

Effectiveness of psycho-educational intervention to promote mental health focused on emotional intelligence in middle-school

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Abstract

Purpose. The specific “outcome-oriented” pattern of the emotional intelligence (EI) should be considered of capital importance for teenagers in order to promote mental health. Nevertheless it is rarely evaluated because a specific tool, useful for routinely use, is not available. In this paper the authors describe the effectiveness of a new approach of public health to improve the EI “outcome-oriented”, by a specific index.

Design. A comparison of two samples: experimental (i.e. applying the program) vs control group, without randomization.

Setting. 12 classes belonging to 3 different schools.

Subjects. A sample of 276 students, 146 (53%) belonging to the experimental classes.

Intervention. A program of 20 meetings, once a week, based on the handbook *Intervento psicoeducativo per la promozione del benessere psicologico e dell'intelligenza emotiva nelle scuole* (Psycho-educational intervention for promoting psychological well-being and emotional intelligence at school) in order to stimulate a “peer to peer student approach”.

Measures. Index of emotional intelligence (15 items), inventory idea questionnaire (19 items), learning ability questionnaire (6 items).

Analysis. Nonparametric tests were used.

Results. The authors found significant statistical differences at the conclusion of the study for all considered measures.

Conclusion. The results show a remarkable and positive impact of the approach above all on the “outcome-oriented” EI. Significant results were also observed about the indicator concerning irrational beliefs. The same significant results were found about learning abilities (goal definition, problem-solving and communication skills). The main limit is the study design (lack of randomization). Further evaluation is needed.

Key words

- mental health promotion
- emotional intelligence
- cooperative learning
- school
- psycho-educational structured approach

INTRODUCTION

Adolescence is the most important period for laying the foundations of psychological well-being. The estimated prevalence of worldwide mental health problems among young people associated to school failure, delinquency and substance misuse is 10-20% [1, 2]. School is considered one of the most important contexts for the promotion of mental health [3, 4]; this environment offers the best opportunity for this initiative [3, 4]. Promoting positive mental health may provide young people with the necessary life skills and resources to accomplish their potential and to deal with adversities [3]. This kind of initiative may be effective especially if

health promotion programs are undertaken as part of school activities that improve social and life skills [5-7] and include active forms of learning, time focused on reaching realistic learning goals and lesson plans written in a handbook [8]. It is important for these programs to focus on Life skills [7, 9], because they are considered psychosocial competences that help people to be more aware in the process of decision-making, problem solving, critical and creative thinking, effective communication and healthy relationships, in order to manage their lives in a healthy and productive manner; the most important competences are self-efficacy, problem-solving, empathy and coping strategies [10].

Training for Life Skills [11] is effective if “active forms of learning are used” with “sufficient time focused on reaching explicit learning goals” [12] according to the theory of the Social Skill Training, the most effective intervention to acquire skills in the field of mental health [13]. The method of Social Skill Training is founded on the psycho-educational approach which suggests a procedure based on small direct instructional steps to be dealt with in sequence in order to be mastered. Written lesson plans, including suggestions for skill acquisition practices, are very useful for this purpose [14, 8].

The Italian National Institute of Health has developed a handbook [5] that is a psycho-educational guide for facilitators in order to promote mental health among high school students. It was designed to reach all students, regardless of their level of risk in developing emotional/behavioural problems, with the aim to promote self-efficacy, psychological well-being, and satisfaction with life [15]. The core component of the handbook is training in the form of structured problem-solving and teaching skills that enable students to improve emotional intelligence to cope satisfactorily with psychosocial problems and stress in their life. It was inspired by Goleman’s model of emotional intelligence [16] and Falloon’s psycho-educational approach [17], in which psychiatric patients and their families are trained to use structured problem-solving to address problems that cause them the most stressful situations in their life. Therefore, it greatly emphasises structured problem-solving and regulation, and utilization of emotional information techniques. In addition, the handbook places a high level of importance on defining personal goals and using communication skills [18]. These last two skills make the approach significant and innovative, because promoting students’ active involvement in taking decisions concerning their individual objectives could give them greater control over their lives and better personal and social functioning.

A preliminary study was carried out to evaluate the effectiveness of the handbook implementation, and although positive results were found [19], the authors considered them not satisfactory as expected. In that study, the handbook implementation was evaluated through a quasi-experimental study design involving four high school classes (two of which acting as a control), including 79 students aged 14 to 16 years (15.35 ± 0.68). The results showed improvement in perceived self-efficacy ($p \leq 0.001$), but limited improvement in behavioural and psychosocial problems, as assessed by Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) and well-being as assessed by the Health and Wellness Questionnaire [18]. The authors thought that future studies in which students practice assiduously and apply targeted skills outside the classroom should obtain better outcomes. This was an important issue because in the handbook programme regular practice was a key component of effective skills acquisition. For that purpose, the authors considered appropriate to incorporate a notebook in the handbook to stimulate homework in order to allow students to consolidate skills outside the classroom. This notebook mainly consisted of exercises to be conducted on

a daily basis at home and some space to report what the students experienced in applying the exercises. As a consequence, in a second effectiveness study involving 10 high school classrooms (5 of which acting as a control), including in total 162 students aged 14 to 16 years, the results showed an improvement in self-efficacy and well-being, as well as an improvement in applying communication and problem solving techniques to solve psychological and interpersonal relationships problems. The results also showed a decrease of some behaviours at risk, such as involvement in fights and smoking [20]. After this encouraging performance, the authors speculated that the handbook equipped with the notebook might also enter in practice in middle-school, for pupils younger than 15 years, considering that late childhood and puberty are critical moments of opportunity for building skills and positive habits [7]. For this purpose, some few changes in the wording of the handbook were made; essentially, the topics and the examples were provided in a jargon more suitable to middle-school students aged 12-14 years. Lastly, a preliminary study was carried out to compare the outcomes obtained from 91 high school students with those of 38 middle school students who used the new version of the handbook [21]. As with the previous study, the results showed improvements in communication and problems solving skills and subjective well-being both in middle and high school students [21].

However, in all the above mentioned studies, the Emotional Intelligence (EI), which is a key competence covered in the handbook [5, 21], was not assessed because a easy tool to be used in non clinical settings was not available in Italy. The available instruments were questionnaires or interviews for assessing the emotional intelligence quotient, such as the Emotional Quotient Inventory (EQ-I) [22] or its characteristics related to personality organization, such as Trait Emotional Intelligence Questionnaire (TEIQue) [23]. These instruments were too long and elaborated especially for clinical purposes. For the authors, an ideal EI instrument for assessing mental health educational programs had to be comprehensive, (*i.e.*, covering all relevant domains of emotional intelligence: knowing your emotions, managing your own emotions, using emotions to motivate yourself, recognising the emotions of other people, managing relationships); but at the same time easy and speed to administer; *outcome* oriented (*i.e.*, particularly able to assess the ability to use emotions for achieving personal goals) [24]. Accordingly, a tool called Index of Emotional Intelligence (IEI) was developed and validated by the authors in the attempt to give an original answer to this issue [25].

In order to corroborate the preliminary results, which suggested that the handbook for middle school produced significant positive effects on targeted attitudes about life skills, and determine whether or no it would also produced significant positive effects on targeted emotional competencies (*i.e.*, emotional intelligence, and abilities to recognize and modify dysfunctional thoughts that precede, accompany, and follow unpleasant emotions), in the 2018-2019 school year, the authors performed a pre-post test study design with a con-

trol group in 3 Italian middle schools. The short-term results are reported in the present paper.

METHOD

The handbook for middle-school

The theoretical basis of the handbook is the “salutogenic” approach as suggested by the World Health Organization (WHO) [7]; the handbook consists of four main modules: defining goals, problem-solving, effective communication, recognizing emotions and coping with anger. According to these modules, the main contents of the handbook [23] address skills such as defining personal goals; using structured problem solving; adopting effective communication skills; using negotiation for improving interpersonal relationships; coping with stress and anger; resolving conflict; recognizing and modifying negative dysfunctional beliefs that precede, accompany, and follow unpleasant emotions (*available online a Supplementary Material*). The handbook mainly consists of exercises to be practiced at school and at home. The handbook includes several work-units which are articulated in the following steps: description of the unit’s content; emotional Roll Call; a random check of the homework among 2-3 students, with a focus on their personal goals; 3-4 students in turn read the content of the unit and the instructions to perform exercises (2-3 exercises) in a small group (60% of total time is dedicated to role-playing), followed by feedback; homework assignment to be performed by using the notebook. By way of an example, the content of the *problem solving* work-unit is synthetically reported (*available online a Supplementary Material*). The cooperative learning methodology is a “peer to peer student approach” supervised by a trained facilitator. The handbook is designed so that students can take turns in reading brief sections with facilitators coordinating group discussion on the key points and their specific relevance to students in the classroom.

Implementation of the handbook

The implementation was held in the classroom during regular school hours and each work-unit of the handbook in the vast majority of cases needed one-hour session a week. Sessions were coordinated by facilitators, psychologists/pedagogists who were trained by the handbook’s authors; specifically they completed the training through a one-day session and also received a guide with practical information. It is worth noting that the role of facilitators was stimulating the active participation of all students in classroom and ensuring that sessions were conducted as described in the handbook.

Study design

Twelve classes of 3 middle schools volunteered to participate in the study (four classes in each school). In each school, two classes were identified for being included in the experimental group and others two for inclusion in the control group.

The total sample consisted of 276 middle-school students (51% females; mean age = 12.7 ± 0.6; range = 11-15): six experimental classes (146 students, 54% fe-

males) and six classes as a control group (130 students, 48% females).

The schools and the classes were chosen on the basis of voluntary participation by headmasters (the principals of the schools) and teachers, without any particular criteria or preferences. School councils of the participating schools approved the study. As the study concerned a psycho-educational intervention, it needed no formal approval by the Ethical Committee of the National Institute of Health, which was nevertheless consulted and gave informal authorization.

The study was worked out according to the international guidelines and ethical codes of the Belmont and Oviedo chart as well as the first section, paragraph 9 of the Italian ethical code of the Order of Psychologists. Prior to participation, students’ parents signed written informed consent.

Instruments

Students attending the classes completed twice some self-administered assessment instruments (see later), before and after the handbook implementation. They had to generate a secret password which had to be memorized and reported on all the instruments.

Index of Emotional Intelligence, IEI [25]. The IEI assesses, by 15 items, the ability to regulate emotions in a flexible, adaptive way, oriented to personal goals. It uses a 4 level Likert-Scale, ranging from strongly disagree to strongly agree (*see Figure 1*). The minimum score is 15 (very low), the maximum is 60 (very high), with a central value of 37.5. The internal consistency is alpha 0.72.

Inventory Idea Questionnaire [26]. It consists of 19 items related to irrational/dysfunctional beliefs. It uses a 4 level Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree) for each item. The minimum score is 19 (the greatest IB), the maximum 76 (the greatest functional beliefs). The internal consistency is alpha 0.84.

Learning Abilities Questionnaire (LAQ). This tool, *ad hoc* developed, with items constructed to assess learning levels of the most important skills covered by the handbook (as reported by the students on the basis of case-vignettes), in total 6 skills through 6 items, one for each skill: a) item 1, for smart-goal definition with a score ranging from 0 (no ability) to 5 (greatest ability); b) items 2-5, for the four communication skills (each of them made up of 4 components). The score is 1 if the specific component is known, otherwise it is 0. For each communication skill the score ranges from 0 to 4. For all communication skills therefore the total score ranges from 0 to 16; c) item 6, for problem solving. For each of the six steps known the score is 1. As a consequence, the score ranges from 0 (no steps are known) to 6 (all steps are known). Finally, the LAQ total score ranges from 0 to 27 (5 points for the first item plus 16 points for the four items of communication skills plus 6 points for the item of problem-solving).

Statistical analysis

For all variables nonparametric tests were used. The Mann-Whitney U-Test was used to compare scores between groups (experimental versus control) at pre- and

post-implementation. The Wilcoxon signed-rank test was used to compare scores obtained in the pre- and post-implementation for each group (experimental and control). All statistical analyses were performed using SPSS software version 25 (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.).

RESULTS

Sample

All students completed both pre- and post-tests. There were no immigrants; there were only 5 foreigners, who had been living in Italy for more than 8 years. The percentage of divorced parents was 12%, equally distributed in the classes. There was socio-economic homogeneity in the sample.

Experimental vs control group

IEI: no significant statistical differences were found between the experimental group vs control, before (mean ranks = 139.8 vs = 137.0; $U = 9305.0$; $p = 0.77$). Significant differences were found at the conclusion of the study (mean ranks = 149.1 vs = 126.5; $U = 7918.0$; $p < 0.01$). At pre-post comparison in the control group the mean-rank Wilcoxon test was 4.30 ($p = 0.001$); in the experimental group was 7.18 ($p = 0.001$), therefore an improvement was observed in both experimental and control groups with regard to emotional intelligence.

Idea Inventory Questionnaire: no statistical significant differences were found between the groups before (mean ranks = 142.1 vs = 134.5; $U = 8967.5$; $p = 0.43$). Significant differences were found at the conclusion of the study (mean ranks = 149.1 vs = 126.6; $U = 7938.5$; $p < 0.05$). At pre-post comparison in the control group the mean-rank Wilcoxon test was 2.47 ($p < 0.01$); in the experimental group was 2.7 ($p < 0.01$), therefore an improvement was observed in both experimental and control groups with regard to irrational/dysfunctional beliefs.

LAQ: no statistical significant differences were found between the groups before the study for all variables. Significant differences at the conclusion of the study were found for all variables:

- *goal definition* (mean ranks = 148.3 vs 127.5; $U = 8055.5$; $p < 0.05$). At pre-post comparison in the control group the mean-rank Wilcoxon test was 0.94 ($p = 0.35$), in the experimental group was 2.21 ($p = 0.027$);
- *expressing positive feelings* (mean ranks = 163.7 vs 110.2; $U = 5811.0$; $p < 0.01$). At pre-post comparison in the control group the mean-rank Wilcoxon test was -1.0 ($p = 0.32$), in the experimental group was 6.96 ($p < 0.001$);
- *making requests* (mean ranks = 163.0 vs 110.9; $U = 5909.0$; $p < 0.01$). At pre-post comparison in the control group the mean-rank Wilcoxon test was -1.24 ($p = 0.21$), in the experimental group was 4.97 ($p < 0.001$);
- *expressing unpleasant feelings* (mean ranks = 166.0 vs 107.6; $U = 5468.0$; $p < 0.01$). At pre-post comparison in the control group the mean-rank Wilcoxon test was -1.55 ($p = 0.13$), in the experimental group was 6.58

($p < 0.001$);

- *active listening* (mean ranks = 158.2 vs 116.4; $U = 6610.0$; $p < 0.01$). At pre-post comparison in the control group the mean-rank test was -0.33 ($p = 0.74$), in the experimental group was 6.15 ($p < 0.001$);
- *problem-solving* (mean ranks = 144.2 vs 132.2; $U = 8664.0$; $p < 0.05$). At pre-post comparison in the control group the mean-rank Wilcoxon test was -2.89 ($p = 0.004$), in the experimental group was 2.11 ($p = 0.035$); therefore an improvement was observed in the experimental group and a worsening in the control group with regard to problem solving.

The scores of both experimental group and control group at T0 (pre-implementation) and T1 (post-implementation) and differences between experimental and control groups at pre- and post-implementation are summarized in *Table 1*.

DISCUSSION AND CONCLUSION

This study confirms, as observed by the same authors previously, that school can be considered one of the more important setting to promote mental health [3, 4].

In this research, attention was focused on improvements of EI outcome-oriented and irrational beliefs to demonstrate the effectiveness of the intervention. At the baseline, the IEI difference between the two groups was not statistically significant ($p = 0.77$), whereas at the end of the study the difference was significant ($p < 0.01$). This shows a remarkable and positive impact of the approach on a specific pattern of emotional intelligence, which at this age is of capital importance. The results become more important because EI in general is scarcely considered in promoting mental health programs and in the same way is rarely evaluated [3, 4], despite it is recognized as a positive predictor of social functioning and school success [27]. The Outcome-Oriented "pattern" emphasizes specific emotional, flexible, and target-oriented abilities associated with some adaptation patterns in the living areas of the individuals; among these patterns there is "job performance" [28]. In technical terms, with regard to this peculiar characteristic of EI the authors must point out that the IEI contains a factor structured "self-efficacy meaning", in order to address the ability to use emotions to achieve personal goals. This structural aspect is well represented by some items, one of them for instance is "I think I am able to overcome problems".

In the present study, the irrational beliefs were also considered a very important emotional and cognitive dimension linked to school success [29, 30]. Significant results were observed on this indicator ($p < 0.05$). It is also likely that EI and irrational beliefs are closely interconnected, because it is hard to become emotionally intelligent without being capable of thinking in a functional way and controlling emotions. According to Di Pietro [29] the principles of emotional education, not the psychotherapy, should already be learned in a playful way starting from elementary school, as suggested by the handbook here presented.

Lastly, it is confirmed that the implementation of the handbook had an impact on the knowledge of the steps

Table 1
Median outcome scores and ranges of the scores of participating students (n = 276)

Variable	Group	N	Pre-implementation	Post-implementation
			Median (range); mean ranks <i>U-test; p value</i>	Median (range); mean ranks <i>U-test; p value</i>
IEI	Experimental	146	37 (25-53); 139.8	42 (28-59); 149.1
	Control	130	39 (21-53); 137.0 <i>9305.0; 0.77</i>	41 (25-56); 126.5 <i>7918.0; < 0.01</i>
Idea Inventory	Experimental	146	47 (26-68); 142.1	49 (32-74); 149.1
	Control	130	47 (23-71); 134.5 <i>8967.5; 0.43</i>	49 (30-68); 126.5 <i>7938.5; < 0.05</i>
LAQ- Goal definition	Experimental	146	0 (0-4); 134.8	1 (0-5); 148.3
	Control	130	0 (0-3); 142.70 <i>8948.0; 0.17</i>	0 (0-3); 127.5 <i>8055.5; < 0.05</i>
LAQ- Expressing positive feelings	Experimental	146	1 (0-2); 134.8	1 (0-4); 163.7
	Control	130	1 (0-3); 142.6 <i>8950.5; 0.29</i>	1 (0-2); 110.2 <i>5811.0; < 0.01</i>
LAQ- Making requests	Experimental	146	1 (0-2); 140.8	1 (0-4); 163.0
	Control	130	1 (0-2); 135.9 <i>9832.5; 0.55</i>	1 (0-2); 110.9 <i>5909.0; < 0.01</i>
LAQ- Expressing unpleasant feelings	Experimental	146	0 (0-2); 138.5	1 (0-5); 166.0
	Control	130	0 (0-2); 138.50 <i>9490.5; 0.99</i>	0 (0-3); 107.6 <i>5468.0; < 0.01</i>
LAQ- Active listening	Experimental	146	0 (0-1); 136.9	1 (0-5); 158.2
	Control	130	0 (0-2); 140.3 <i>9254.0; 0.19</i>	0 (0-1); 116.4 <i>6610.0; < 0.01</i>
LAQ- Problem solving	Experimental	146	0 (0-3); 135.20 <i>9007.0; 0.09</i>	0 (0-4); 144.2
	Control	130	0 (0-3); 142.2	0 (0-1); 132.2 <i>8664.0; < 0.05</i>

to be dealt with in sequence for improving goal definition, effective communication and problem solving. The positive impact is satisfactory, given the statistically significant difference between the experimental and control group.

This study has mainly investigated the impact of intervention on EI “outcome-oriented”. This aspect represents the core point of this work. With this study, the authors confirmed the effectiveness of the handbook, which has been conceived to promote health in the way suggested by “gaining health” programmes. It is important to pinpoint that this intervention to promote mental health is based on a structured and systematic continuous psycho-education, bearing in mind that psycho-education and salutogenesis are the key components of public health promotion and share the same principles and actions [31, 32].

The limit of this study is the study design, which did not take into account randomization and therefore there may be a generalization defect. The lack of this kind of methodology was due to feasibility reasons and therefore further evaluation is needed.

Another limitation is that differences between pre-

and post-implementation scores are small in absolute values, also because the scores improved for both experimental and control groups, although to a lesser extent in the control group compared to the experimental group, on the instruments which assessed EI and irrational beliefs. An introduction of contamination within the schools, between experimental and control classes, may have played a role in this, weakening or diluting the implementation effects. The control classes within the schools may have become aware of the implementation processes by knowledge transfer from the experimental classes, either inadvertently or intentionally as students may have discussed their experiences. Nevertheless, the implementation performance in the experimental group is encouraging and provides preliminary evidence of its efficacy.

Conflict of interest statement

The authors declare that there is no conflict of interest regarding the publication of this paper.

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