

Is the Level of Emotional Intelligence in Students and Health Workers Satisfactory?

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Abstract – Emotional intelligence (EI) is the ability to recognize one's own and other people's emotions, to discriminate between different feelings and label them appropriately, and to use emotional information to guide thinking and behavior. It was confirmed that EI is important psychological characteristics needed in everyday life.

The aim of this research is to evaluate the EI construct in three groups of adolescents: students of medicine, psychology and special education and rehabilitation, representing groups of young intellectual population. In addition, groups of examinees containing health workers (doctors and nurses), as well as non-medical professionals are evaluated as an example of adult intellectual people. The purpose was to compare the obtained EI scores between young and adult population both related to actual or future work with patients. Non-medical professionals serve as a control.

Obtained results for students in this study showed that the group of special education and rehabilitation are the most extrovert and have the highest self-confidence, while the most optimist are students of medicine. We did not obtain significant differences between groups for the level of anxiety as well as for the level of empathy.

Concerning adult population, anxiety is the lowest while the optimism is the highest in non-medical group. Similar scores of extroversion, self-confidence and empathy are obtained in all groups of adults.

Having in mind the importance of emotional intelligence we suggest introduction of teaching EI skills in educational curricula.

Keywords – Emotional Intelligence, Achievement, Prosocial Behavior, Psychometric Assessment.

I. INTRODUCTION

As it is known, it's not the smartest people that are the most successful or the most fulfilled in life. Some people who are academically brilliant yet are socially inept and unsuccessful at work or in their personal relationships. It is clear that intellectual intelligence (IQ) isn't enough on its own to be successful in life. It is thought that IQ can help to obtain high diploma, but its emotional intelligence quotient (EQ) that will help people to manage the stress and emotions when facing everyday challenges.

Emotional intelligence (EI) refers to individual differences in the extent to which one appropriately appraises and regulates self-related and other-related emotions. The two main aspects of EQ are: a) understanding own self, own goals, aspirations, responses and behaviour and b) understanding others and their feelings [1, 2, 3, 4].

The important opinion of many psychologists is that EI is not innate personality characteristics like IQ. The key skills of emotional intelligence can be learned by anyone,

at any time, especially in the period of childhood. Here, the influence of parents and teachers involved in the educational system is very important. However, there is a difference between learning about emotional intelligence and applying that knowledge in the practical life.

Many researches using neuroimaging techniques showed that EI is related to the number and activity of "mirror neurons" located in the prefrontal regions of the brain [5, 6].

EI has generally been associated with prosocial behavior. High levels of EI are mainly associated with better interpersonal relationships. However, recent studies have suggested that EI can facilitate not only socially valued behavior, but also may manipulate others' behaviors to suit their own interests rather than achieving general prosocial outcomes using high-level capabilities to read and manage the emotions of others.

The construct of Emotional Intelligence is not a new one, it has some history, which is presented shortly in the following points:

- 1930s – Edward Thorndike describes the concept of "social intelligence" as the ability to get along with other people [7].
- 1940s – David Wechsler suggests that affective components of intelligence may be essential to success in life [8].
- 1950s – Humanistic psychologists such as Abraham Maslow describe how people can build emotional strength [9].
- 1975 - Howard Gardner publishes *The Shattered Mind*, which introduces the concept of multiple intelligences [10].
- 1985 - Wayne Payne introduces the term emotional intelligence in his doctoral dissertation entitled "A study of emotion: developing emotional intelligence; self-integration; relating to fear, pain and desire (theory, structure of reality, problem-solving, contraction/expansion, tuning in/coming out/letting go)." [11]
- 1987 – In an article published in *Mensa Magazine*, Keith Beasley uses the term "emotional quotient." It has been suggested that this is the first published use of the term, although Reuven Bar-On claims to have used the term in an unpublished version of his graduate thesis [12].
- 1990 – Psychologists Peter Salovey and John Mayer publish their landmark article, "Emotional Intelligence," in the journal *Imagination, Cognition, and Personality*.
- 1995 - The concept of emotional intelligence is popularized after publication of Daniel Goleman's book *Emotional Intelligence: Why It Can Matter More Than IQ*.

There are three models for describing EI. The *ability model*, developed by Peter Salovey and John Mayer, focuses on the individual's ability to process emotional information and use it to navigate the social environment [1]. The *trait model* as developed by Konstantin Vasily Petrides, "encompasses behavioral dispositions and self-perceived abilities and is measured through self-report" [5, 6]. The *mixed model* is a combination of both ability and trait EI. It defines EI as an array of skills and characteristics that drive leadership performance, as proposed by Daniel Goleman [3].

Different models of EI have led to the development of various instruments for the assessment of the construct. As John Mayer said, "In regard to measuring emotional intelligence – I am a great believer that criterion-report (that is, ability testing) is the only adequate method to employ. Intelligence is an ability, and is directly measured only by having people answer questions and evaluating the correctness of those answers."

The most frequently used tests for measuring EI are: **Reuven Bar-On Emotional Quotient Inventory** (A self-report test designed to measure competencies including awareness, stress tolerance, problem solving, and happiness). According to Bar-On, EI is an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures.

Multifactor Emotional Intelligence Scale (MEIS) is an ability-based test in which test-takers perform tasks designed to assess their ability to perceive, identify, understand, and utilize emotions.

Seligman Attributional Style Questionnaire (SASQ) is originally designed as a screening test for the life insurance company Metropolitan Life, and mainly measures optimism and pessimism.

Emotional Competence Inventory (ECI) is based on an older instrument known as the Self-Assessment Questionnaire. The ECI involves having people who know the individual offer ratings of that person's abilities on a number of different emotional competencies.

Measuring EQ gives general information if some person is reliable as a team-worker, and his social adaptability which is especially important for managers or employers. It is also important for adolescents for helping them to choose profession.

The aim of this research is to evaluate the EI construct in three groups of adolescents: students of medicine, psychology and special education and rehabilitation representing a group of intellectual young population. In addition, groups of examinees containing health workers (doctors and nurses) as well as non-medical professionals are evaluated as an example of adult intellectual people. The purpose was to compare the obtained EI scores between young and adult population related to the actual or future work with patients. Non-medical professionals serve as a control.

II. SAMPLE AND METHODOLOGY

The evaluated examinees are randomly selected comprising three groups of a first year students: of medicine (N= 30), psychology (N= 73) and special education and rehabilitation (N= 66), mean age 18.9 ± 0.63 years. All students are recruited from faculties which are related to the future work with patients. In addition, doctors and nurses (recruited from University Pediatric Clinic in Skopje), and non-medical people (engineers, mathematicians, businessmen's), each group containing of 30 examinees (total N= 90), are evaluated for comparison with the adolescent's groups. Medicine-related adults are selected for assessment the EI, which is supposed to be important in their profession. The non-medical people are recruited from different working places, and we used them as independent i.e. professionally not related to close relationship with other people which need health care.

As a psychometric instrument we used EI test selected from Filip Carter's *Complete Book of Intelligence Tests* published in 2005, England [13]. The test comprises five subtests for evaluation of: anxiety level, extraversion/introversion, optimism, self-confidence and sensibility. All facets are related with the EI concept described by Goleman (self-awareness, self-management, social awareness and relationship management).

All subtests comprise 25 statements rated by using a 5-point Likert scale.

Subtest *anxious/relaxed* comprises 25 statements with 1-5 possible answers the most applicable to the examinee. Total score 90–125 means overly anxious nature who finds it very difficult to relax completely; score 65–89 means average anxiety; while score less than 65 means relaxed attitude to life.

Subtest *extrovert/introvert* comprises also 25 statements with three possible answers. Scores of 40–50 points means extroversion; 25–39 points – average extroversion; less than 25 points indicate introversion.

Subtest *optimist/pessimist* gives the general outlook on life. Total score 90–125 means eternal optimism; score 65–89 means realism; score less than 65 means predominantly pessimistic outlook on life.

The assessment of the subtest *self-confidence* gives several possibilities: 40–50 points means high self-confidence factor; 25–39 points means average self-confidence factor and less than 25 points means below average self-confidence factor.

The subtest *empathy* assesses the sensitivity of the person. Total score 90–125 means very caring person who is deeply touched by the feelings of others; score 65–89 means a generally tender-hearted person who would never wish to hurt other people's feelings deliberately. Total score less than 65 indicate a high degree of toughness.

We preformed descriptive statistics (Mean and SD) as well ANOVA and Student t-test included in the Statistic 10 package. The results are presented in tables, figures, and discussed further.

III. RESULTS

The evaluated sample comprises three groups of adolescents (students of medicine, special education and rehabilitation and psychology) total N=168, as well as groups of adults (doctors, nurses, and non-medical people), total N=90. Each group comprises randomly selected participants. Adolescents, all at the first year of studies, are recruited from corresponding faculties in Skopje University (Faculty for Medicine, Institute for Psychology and Institute for Special education and rehabilitation). Doctors and nurses are recruited from University Children Hospital Skopje, and the other adults are recruited from different institutions. The age (in years) of evaluated groups is presented on Table 1.

Table 1. Mean age (in years) of examined groups

Adolescents	18,9±0.63
Doctors	35,3±2,98
Nurses	30,3±5,37
Others	39,9±2,37

Result obtained for EI facets in the three groups of students are presented in Table 2.

Table 2. EI facets in student's groups

	med.	defect.	psychol.
anxiety	79.4	77.35	79.4
extrovesrion	32,1	50.91*	24.25*
optimism	97,2*	81.64	84.15
self-confidence	38,1	44.44*	27.75*
empathy	89	85.39	86.34

* p<0.05

For clearer apprehension we choose graphical figures for EI facets, as presented on Figure 1.

Significant differences are obtained in extroversion, optimism and self-confidence levels. More precisely, students of special education and rehabilitation are the most extrovert; the most optimistic are students of medicine, while the self-confidence is the highest in students of special education and rehabilitation and the lowest in psychology group. We did not obtained significant differences for the level of anxiety as well as for the level of empathy. However, obtained scores seems us logical: extroversion is important for professional success in defectologists whose future work is related to people with special needs; while optimism is very important for future doctors. However, high self-confidence in defectologists is not appropriate with the professional expectations, and the lowest one in the group of students of psychology is related maybe with the absence of any practical experience and not enough knowledge in this group of students.

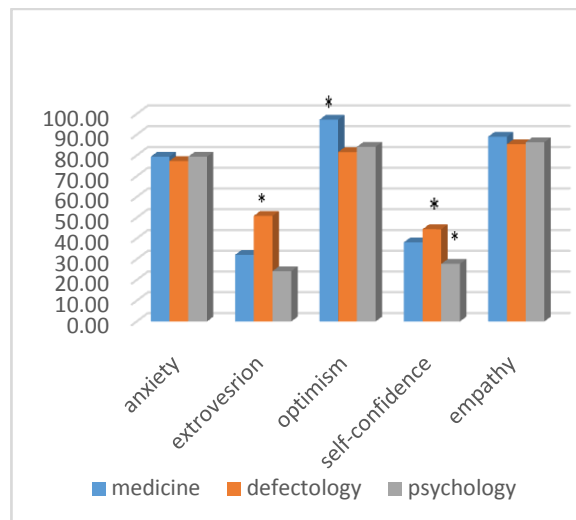


Fig.1. EI components in adolescents groups

The obtained scores of EI components in adults are presented on Figure 2. Anxiety is lowest while the optimism is the highest in the non-medical group, in comparison with other groups of examinees. Similar scores of extroversion, self-confidence and empathy are obtained in all groups of adults.

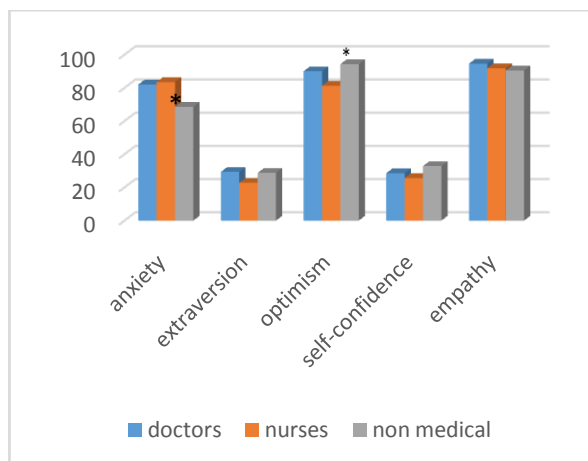


Fig.2. EI components in adults

*p<0.05

In the following analysis we used one way ANOVA for scores obtained for different facets (anxiety, extroversion, optimism and empathy) in both groups of participants (adolescents and adults). If ANOVA showed significance, we calculated Student t-test for evaluating differences in mean values and standard deviations of the scores obtained for specific facet.

For the facet anxiety, ANOVA is not significant which means there is no significant variance in obtained scores (ANOVA for anxiety p=0.2).

For the facet extroversion obtained ANOVA was p=0.005, which is statistically significant. In the following, we calculated Student's t-test for different groups of participants (Table 3).

Table 3. Student *t*-test for extroversión/introversión facet

Examinees	<i>t</i> -test
Nurses/doctors	p=0.004*
Nurses/students	p=0.004*
Nurses/others	p=0.002*
Others/students	p=0.26
Others/doctors	p=0.77
Students/doctors	p=0.39

Statistically significant differences of *t*-test was obtained between groups of nurses and other groups (doctors, students, and non-medical people). It means that nurses have the lowest level of extroversion in comparison with others which could be a negative psychological characteristics concerning their profession. Not enough extroversion in nurses is not suitable characteristics for good relationship with people who need health care.

For the facet optimism obtained one way ANOVA was $p=0,007$, which is significant. The calculated Student's *t*-test for optimism/pessimism scores between different groups is shown on Table 4.

Table 4. T-test for optimism/pessimism facet

Examinees	<i>t</i> -test
Nurses/doctors	p=0.15
Nurses/students	p=0.003*
Nurses/others	p=0.04
Others/students	p=0.46
Others/doctors	p=0.25
Students/doctors	p=0.006*

Significant differences are obtained between optimism in nurses in comparison with students, as well as in students and doctors. Students are the most optimistic group, which seems us very logical.

For the facet self-confidence obtained one way ANOVA was $p=0,000001$ which is highly significant. The calculated Student's *t*-test is presented on Table 5.

Table 5: Student *t*-test for self-confidence facet

Examinees	<i>t</i> -test
Nurses/doctors	p=0.24
Nurses/students	p=0.004*
Nurses/others	p=0.00002*
Others/students	p=0.0014*
Others/doctors	p=-0.000013*
Students/doctors	p=0.004*

We obtained significant differences in the level of self-confidence in compared groups: self-confidence is the highest in students in comparison to nurses, nurses compared with other professionals, as well as in doctors compared with students; doctors are significantly with lower and negatively related self-confidence in comparison to non-medical professions. However, nurses and doctors have not significant differences in the self-confidence level, which is related to similar professional aim, to help ill people.

We tested separately self-esteem in student population with self-esteem questionnaire (www.growing-self-esteem.com/self-esteem-questionnaire.html) and obtained results showed relatively high self-esteem in all examinees ($M= 73, 76$; $SD= 12, 18$). Maximum possible scores in this 20- item test is 100 and the lowest one is 20. So, the results obtained for evaluated groups are relatively high. This corresponds to obtained results on subtest for self-confidence included in EI test. Self-esteem is an important psychological characteristics for better achievement during studies, as well as in the future carrier.

ANOVA for empathy was no significant ($p=0.62$). It means that all groups are similar in empathy subtest. These results mean a generally tender-hearted persons who would never wish to hurt other people's feelings deliberately.

IV. DISCUSSION

The Emotional Intelligence is assume to be important in many field of life. It was shown that EI influence on the performance at work (complexities of the workplace, motivation the others and excellence in the career). EI influences on the physical health as well, by managing the stress level. Uncontrolled stress can raise blood pressure, suppress the immune system and increase the risk of heart attack and stroke. Uncontrolled stress can also impact to mental health making higher the vulnerability to anxiety and depression [14].

Having in mind that EI can be learned, it is important to include education about EI skills in educational system. Skills related to EI comprise ability to stress relief in the moment, improving nonverbal communication and conflict resolution skills and learn to fixing relationship problems with humor. Finally, trait emotional intelligence can facilitate interpersonal behaviors for achieving goals. Even the most recently published articles accentuate the importance of EI and suggest teaching young people on EI skills.

In this context, the study of Ravichandra KS. (2015) showed that only 11.55% undergraduate students in dentistry had a good EI and a major percentage of the students require immediate intervention to improve their EI.

In the study of Gharetepeh A. (2015) emotional intelligence was evaluated as a predictor of self-efficacy among students with different levels of academic achievement at University of Medical Sciences. It was concluded that emotional intelligence can explain self-efficacy. Therefore, it is recommended to teach emotional intelligence skills in students with low academic achievement through training workshops.

Weiszbrod T. (2015) showed that health care leader competencies are strongly related to emotional intelligence and suggested that including the study and development of emotional intelligence in health care administration programs could have a positive impact on the degree of leader competence in graduated professionals.

Fabio AD. (2015) in his research has identified an association between emotional intelligence (EI) and social

support. Social support represents an important individual resource that has been associated with multiple indices of adaptive functioning and resiliency.

Trying to improve emotional intelligence skills Lindquist KA (2015) evaluated the importance of language. It was shown that language helps constitute emotion by cohering sensations into specific perceptions of "anger," "disgust," "fear," etc. The powerful role of language in emotion suggests that emotions occur when sensations are categorized using emotion category knowledge supported by language. By teaching use the emotion words it is possible to go beyond communication and to help constitute emotional perceptions, and perhaps even emotional experiences related to improve EI.

Given that EI is the subset of social intelligence, it is important to reveal how emotionally intelligent people behave in interpersonal situations. When people confront interpersonal problems, they have to appraise and regulate others' emotions as well as their own emotions to achieve a constructive outcome. Therefore, how people behave in an ostracism situation will reflect the individual differences in trait EI (Yuki Nozaki, 2013). In the laboratory study it was empirically revealed that people with high interpersonal emotional intelligence influence others' emotions based on their own goals contrary to the general view.

In a study of Tsigotis K (2015) emotional intelligence was evaluated in women experiencing domestic violence and it was shown that it is a lower than emotional intelligence of women not experiencing domestic violence. Their abilities and skills making up emotional intelligence are also less developed. It was shown that the internal structure of emotional intelligence in women experiencing domestic violence differs from emotional intelligence of women not experiencing domestic violence. Authors advised to consider emotional intelligence in the process of providing women experiencing domestic violence with psychosocial help.

Emotional intelligence is supposed to play an important role in the onset and persistence of different psychopathologies. In the study of Mohagheghi A. (2015) it was investigated the relationship between emotional intelligence and alcohol dependence. It was concluded that patients with alcohol dependence have deficits in components of emotional intelligence. Identifying and targeted training of the individuals with lower scores in components of emotional intelligence may be effective in prevention of alcohol dependence.

Having in mind all this issues which confirm the importance of EI, Choi Y (2015) suggest improving communication skills training for nursing students by using a video clip on a smart phone.

As we mentioned before, EI is important in private life too. Nasiri Zarch Z (2014) showed that EI influence also marital satisfaction beside the economic level of the family.

In our study we evaluate EI in two groups: adolescents and young adult people and showed some specifics. These results are important especially for professions related to work with patients. Our findings showed some differences

between young and adult population. Having in mind the importance of emotional intelligence we suggest to organize teaching skills of EI early in the life (starting in primary school, but especially in students).

V. CONCLUSION

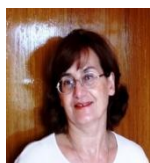
- The Emotional intelligence is assumed to be important in many field of life, achievement in studies, performance at work, and physical and mental health.
- It is very important knowledge that Emotional intelligence is a psychological traits/ability which can be learned.
- The evaluated groups of students in this study showed that the group of special education and rehabilitation are the most extrovert and have the highest self-confidence; while the most optimist are students of medicine. We did not obtained significant differences for the level of anxiety as well as for the level of empathy.
- Self-esteem is relatively high in all students.
- Concerning adult population, anxiety is lowest while the optimism is the highest in non-medical group in comparison with other groups of examinees. Similar scores of extroversion, self-confidence and empathy are obtained in all groups of adults.
- Having in mind the importance of emotional intelligence we suggest introduction of teaching EI skills in education curricula.

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