Increasing Emotional Competence Improves Psychological and Physical Well-Being, Social Relationships, and Employability

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This study builds on earlier work showing that adult emotional competencies (EC) could be improved through a relatively brief training. In a set of 2 controlled experimental studies, the authors investigated whether developing EC could lead to improved emotional functioning; long-term personality changes; and important positive implications for physical, psychological, social, and work adjustment. Results of Study 1 showed that 18 hr of training with e-mail follow-up was sufficient to significantly improve emotion regulation, emotion understanding, and overall EC. These changes led in turn to long-term significant increases in extraversion and agreeableness as well as a decrease in neuroticism. Results of Study 2 showed that the development of EC brought about positive changes in psychological well-being, subjective health, quality of social relationships, and employability. The effect sizes were sufficiently large for the changes to be considered as meaningful in people's lives.

Keywords: emotional competencies, intervention, training, correlates, personality changes

Although we all experience emotions, we markedly differ in the way we process them. Although some of us are able to identify our emotions, express them in a socially acceptable manner, and regulate them when they are inappropriate, others have a hard time interpreting their emotions and seem most of the time overwhelmed by them. The term *emotional competence* (EC), also labeled *emotional intelligence* (EI) or *emotional skills*, aims to provide a scientific framework for that idea. More specifically, EC refers to individual differences in identifying, expressing, understanding, regulating, and using emotions (Mayer & Salovey, 1997; Petrides & Furnham, 2003).

Past debates on the status of EC as intelligence (i.e., is EC an ability?) or trait (i.e., is EC a disposition?) have given birth to a tripartite model of EI (see Mikolajczak, Petrides, Coumans, & Luminet, 2009). Briefly, this model posits three levels of EI: knowledge, abilities, and traits. The knowledge level refers to the complexity and width of emotion knowledge. The focus is on what people know about emotions and how to deal with emotion-laden situations. The ability level refers to the ability to apply emotion

knowledge in an emotional situation and to implement a given strategy. The focus here is not on what people know but on what they can do. For instance, even though many people know that distraction is an efficient strategy to reduce anger, many are simply not able to distract themselves when angry. The trait level refers to emotion-related dispositions, namely, the propensity to behave in a certain way in emotional situations. The focus here is not on what people know or can do but on what they do. For instance, some individuals may be able to distract themselves from a situation that makes them angry if explicitly asked to do so while not managing to distract themselves of their own volition. These three levels of EI are loosely connected: Knowledge does not always translate into abilities, which, in turn, do not always translate into usual behavior.

Over the last 30 years, evidence pointing the crucial role of emotional abilities and dispositions for adjustment has expanded. At a psychological level, higher trait EC is associated with greater well-being and higher self-esteem (Schutte, Malouff, Simunek, McKenley, & Hollander, 2002), as well as a lower risk to develop psychological disorders (Gross & Munoz, 1995) or burn-out (Mikolajczak, Menil, & Luminet, 2007). Socially, higher ability–trait EC is related to better social and marital relationships (Lopes et al., 2004; Lopes, Salovey, Côté, & Beers, 2005; Schutte et al., 2001) and, all things being equal, to a greater likelihood of being chosen as a romantic partner (Schutte et al., 2001). Workwise, higher trait EC is associated with greater academic achievement (Leroy & Grégoire, 2007; Petrides, Frederickson, & Furnham, 2004), and higher ability–trait EC is associated with higher job performance (see Van Rooy & Viswesvaran, 2004, and Joseph & Newman, 2010, for meta-analyses). Last, at a physical level, a

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deficit in emotion identification or regulation is involved in the onset, severity, or both, of several somatic disorders, such as diabetes (e.g., Luminet, de Timary, Buysschaert, & Luts, 2006), gastrointestinal disorders (e.g., Porcelli et al., 2003), and coronary heart diseases (e.g., Suls, Wan, & Costa, 1995). Ability–Trait EC is also linked to the likelihood of adopting unhealthy behaviors such as smoking, excessive drinking, and reckless driving (e.g., Brackett, Mayer, & Warner, 2004; Riley & Schutte, 2003; Trinidad & Johnson, 2002).

These results have spurred a number of interventions designed to help people from all walks of life to improve their EC (Matthews, Zeidner, & Roberts, 2002). The proliferation of these interventions was prompted by a cultural movement that put socioemotional learning to the foreground in both organizations and schools (Mayer & Cobb, 2000). Although validated programs for kids have emerged with positive outcomes (see Zins, Payton, Weissberg, & Utne O'Brien, 2007 for a review), programs for adults have been less successful due to several drawbacks. First, many of these interventions lack a clear theoretical rationale and use a miscellany of techniques of which psychological bases are sometimes dubious (Matthews et al., 2002; Matthews, Zeidner, & Roberts, 2007). Second, they usually target only some EC dimensions (e.g., emotion identification but not emotion management) and add a number of skills that are not considered as parts of EC, such as goal setting, decision making, and problem solving. Third, few interventions have been rigorously tested, and when evaluations of these programs exist they are often limited to the participants' subjective impressions, right after the training, without considering long-term effects. Last, only one EC-training evaluation to date included a control group (Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009).

Thus, in spite of the proliferation of trainings, important questions have remained unanswered: Is it possible to meaningfully improve adults' EC? Do the changes last? Do they lead to subsequent alterations in personality? In addition, crucially, which benefits—in terms of well-being, health, social relationships, and work success—are expected from such EC improvement?

This study aims to answer those questions while avoiding the shortcomings that have detracted from previous research. To this end, we designed an 18-hr intervention that focused on teaching theoretical knowledge about emotions and on training participants to apply specific emotional skills in their everyday lives. Sessions were centered on the four core emotional competencies: identification, understanding, regulation, and utilization (Mayer & Salovey, 1997; Saarni, 1999). Only empirically supported theories and methods were used to inform teaching modules (see Mikolajczak, Quoidbach, Kotsou, & Nelis, 2009, for a full description of the theoretical and empirical bases of the training). For example, Scherer's (2001) model on the multiple components of emotion and Ekman and Friesen's (1971) work on facial expressions informed a large part of the perception of emotion in oneself and in others. Likewise, effective emotion regulation strategies (e.g., Gross, 2007; Lazarus & Folkman, 1984) were used to develop a large part of the emotional regulation module. Because the best trainings are useless if the newly acquired skills are not transferred into real life, we designed each module to maximize both short-term and long-term transfer of competencies (see S. M. Barnett & Ceci, 2002; Yamnill & McLean, 2001, for reviews and transfer guidelines).

In Study 1, we used a controlled design to examine whether our empirically supported intervention would lead to a substantial, long-term improvement in EC. We also measured personality before and several months after the training, considering that any meaningful improvements in EC should be accompanied by changes in emotion-related personality traits, such as a decrease in neuroticism (Caspi & Roberts, 2001; Roberts, 1997).

In Study 2, we examined whether changes in EC resulted in observable changes in EC correlates, namely psychological well-being, subjective health, quality of social relationships, and work success. We reasoned that the training could only be deemed effective if it translates into real-life improvements for the participants. To ensure that the benefits of the training were attributable to the changes in EC and not to unrelated factors such as conforming to the experimenter's expectations, developing a social network, becoming involved in a new activity, and so forth, we compared the efficiency of the EC training with two control groups: one composed of people who did not participate in a training program, and another one composed of people following an improvisation drama training.

Study 1

The purpose of Study 1 was to investigate whether EC could be improved among young adults and whether these changes lasted. Moreover, we investigated whether increasing EC would lead to long-term changes in personality traits.

Method

Participants

Fifty-eight undergraduate students from the University of Liège participated in the study on a voluntary basis. There were 21 women and 8 men in both the training group ($M = 20$, $SD = 3.4$) and control group ($M = 20$, $SD = 1.3$). Sixteen participants of the training group attended all of the sessions, and all participants were unaware of their scores throughout the study. There were no significant differences between participants who completed all questionnaires and those who did not in regard to their initial ratings on all of the study variables (ps ranged from .110 to .806).[1]

Measures

Global emotional competence was assessed by using the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides & Furnham, 2003). The TEIQue consists of 153 items arranged on a 7-point Likert scale, ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). It provides scores on 15 subscales, four factors (well-being, self-control, emotionality, and sociability), and global trait EI. The TEIQue shows excellent psychometric properties (see

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[1] Details statistics for each measure are as follows: Trait Emotional Intelligence Questionnaire (TEIQue), $t(27) = 1,22$, $p = .23$; Emotion Regulation Profile–Revised (ERP-R), $t(27) = 0.82$, $p = .42$; Situational Test of Emotional Understanding (STEU), $t(27) = 1.10$, $p = .28$; neuroticism, $t(27) = -0.79$, $p = .43$; extraversion, $t(27) = -0.26$, $p = .81$; openness, $t(27) = 0.49$, $p = .62$; agreeableness, $t(27) = 1.66$, $p = .11$; conscientiousness, $t(27) = 0.29$, $p = .78$.

Mikolajczak, Luminet, Leroy, & Roy, 2007, for the psychometric properties of the French adaptation used in this study). In this study, the internal consistency of the global score was good (α = .81).

Emotion regulation was assessed through use of the Emotion Regulation Profile–Revised (ERP-R; Mikolajczak, Nelis, Hansenne, & Quoidbach, 2008; Nelis, Quoidbach, Hansenne, & Mikolajczak, in press). The ERP-R is a vignette-based measure that includes 15 scenarios, describing different types of emotion-eliciting situations. Each scenario features a specific emotion (anger, irritation, sadness, deception, fear, anxiety, jealousy, shame, guilt, joy, contentment, awe, excitement, gratitude, and pride) and is followed by eight possible reactions: four considered to be adaptive in the literature (situation modification, attention reorientation, positive reappraisal, and emotion expression) and four viewed as maladaptive (substance abuse, rumination, learned helplessness, and acting out). Respondents are required, for each scenario, to select the strategy (or strategies) that best describe their most likely reaction in the situation. Scores across situations are then averaged into an overall emotion regulation score (α = .89).

Emotion understanding was evaluated by selected items of the Situational Test of Emotional Understanding (STEU; MacCann & Roberts, 2008). The STEU is based on Roseman's (2001) model of the emotions system. According to this model, the 17 most common emotions can be explained by a combination of seven appraisal dimensions. The STEU is composed of 42 items that present emotional situation (decontextualized, workplace related, or private life related). For each item, participants have to choose what emotion the described situation will most likely elicit. In order not to overload participants, we selected and administered 14 items of the STEU that best fit with the student context. Additionally, we included six new items designed to assess knowledge about biological modifications and action tendencies for each emotion. The internal consistency of the overall measure was .68.

Personality was assessed via the NEO-FFI-R (McCrae & Costa, 2004), a widely used personality inventory based on the five-factor model (FFM; Costa & McCrae, 1992). This measure assesses the Big Five dimensions of neuroticism, extraversion, openness, agreeableness, and conscientiousness through 60 items rated on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The NEO-FFI-R dimensions showed good internal consistency in the present sample with scale reliabilities that range from .70 (extraversion) to .83 (neuroticism).

EC Intervention

The EC intervention consisted of either three 6-hr sessions (a session on each of 2 consecutive days and the last session 2 weeks later) or six 3-hr sessions (one session per week for 6 weeks). This interval between sessions gave participants time to apply their learning in their daily life. For practical reasons, the training group was split into three different smaller groups; two groups participated in the three-session format and one group participated in the six-session format.[2]

Each session was designed to enhance a specific emotional competence: understanding emotions, identifying one's own emotions, identifying others' emotions, regulating one's own emotions, regulating others' emotions, and using positive emotions to foster well-being. The content of each session consisted of short lectures, role-playing games, group discussions, and work in dyads. Participants were also provided with a personal diary in which they had to daily report one emotional experience. These emotional experiences had to be analyzed in light of the theory presented in class. Finally, various readings were also proposed. The detailed outline of the sessions is presented in the Appendix.

After the in-class training, an e-mail-based follow-up was set up to optimize knowledge transfer in daily life. Participants have received two e-mails per week for 6 weeks (12 e-mails total). Each e-mail included a theoretical reminder of the notions discussed in class and a related practical exercise. E-mails were kept as short and simple as possible to increase the chances they were read and put into practice.

Procedure

Participants completed all measures three times: prior to the intervention, at the end of the intervention (i.e., right after the 6 weeks of Internet follow-up), and 6 months later. Indeed, research shows that knowledge acquired during group training can take up to 6 months to translate into applied skills (e.g., Kirkpatrick, 1998; Rae, 2002). Personal diaries were given to participants at the end of the first session. Reminders and readings were given to the participants after each session. Participants in the control group completed the same measures as the training group, but they were not exposed to the training, diaries, or e-mails.

Results

Table 1 showed that there were no baseline differences between the training and the control group for the different measures, with the exception of agreeableness for which scores in the control group were higher.

Overall Effect of the Intervention

Mixed-Model Group (training vs. control) × Time (Time 1 vs. Time 2 vs. Time 3) repeated measures analyses of variance (ANOVAs) were performed on each measure, with group as the between-subjects factor and time as the within-subject factor. For each measure, we anticipated a Group × Time interaction, meaning no significant change in the control group and a significant change in the training group, indicating an increase in emotional competence. Analyses yielded a significant Group × Time interaction for global EC, $F(2, 74) = 23.37$, $p < .01$, estimate (μ_p^2) = .39; emotion regulation, $F(2, 74) = 14.97$, $p < .01$, $\mu_p^2 = .29$; emotion understanding, $F(2, 74) = 7.69$, $p < .01$, $\mu_p^2 = .17$; neuroticism, $F(2, 74) = 4.40$, $p = .02$, $\mu_p^2 = .11$; extraversion, $F(2, 74) = 6.12$, $p < .01$, $\mu_p^2 = .14$; and agreeableness, $F(2, 74) = 4.61$, $p = .01$, $\mu_p^2 = .11$. No significant Group × Time interactions were found for openness, $F(2, 74) = .81$, $p = .45$, and conscientiousness, $F(2, 74) = .62$, $p = .54$.

Short- and Long-Term Effects and Change Dynamics

The means, standard deviations, and *t* statistics between Time 1, Time 2, and Time 3 for each variable and group are shown in Tables 2, 3, and 4.

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[2] The intervention format had no impact on the results reported in this article.

Table 1

Means, Standard Deviations, and Significance of Differences Between Training and Control Group Prior to Emotional Competencies (EC) Intervention

Variable	Training group (*n* = 29) M (SD)	Control group (*n* = 29) M (SD)	*t*(56)	*p*
Trait EI	610.72 (81.01)	644.10 (61.30)	−1.76	.08
Emotion regulation	17.45 (15.30)	13.97 (12.44)	0.95	.35
Emotional understanding	19.28 (3.27)	20.34 (3.42)	−1.22	.23
Neuroticism	28.10 (10.13)	25.93 (7.98)	0.91	.37
Extraversion	28.90 (6.23)	27.80 (5.36)	0.72	.47
Openness	34.28 (5.60)	31.83 (5.07)	1.74	.09
Agreeableness	28.83 (4.59)	32.79 (5.63)	−2.94	<.01
Conscientiousness	30.93 (5.27)	28.52 (7.17)	1.46	.15

Note. EI = emotional intelligence.

In regard to short-term changes, the training group showed a significant increase on global EC, *d* = 1.13; emotion regulation, *d* = 1.20; emotion understanding, *d* = 0.70; and extraversion, *d* = 0.54, between Time 1 and Time 2. Changes in neuroticism and agreeableness failed to reach significance (see Table 2).

In regard to long-term changes, all of the significant increases found at Time 2 compared with Time 1 were also significant at Time 3 (see Table 3). Specifically, the training group scored higher on global EC, *d* = 0.91; emotion regulation, *d* = 0.38; emotion understanding, *d* = 0.60; and extraversion, *d* = 0.48. Moreover, participants in the training group reported lower neuroticism, *d* = 0.80, and higher agreeableness, *d* = 0.22, suggesting that these dimensions were also eventually affected by the intervention. As expected, the control group showed no significant difference between Time 1 and Time 2 for any of the measures (*ps* ranging from .303 to .945). Likewise, no significant differences were found between Time 1 and Time 3 on most measures (*ps* ranging from .064 to 1). Note, however, that the control group scored lower on global EC and openness between Time 1 and Time 3.

Last, we investigated the differences between Time 2 and Time 3. Significant increases would indicate that emotional competences kept improving after the training, whereas significant decreases indicate that the new competencies were gradually vanishing. Results show no significant differences in the training group for

global EC, emotion regulation, emotion understanding, and extraversion, indicating that changes right after the training remained stable over 6 months. Participants did, however, show decreased neuroticism, *d* = 0.43, and increased agreeableness, *d* = 0.42, between Time 2 and Time 3.

Development of EC and Personality Change

To investigate whether the observed long-term effects of the intervention on personality were due to an increase in EC, we first standardized and aggregated difference scores (Time 3 - Time 1) of emotion regulation, emotion understanding, and total emotional competence into an overall EC difference variable. We then performed mediation analyses on the three personality variables that changed 6 months after the training: neuroticism, extraversion, and agreeableness, to determine whether the effect of the intervention on personality was mediated by the increase of EC (Baron & Kenny, 1986). As illustrated in Figures 1, 2, and 3, increase in EC mediated the effect of the intervention on neuroticism and extraversion but not on agreeableness.

Discussion

The purpose of this study was to investigate—using a proper experimental design and a theoretically grounded training pro-

Table 2

Means, Standard Deviations, and Significance of Differences Between Time 1 and Time 2 for Each Variable and Each Group

Variable	Training group (*n* = 16) Time 1 M (SD)	Time 2 M (SD)	*F*(1, 37)	*p*	Control group (*n* = 23) Time 1 M (SD)	Time 2 M (SD)	*F*(1, 37)	*p*
Trait EI	627.06 (18.18)	716.87 (18.66)	44.69	<.01	636.78 (15.16)	638.13 (15.56)	0.01	.90
Emotion regulation	19.56 (3.35)	32 (2.92)	50.71	<.01	12.69 (2.80)	12.78 (2.43)	<0.001	.95
Emotional understanding	19.87 (0.80)	21.93 (0.67)	14.09	<.01	20.60 (0.66)	20.13 (0.55)	1.09	.30
Neuroticism	26.75 (2.25)	24.37 (2.40)	2.53	.12	26 (1.87)	25.52 (2.00)	0.15	.70
Extraversion	28.62 (1.54)	31.50 (1.42)	10.43	<.01	28.04 (1.29)	27.69 (1.18)	0.22	.64
Openness	34.75 (1.39)	33.62 (1.57)	3.00	.09	31.56 (1.15)	31.08 (1.30)	0.78	.38
Agreeableness	30.06 (1.23)	30.81 (1.28)	1.97	.17	32.21 (1.03)	32.13 (1.07)	0.04	.85
Conscientiousness	31.19 (1.53)	31.87 (1.51)	1.01	.32	27.60 (1.27)	27.34 (1.26)	0.21	.65

Note. EI = emotional intelligence.

Table 3

Means, Standard Deviations, and Significance of Differences Between Time 1 and Time 3 for Each Variable and Each Group

	Training group (*n* = 16)				Control group (*n* = 23)			
	Time 1	Time 3			Time 1	Time 3		
Variable	*M* (*SD*)	*M* (*SD*)	*F*(1, 37)	*p*	*M* (*SD*)	*M* (*SD*)	*F*(1, 37)	*p*
Trait EI	627.06 (18.18)	714 (14.43)	25.15	<.01	636.78 (15.16)	596.56 (12.03)	7.74	<.01
Emotion regulation	19.56 (3.35)	29.50 (2.56)	20.81	<.01	12.69 (2.80)	12.69 (2.13)	0	1
Emotional understanding	19.87 (0.80)	22.43 (0.49)	14.90	<.01	20.60 (0.66)	20.65 (0.41)	0.01	.94
Neuroticism	26.75 (2.25)	20.68 (2.30)	28.01	<.01	26 (1.87)	25.08 (1.91)	0.91	.35
Extraversion	28.62 (1.54)	31.43 (1.37)	13.81	<.01	28.04 (1.29)	27.91 (1.15)	0.04	.84
Openness	34.75 (1.39)	33.62 (1.59)	1.29	.26	31.56 (1.15)	29.65 (1.32)	5.35	.03
Agreeableness	30.06 (1.23)	32.43 (1.20)	6.82	.01	32.21 (1.03)	31.69 (1.01)	0.47	.50
Conscientiousness	31.19 (1.53)	32.43 (1.38)	2.34	.14	27.60 (1.27)	28.91 (1.15)	3.65	.06

Note. EI = emotional intelligence.

gram—whether EC could be lastingly increased and whether this increase would lead to significant changes in personality traits. Our findings indicated that compared with the control group, the training group showed a significant improvement in emotion understanding, emotion regulation, and overall emotional competence directly after the intervention. Analysis of the change dynamics further revealed that these initial changes remained stable over a 6-month period. That the effect was significant on all three measures of emotional competence suggests that the training did not only increase emotion-related knowledge and abilities but also, and more crucially, the use of this knowledge and abilities in daily life. Finally, our intervention led to an immediate increase in extraversion (i.e., right after the training), as well as a progressive increase in agreeableness and a progressive decrease in neuroticism, which all reached significance 6 months after training. Moreover, mediation analysis revealed that these changes were partly mediated by the increase in EC. The more participants learned to understand and manage their emotions, the more sociable and emotionally stable they became.

Our results suggest that personality traits that have been shown to be relatively stable over time can be modified through intensive training. These findings dovetail with previous studies, demonstrating that clinical interventions can actually change personality traits (P. A. Barnett & Gotlib, 1988; Lambert & Supplee, 1997;

Piedmont, 2001). These controlled interventions showed that personality traits are somewhat malleable, even in adulthood. Indeed, life experiences in several domains such as love and work are associated with personality trait change (Roberts, Wood, & Smith, 2005). The positive transformations observed in the current study also suggest that developing people's EC could lead to a number of other positive consequences usually associated with high EC (e.g., well-being, health, social, and performance-related benefits). Thus, the aim of Experiment 2 was to see whether our training would be effective in enhancing those EC correlates.

Study 2

To test the consequences of our intervention on EC correlates, we replicated Experiment 1 while including pre- and postintervention measures of various indicators of psychological, somatic, social, and work adjustment. Additionally, we aimed at overcoming several limitations of Study 1. First, the control group in Study 1 was composed of participants who did not take part in any group activity. Thus, participants in the training program (but not the control group) may have been inadvertently influenced by experimenter demands, expectations of improvement, and a number of group processes, including contact with a caring instructor and social support provided by the group. Therefore, in Study 2, we set

Table 4

Means, Standard Deviations, and Significance of Differences Between Time 2 and Time 3 for Each Variable and Each Group

|	Training group (*n* = 16)				Control group (*n* = 23)			
	Time 1	Time 3			Time 1	Time 3		
Variable	*M* (*SD*)	*M* (*SD*)	*F*(1, 37)	*p*	*M* (*SD*)	*M* (*SD*)	*F*(1, 37)	*p*
Trait EI	716.87 (18.66)	714 (14.43)	0.05	.82	638.13 (15.56)	596.56 (12.03)	15.30	<.01
Emotion regulation	32 (2.92)	29.50 (2.56)	2.68	.11	12.78 (2.43)	12.69 (2.13)	0.01	.95
Emotional understanding	21.93 (0.67)	22.43 (0.49)	1.04	.31	20.13 (0.55)	20.65 (0.41)	1.63	.21
Neuroticism	24.37 (2.40)	20.68 (2.30)	7.09	.01	25.52 (2)	25.08 (1.91)	0.14	.71
Extraversion	31.50 (1.42)	31.43 (1.37)	0.01	.93	27.69 (1.18)	27.91 (1.15)	0.15	.71
Openness	33.62 (1.57)	33.62 (1.59)	0	1	31.08 (1.30)	29.65 (1.32)	3.47	.07
Agreeableness	30.81 (1.28)	32.43 (1.20)	4.45	.04	32.13 (1.07)	31.69 (1.01)	0.46	.50
Conscientiousness	31.87 (1.51)	32.43 (1.38)	0.46	.50	27.34 (1.26)	28.91 (1.15)	5.06	.03

Note. EI = emotional intelligence.
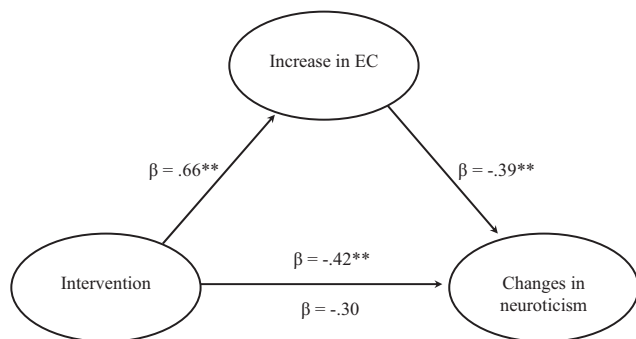
Figure 1. Results of the regression analyses that tested the mediating effect of emotional competence in the relationship between the intervention and personality changes. Asterisks indicate coefficients significantly different from zero, *p < .05. **p < .01. When increase in emotional competencies (EC) is included, the initial beta weight changed from β = −.42 to β = −.30.

up a second control group that took part in a drama improvisation training similar to the EC training in terms of length, possibility to experience group dynamics, and opportunity to develop new relationships. Second, conclusions of Study 1 were limited by our reliance on a majority of self-reports. Thus, in addition to self-report and paper-and-pencil tests, we included an informant-report evaluation of EC as well as an assessment of an important behavioral outcome: the probability of being hired by a future employer.

Method

Participants

The sample consisted of 92 undergraduates, 34 in the training group, 31 in the drama improvisation group, and 27 in the control group. There were 25 women in the training (EC) group ($M = 21$, $SD = 0.3$), 25 women in the drama improvisation group ($M = 21$, $SD = 0.3$), and 21 women in the control group ($M = 20$, $SD = 0.3$).
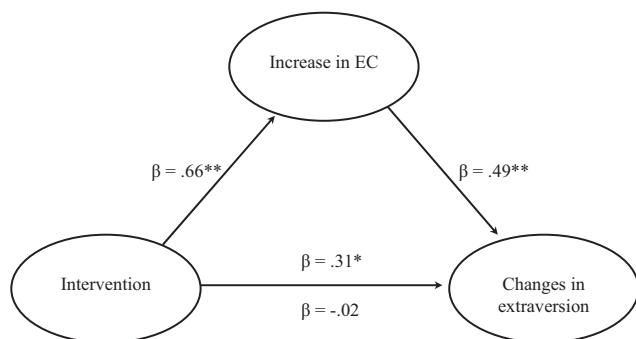

Figure 2. Results of the regression analyses that tested the mediating effect of emotional competence in the relationship between the intervention and personality changes. Asterisks indicate coefficients significantly different from zero, *p < .05. **p < .01. When increase in emotional competencies (EC) is included, the initial beta weight changed from β = .31 to β = −.02.
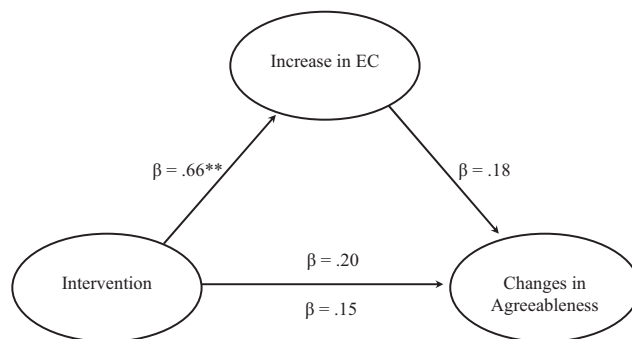

Figure 3. Results of the regression analyses testing the mediating effect of emotional competence in the relationship between the intervention and personality changes. Asterisks indicate coefficients significantly different from zero, *p < .05. **p < .01. When increase in emotional competencies (EC) is included, the initial beta weight changed from β = .20 to β = .15.

Pre- and Posttest Measures of EC

Self-report measures of global emotional competence were assessed by using the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue-SF; Petrides & Furnham, 2006). This measure is a short version of the previously described TEIQue, which comprises 30 7-point items providing a global EC score.

Informant-report of global emotional competence was assessed using the Trait Emotional Intelligence Questionnaire-360-Short Form (TEIQue 360°-SF; see Petrides, Niven, & Mouskounti, 2006). This measure is a short form designed for peer or 360° assessment of EC. It consists of 15 items, each representing one of the 15 facets of the TEIQue. Items include "[the participant] is able to express his or her feelings to others" and "[the participant] is good at managing other people's emotions (e.g., by consoling them or calming them down)." An informant (close friend or relative) was selected by each participant and was instructed to indicate how good they believed the participant was on each item using a percentage score (from 0% to 100%).

Emotion regulation was assessed through the Emotion Regulation Profile–Revised (ERP-R; Nelis et al., in press; Mikolajczak et al., 2008) described in Study 1.

Pre- and Posttest Measures of Adjustment

Mental disorders were evaluated through the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983; French adaptation by Dreyfus & Guelfi, unpublished). The BSI is the short version of the SCL-R-90 (Derogatis, 1975, 1977). This measure consists of 53 items forming nine subscales: anxiety, depression, somatization, obsessive–compulsive disorder, phobias, hostility, interpersonal sensitivity, paranoia, and psychotic symptoms. Respondents indicate on a 5-point scale, ranging from 0 (*not at all*) to 4 (*extremely*) how much they experienced each symptom over the past 7 days. The reliability of the BSI is excellent ($\alpha = .92$).

Somatic complaints were assessed through the Physical Inventory of Limbic Languidness (PILL; Pennebaker, 1982), which provides a list of 54 physical symptoms and bodily sensations. Participants are required to rate the frequency with which they experience each symptom–sensation on a 5-point scale (*never or nearly never/3 or 4 times a year/about every month/about every*

week/more than once a week). To keep the measures as short as possible, we removed symptoms that are unlikely among students (e.g., arthritis) and kept only the 29 most frequent somatic complaints at that age. This adapted PILL was highly reliable in our sample ($\alpha = .91$).

Happiness was assessed using the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). The measure contains four items scored on a 7-point Likert-type scale and provides a general assessment of whether one is a happy or an unhappy person. The internal consistency in our sample was .83.

Life satisfaction was appraised through the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). This validated five-item instrument was developed to assess respondents' satisfaction with their life as a whole. The scale does not assess satisfaction with life domains (e.g., health, social functioning). Participants indicate agreement or disagreement on a 7-point scale (1 = *strongly agree*, 7 = *strongly disagree*). The SWLS has favorable psychometric properties, including high temporal reliability (Diener et al., 1985). In this sample, internal consistency was good ($\alpha = .80$).

Global social functioning was assessed through a measure designed specifically for the present study. We aimed at measuring the quality of participants' relationships, their perceived social support, and their proficiency in social relationships. The measure consisted in 17 items scored on a 7-point scale. Items included "I have superficial relationships with my family," "If I have a problem I know I can count on help of friends and family," and "Most of the negotiations I participated in took place in a positive atmosphere." The internal consistency of the global social functioning score was .79.

Employability was assessed as follows. At pretest and posttest, we asked each participant to answer a set of two questions during a one-on-one videorecorded interview. Specifically, participants were provided with one brief scenario, featuring a hypothetical private life problem (e.g., a messy roommate who has not cleaned up the dishes for weeks) and one scenario featuring an hypothetical problem at work (e.g., a conflict between two members of the participant's team jeopardizes the achievement of an important project). Participants were given a few minutes to think about the scenarios and were then asked to explain to the interviewer how they would react in each situation. To avoid potential habituation effects at posttest, we designed an additional set of scenarios—equivalent in terms of the issues raised—such that the participants never answered the same question twice. Likewise, the interviewers—who were unknown to participants—were different at pretest and posttest. The order of the interviewers was counterbalanced, as were the sets of questions that they presented. Video interviews were then evaluated by a panel of 18 judges, all human resources professionals. Judges included people of both genders and from various sectors. No judge had to assess the same participant twice, and each judge was presented with participants from the three experimental groups and the two evaluation times (i.e., pretest and posttest). Each human resource specialist viewed between 40 and 50 interviews. For each participant, they were asked to judge—solely based on the interview—whether they would hire the participant, and, if not, the likelihood that they would keep the participant in a recruitment pool (on a scale from 1 to 7). Participants were credited 10 points when hired by a judge and 1 to 7 points for the likeliness to be kept in the recruitment pool. Scores across judges were aggregated into an overall employability score.

Emotional Competencies Intervention

The EC intervention was similar to the one described in Study 1. The training group was split into four smaller groups, which followed the same two schedules described in the previous study (three groups with three 6-hr sessions and one group with a six 3-hr sessions), followed by a 6-week e-mail follow-up.

Improvisation Drama Intervention

The improvisation training consisted of six 3-hr workshops. The 31 participants were split up into three groups. The workshops were prepared using a set of improvisational theater manuals and taught by an improvisation practitioner. The outline of sessions was as follows: (a) warm-up (i.e., relaxation, physical and vocal warm-up, concentration, and stimulation of imagination), (b) basic exercises (i.e., acquisition of new precepts and tools), (c) group improvisation (i.e., integration of these new acquisitions), and (d) debriefing.

Procedure

EC and improvisation interventions were promoted similarly on the campus (through presentations in the main departments and ads posted all around the campus). In both cases, we advertised the training as directly useful for student academic achievement, in the sense that it should help them to get more confident and less stressed during oral examinations and classroom presentations. There was no financial compensation for participation. Participants could choose between the EC training or the improvisation drama (which were presented as different methods to achieve the same results). The allocation to the different conditions was purposefully not random in order to (a) increase the ecological validity of the study and (b) determine whether participants who chose improvisation differed from participants who chose EC. In fact, there was no difference between groups at baseline in regard to the variable under study. Although we do not have a formal measure of baseline motivation, participants seemed equally motivated in both groups: first, subscriptions went equally fast in EC and improvisation groups and, second, there was nearly no drop out.

Participants in the three groups (EC, improvisation, and control) completed all of the measures twice: prior to Session 1 and at the end of the Internet monitoring (i.e., 6 weeks after the training). Participants in the control group completed the same measures as the EC and the improvisation groups, but they were not exposed to any training.

Results

There were no baseline differences between the three groups for any of the variables under consideration (see Table 5).

A Mixed-Model Group (EC vs. improvisation vs. control) $\times$ Time (Time 1 vs. Time 2) ANOVA was carried out on each measure. Results show significant Group $\times$ Time interactions for self-report global EC, $F(2, 57) = 4.46$, $p = .02$, effect size estimate $(\mu_p^2) = .14$; emotion regulation, $F(2, 81) = 9.10$, $p < .01$, $\mu_p^2 = .18$; somatic complaints, $F(2, 83) = 5.41$, $p < .01$, $\mu_p^2 = .12$;

Table 5

Means, Standard Deviations, and Significance of Differences Between Training, Improvisation and Control Group Prior to Intervention

Variable	EC group M (SD)	Improvisation group M (SD)	Control group M (SD)	F	p
Trait EI	4.54 (0.12)	4.73 (0.13)	4.72 (0.14)	0.73[a]	.49
Emotion regulation	14.38 (1.88)	17.84 (1.97)	16.19 (2.11)	0.81[b]	.45
Somatic complaints	2.10 (0.09)	2.04 (0.09)	2.05 (0.10)	0.14[b]	.87
Mental disorders	1.72 (0.08)	1.68 (0.08)	1.77 (0.08)	0.29[c]	.75
Happiness	4.69 (0.19)	4.62 (0.20)	4.56 (0.22)	0.11[b]	.90
Life satisfaction	4.68 (0.19)	4.67 (0.20)	4.87 (0.22)	0.29[b]	.75
Social functioning	4.74 (0.14)	4.88 (0.15)	4.87 (0.16)	0.33[b]	.72
Trait EI 360°	1,095.56 (27.90)	1,110.82 (30.74)	1,074.48 (31.31)	0.35[d]	.71
Employability	0.13 (0.27)	0.16 (0.25)	0.12 (0.18)	0.19[e]	.83

Note. EC = emotional competencies; EI = emotional intelligence.
[a] (2, 82). [b] (2, 89). [c] (2, 88). [d] (2, 86). [e] (2, 83).

mental disorders, $F(2, 82) = 3.05$, $p = .05$, $\mu_p^2 = .07$; happiness, $F(2, 83) = 3.20$, $p = .05$, $\mu_p^2 = .07$; global social functioning, $F(2, 83) = 3.52$, $p = .03$, $\mu_p^2 = .08$; and employability, $F(2, 79) = 3.44$, $p = .04$, $\mu_p^2 = .08$. There were no significant Group × Time interactions for life satisfaction, $F(2, 83) = 1.99$, $p = .14$, and for informant-report global EC, $F(2, 81) = 0.81$, $p = .45$.

The means, standard deviations, and *t* statistics between Time 1 and Time 2 for each variable and each group are shown in Table 6. The EC group showed a significant increase in self-report global EC, $d = 0.16$; emotion regulation, $d = 0.61$; happiness, $d = 0.57$; life satisfaction, $d = 0.59$; global social functioning, $d = 0.47$; informant-report global EC, $d = 0.30$; and employability, $d = 0.30$. In addition, the EC group showed a significant decrease in somatic complaints, $d = 0.61$, and mental disorders, $d = 0.62$.

The improvisation group showed a significant increase in happiness, $d = 0.45$, and global social functioning, $d = 0.20$. Results showed a marginally significant reduction of somatic complaints and mental disorders, and a marginal increase in life satisfaction. No significant differences were found for global EC, emotion regulation, informant-report global, and employability. The control group showed no significant differences between Time 1 and Time 2 (*p*s ranged from .13 to .95).

Discussion

Consistent with our previous findings, results of Study 2 show that EC can increase after a brief training. Moreover, that EC did not increase in the drama improvisation and control groups suggests that these improvements were specific to our training and cannot be explained by experimenter demand, expectation of improvement, or other group processes. It is more important to note that Study 2 shows that developing EC leads to a wide array of positive consequences. Participants in the EC training group reported a significant improvement of their physical health, mental health, happiness, life satisfaction, and global social functioning. Likewise, employability also increased following the EC intervention, as a diverse panel of human resource professionals were more likely to hire participants after the training.

Summary and Concluding Discussion

Interventions designed to improve adults' EC have multiplied in the last decade. However, very few of these programs are based on solid theoretical models and even fewer have been rigorously tested (Matthews et al., 2002). Whereas previous work conducted in our lab suggests that EC can be improved (Nelis et al., 2009), the implication of such training for people's lives remained largely unknown. This study is the first to investigate how a rigorous, evidence-based EC training can lead to sustainable improvements of emotional functioning, long-term personality changes, and important positive implications in various life domains. Using a controlled design, we first showed that 18 hr of training with e-mail follow-up was sufficient to significantly and lastingly— initial changes remained stable over 6 months—improve emotion regulation, emotion understanding, and overall EC. These changes, in turn, seem to lead to long-term significant changes in some personality dimensions: Six months after the intervention, participants in the training group were more extraverted, more agreeable, and less neurotic. In a second study, we further confirmed—by comparing it to a drama improvisation training group—that the effectiveness of our EC training was specifically due to the content of the program. We also showed that the development of EC paired with positive changes in psychological well-being, subjective health, quality of social relationship, and work success. The effect sizes were sufficiently large to consider the changes as meaningful in people's lives.

Our findings are in line with previous studies showing that emotional abilities and habits may be effectively improved, even using a relatively short training (Nelis et al., 2009; Slaski & Cartwright, 2003). Moreover, a growing number of studies are highlighting the importance of social-emotional learning for children's mental health, social relationships, and school performance (Greenberg et al., 2003; Zins, Weissberg, Wang, & Walberg, 2004). This study further emphasizes this conclusion and extends it to an adult population: not only can people improve their emotional competencies as adults, but learning to identify, understand, express, manage, and use emotions to one's advantage can also be beneficial for them. These findings bring hope to people

Table 6
Means, Standard Deviations, and Significance of Differences Between Time 1 and Time 2 for Each Variable and Each Group

	EC group				Improvisation group				Control group			
	Time 1	Time 2			Time 1	Time 2			Time 1	Time 2		
Variable	M (SD)	M (SD)	F	p	M (SD)	M (SD)	F	p	M (SD)	M (SD)	F	p
Trait EI (n = 26)	4.54 (0.12)	5.06 (0.14)	20.07[a]	<.01	4.78 (0.14)	4.94 (0.16)	1.51[a]	.23	4.46 (0.16)	4.43 (0.19)	0.04[a]	.85
Emotion regulation (n = 30)	13.77 (1.95)	24.27 (2.27)	27.99[b]	<.01	17.33 (2.05)	19.26 (2.40)	0.85[b]	.36	16.19 (2.05)	14.85 (2.40)	0.41[b]	.53
Somatic complaints (n = 31)	2.07 (0.09)	1.89 (0.10)	9.27[c]	<.01	2 (0.10)	1.89 (0.10)	3.13[c]	.08	2.04 (0.10)	2.14 (0.10)	3.13[c]	.13
Mental disorders (n = 31)	1.69 (0.08)	1.47 (0.08)	8.31[d]	<.01	1.66 (0.08)	1.51 (0.09)	3.52[d]	.06	1.77 (0.08)	1.82 (0.09)	0.35[d]	.56
Happiness (n = 31)	4.68 (0.21)	5.10 (0.18)	7.33[c]	<.01	4.63 (0.21)	5.13 (0.19)	8.74[c]	<.01	4.56 (0.22)	4.50 (0.19)	0.11[c]	.74
Life satisfaction (n = 31)	4.70 (0.20)	5.19 (0.18)	10.03[c]	<.01	4.73 (0.20)	5.02 (0.19)	3.19[c]	.08	4.87 (0.21)	4.90 (0.19)	0.05[c]	.82
Social functioning (n = 31)	4.73 (0.15)	5 (0.12)	6.22[c]	.02	4.91 (0.15)	5.29 (0.13)	11.16[c]	<.01	4.88 (0.16)	4.84 (0.13)	0.09[c]	.76
Trait EI 360° (n = 29)	1,086.24 (29.37)	1,134.07 (32.32)	4.61[b]	.04	1,110.82 (29.89)	1,134.57 (32.89)	1.09[b]	.30	1,074.48 (30.44)	1,081.82 (33.49)	0.10[b]	.75
Employability (n = 34)	0.13 (0.27)	0.33 (0.31)	11.95[e]	<.01	0.16 (0.25)	0.17 (0.30)	<0.01[e]	.99	0.13 (0.18)	0.12 (0.19)	<0.01[e]	.95

[a] (1, 57). [b] (1, 81). [c] (1, 83). [d] (1, 82). [e] (1, 79).

who have not had the opportunity to develop their EC as children. With motivation, effort, and guidance, such individuals can still improve their EC later in life, and thereby enhance their adjustment in many domains of life.

Our intervention had a significant effect on several indicators of adjustment. First, it enhanced well-being and life satisfaction while improving mental health. This is not surprising because emotional competencies (emotion regulation in particular) are central to preserving mental health. Over half of the nonsubstance-related Axis I disorders and all of Axis II *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) disorders involve some form of emotion dysregulation (Gross & Levenson, 1997). Second, our intervention also improved participants' subjective physical health by decreasing somatic complaints. This was also expected as emotional competencies play a significant role in health and disease (e.g., Bastin, Luminet, Buysschaert, & Luts, 2004; Porcelli et al., 2003; Suls et al., 1995). Third, the training improved participants' social relationships. This finding is consistent with research that demonstrates that individuals for whom it is difficult to identify, express, or regulate their emotions have fewer friends, have social and marital relations of lower quality, and experience more frequent interpersonal conflicts (Schutte et al., 2001; Lopes et al., 2005). Fourth and finally, the intervention enhanced employability, which we expected as emotional competencies explain a significant part of variance of work performance (see Van Rooy & Viswesvaran, 2004, for a meta-analysis).

The latter finding is noteworthy because the employability measure was fully objective. During the second interview, participants referred more often to their feelings and took others' feelings into account more. They also better managed their stress in front of the camera, allowing them to answer the questions in a calmer and more structured fashion. These qualities seem to have been considered as particularly important by recruiters. It thus appears that our findings might have potential applications for the issue of unemployment. Outplacement firms typically provide employees with job search, networking, self-marketing, résumé, and interview tools (e.g., Westaby, 2004). Our findings suggest that EC might be a key element in finding a job. We suggest that EC development modules could be fruitfully included in programs that aim to raise people's employability.

Another important finding of this study is that improving emotional competencies has an impact on personality. The progressive reduction in neuroticism indicated that the training provided participants with an enhanced—and broader—sense of self-esteem and coping ability. The increases in extraversion and agreeableness suggest that the intervention prompted the emergence of an interpersonal style that fostered more positive and emotionally sustaining relationships with others. This effect on personality might be surprising as personality is often thought to be entirely stable. An increasing number of studies, however, support the view that personality is both stable and changing: Stability is explained by genetic factors whereas change is determined to a large extent by environmental influences (McGue, Bacon, & Lykken, 1993). Therefore, there is room for personality change, but only under certain circumstances. In accordance with this view, several studies show that clinical interventions can effectively alter personality traits (Lambert & Supplee, 1997; Piedmont, 2001). Moreover, previous research has shown that personality scores do change following the remission or amelioration of psychological symp-

toms (see P. A. Barnett & Gotlib, 1988). These studies showed—like ours—that personality traits are somewhat malleable, even in adulthood (Robert et al., 2005).

Although the changes observed in our study (i.e., increase in EC, decrease in neuroticism, increase in extraversion and agreeableness) appear to be globally adaptive (i.e., they are associated with a global improvement of physical and mental well-being, social relationships and employability), it should be stressed that higher scores on these competences and traits are not always desirable (see Petrides & Sevdalis, 2010). Just as a high IQ may become unfavorable in a low-IQ environment, there might be situations–tasks in which people with lower emotional competencies adapt or do better. Thus, future studies will have to go beyond the overall positive effect of the training and determine whether it bears some specific–contextual negative side effects.

Although this study breaks new ground, future research is called for to probe or refine its findings. First, the sample was predominantly composed of female students. Future work would benefit from replicating these results with a larger and more heterogeneous sample. Second, our sample included participants who were motivated for self-change. Therefore, it is possible that the intervention would not work with a less receptive audience. Third, instructors were not the same in EC and improvisation group. This does not allow to firmly rule out that the differential effects of intervention are due to the differential charisma, effectiveness, or motivational capacity of the instructors rather than the content of the intervention itself. However, it is unlikely that the effects of the training solely rest on an experimenter effect. First, the instructor in EC training was not the same across Study 1 and 2, yet the intervention was equally effective in both studies. Second, two other studies (Study 3 and 4, submitted for publication) have now been run to investigate the effect of the training on endocrine (Kotsou, Nelis, Grégoire & Mikolajczak, 2011) and neural activity (Nelis, Majerus, Feyers, Salmon, & Hansenne, 2011). Studies were conducted by different trainers, who were purposefully chosen because they had different personalities, different levels of charisma, and different levels of experience. The intervention had the desired effect in all cases. Thus, we can be pretty confident that the training (content and methods) is effective in itself. Regarding the difference between EC and improvisation training, the instructor in the improvisation group was an experienced improviser, who was chosen for that reason. By contrast, the EC trainer of Study 2 had no experience at all. Therefore, it is unlikely that the effects are attributable to the experimenter. A fourth direction for future research implies the inclusion of objective measures of emotional processing (e.g., frontal asymmetry, fMRI, etc.) to probe the biological mechanisms underlying improvement in EC. This seems particularly relevant as recent research demonstrated that people who practice meditation show different brain activity from those who do not (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davisdon, 2007). Moreover, cognitive behavioral therapy has proved to modify the dysfunctional neural circuitry associated with anxiety disorders (Goossens, Sunaert, Peeters, Griez, & Schruers, 2007; Paquette et al., 2003) or depression (Schaefer, Putnam, Benca, & Davidson, 2006). Building on this research, our lab is currently investigating the structural and functional changes in the brain associated with the development of EC. Finally, and perhaps most crucially, future research will have to determine how long the changes last. We have demonstrated that they lasted for at least 6 months. For how long do they live on afterward? This is a crucial issue that certainly deserves further investigation.

Overall, our results are promising because they demonstrate that, with a proper methodology relying on the latest scientific knowledge of emotion and emotional processing, EC can be enhanced, which in turn, improves people's lives. Applications of this intervention in health, educational, and organizational settings offer a promising approach to developing and promoting effective life skills.

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(*Appendix follows*)

Appendix

Outline of EC Training Sessions

First day

Session 1: Understanding emotions
    Welcome–Explanation of the sessions and introduction to the use of the personal diary.
    Introduction to the importance of emotions and explanation of key concepts (emotions, EC).
    Videoclips illustrating the importance of emotions.
    Summary.
Session 2: Identifying emotions
    Review of previous session.
    Identifying one's emotions using three doors (i.e., physiological activation, cognitions, and action tendencies): theory
        and practice.
    Identifying other's emotions through nonverbal communication.
    Identifying other's emotions through facial expression decoding: drill with the METT program.
    Summary and homework.

Second day

Session 3: Listening to other's emotions
    Review of previous session and homework.
    Basic communication rules.
    Active listening.
    Empathic listening.
    Role play on active listening.
    Summary.
Session 4: Expressing emotions to others
    Review of previous session.
    How to express emotions: facts—emotions—needs—positive solutions.
    Role play on the expression of emotions.
    How to manage a conflict? Theory and role play.
    Summary and homework.

Third day

Session 5: Managing emotions
    Review of previous session and homework.
    Coping strategies and their effectiveness: theory and group discussion.[a]
    Positive reappraisal: role play and drill.
    Mind–body connections and relaxation exercises.
    Summary.
Session 6: Enhancing positive emotions
    Review of previous session.
    The importance of positive emotions: theory and group discussion.
    Using the power of positive emotions: promoting positive feelings (e.g., gratefulness).
    Savoring: theory and exercises.
    Summary–Questions–Evaluation.

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[a] Participants did not receive instructions on situations similar to those included in the Emotion-Regulation Profile–Revised, nor on managing situations structurally similar to those used to rate employability. Thus, our measures (ERP-R or employability test) were in no case taught to participants. Instead, they received decontextualized information on emotion regulation strategies, followed by a group discussion. In the latter, we invited participants to identify the recurring situations that induced negative emotions in their own life (the most frequent were relationship problems with their boyfriend–girlfriend, academic stress, or both, none of which appears in the ERP-R) and imagine better ways to handle them. Outline of EC Training Sessions.