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A pilot study assessing emotional intelligence training and communication skills with 3rd year medical students

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ABSTRACT

Objective: To investigate whether emotional intelligence (EI) developmental training workshops can lead to increases with the Bar-On Emotional Quotient (EQ-i) total scores.
Methods: A pilot study with a quasi-randomised controlled design was employed with self-report assessments conducted at baseline and post-intervention following a 7-month training programme. Medical students based at a UK-based medical school participated in the study, and 36 volunteer students were recruited to the control group with 50 students randomly assigned to receive the intervention. A total of 34 (68%) students in the intervention group attended the first intervention training workshop, 17 (34%) attended the majority of the monthly development sessions and completed the post-intervention assessment. In the control group only one participant did not complete the follow-up assessment.
Results: The intervention group had significantly higher EQ-i change from baseline mean scores than the control group. The intervention group mean scores had increased across time, whilst the control group mean scores slightly decreased.
Conclusion: The EI developmental training workshops had a positive effect on the medical students in the intervention group.
Practice implications: Further research is warranted to determine whether EI can be a useful measure in medical training, and the concept and measurement of EI requires further development.

1. Introduction

Since the early 20th century there has been speculation that in addition to general intelligence (*g*) another type of intelligence may exist to facilitate social interaction processes [1,2]. A review in the 1930s failed to find any convincing support for the concept of social intelligence [3], and the idea received limited attention until emotional intelligence (EI) was introduced by Mayer and Salovey in 1990 [4,5]. The authors viewed EI as a set of associated mental abilities and a type of intelligence, which was later categorised as an ability model of EI. They defined EI as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" [[6] pp. 189]. Shortly afterwards the concept received widespread popular attention following the publication of the book *Emotional Intelligence* [7] and further models of EI were presented by other investigators with their own accompanying definitions [8–10], e.g. the Bar-On Emotional Quotient Inventory (EQ-i) defined EI as "an array of noncognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" [[9] pp. 14]. The Bar-On model is the most widely used mixed ability model and it encompasses a broad range of personal qualities (unlike the ability model) as well as mental abilities as components of EI [11], e.g. optimism, independence, happiness.

The ability and mixed EI models take different approaches to assess an individual's level of EI. The Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) tests abilities on four hierarchical dimensions: correctly identifying emotions, using emotions cognitively, employing emotions, and managing emotions for specific aims [12,13]. The accuracy of responses is compared to expert opinions supported by the views of focus groups recruited from the general public. In contrast, a mixed model such as the Bar-On (EQ-i) employs self-report measures to assess competencies across five subscales: intrapersonal, interpersonal, stress management, adaptability, and general mood. An

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individual's scores are compared to general population norms to determine their own level of EI [9].

A number of reports in the human resources literature have indicated that EI has been associated with effective leadership, increased job satisfaction, and higher customer satisfaction [14–17]. In addition, EI development training courses have resulted in higher levels of EI and better ratings of leadership qualities [18,19], whilst training has also been shown to improve facial emotional recognition [20]. There has been discussion in the medical education literature that EI can be assessed to determine levels of professional competence within the affective/moral dimension [21], and as a selection measure for medical school training [22–24] particularly for interpersonal and communication skills [25]. Stratton et al. have also reported that facets of EI were related to simulated patient satisfaction scores in objective structured clinical examinations (OSCEs), which indicate that EI training may be a useful avenue to pursue in medical training [26].

To our knowledge there has not yet been a study conducted within the medical education curriculum that has investigated the impact of EI developmental training. This pilot study explored the effect and feasibility of conducting a quasi-randomly allocated EI development programme with currently enrolled medical students.

2. Methods

This study was a quasi-randomised control design with an intervention and teaching-as-usual control group within a UK-based medical teaching school. Ethical approval for the investigation was received from the Medical Education Research Ethics Committee and the University of Liverpool Research Ethics Sub-Committee for Non-Physical Interventions.

The random allocation was based upon clinical rotation: all the students within a single clinical rotation ($n = 50$) were assigned to the intervention group, and equivalent numbers of volunteers were recruited to the control group from the other four clinical rotations in that teaching year ($n = 200$). The EI development training programme was implemented by externally recruited professionals who were experienced in delivering EI training to corporate and commercial organisations. A focus group was conducted with volunteers following the completion of the intervention to evaluate the feasibility of implementing any future EI development training programme, using semi-structured open ended questions to explore relevant issues and the perceived educational impact.

2.1. Sample

The students were recruited at the start of their 3rd year in medical school and attendance of the intervention group EI training sessions was not compulsory. The participation rate for the intervention group attending the first EI development training session was 68% ($n = 34$) and 34% ($n = 17$) attended the majority (≥ 4) of the EI development workshops. A total of 18% ($n = 36$) volunteers were recruited from the other four clinical rotations into the control group. The average age of the participants was 21.3 years (S.D. = 2.2) and 64.4% were females.

2.2. Study procedure

The intervention was delivered over 7 month period from November to May, with a total of 7 EI development sessions and one introductory meeting, a single 4 h long development workshop was timetabled once a month. The EI training was led by an external facilitator and consisted of individual and group exercises in the development workshops. The intervention group attended these sessions as an add-on to the usual problem-based learning (PBL) medical curriculum. The control group did not attend these add-on sessions and they followed the normal PBL timetable. Assessments were completed by the intervention and the control group at two time points: a baseline measure in the two weeks before the EI development training commenced, and a post-intervention assessment collected during a two week period after the completion of the programme. The focus group was held in the two weeks following the last EI workshop and the discussions were audio-recorded and transcribed.

2.3. Student assessment

Emotional intelligence was assessed with the Bar-On EQ-i which is a 133 item self-report measure with a five-point response scale, e.g. 1 'very seldom true or not true of me' to 5 'very often true or true of me'. The measure produces an Emotional Quotient (EQ-i) total score composed of five subscales: intrapersonal, interpersonal, stress management, adaptability, and general mood. In order for meaningful data interpretation, the participants' raw scores have to be converted into standard scores by the test publishers, with a standard fee charged to convert each participant's score. The standard scores are based on population norms that have a mean of 100 with a S.D. of 15 (as with IQ), and account for gender and ethnicity, i.e. any EQ-i standardised score can be compared to the equivalent population EQ-i normal score. The participants took approximately 30–45 min to complete the measure.

2.4. Data analysis

The baseline characteristics of the intervention and the control groups were compared with appropriate bivariate analyses, e.g. χ^2 (gender) and t-test (age). Baseline and post-intervention EQ-i total standardised scores were examined to investigate differences between the two groups. A difference score was generated by subtracting the EQ-i total standardised baseline scores from the post-intervention scores to examine changes from baseline between the two groups [27]. The between group comparisons were conducted with independent samples t-tests. No missing value analysis (MVA) was conducted re missing post-intervention data because this was a pilot study with low numbers of participants. The data analysis was conducted with SPSS 16.0.2 [28].

3. Results

Table 1 outlines the baseline student demographic characteristics re gender and age, and due to the quasi-randomisation the baseline data was examined to determine whether there were any differences between the two groups. There were no statistical differences between the intervention and the teaching-as-usual group's baseline demographic characteristics (Table 1).

Table 2 presents the Bar-On EQ-i total standardised baseline and post-intervention mean scores with the results of the between groups analyses. There was no statistical significant difference between the two groups' baseline mean EQ-i scores, and there was no significant difference observed with the post-intervention standardised mean scores. However, the change from baseline analysis demonstrated that there had been a statistically significant difference between the control and intervention groups. The sign of the control group's change scores illustrates that there had been a slight reduction in their EQ-i total mean scores from baseline to post-intervention (−1.3), in contrast the intervention group's change scores had increased somewhat (+3.9) from the pre to post-assessments.

Table 1
Demographic characteristics of the teaching-as-usual and intervention groups.

	Control group ($n = 36$)	Intervention group ($n = 34$)	p
Gender, n (%)			0.456
Female	25 (69.4)	20 (58.8)	
Male	11 (30.6)	14 (41.2)	
Age mean (S.D.)	21.4 (2.4)	21.1 (2.0)	0.471

Table 2
Between group comparisons of the Bar-On EQ-i total scores.

	Control group	Intervention group	p
Baseline	$n = 36$	$n = 34$	0.347
Mean (S.D.)	98.8 (13.9)	95.9 (11.9)	
Post-intervention	$n = 34$	$n = 17$	0.065[a]
Mean (S.D.)	96.9 (15.8)	104.0 (10.1)	
Difference score	$n = 34$	$n = 17$	0.01[**]
Mean (S.D.)	−1.3 (6.5)	3.9 (7.4)	

[a] p value adjusted due to violation equality of variance.
[**] $p < 0.01$.

Following the final EI develop training workshop the participants were invited to attend a focus group to elicit their views on the implementation of the training programme. Four medical students agreed to attend the focus group. A number of themes emerged from these discussions.

3.1. Requiring further development

- Lack of clear objectives, i.e. a session-by-session "breakdown of large objectives into smaller and achievable short term goals would have assisted".
- An "unwillingness of presenters to listen to alternative points of view. . .a lack of open mindedness where differing points of view were taken personally".
- An academic member of staff should attend and monitor the EI development workshops.

3.2. Positive perspectives

- Structured sessions were directly relevant to the curriculum such as the communication skills OSCE sessions.
- The development of emotional awareness enabled students to stand back and "see other points of view".

4. Discussion and conclusion

4.1. Discussion

This was a pilot study to investigate whether developmental training would increase the EI of medical students and the practicality of implementing training workshops. The analyses revealed that there was a borderline to positive effect on EQ-i total standardised scores for the intervention group dependent on the selection of the outcome variable. These findings are in accord with the data reported by investigators from occupational psychology running similar EI developmental training sessions [18,19].

However, the current findings are at best tentative due to the percentage of participants (32%) who did not choose to attend any of the EI developmental training workshops. There was also a high drop-out rate as only half of the students assigned to the intervention group attended the majority of the workshops. This has to be a major cause of concern and a threat to the validity of the statistically significant results of the intervention regarding participants EQ-i scores. A further threat to the significant effect of the developmental training was the length of time between the baseline and post-intervention assessments, and the volunteers to the control group may have had different characteristics to the other students in their cohort.

The qualitative information originating from the focus group discussion indicates a few of the potential difficulties of implementing a larger programme within the medical training curriculum. It should be borne in mind that the volunteers attending the focus group were active participants in the intervention and their views may not represent those of the non-attendees.

The developmental training workshops were conducted and facilitated by a commercial training organisation and their costs would have to be taken into consideration if a larger programme was envisaged. In addition, the standardised data from the Bar-On EQ-i instrument can only be obtained from the test publishers at a set fee per participant. These financial implications may act to restrict the feasibility of implementing a larger training programme with the EQ-i as the preferred assessment tool.

Perhaps the greatest concern has to be the lack of consistency within the field of EI itself, which has been reflected in the number of critical papers in the literature casting doubt on the theoretical concept and associated measurement issues [29,30]. Romanelli et al. [31] in common with many critics have concluded that the definition of EI has to be resolved, and that issues relating to the validity and reliability of current EI measures require further research before it can be advocated as a selection aid to enter medical school. Grubb III and McDaniel [32] have demonstrated that the EQ-i short form, which has 51 items targeting the same five subscales as the original version, can be predicted ($r = 0.79$) by the so-called Big Five personality constructs, i.e. extraversion, agreeableness, conscientiousness, emotional stability, and openness. In addition, their investigation revealed that it was possible for respondents to increase their EQ-iS total scores by 0.83 S.D. by faking responses that were not detected. Lewis et al. [33] have gone so far as to comment that EI probably does not exist and suggest that it is should be seen as an artefact, but, they also strongly support the idea that medical professionals require emotional skills to interact appropriately with patients and fellow professionals. This is no doubt a view that we would all agree with, although how we define and measure emotional skills at the moment appears to be a bone of contention.

4.2. Conclusion

The pilot study demonstrated that there was a significant effect of EI development training workshops on the medical students in the intervention group compared to the teaching-as-usual control group. There were several factors that threaten the stability of this result including differential attendance and drop-out in the intervention arm, and the length of time between the assessments. The inherent difficulties with defining and measuring emotional skills were highlighted to place these findings in context.

4.3. Practice implications

The results demonstrated that EI developmental training can led to improvements in EQ-i total scores, although further work seems to be required to firmly establish the theoretical basis of the construct. This may be a promising avenue to pursue in the future to enhance the emotional skills and assessment of medical students.

Conflict of interest

The authors are aware of no conflict of interest arising from this work.

I confirm that all the patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of our story.

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