Enhancing EFL Learners' Emotional Intelligence through Fuzzy Thinking and Emotional Engineering

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Abstract
Among the major milestones in the history of psychological attempts and psycholinguistic investigations lies the inception and outbreak of the contentious field of emotional intelligence in the mid 1990s. Although subsequent to its advent a profusion of diverse probes from several neighboring disciplines have been devoted to disentangling the true nature of this rather avant-garde doctrine, some aspects of EQ still seem to have been given scant attention in L2 learning research. One such partially neglected facet is thought to be the investigation of the role of intervention studies in enhancing EFL learners' emotional intelligence. Thus, the present study aims to somehow bridge this ostensible gap in the literature on the issue by resorting to two innovative techniques of fuzzy thinking and SAFE (Sign-Assisted Feeling Expression). The results gained point to significant leaps in EFL learners' level of emotional intelligence with regard to some particular subscales of Bar-On's EQ-i which are attributable to the effect of treatment on participants.

Keywords: Emotional intelligence; Bar-On's EQi; Fuzzy thinking; Semiotics; SAFE

Introduction

The notion of emotional intelligence was mainly popularized through the publication of Goleman's (1995) seminal book. As Hedlund and Sternberg (2000, p. 145) put it, "research explicitly targeted at the construct of emotional intelligence is fairly recent." Though the emergence of the better-called

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revolutionary theory of emotional intelligence goes back to not more than a couple of decades ago, a plethora of various investigators in manifold disciplines have been caught up by the vast variety of repercussions the implementation of such a doctrine may have for disparate realms of knowledge. Among this massive crowd of EQ-evoked researchers lie the practitioners involved in varied branches of educational sciences and applied linguistics. As a brief glance through the not-so-long-lasting history of EQ-oriented investigations reveals, the whole body of research in the area falls within either descriptive or exploratory planes as far as the implications of such a construct are concerned. However, a third preoccupation of many researchers has been that of enhancing emotional intelligence through the application of the so-called "intervention programs and techniques" (Bar-On & Parker, 2000, p. xii).

Although few studies to date have centered on the possibility of enhancing emotional intelligence, this is not to say that intervention studies dealing with the role of manipulating subjects' emotional field in order to bring about the emergence or enhancement of desired emotions has been the missing ring in the sweeping chain of investigations on the nature of emotional intelligence, as only a quick glimpse at the existing literature on the issue would be adequate to disclose the thriving fruition of this once embryonic branch of EQ-oriented studies. Contrary to the widespread rejection of the viability of such intervention studies, this rather productive area of interest is about to turn to a productive groundwork for a surfeit of investigations into the nature of emotional intelligence and related constructs.

Emotional Intelligence Viewed from a Philosophical Perspective

Historically emotions were viewed as an unwelcome facet of the individuals' make-up and were said to be at odds with the intellect and hence were mistrusted and thought to make no contribution to one's intelligence. A case in point in this regard is Young's overstatement regarding the harmful effect of emotions on mind which he believed would bring about "a complete loss of cerebral control" (1936, pp. 457-458). The idea of superiority of reason and intellect over the emotions and passions endured as the predominant tenet of the antediluvian philosophical ideology, until when alternative contrary directions were taken by some contemporaneous theoreticians including Hume (1948/1739), Darwin (1965/1872), and Freud (1962/1923).

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Early philosophical orientation regarding the status of emotions versus reason and intellect had emanated to a large extent from the views of ancient philosophers such as Socrates, Plato, and Aristotle, who almost unanimously pointed to the inferior and bestial position of emotions compared to reason (hence the famous master-slave metaphor in which emotions were said to be under the control of reason). Yet, this stance was sturdily confuted by later philosophers, including Hume, who held an utterly different perspective especially when he proclaimed "reason is, and ought to be, the slave of the passions" (Baier, 1991; Davidson, 1976; Hume, 1948/1739).

Generally speaking, three distinct ideologies and orientations have been taken up throughout the long history of philosophical endeavors grappling with the painstaking task of providing a straightforward demarcation of emotion/reason dualism. At one time, as mentioned earlier, there was a tendency to thoroughly ignore the active role of emotions in life and hence to consider them as destructive and unwelcome constituents of human make-up. An alternative view emerged, however, when emotions were given due heed as some avant-garde philosophers including David Hume accentuated the focal and overbearing role of emotions in individuals, but then again these attempts are not to be considered as purely supporting the superiority of emotions over reason, and even at rare occasions in which they have done so, their fundamental preoccupation has been with the cognitive aspects of emotion rather than with its social and behavioral facets. The third approach to emotions encompasses a more moderate and multidimensional standpoint, which strives to grant a more balanced outlook of the status of emotions as opposed to intellect (Solomon, 2000, p. 4).

The Origins of Emotional Intelligence

Emotional intelligence as a now-well-established construct and a self-contained discipline emerged through the attempts by several celebrated scholars and intellectuals with an assortment of psychological affiliations. The term EQ (emotional quotient) was initially coined by Bar-On in the early 1980s to differentiate it from its counterpart, i.e. cognitive intelligence (IQ) (Bar-On, 2000, p. 366). In a presumably weighted proclamation by Mayer, Salovey, and Caruso (2000), the outbreak of the notion of emotional intelligence (this so-called tantalizing oxymoron) is associated with the invaluable work of Salovey and Mayer and hence with the publication of two seminal articles by them at the outset of the 1990s (Mayer, Dipaolo & Salovey, 1990; Salovey & Mayer, 1990). The fact

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that Salovey and Mayer are known as the main originators of the concept of emotional intelligence is also recapitulated by several other researchers among whom a reference can be made to McCrae (2000, p. 263). Later popularization of EQ is, however, said to be indebted to Goleman's highly influential and illuminating attempts impressively amassed in his 1995 tome, entitled *Emotional Intelligence* (Goleman, 1995).

Fuzzy Thinking

Fuzzy logic was first introduced by Dr. Lotfi Zadeh in the 1960s to act against the prevalent school of logical positivism attributed to Aristotle and his followers. Logical positivism represented the core of traditional logic which was later on "renewed and developed by Westerners such as Descartes in the French Enlightenment of the eighteenth century and subsequently by British and American logical empiricists" (Keefer, 1997, p. 1). According to the key axiom of logical positivism, if we are not able to prove the truth/falsity of our statements, it means we haven't done anything worth mentioning. Conversely, the major objective of fuzzy thinking is that of searching for a way to cope with the concepts of imprecision, uncertainty and partial truth (as opposed to absolute truth), i.e. truth values between "completely true" and “completely false.”

Fuzzy thinking involves directing our attention away from the Aristotelian bivalence (binary) thinking and toward a reappraisal of multivalence, that is a reconsideration of real-life phenomena in terms of degrees rather than looking for absolutely true or false cases. To adopt Keefer's terminology "instead of the Aristotelian A or not-A mode of thinking, fuzzy logic is defined mathematically as including statements that are true to some degree between 0 and 1" (1997, p. 1). Furthermore, Kosko (1993) maintains fuzzy thinking is the theory according to which one is asked to concentrate on the grey rather than the black and white and to ignore the absolutes. Finally, it would prove quite beneficial to conclude this part with a quotation from Hellmann (2001, p. 1):

> Fuzzy logic (FL) is a multivalued logic, that allows intermediate values to be defined between conventional evaluations like true/false, yes/no, high/low, etc. … Fuzzy systems is an alternative to traditional notions of set membership and logic that has its origins in ancient Greek philosophy. The precision of mathematics owes its success in large part to the efforts of Aristotle and the

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> philosophers who preceded him. In their efforts to devise a concise theory of logic, and later mathematics, the so-called "Laws of Thought" were posited. One of these, the "Law of the Excluded Middle," states that every proposition must either be true or false. … It was Plato who laid the foundation for what would become fuzzy logic, indicating that there was a third region (beyond true and false) where these opposites "tumbled about." Other modern philosophers echoed his sentiments, notably Hegel, Marx, and Engels. But it was Lukasiewicz who first proposed a systematic alternative to the bi-valued logic of Aristotle.

Semiotics

Fundamentally concerned with the systematic study of signs, semiotics is believed to have existed, in one form or another, from the time of early philosophers including Plato and Aristotle. Nonetheless, the intermittent attempts on the part of these ancient philosophers regarding the study of signs in their varied forms is not to be considered as the chief point where semiotics took shape as a discipline in its own right. Now a prevalent and thriving discipline, semiotics was first given birth out of early attempts by the celebrated English philosopher John Locke. The term *semeiotike* (the original form of the word) was adopted from the Greek *semeion* which meant "mark," "sign," or "point." Indeed, *semeiotike* represented one of the elements of Locke's triad regarding the essence of science, with *physics* and *practice* constituting the other two main components of what he referred to as science.

Nevertheless, the emergence of semiotics as a self-contained discipline dates back to more recent strides, in the 19th and 20th centuries, taken by two illustrious and highly influential figures, i.e. the American philosopher Peirce, and the Swiss linguist de Saussure. Though for some people Peirce and de Saussure belong to two separate theoretical traditions, respectively referred to as the Peircean tradition and the Saussurean tradition, they are commonly known as the co-funders of semiotics. While the former tended to speak of semiotics, the latter formulated his endeavors under the rubrics of what he referred to as semiology. In spite of the fact that both terms are taken by many to imply the same entity, Peirce's term is at times preferred to that of Saussure.

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Faced with the surfeit of disparate conceptualizations as to what exactly is meant by semiotics, one may find himself/herself inundated by several incongruous delineations and yet not clear on what it really entails. While for Peirce, the founder of pragmatism, semiotics (or as he called it semiosis) involved a triadic relation among a *sign*, its *object*, and its *interpretant*, to Saussure it was a dyadic notion composed of the relationship between the *signifier* and the *signified*. Finally, regarding the exalted position semiotics has currently gained in its own right and in relation to several other disciplines, Eco's (1976) working definition seems to feature as a convincing conceptualization of its real status, where he defines semiotics as the science which "is concerned with everything that can be taken as a sign" (p. 7).

It must be noted at this juncture that the researchers' devised method, namely SALL (Sign-Assisted Language Learning) and its emotionally oriented offspring called SAFE (Sign-Assisted Feeling Expression) bear direct relation to the very principles of semiotics. Where the former, SALL, is employed as a multi-faceted elicitation technique facilitating learning process, the latter, SAFE, is intended as a practical resource to tap simply the feeling-related fractions of thought through the active use of signs.

Studies on the Viability of EQ Enhancement

That the nearly-two-decade-old field of emotional intelligence is now a perfectly well-established enterprise instigating a tremendous outburst of inquiries from a variety of its neighboring disciplines is no question. In addition, the fact that the preponderance of the work done on the issue thus far, points, almost unanimously, to the surfeit of gains on the part of the so-called emotionally intelligent individuals is also quite well substantiated. So, while the effectiveness of emotional intelligence in terms of the individuals' success in several life perspectives is thought to have turned to one of the well-grounded axioms of the modern life, what continues to remain a scantly endorsed concept is how emotional intelligence could be enhanced through the application of sound intervening techniques and procedures.

Yet, this is not to claim that no attempt has thus far been appropriated to the area of EQ enhancement, as a quick glance through the literature (at least in the recent years) will help reveal the due concern on the part of some researchers to address this aspect of EQ probes. Among the most recent attempts aimed at

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addressing this paramount issue lie those made by (1) Chu (2005), who reports on the gains in EI through a cognitive-based English reading curriculum, (2) Morris et al. (2005), who investigate the effect of poetry and visual arts on the development of emotional intelligence, (3) Potter (2005), who studies the impact of an intervention program on the enhancement of EI, (4) Reilly (2005), who probes the role of negotiation courses with role plays and stimulated exercises in enhancement of emotional intelligence, and (5) Chang (2006), who considers the viability of teaching emotional intelligence. Finally, Shanta's study (2007) can feature as another intervention study where she investigates the impact of nursing education on the development of emotional intelligence.

Purpose of the Study

The present study is after bridging, in the first place, the seemingly wide gap in the literature regarding the feasible implications of philosophical constructs for the enhancement of language-related traits. Today, in the heyday of interdisciplinary fields, one can find few traces, if any, of the role of philosophical axioms and schools of thought in pedagogical research circles. Now, in view of the significance of philosophical macrostructures, it may appear insane to try to do away with such focal bases of knowledge. Thus, the way the researchers have adopted to approach the problem seems to be purely different in nature from other attempts made thus far, in that a seminal part of the current study draws on the maxims of the widely-celebrated doctrine of fuzzy thinking and strives to bring this revolutionary philosophical concept into terms with emotional intelligence, hence struggling to somehow eradicate the history-long discrimination between emotions and reason.

Therefore, the present study might be considered as an attempt to move in line with two overriding philosophically-founded schools of thought, namely fuzzy thinking and a brand new element of semiotics introduced here as SAFE (Sign-Assisted Feeling Expression), formerly and originally devised by the researchers as SALL (Sign-Assisted Language Learning) and intended as an innovative method to enhance language learning (A brief account will be given in this paper regarding the implications of fuzzy thinking and the researchers' coined terminology). Thus, by way of doing so, this investigation is aimed at applying these philosophical frameworks into the formerly well-illuminated construct of emotional intelligence. This way of conceptualizing the issue, it is thought, will pave the way for a more meticulous reformulation of the construct of studies concerned with the feasibility of emotional intelligence enhancement. Thus far it must have been perceived that

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in the current study the researchers will concern themselves with the possible gains in the emotional field of learners resulted from a scrupulous engineering of the learners' emotions. What is meant by engineering entails, of course, all the attempts made on the part of the researchers to bring about the better expression and surfacing of emotions. Several techniques were, therefore, employed to serve this purpose, including the researchers' devised method called SAFE, having its roots mainly in the semiotics of language. Through the application of such orientations and techniques, it was hoped that the researchers would come up with significant gains in the subjects' level of emotional intelligence.

Research Questions

Based on the orientation the current research takes, two general questions and thirty more specific and narrow questions were formulated as follows:

1. Does the expression of emotions through SAFE bring about an enhancement in the EFL learners' general emotional intelligence level?
   - (1.1) Does the introduction of SAFE enhance learners' emotional self-awareness?
   - (1.2) Does the introduction of SAFE enhance learners' assertiveness?
   - (1.3) Does the introduction of SAFE enhance learners' self-regard?
   - (1.4) Does the introduction of SAFE enhance learners' self-actualization?
   - (1.5) Does the introduction of SAFE enhance learners' independence?
   - (1.6) Does the introduction of SAFE enhance learners' empathy?
   - (1.7) Does the introduction of SAFE enhance learners' social responsibility?
   - (1.8) Does the introduction of SAFE enhance learners' interpersonal relationship?
   - (1.9) Does the introduction of SAFE enhance learners' reality testing?
   - (1.10) Does the introduction of SAFE enhance learners' flexibility?
   - (1.11) Does the introduction of SAFE enhance learners' problem solving?
   - (1.12) Does the introduction of SAFE enhance learners' stress tolerance?
   - (1.13) Does the introduction of SAFE enhance learners' impulse control?
   - (1.14) Does the introduction of SAFE enhance learners' optimism?
   - (1.15) Does the introduction of SAFE enhance learners' happiness?
2. Does the awareness of emotions (provided through the introduction of fuzzy logic) bring about an enhancement in the EFL learners' general emotional intelligence level?

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(2.1) Does the introduction of fuzzy logic enhance learners' emotional self-awareness?
(2.2) Does the introduction of fuzzy logic enhance learners' assertiveness?
(2.3) Does the introduction of fuzzy logic enhance learners' self-regard?
(2.4) Does the introduction of fuzzy logic enhance learners' self-actualization?
(2.5) Does the introduction of fuzzy logic enhance learners' independence?
(2.6) Does the introduction of fuzzy logic enhance learners' empathy?
(2.7) Does the introduction of fuzzy logic enhance learners' social responsibility?
(2.8) Does the introduction of fuzzy logic enhance learners' interpersonal relationship?
(2.9) Does the introduction of fuzzy logic enhance learners' reality testing?
(2.10) Does the introduction of fuzzy logic enhance learners' flexibility?
(2.11) Does the introduction of fuzzy logic enhance learners' problem solving?
(2.12) Does the introduction of fuzzy logic enhance learners' stress tolerance?
(2.13) Does the introduction of fuzzy logic enhance learners' impulse control?
(2.15) Does the introduction of fuzzy logic enhance learners' optimism?
(2.15) Does the introduction of fuzzy logic enhance learners' happiness?

Method

Participants

The subjects participating in the present study were a total of 101 English students at Urmia University, 29 participants involved in the first experimental group (called the SAFE group), 29 in the second experimental group (termed the fuzzy group), and 43 in the control group. Since three students from the first experimental group and one from the second didn't find the opportunity to sit the posttest, only 97 students took part in the second administration of Bar-On's EQ-i. Furthermore, as mainly the freshmen constituted the targeted population for the present study, the majority of subjects were eighteen or nineteen years of age. Moreover, due to the fact that no control was exercised over the possible effect of gender, the participants of the study included both males and females.

Instruments

Though one of the latest versions of the paper-based TOEFL was administered to ensure the homogeneity of the groups at the outset of the study, the major instrument employed in the present research was Bar-On's EQ-i, which was used as the prevailing source of gathering data throughout the study. While the original

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version of the test included 133 questions, later revisions applied to the test by Bar-On himself reduced its size to a considerable degree, so that the modified version of the test comprised only 117 questions. Furthermore, through later amendments, the size of the domestically standardized instrument was reduced through eradicating the questions which had been rendered either irrelevant or inappropriate to Iranian context.

Thus, what was utilized as the main source of data collection for the current research was this very reduced form which encompassed 90 questions arranged in 15 separate sections, i.e. the subscales of Emotional Self-Awareness, Assertiveness, Self-Regard, Self-Actualization, Independence, Empathy, Social Responsibility, Interpersonal Relationship, Reality Testing, Flexibility, Problem Solving, Stress Tolerance, Impulse Control, Optimism, and Happiness.

Data Collection Procedure

Data collection was done by the researcher over a period of about three months (12 full weeks) between pre-test and post-test. The main instrument employed in the present research, as noted earlier, was the domestically standardized version of Bar-On's (1997a, 1997b) EQ-i which included 90 questions arranged in 15 separate sections. To bring about the desired change and enhancement, the subjects of experimental groups were exposed to two alternative treatments, while the control group subjects were left with their routine course of studies and core materials. The main treatment applied to the first experimental group (the SAFE group) involved a multi-step course of action mainly centering around the expression of emotions through the researcher's devised method called SAFE in which during each session all the students were given small blank rectangular wooden signs (in the shape of traffic signs) which were made of chopped whiteboard and were asked to communicate their moment-by-moment emotions regarding every aspect of class to their peers, by putting them in their preferable mode on their whiteboards using the markers which were also given to them at the beginning of the session. Thus, the subjects' emotions were first expressed in the form of signs or drawings on boards and then worded and reflected on by other peers as well as by the teacher (the researcher himself). This playful manner of outpouring emotions was found to be quite practical by all the students involved and at times helped remove and put right the occasional misinterpretations and misjudgments on the part of other classmates.

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Participants of the second experimental group (the Fuzzy group), on the other hand, were exposed to a different kind of treatment which intended to bring about a raise in their level of emotional awareness. The method selected for this end relied heavily on the tenets of fuzzy thinking. Hence, after providing them with a brief introduction to the major principles of fuzzy logic, they were asked to react, during the subsequent sessions, within the framework of fuzzy thinking, all the time moving in line with the maxim of considering the best balanced reaction toward stress-laden occasions. The activities programmed included a variety of tasks such as the provision of several problematic circumstances each session in either oral or written form, and asking the students to refer to the best modus operandi to best cope with each stressful situation.

Data Analysis

Successive to the collection of subjects' filled questionnaires, the testees' total grades on each subscale were calculated both mechanically (using the emotional intelligence software) and manually to ensure maximum precision. Following the test designer's lead, a greater number of the questions (48 out of 90) were scored in the direct mathematical order from 1 to 5 (with the full score being given to strongly agree and the minimum score being assigned to strongly disagree), whereas the remaining 42 were graded in the reverse order. As each of the test subscales was composed of six questions, the total score for each subscale equaled thirty. Furthermore, the maximum grade for the entire test was 450. In addition, to analyze the data obtained, several ANCOVA analyses were run for separate subsections of the test to be able to demarcate the areas of potentially significant performances among the three groups.

Results

The results of ANCOVA analyses for several subsections of the test revealed significant results for some subtests of Bar-On's EQ-i. Nevertheless, to further analyze these significant results and to be able to attribute them to each of the three groups' performances, additional analyses of data were required. To this end, two further pieces of operation (simple and repeated contrasts) had to be run to find the exact sources of significant results. To come up with satisfactory responses to the afore-mentioned thirty research questions, it would suffice to take a glance at the results summarized in the following tables. While Table 1 summarizes the results of ANCOVA analyses, Tables 2, 3 and 4 reveal the upshots taken through running the so-called custom hypothesis tests.

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Table 1
Summary of the results gained through ANCOVA analyses by running tests of between-subjects effects

SUBSCALES	Type III Sum of Squares	df	Mean Square	F	Sig.
ES	120.172	2	60.086	5.775	.004
AS	69.637	2	34.818	5.159	.008
SR	6.140	2	3.070	.359	.699
SA	58.863	2	29.432	4.719	0.11
IN	59.326	2	29.663	2.864	.062
EM	43.040	2	21.520	4.156	.019
RE	2.751	2	1.376	.193	.825
IR	28.421	2	14.210	3.333	.040
RT	2.771	2	1.385	.235	.791
FL	56.973	2	28.486	3.965	.022
PS	61.363	2	30.682	4.732	.011
ST	79.250	2	39.625	5.391	.006
IC	77.162	2	38.581	3.459	.036
OP	56.313	2	28.157	3.732	.028
HA	56.768	2	28.384	3.809	.026

For instance, as Table 1 reveals, F value for the subtest of emotional self-awareness (abbreviated as ES) equals .004, which is smaller than .05 and hence is a significant result. Further analysis through custom hypothesis tests (the results of which are summarized in Table 2 below) provides us with clear evidence in favor of the first experimental group (SAFE) in terms of a heightened performance by its members on the subtest of emotional self-awareness, and points to the effectiveness of the treatment applied to the subjects of this group. This is because the contrast of level 1 vs. level 3 and that of level 1 vs. level 2 respectively equal .001 and .032, both of which being significant at .05, while the other contrast, i.e. the one between levels 2 and 3, is non-significant. Owing to the fact that identical expositions are to be appropriated for the interpretation of group performances on other subscales of Bar-On's EQ-i, the findings relevant to other categories of the test are left with no additional clarification of results in order to help eschew redundancy.

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Table 2
Summary of the significant results gained through custom hypothesis tests (simple and repeated contrast) for the SAFE group

SUBSCALES	Contrasts	Contrast Estimate	Difference (Estimate Hypothesized)	Std. Error	Sig.
ES	L. 1 vs. L. 3	2.726	2.726	.805	.001
	L. 1 vs. L. 2	1.933	1.933	.887	.032
	L. 2 vs. L. 3	.793	.793	.785	.315
AS	L. 1 vs. L. 3	1.631	1.631	.647	.013
	L. 1 vs. L. 2	2.174	2.174	.708	.003
	L. 2 vs. L. 3	-.543	-.543	.632	.392
SA	L. 1 vs. L. 3	1.700	1.700	.624	.008
	L. 1 vs. L. 2	1.838	1.838	.682	.008
	L. 2 vs. L. 3	-.138	-.138	.618	.824
EM	L. 1 vs. L. 3	1.522	1.522	.565	.008
	L. 1 vs. L. 2	1.475	1.475	.621	.020
	L. 2 vs. L. 3	4.726E-02	4.726E-02	.555	.932
IR	L. 1 vs. L. 3	1.230	1.230	.513	.018
	L. 1 vs. L. 2	1.216	1.216	.567	.035
	L. 2 vs. L. 3	1.432E-02	1.432E-02	.506	.977

Based on the results gained from ANCOVA analyses and the information presented in Tables 1, 2 and 3, evidence was gathered in favor of ten out of thirty research questions, i.e. questions 1a, 1b, 1d, 1f, 1h, 2j, 2k, 2l, 2m and 2n,. As the subjects of our three groups were checked at the outset of the study for homogeneity, any enhanced performance on the posttest can be attributed to the effect of the treatment. Thus, to summarize the results, it can be concluded that SAFE has been effective in improving the subjects' emotional self-awareness (ES), assertiveness (AS), self-actualization (SA), empathy (EM), and interpersonal relationship (IR). However, the treatment with fuzzy logic has resulted in significant gains in the areas of flexibility (FL), problem solving (PS), stress tolerance (ST), impulse control (IC), and optimism (OP).

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Table 3
Summary of the significant results gained through custom hypothesis tests (simple and repeated contrast) for the fuzzy group

SUBSCALES	Contrasts	Contrast Estimate	Difference (Estimate Hypothesized)	Std. Error	Sig.
FL	L. 1 vs. L. 3	.238	.238	.672	.724
	L. 1 vs. L. 2	-1.530	-1.530	.733	.040
	L. 2 vs. L. 3	1.767	1.767	.651	.008
PS	L. 1 vs. L. 3	-.570	-.570	.633	.370
	L. 1 vs. L. 2	-2.037	-2.037	.694	.004
	L. 2 vs. L. 3	1.467	1.467	.620	.020
ST	L. 1 vs. L. 3	.154	.154	.676	.821
	L. 1 vs. L. 2	-1.903	-1.903	.739	.012
	L. 2 vs. L. 3	2.057	2.057	.663	.003
IC	L. 1 vs. L. 3	.213	.213	.836	.799
	L. 1 vs. L. 2	-1.829	-1.829	.917	.049
	L. 2 vs. L. 3	2.042	2.042	.811	.014
OP	L. 1 vs. L. 3	-.595	-.595	.700	.397
	L. 1 vs. L. 2	-1.968	-1.968	.748	.010
	L. 2 vs. L. 3	1.372	1.372	.683	.047

The only irrelevant result is the observed significant enhancement in the level of happiness among the subjects participating in the control group (Table 4 below). Finally, in line with the findings of the tables above, there is sufficient ground to confirm the usefulness of our devised methods in bringing about desired leaps in the targeted areas of the learners' emotional intelligence level. Yet, to come into closer terms with what the upshots of the present study have unraveled, a more in-depth discussion of the results follows under two separate headings for both experimental groups.

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Table 4
The chance significant result gained through custom hypothesis tests (simple and repeated contrast) for the control group

SUBSCALES	Contrasts	Contrast Estimate	Difference (Estimate-Hypothesized)	Std. Error	Sig.
HA	L. 1 vs. L. 3	-1.690	-1.690	.679	.015
	L. 1 vs. L. 2	-.313	-.313	.746	.676
	L. 2 vs. L. 3	-1.377	-1.377	.669	.042

Discussion

Gains in the SAFE Group

The first point to be made concerns the improvement observed in the SAFE group's level of emotional self-awareness from pretest to posttest. Defined as "the ability to recognize and understand one's emotions" (Bar-On, 2000, p. 365), emotional self-awareness is among the principal components of emotional intelligence, an improvement of which may and should constitute the main preoccupation of all those who opt for an enhancement in the individuals' general level of emotional intelligence. The researchers' user-friendly approach entitled SAFE is hence proven to be useful in bringing about the desired improvement in the domain of emotional self-awareness. Although the main purpose of SAFE, as already pointed out, has been to facilitate the process of surfacing pent-up emotions, the enhancement witnessed in emotional self-awareness is not to be regarded as a radically remote outcome, but rather as a plausible and well-substantiated aftermath of the treatment employed.

The second area undergoing a considerable amount of improvement is what Bar-On (2000, p.365) refers to as assertiveness or "the ability to express feelings, beliefs, and thoughts, and to defend one's rights in a nondestructive manner." Thus, as the results help reveal, SAFE has served its prime purpose quite well and has proven quite beneficial in bringing about an enhancement in the individuals' levels of assertiveness. In view of the fact that being able to express one's emotions on an even keel is among the optimum goals of most practitioners dealing with say academic or occupational benefits of emotional intelligence, SAFE can be well resorted to as an adequately efficient method for raising the individuals' degree of assertiveness.

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A third area in which noticeable enhancement has been observed in the study is the subcomponent of self-actualization which incorporates "the ability to realize one's potential and to do what one wants to do, enjoy doing, and can do" (Bar-On, 2000, p. 365). This piece of finding seems also justifiable on the grounds that free expression of emotions through SAFE is thought to have contributed to an increased level of self-confidence and self-esteem and by way of doing so it has led to improved degrees of self-actualization.

Further, empathy, "the ability to be aware of, understand, and appreciate the feelings of others" (Bar-On, 2000, p. 365), was another domain of emotional intelligence which was found to be improved among the subjects participating in SAFE group. This finding does not seem unwelcome on account of the fact that the subjects of SAFE were all involved in the ongoing process of interpersonal communication and interchange of emotions. In essence, the signs were exerted not only as a contrivance for freeing oneself of pent-up emotions, but also as a means of intertwining the individuals in an inextricable network of inter-connected emotions.

Finally, interpersonal relationship _ or what Bar-On (2000, p. 365) delineates as "the ability to establish and maintain mutually satisfying relationships that are characterized by emotional closeness, intimacy, and by giving and receiving affection" _ was still another fragment of emotional intelligence which was found to be affected by the treatment applied to the SAFE group. On analogous grounds, it might be argued that SAFE, which is said to enjoy a highly interactive nature, has proven effective in improving the subjects' interpersonal relationship, a result which could have been well anticipated prior to execution of the study.

To wrap up this section, it could be claimed that on the basis of the foregoing discussion, there is sufficient justification as to the efficacy of the researchers' devised method (SAFE) in terms of emanating good levels of improvement in several areas of emotional intelligence.

Gains in the Fuzzy Group

The treatment applied to the other experimental group through the fuzzy method also proved effective in terms of improving the subjects' emotional intelligence in several respects, though these enhancements were not found to overlap with the areas in which gains had been observed with respect to the SAFE group.

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The first and foremost escalation in the posttest results, as shown in Table 3, was witnessed apropos of what Bar-On refers to as flexibility or "the ability to adjust one's feelings, thoughts, and behavior to changing situations and conditions" (2000, p. 366). This significant betterment may be accounted for by resorting to tolerance-inducing nature of the fuzzy method employed with the second experimental group. In other words, the students' confrontation with several possible alternatives for dealing with stress-laden situations and then opting for the best option is thought to have indirectly brought about an augmentation in the level of their flexibility in the face of onerous and arduous conditions.

Problem solving _ pinned down by Bar-On (2000, p. 366) as "the ability to identify and define personal and social problems as well as to generate and implement potentially effective solutions" _ also underwent significant augmentation. This piece of finding was not far from the researchers' expectation, since throughout the most part of (if not the whole) study the subjects of the fuzzy group were somehow engaged in an ongoing process of grappling with dilemmatic situations for which they were asked to put forth reasonable solutions.

The next domain of emotional intelligence affected by the treatment applied to the second experimental group was the area of stress-tolerance which, in Bar-On's (2000, p. 365) words, is "the ability to withstand adverse events, stressful situations, and strong emotions without 'falling apart' by actively and positively coping with stress." As the eradication of stress-inducing conditions was among the focal objectives of fuzzy method, this finding is also prone to sufficient amount of justification.

The ability to control one's impulse or, to adopt Bar-On's terms, "the ability to resist or delay an impulse, drive, or temptation to act, and to control one's emotions" (2000, p. 365), was the subsequent field which was conjectured to have received an outstanding impact from the treatment by the fuzzy method. Though this feature was not directly attended to in the overall agenda intended for the fuzzy group, it can be regarded as a feasible aftermath of the work done on the reduction of stress and negotiation of burdensome circumstances.

Last on the list of gains attributed to the effect of treatment by the fuzzy approach lies the observed improvement in the domain of optimism, which Bar-On (2000, p. 366) refers to as "the ability 'to look at the brighter side of life' and to

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maintain a positive attitude, even in the face of adversity." The fact that too much overlap existed between the underlying tenets of fuzzy thinking and those of positive thinking can be taken as evidence in favor of the observed leap in the subjects' level of optimism. This positive outlook on life circumstances is thought to have been particularly reinforced in the way the subjects were asked to approach the troublesome situations and to come up with logical solutions and options to deal with the difficult situation(s) they were faced with.

Conclusion

The findings of the study seem to have paved, to a considerable extent, the way for the substantiation of the efficacy of the researcher's devised methods. Therefore, there seems to exist ample evidence in favor of the claim that the two exerted techniques have been effective in bringing about desired gains in the learners' emotional intelligence level. However, the only irrelevant result, as already pointed out, is the observed significant enhancement in the level of happiness among the subjects participating in the control group. This rise in happiness levels, the element which is defined in Bar-On's terminology (2000, p. 366) as "the ability to feel satisfied with one's life, to enjoy oneself and others, and to have fun and express positive emotions," is the only haphazard and partially unwelcome upshot which cannot reasonably be accounted for.

Altogether, the discussion of results presented so far can be considered as robust evidence confirming the feasibility of emotional intelligence enhancement through the implementation of appropriate intervention techniques in general and of engineering certain areas of emotional intelligence in particular.

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