participated in the EI training program would have fewer clinical symptoms after the intervention than would students in the control group, and that these differences would persist 6 months later.

Methods

Participants and procedure

Adolescents were recruited through several schools in three Spanish cities. A total of 479 participants (47.4% male) with a mean age of 13 (standard deviation [SD] = .87, range = 11–16) years were involved in this project. The population was selected by multiple-step, simple random sampling. First, location was taken into account, and then at least two different schools within each city were randomly assigned to the intervention or control group. A total of 322 adolescents (51.6% male) with a mean age of 12.85 years (SD = .88) were randomly selected to be the training group (EI group), and 157 adolescents (45.3% male) with a mean age of 13.22 years (SD = .79) were recruited as the control group (regular tutorial class). The research study protocol was approved by the Technical Council of the Ethical Committee of the University of Malaga. School superintendents, administrators, supervisors, teachers, and staff were informed about the nature and purpose of the study. Written consent to participate was requested from parents/stakeholders and school directors involved in the study. No incentives for participating in the study were offered to participants. Nevertheless, at the end of every annual intervention program, students received a "surprise gift" for their participation.

Research design

This study is part of a larger project designed to evaluate the effects of the INTEMO program on variables related to aggressive behavior, empathy, mental health, and psychological adjustment in adolescence. We used a pretest–posttest quasi-experimental design with control and treatment groups to evaluate the efficacy of an EI program based on the ability model [5]. Pretest evaluation data (baseline data) were collected in September 2008. The 2-year EI program took place from January to June in 2009 and 2010; all students participated in the program for the full 2 years. The program consisted of 24 sessions, each lasting 1 hour, held weekly over 6 months of each year. Posttest data were obtained in June 2010. Finally, to evaluate the effects of our EI program over time, follow-up assessment was performed in December 2010.

Measures

Psychological adjustment. We used the Behavior Assessment System for Children and Adolescents [23,24], which is a well-validated international instrument that assesses a broad range of pathologic and adaptive dimensions of child and adolescent behavior in academic and clinical settings [23]. It consists of diverse adaptive subscales that measure positive adjustment and clinical subscales that measure maladjustment. Participants assess statements about their personal thoughts and feelings as true or false. The self-report questionnaires for adolescents aged between 12 and 18 years were used to assess the following dimensions of clinical subscales: anxiety, atypicality (tendency to engage in immature or strange behavior), social stress, depression, external locus of control, sense of incapacity, and somatization. The Spanish adaptation of this test has shown adequate psychometric properties [24]. The internal consistency for each of these dimensions at pretest, posttest, and follow-up assessments was as follows: anxiety (.76, .73, and .76, respectively), atypicality (.76, .78, and .78, respectively), depression (.76, .78, and .80, respectively), social stress (.80, .82, and .80, respectively), external locus (.73, .77, and .75, respectively), sense of incapacity (.73, .78, and .77, respectively), somatization (.62, .71, and .75, respectively).

Mental health. We used the 5-item Mental Health Inventory (MHI-5) [25]. The MHI-5 is used as the "mental health" domain of the Medical Outcomes Study 36-Item Short-Form Health Survey

[26]. Respondents use a 6-point scale to rate five items concerning their mood during the past 30 days, of which three are distress items (e.g., "Did you feel very nervous?") and two well-being items (e.g., "Have you been happy?"). The MHI-5 is a well-validated, reliable measure of mental health status. In this study, we used the Spanish version of the MHI-5, which has shown good internal consistency (Cronbach $\alpha = .75$), good discrimination among severity groups, moderate correlation with clinical indicators, and high correlation with other health-related instruments [27]. In this study, internal consistency at pretest, posttest, and follow-up assessments was .73, .75, and .75, respectively.

Negative affect. We used the Positive and Negative Affect Schedule [28], which is a self-reported adjective checklist that contains two 10-item subscales designed for the assessment of positive and negative affect. Respondents use a 5-point Likert scale to rate the extent to which they usually feel each of 10 emotion-related words. The Spanish version of this instrument has demonstrated robust psychometric properties [29]. In this study, we used only the negative affect subscale (e.g., afraid, ashamed, distressed, guilty, hostile) that reflects a general dimension of negative engagement and distress. The scale showed adequate reliability in this study. Internal consistency at pretest, posttest, and follow-up assessments was .81, .82, and .82, respectively.

Intervention

EI program. INTEMO is a program that consists of 24 lessons based on the ability model of EI [5]. The main aim of our program is to prevent aggressive behaviors and psychosocial maladjustment and promote mental health through coordinated and structured activities in adolescents aged 12–17 years.

The program involves 24, 1-hour lessons scheduled during tutorial hours during the regular school day. We dedicated a 3-hour training for each branch of the Mayer and Salovey model, per year. The objective of these sessions is to provide students with different socioemotional skills related to the ability model of EI through group work, role-playing, art, film forum, and reflective activities throughout the training period (Table 1). The complexity of the various activities is adjusted to match the student's maturity levels in each participating school.

The program was developed by 13 psychologists after receiving 16 hours of EI training over 2 days. A coordinator maintained contact with all 13 trainers during program development and implementation to ensure uniform conditions at all the participating schools.

Activity design. Some of the activities in the INTEMO program are summarized in Table 1.

Data analysis

Data were analyzed using SPSS software version 18.0 (SPSS Inc., Chicago, IL). Multivariate analysis of covariance was conducted, in which the dependent variables were variables related to mental health (MHI-5, negative affect, anxiety, atypicality, depression, social stress, external locus of control, sense of incapacity, and somatization) after the intervention and at 6-month follow-up. The independent variables were EI intervention and sex, and the covariates were pretest scores for the aforementioned variables and age. Effect sizes for mean comparisons between control and treatment groups for each of the dependent variables were computed using the *r* index [30]. Furthermore, repeated-measures 1-way analyses of variance were performed for treatment and control groups by separately taking pretest scores, posttest scores, and follow-up scores as the levels of the within-subject variable and the variables related to mental health as dependent variables. Post hoc comparisons between pretest scores and posttest scores and between pretest scores and follow-up scores were carried out using the Bonferroni test. Effect sizes for these comparisons were also computed using the *r* index.

Results

Descriptive analyses

Table 2 summarizes the means and SDs at each time (pretest, posttest, and follow-up) for the trained and control groups.

Table 1
The INTEMO program design

EI ability	1. Perception, appraisal, and expression of emotion
Process	Learning the physical characteristics of different emotions though photos, scenarios, characters, and role-playing
	Recognizing emotions in different contents like newspapers and magazines
	Developing the ability to express emotions using new ways of communication
	Developing the ability to identify emotions in faces and matching faces with scenarios
	Discussing different situations and characters' nonverbal communication
EI ability	2. Emotional facilitation of thinking
Process	Introducing the idea that feelings matter and how they can be used in academic settings to improve personal achievement
	Discussing real situations where feelings should be taken into account
	Generating positive and negative moods among students and subsequently interpreting a poem, story, or real situation
	Generating positive and negative moods among students and subsequently proposing solutions to a hypothetical situation
EI ability	3. Understanding and analyzing emotions; using emotional knowledge
Process	Acquiring feeling words through modern games (e.g., Taboo, Password, Scrabble, crossword puzzles)
	Understanding emotions by learning their significance, functions, and utility
	Introducing empathic abilities and raising awareness of different points of view in situations
	Analyzing the influence of thoughts on the experience of emotions; representing specific emotional states in a story and acting according to the feeling
EI ability	4. Reflective regulation of emotion to promote emotional and intellectual growth
Process	Increasing the ability to stay calm in different conflict situations
	Using real conflict situations from everyday classroom life to discuss new ways to face problems
	Creating a film forum to recognize, compare, reflect on, and consider characters' performances
	Learning adaptive ways to handle emotions and creating a forum to discuss strategies

Table 2
Pretest, posttest, and follow-up mean scores and standard deviations on scales applied to the trained and control groups

Scale	Scale ranges	Pretest		Posttest		Follow-up		Mean difference (pretest–posttest)	r	Mean difference (pretest–follow-up)	r
		M	SD	M	SD	M	SD				
Trained group (n = 322)											
Mental health	1–6	4.23	.98	4.15	.98	4.08	1.04	.08	.05	.06	.07
Negative affect	1–5	2.24	.72	2.29	.69	2.18	.68	−.05	.03	.04	.04
Anxiety	1–2	.49	.23	.39	.21	.39	.23	.10*	.22	.10*	.22
Atypicality	1–2	.28	.2	.23	.2	.21	.19	.05*	.12	.08**	.18
Depression	1–2	.21	.19	.19	.19	.18	.19	.01	.05	.03**	.08
Social stress	1–2	.24	.23	.22	.24	.21	.21	.02	.04	.04**	.08
External locus	1–2	.3	.21	.28	.22	.24	.2	.02	.05	.06*	.15
Sense of incapacity	1–2	.28	.22	.26	.23	.22	.21	.02	.04	.06*	.14
Somatization	1–2	.2	.19	.16	.19	.17	.21	.04*	.1	.03**	.07
Control group (n = 157)											
Mental health	1–6	4.25	.94	3.93	1.08	3.89	1.02	.31*	.16	.36*	.14
Negative affect	1–5	2.32	.64	2.32	.68	2.41	.67	−.01	.01	−.09	.07
Anxiety	1–2	.5	.21	.43	.22	.43	.22	.07*	.16	.07*	.16
Atypicality	1–2	.29	.2	.31	.21	.29	.22	−.02	.05	.01	.01
Depression	1–2	.2	.18	.26	.22	.25	.21	−.06*	.15	−.05**	.13
Social stress	1–2	.27	.23	.28	.22	.3	.24	−.01	.02	−.03	.06
External locus	1–2	.33	.21	.32	.23	.32	.23	.01	.02	.01	.02
Sense of incapacity	1–2	.29	.2	.32	.23	.3	.23	−.03	.07	−.02	.02
Somatization	1–2	.21	.17	.22	.21	.23	.22	−.02	.03	−.02	.05

* $p \leq .01$.
** $p \leq .05$.

Main analysis

After controlling for age and for the pretest differences between trained and control groups, the multivariate analysis of covariance showed that the multivariate main effects for condition (trained vs. control group) Wilks lambda [18,449] = .905, $p = .0001$; $\eta^2 = .095$ and for sex Wilks lambda [18,449] = .883, $p = .0001$; $\eta^2 = .12$ were statistically significant. The interaction between condition and sex was not statistically significant, and the effect size for the interaction was very low $\eta^2 = .03$. The univariate test showed that adolescents in the trained group had lower posttest scores than adolescents in the control group for atypicality $F[1,466] = 11.33$, $p = .001$, $r = .16$, depression $F[1,466] = 9.62$, $p = .002$, $r = .14$, social stress $F[1,466] = 5.83$, $p = .016$, $r = .11$, sense of incapacity $F[1,466] = 4.83$, $p = .028$, $r = .10$, and somatization $F[1,466] = 8.95$, $p = .003$, $r = .14$ (Table 3). For the follow-up effects of the intervention even after controlling for the influence of the covariates, the intervention significantly reduced negative affect $F[1,466] = 11.51$, $p = .001$, $r = .15$, atypicality $F[1,466] = 21.53$, $p = .0001$, $r = .21$, depression $F[1,466] = 16.37$, $p = .0001$, $r = .18$, social stress $F[1,466] = 20.98$, $p = .0001$, $r = .21$, external locus $F[1,466] = 14.15$, $p = .0001$, $r = .17$, sense of incapacity $F[1,466] = 18.88$, $p = .0001$, $r = .20$, and somatization $F[1,466] = 9.43$, $p = .002$, $r = .14$. At the same time, the intervention significantly improved MHI-5 scores $F[1,466] = 5.89$, $p = .016$, $r = .11$. Moreover, the effect sizes for the majority of dependent variables were higher at follow-up than immediately after the intervention.

Furthermore, we used repeated-measures 1-way analyses of variance to analyze the change from pretest to posttest and follow-up for each group (trained and control) for variables related to mental health. As, similar to previous analyses, the interaction between condition and sex was not statistically significant, we did not include sex in these set of analyses. The trained group showed statistically significant differences for all variables analyzed, except MHI-5 and negative affect (Table 2). Pairwise post hoc comparisons using the Bonferroni test and effect size estimates for these comparisons indicated that in the trained

Table 3
Group differences on psychological adjustment variables

Scale	Control group (n = 157)		Trained group (n = 322)		F	p	r
	M	SD	M	SD			
Posttest							
Mental health	3.93	1.08	4.15	.98	2.11	.147	.07
Negative affect	2.32	.68	2.29	.69	.03	.851	.03
Anxiety	.43	.22	.39	.21	3.08	.08	.08
Atypicality	.31	.21	.23	.2	11.73	.001	.16
Depression	.26	.22	.19	.19	9.62	.002	.14
Social stress	.28	.22	.22	.24	5.83	.016	.11
External locus	.32	.23	.28	.22	2.29	.13	.07
Sense of incapacity	.32	.23	.26	.23	4.83	.028	.1
Somatization	.22	.21	.16	.19	8.95	.003	.14
Follow-up							
Mental health	3.9	1.02	4.08	1.04	5.89	.016	.11
Negative affect	2.41	.67	2.18	.68	11.51	.001	.15
Anxiety	.43	.22	.39	.23	3.36	.067	.08
Atypicality	.29	.22	.21	.19	21.53	.0001	.21
Depression	.25	.21	.18	.19	16.37	.0001	.18
Social stress	.3	.24	.21	.21	20.98	.0001	.21
External locus	.32	.23	.24	.2	14.15	.0001	.17
Sense of incapacity	.3	.23	.22	.21	18.88	.0001	.2
Somatization	.23	.22	.17	.21	9.43	.002	.14

Age, sex, and pretest score for each dimension were included as covariates in all analyses.

group, scores at 6-month follow-up were significantly lower than pretest scores for anxiety, atypicality, depression, social stress, external locus of control, sense of incapacity, and somatization. In the case of the control group, reports of MHI-5 and anxiety significantly decreased over time, whereas reports of depression significantly increased. No significant changes were found for the other variables.

Discussion

Findings from this study showed evidence that our EI training program, based on the ability model of EI [5], is effective at promoting several skills related to mental health in adolescents. If promoting mental health means decreasing the incidence of several risk factors and behavioral disorders in the young population [31], then the present study suggests that our evidence-based training enhances adolescent mental health by decreasing negative affect scores and several clinical symptoms, including anxiety, atypicality, social stress, depression, external locus of control, sense of incapacity, and somatization, while increasing the MH-5 measure of mental health. These results persist at least 6 months after our intervention. Our results concur with previous reviews indicating that socioemotional learning programs show promise for reducing problem behaviors, preventing psychological problems, and promoting mental health and positive adjustment among children and adolescents [17].

The abilities related to EI can determine a student's emotional well-being, help them effectively manage emotions, and prevent possible psychological problems [32]. In fact, students with higher EI abilities are less likely to experience emotional maladjustment and externalizing problems, whereas students with lower EI abilities are more prone to engage in potentially harmful behaviors, especially in later adolescence [33,34]. In addition, EI abilities moderate the association between stressful experiences and suicidal behaviors, serving as a protective factor in at-risk adolescent populations [15]. Taken together, these studies demonstrate that EI is essential to many aspects of student psychological functioning and ensures optimal development in this age-group. Therefore, EI can be considered a powerful tool for preventing internalizing problems from an early age. Such skills as perceiving, facilitating thinking, understanding, and managing one's and others' emotions can be the first step in enhancing mental health and preventing psychological problems, which are especially prevalent during adolescence [4,35]. EI abilities allow people to (a) detect others' emotional states and have successful social interactions, (b) guide attention into appropriate thoughts and make better decisions, (c) gain sufficient knowledge to accurately understand emotional processes, and (d) develop better strategies for handling challenging situations effectively and for managing negative emotions, thereby decreasing inhibition and rumination [32,36]. Thus, EI skills seem to be an important factor in the prevention of psychological disorders [8,9] and appear to be related to positive life outcomes. According to previous research evidencing the implication of EI abilities in psychological adjustment, EI assumes an important role in the process of human adaptation, specifically on mental and physical health. Regarding the theoretical model of EI, emotion-related skills are fundamental at both the intrapersonal and interpersonal levels [37]. First, on an intrapersonal level, the skills to perceive, use, understand, and manage one's and others' emotions may reduce the impact of negative aspects of our daily lives, help to cope better with challenging events, minimize the negative effects and increase the positive ones. Second, on an interpersonal level, emotional abilities can promote and increase the quality of our relevant social relationship, which may lead to better levels of intimacy, group acceptance, and social support.

In addition, the present work aimed to assess the stability of our EI program effects by including a follow-up at 6 months. The effects of our program proved to be greater at follow-up than immediately after the intervention, showing positive results at least 6 months after the intervention. These findings strengthen the idea that it takes time to apply learned EI abilities to real life. However, few studies have included follow-up assessments of psychosocial educational programs [17,21]. This study supports previous research showing that programs developed for $\geq$2 years are more effective than those carried out in a single year [38]. Although the effect sizes in the present work were not high, our findings are consistent with previous studies [17]. In addition, our intervention is based on structured and interactive activities, role-playing, and exercises adapted to the student's maturity level, which helped to ensure an optimal intervention. Finally, our results suggest that a program based on the ability model of EI, without a focus on other competencies extensively developed in other socioemotional learning programs, can promote adolescent well-being by teaching perception, facilitation, understanding, and management of emotions.

We acknowledge several limitations in this study. First, we did not use any EI measures to confirm that the observed effects depended on the development of abilities related to EI. To the best of our knowledge, there are no standardized questionnaires for measuring the EI abilities of Spanish adolescents based on the ability model [5]. Nevertheless, there is evidence that adult EI programs do improve EI [39]. Another limitation is that we did not ensure that control groups in all participating groups received alternative training, which would have allowed us to estimate the effects of our program more accurately.

Despite these limitations, our research adds to the literature on EI training by demonstrating the effectiveness of a 2-year program that includes high school students and that relies on a more scientific, structured approach than has been reported in other educational EI programs [39].

A recent review about socioemotional learning [17] stated that many schools do not faithfully implement evidence-based prevention programs, perhaps because of a gap between research and implementation in real school settings. Thus, we recommend designing EI programs that train teachers and education professionals to develop their EI abilities, encourage a scientific approach to education, and facilitate faithful integration of EI programs in schools. We also suggest comparing our EI program for adolescents with programs intended for the broader school community to advance our understanding of the mechanisms that promote and develop mental health and positive well-being in young people [40].

In conclusion, the results of this work suggest that an EI program created to develop skills in perceiving, facilitating, understanding, and regulating emotions is effective at promoting mental health in adolescence.

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