

## Fostering womens to choose stem career by using emotional intelligence as key element

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### Abstract

*Emotional intelligence has become more and more important in our society, being part of the competencies of the 21st century, regardless of the field in which the professional career exists. Especially in the STEM field, which is deeply marked by the small number of women represented, this could be the key to motivating girls to increase their motivation to choose the STEM field. This article presents the gender gap in terms of emotional intelligence and its expressiveness in order to create the premises to encourage girls to become leaders in the field, based on their ability to empathize (better than boys). STEM girls have an emotional intelligence superior to boys and there is a difference between girls and boys in terms of perceiving and expressing emotions. Thus, girls studied in STEM domain tend to be affirmative expressing their feelings directly, naturally, they are sociable, socially balanced, sometimes they can have exaggerated emotional reactions to a situation. Despite this, test results have shown that boys, unlike girls, have the ability to perceive and use emotions within the relationships they establish, much higher. STEM girls have an empathic ability superior to boys. This indicates that girls, unlike boys, are able to listen to others look from the perspective of others, to put their feelings in tune with others, they have altruistic behaviors that give them a dose of generosity that is sometimes lacking in boys.*

**Keywords:** emotional intelligence, female STEM career, self-regulation.

### Introduction

Emotional intelligence plays an important role in the lives of young people. It has been found that mothers who protect their children from frustrations, from stressful situations, from those that cause them anxiety, actually exacerbate the child's inclination towards shyness, which ultimately leads to depriving the child of the opportunity to learn to cope alone in unfamiliar situations and to get rid of fear. This causes children to become safe targets in front of the manipulator. Also, some parents despise the feelings of their children and show them no respect, criticizing them in general, disapproving of them, punishing them or being angry at them for daring to express their affective feelings, not knowing that shyness is not a native disposition, a trait that belongs to the nature of man, but is largely determined by education. Children become anxious when they are in

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unfamiliar situations or meet new people. If they are protected by educators or parents in the sense of avoiding stressful events, places and new people, then they have the chance to become shameful adults, timorous, inhibited in behavior and vulnerable to the manipulative influence exerted by those around them.

Emotional intelligence requires a permanent commitment to development and a continuous personal evolution. Emotional crises, which generally cause vulnerability to manipulative influence, associated with inherent events-career failures, illness, deaths of loved ones, moving to lesser-known places--are ameliorated or at least easy to bear with the sincere sharing of feelings with another person.

Children learn early on from adults that feelings are not information and that they are not accepted by others as information. In this situation they will cease to express their feelings or rely on them and will try to orient their lives on, and towards, neutral information (so-called objectives). This, however, is not simple because the feelings exist, and their power is very great.

From the point of view of meaning cognitive learning and emotional learning are interrelated, so it is a real problem. Although the programs for the development of emotional competences gather the best of classical training, the development of emotional competences differs from the usual training, by:

- duration - the development of emotional competences takes longer than the development of cognitive skills; IE means change and change requires time; learning also occurs after the end of the course itself;
- motivation - the motivation of the participants in the IE training is generally higher and healthier;
- practice - to reach excellence in the field of EI requires a lot of practice;
- accentuated dynamics - learning is not linear, change does not happen at once, it returns to old behaviors, it is tried once again; there are falls and comebacks;
- support – EI development requires significant organizational support;
- learning – IE training is centered on emotional learning, which means a reshaping of neural circuits; cognitive learning means acquisition of information and does not involve a "reprogramming".

Students learn early on from adults that feelings are not information and that they are not accepted by others as information. In this situation they will cease to express their feelings or rely on them and will try to orient their lives on, and towards, neutral information (so-called objectives). This, however, is not simple because the feelings exist, and their power is very great. Emotional intelligence requires a permanent commitment to development and a continuous personal evolution.

### **1.Elements of Emotional Intelligence**

Knowing personal emotions involves identifying and expressing them coherently, in a given context. In any relationship we express information, feelings, facts, memories. Sometimes, however, we find it difficult to express clearly what we want to say or feel -

we are not coherent, and sometimes we find it difficult to understand what we are told - the intention that hides behind the words. These situations are generating conflict.

In order to avoid them, it is important to be able to encode and decode the transmitted messages, at the verbal or non-verbal level, so that we can correctly transmit and understand the meaning of the messages.

Managing emotions refers to the ability to choose how we will express s in a given situation. In order to manage emotions, it is important to take into account: What do we express? How do we express it? When do we express? Where do we express? To whom do we express?

Directing emotions towards purpose is the criterion by which we manage our emotions. It is important to take into account what we want to do or achieve, concretely: duration in time - when we want to achieve the goal; participants - who we need; strategy - what steps to follow; resources - what we need.

Empathy it is the ability to intuit or recognize the emotions of others. Empathy is not about living other people's emotions, but about understanding them from our experiences.

The ability to build positive interpersonal relationships is the art of emotional intelligence comes down within this component. Thus, we have the possibility to create our own relationships using the elements mentioned so far: we set our goals, we channel our energy and emotions according to the goal (using empathy as a tool), we express and identify our emotions in a coherent way. We will be aware of our responsibility and that of others in interpersonal relationships. This will help us reduce conflicts and communicate effectively (Roco, 2001).

Goleman (2001) considers that the elements that make up emotional intelligence are:

- social skills – the ability to manipulate, communicate, collaborate, cooperate;
- self-control-desire for truth, conscientiousness, adaptability, innovation;
- self-awareness - self-confidence;
- motivation - desire to conquer, dedication, initiative, optimism;
- empathy-to-understand others, diversity, political capacity.

### ***High level of emotional intelligence-differences by gender***

The difference between emotional intelligence (IE), the level of structuring of which is assessed by the emotional contributor (QE), and academic intelligence, which relates to logical thinking and is acquired in schools, evaluated by intellectual contributor (QI), can also be made in terms accessible to all, namely the voice of the heart and the voice of reason. The two forms of intelligence refer to two kinds of knowledge, one based on affectivity and the other on rasion (Roco, 2001).

Psychological profile for a male student with high emotional ability (QE): has a social balance in human relationships, has an ability to engage in solving other people's problems, can dedicate himself to noble causes, is socially responsible and takes into account the moral side of the circumstances in which he is involved, has a rich affective

life, nuanced about herself, feels comfortable with herself and others in the social universe in which lives.

The psychiatric profile of a woman student with high QE: tends to be affirmative, expressing her feelings directly, naturally, life for her makes sense and deserves to be lived to the fullest, is sociable, expresses her sentences appropriately and adapts well to stress, is socially balanced, easily gets acquainted with new people, feels comfortable with herself being a joke, playful and sexually natural, rarely feels anxious.

Goleman (2001) identifies two types of people from an affective point of view: the passionate, who has exaggerated emotional reactions to a situation and the indifferent, who tends to totally ignore the seriousness of a problem.

### ***Critical situations-types of reactions and frequent***

When one has to cope with the reactions of others, when he needs them or when he has to solve a misunderstanding with other people, the different reactions can be summed up in four typical attitudes: to run away, to attack, to manipulate, to assert yourself.

The first three attitudes do not give very satisfactory results for solving problems and ensuring good relations with others unlike the last, to be assertive, which allows affirmation constructively.

Knowing these attitudes facilitates their understanding and puts everyone in a good position to choose and decide the behavior that seems best for everyone in the situations in which they find themselves.

Flight is an attitude of active or passive avoidance in front of people and events: rather than asserting himself slowly but surely, the fugitive prefers to obey or flee, even to his disadvantage, although he would have the possibility to act differently.

The attack is an attitude of aggression in front of people and events: rather than asserting himself slowly but surely, the attacker prefers to subdue others, to make them fit after him, even to his detriment, although he would have the possibility to act differently.

Assertiveness aims to make the individual able to express his personality, continuing to be accepted socially without fear of arousing hostility in the environment.

To assert means to affirm, to say. By extension: to assert themselves, to defend their rights, to claim to: assert yourself without fear and constructively; defend your rights, without restricting those of others; aspire to your own truth, to your own ideas, to your own tastes; take possession of your personal environment again.

The manipulator is skilful and Machiavellian. Generally, he stands aside when he participates in a debate, but his work intensifies through interruptions of the meeting. Was always looking behind the interpretations, not trusting the direct information. Often presents himself as a useful, if not indispensable, intermediary. Is never the real responsible, only draws the consequences from the will of another, not his own. Mentally speaking, it often takes on the airs of theatrical character, plays a role. Often begins

phrases: "honestly", "let's not spin around the tail", so that the other can free himself and let his guard down.

### ***Behaviors and attitudes typical of emotions manipulators***

*To flatter and seduce:* imposing yourself in front of others and gaining appreciation from them must be tactfully in order to succeed: to like and flatter if you want to be liked and flattered.

*To devalue* what allows the other to unbalance, especially if he lacks safety or if he is already in situations of weakness. A devaluation humor, along with short phrases that prove intelligence and culture, is only a sad manipulation, without effectiveness in solving problems. The defeated one, full of strangeness, seeks only revenge.

*To exaggerate and caricature* involves starting from the information offered by another, the retention of a single aspect to be exaggerated, caricatured.

*To simulate and fable:* "lie...lie," Voltaire said, "there will always be something left of this." Simulation is a classic element of manipulation. It's an old childhood reminiscence, the first means of existing outside of parenting. They are the means of the weak, to arouse the weakest like him, or to defend himself from overly heavy responsibilities, and by denying facts or reality or by inventing happenings in his favor.

*To conspire* - reveals half-heartedly partial truths and hints even more. Provocative of rumors and rumours, he acts with the help of rancor and ambitions. It is more skillful to create conflicts at the right time than to settle existing ones.

*To combine-play* is to know how to turn the rules.

*To stage* this person expresses his talent in the presence of difficult audiences.

*To interpose-know* "who and what does"; it has its inputs and exits.

*Guilt:* knows the art and how to exploit the background of traditions, beliefs; perosana takes the air of rescuer. The highest degree is to make the other guilty of his own value systems.

*To enslave*-his charged conscience prevents him from being directly or from putting the point on I when the situation demands it. He feels the need to enslave, to use indirect practices, to cause small catastrophes in the hope of counting on the supered of others.

*Doing the honest-* starts with phrases like: "you can trust me...", let's say it all...". it can really be honest, but very rare. The more or less conscious simulation is the most common attitude that hides behind this wonderful behavior.

*To manipulate unconsciously-* these people are full of good intentions and do not want for anything in the world to manipulate others. If they are told that they are manipulating, they are not too amazed: they are people who manipulate honestly, without realizing it.

### ***The adverse consequences of manipulation***

*Passivity:* feeling more or less consciously restricted by the manipulation of the other, the one in question becomes submissive and passive. Of course, his superior feels a skilful

psychologist, but he is naively amazed by the lack of initiative and the poor sense of responsibility of the collaborators.

*Revolt and revenge:* after letting himself be used once, the one in cauya develops a resentment and becomes aggressive as soon as the power and social life ratio allow him; it is the type of revenge and even the pseudo-manipulator is amazed by so much aggressiveness.

*Defiance:* in any case, trust is lost, and the one in question will interpret all behaviors less clear as manipulations.

The origin of manipulative attitudes is usually found in traditional education, which can be defined as a huge permissive manipulation, regulated and elevated to the level of moral system. A lying to children can mean not to lie. In any case, the children who grew up and became adults remember this and, unconsciously, think that in order to have power they must manipulate because the first authoritarian individuals they met were their own parents who turned out to be famous manipulators.

## 2. Women in Science, Technology, Engineering and Mathematics

In 2022, engineering and computer science (most lucrative STEM fields) is viewed as male dominated, only 34% of women are involving in the highest-paid jobs, according to National Science Board (2022). From the point of view of U.S. Bureau of Labor Statistics (2020) the percent of women in STEM occupations are 46% in Biological Scientists, 40% in Chemists and Materials Scientists, 25% in Computer and Mathematical Occupations, 16% in Engineers and architects. In Romania, the women representation is more likely to the EU standards and is quite increasing over years (Eurostat, 2020).

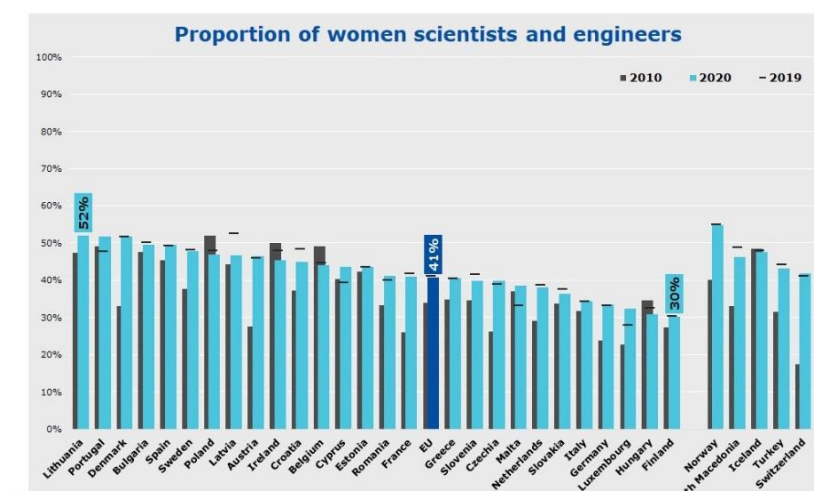


Image 1. Proportion of women scientists and engineers in the world. Source: Eurostat, 2020

An investigation about gender situation balance, in the Romanian universities, was conducted in 2019, by Drumea and all. (2020). The article offers an analysis of the

potential impact of the gender selection in terms of management and the power structure, especially in the STEM universities.

World Economic Forum (2019) reveals than the global gender gap index, in the Romania case was 0.724 and the STEMS education and skills, shared by the gender is lower than in others countries (20% female/ 40% male), as can be seen in Table no3 and Image no.2.



Image no.2 Global Gender Gap Index. Source: World Economic Forum, 2019

female	male	value		female	male	value	
-	-	239.6	<b>Education and skills</b>	20.25	40.80	0.50	
-	-	23.50		STEMS, attainment %	2.79	5.75	0.48
10.02	9.49	19.50		Agri., Forestry, Fisheries & Veterinary, attainment %	11.00	8.03	1.37
-0.69	-0.77	-0.73		Arts & Humanities, attainment %	32.49	22.60	1.44
48.66	51.34	0.95		Business, Admin. & Law, attainment %	6.44	0.93	6.95
				Education, attainment %	10.95	28.31	0.39
				Engineering, Manuf. & Construction, attainment %	12.63	7.01	1.80
				Health & Welfare, attainment %	2.79	7.93	0.35
				Information & Comm. Technologies, attainment %	6.52	4.56	1.43
				Natural Sci., Mathematics & Statistics, attainment %	2.69	9.46	0.28
			Services, attainment %	11.71	5.42	2.16	
			Social Sci., Journalism & Information, attainment %	17.37	22.84	0.76	
			Vocational training, attainment %	0.08	0.08	1.10	
			PhD graduates, attainment %				

Table no3 Gender representation in education and skills. Source: World Economic Forum(2020)

This approach is closely identified with the work of Makwana and all. (2021) during the researching. The article clearly identifies the factors influencing the decision to select a career in STEM occupations related to emotional intelligence.

In addition to surveying the literature on STEM women occupations, we also reviewed work (Jiang, 2021) carried out on STEM domain: 6.7% of the high ability non-STEM women explain 13.7% of the gender wage gap in college graduates.

As noted in a recent report (Barbieri, 2021), Romania has been at the forefront of developments in gender STEM interest. This success is often attributed to Romania's position, but the factors catalogued in the report reveal a more complex picture.

## II. Research Methodology

### Research objectives

In this research we have pursued the following objectives:

- Determination of the level of emotional intelligence in the investigated subjects and its comparative study by gender.
- Comparative establishment of the way of perceiving and expressing emotions.
- Comparative study of empathic capacities in girls and boys.
- Comparative study by gender of the capacities of regulating and using emotions.

### Research hypotheses

- We assume that in the research group girls have a superior capacity of influence than boys.
- We anticipate that girls have an emotional intelligence superior to boys.
- We anticipate that there is a difference between girls and boys in terms of perceiving and expressing emotions.
- We anticipate that girls have an empathic capacity superior to boys.
- We anticipate that there is a difference between the sexes in terms of regulating emotions and their use.

### Research participants

In this research, the subjects are second-year students (19-20 years old), in a university with the scientific field of STEM education. All those enrolled in the research participated on a voluntary basis, on the principle of completing the research tools online. Also, the number of subjects by sex, namely 45 boys and 45 girls, has been imposed since the beginning of the research. Since it was difficult to identify the target group only within a single faculty, only membership in the university was chosen at the general criterion level. The completion of the research tools was done within a didactic activity, the tests being administered at the same time for all subjects.

### Instruments and procedure

For this research were used 3 research tools Emotional intelligence test (1), The Moon emotional intelligence test(2) and Questionnaire for self-knowledge (3), all adapted and rendered before. Prior to data collection, research tools were pre-tested to measure internal consistency for both tests (Cronbach Alpha Moon test-0.74, Cronbach Alpha Questionnaire for self-knowledge-0.76). The first test includes 10 items that consist in presenting situations (scenarios) in which a person can find himself ensuring as much as possible the transposition of the individual in the situation and some concrete ways to react in the situations indicated by the questions. The Moon emotional intelligence test comprises 47 items, organized in 5 scales: perception of emotions (items



1-5 and 13-15), expressing emotions (items 6-12), empathy (items 16-22), adjusting emotions (items 23-37), the use of emotions (items 38-47). Questionnaire for self-knowledge, questions regarding the influence attitude were used. The last test included 15 items, and the scores are interpreted as low scores (0-5p), average scores (6-10p) and high scores (11-15p).ati in 5 scale: perception of emotions (items 1-5 and 13-15), expressing emotions (items 6-12), empathy( items 16-22), adjusting emotions(items 23-37), the use of emotions( items 38-47). Questionnaire for self-knowledge, questions regarding the manipulation attitude were used. The last test contains 15 items, and the scores are interpreted as low scores (0-5p), average scores (6-10p) and high scores (11-15p).

### III. Results

According to the first hypothesis, according to which we assume that the girls have a superior capacity of influence than boys, we compare the scores obtained by our subjects at the test, using the T test:

Table 1. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
MABoys	45	8.6667	1.3817	.2060
MAGirls	45	9.7556	1.5099	.2251

Table 2. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
MABoys	42.077	45	.000	8.6667	8.2516	9.0818
MAGirls	43.342	45	.000	9.7556	9.3019	10.2092

It is observed that girls have an average of the scores higher than that obtained by boys, so we deduce that they have a better influencer capacity than boys. This is mainly due to the fact that girls show more diligence in achieving their own goals, they are more emotionally organized. Being at the age of 20s, girls more than boys have a tendency to use all the resources necessary to achieve the goals, the end justifies the means. Possessing a lot of charm, the girls consider that this is the main weapon through which they manage to influence the attitude of those around them. Being dominated, at this age, by an emphatic spirit of competition, girls more than boys tend to identify more quickly the weaknesses of others, thus using them to influence. Of course, the results are applicable to this research group, and we cannot generalize, our study being limited to subjects between the ages of 19 and 20.

We can also say that the mentioned abilities appear at this age and manifest themselves quite strongly.

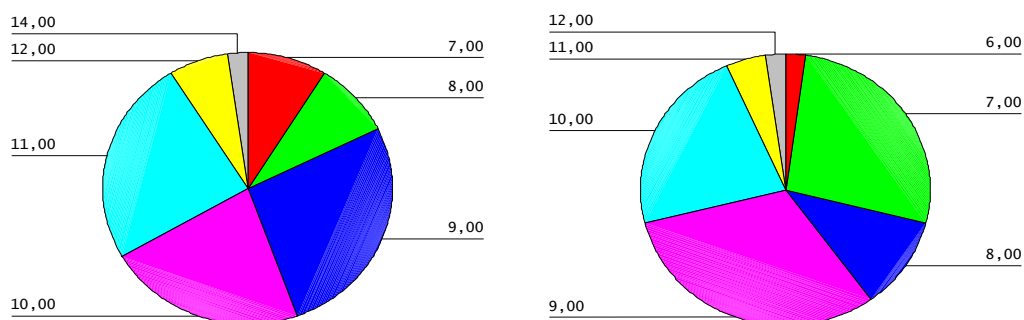


Figure 1. Distribution of the scores for the manipulative attitude test ( girls and boys)

The first hypothesis of our research is confirmed – the skills of influence are present, and girls have these abilities better developed than boys. This can be explained based on the differences in their personality but especially on the account of the ways of solving or ensuring their own age-specific needs. Thus, girls, much more balanced from a psychic point of view compared to boys of the same age, will resort more often to manipulative low abilities when necessary to satisfy their needs for self-realization, esteem, belonging and love, safety. If these needs could not be met, girls would easily resort to the behaviors and attitudes typical of the manipulator, namely: simulation, conspiracy, flattery, criticism. In boys, unlike girls, age-specific needs do not manifest themselves with the same intensity as in girls and that is why they are supposed to use their manipulative skills whenever they have to do so, without making this a permanent purpose to use. Several studies have been used to explain the factors on so few female are represented in most STEM education fields (González-Pérez et. Al, 2020; Prieto-Rodriguez et.al, 2022; Casad et.al, 2021), but, in particular ways, the results can be useful to resolve the problems understanding the complexity of female roles (Barbuto, 2007). This results together form a framework for describing female participation in STEM fields and were particularly useful when linked to their intended learning approaches but impossible because sociocultural factors (UNESCO, 2020) or because they often do not consider to be closely linked to culture of females jobs (Calitz et.al.2020).

According to the second hypothesis, we anticipate that girls have an emotional intelligence superior to boys. To demonstrate this, we compared the averages of the tests used on the samples of girls and boys in the Emotional intelligence test, using the T test:

Table 3. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
EI Boys	45	91.5556	27.7124	4.1311
EI Girls	45	102.56	28.8535	4.3012

Table 4. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
EI Boys	42.077	45	.000	8.6667	8.2516	9.0818
EI Girls	43.342	45	.000	9.7556	9.3019	10.2092

About the distribution of the results for the Emotional Intelligence test (girls-left and boys right figure):

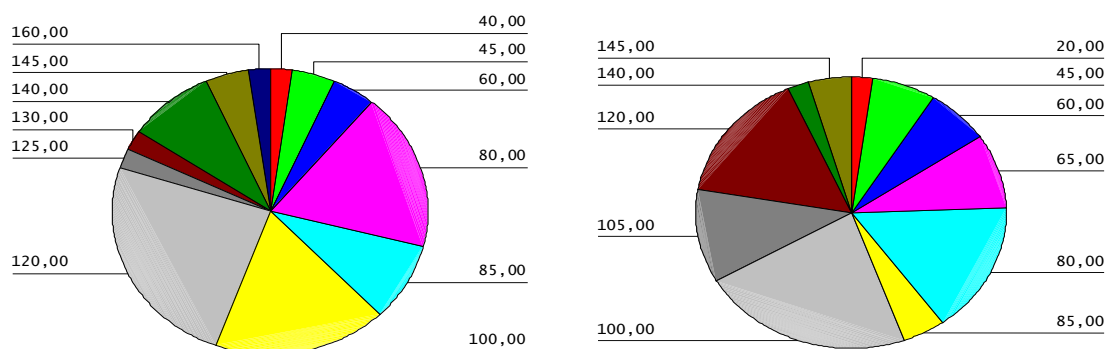


Figure 2. Distribution of the scores for the Emotional Intelligence Test (girls and boys)

We see the existence of a difference between the two averages, the average of the scores obtained by the girls being 102.56, and the one obtained by the boys being 91.56. Thus, the scores obtained by girls are higher than those of boys, which shows a higher emotional intelligence, our hypothesis being thus confirmed. Girls are better connected with their own emotions, and they can control them better, they can self-regulate them more effectively. From this point of view, it can be appreciated that girls, having that manipulative ability, can use the appeal to emotions in their manipulative activity. The appeal to emotions can be used to determine the achievement of a persuasive goal and if this call is adapted to human needs the result is maximum.

Girls have the ability to effectively manage their emotions in relation to their personal goals (career, family, education, etc.). The goal lies in achieving goals, with a minimum of inter- and intra-personal conflicts. As a rule, people with a high score of emotional intelligence have a satisfactory social balance in human relationships, are sociable, sympathetic and caring in interpersonal relationships, have, about themselves, a good image (Stewart-Williams, 2021).

Having an average emotional intelligence means having the ability to identify one's own emotions, assuming the responsibilities involved in the identified emotions, learning compassion and empathy. So women leaders can encourage others girls to pursue STEM career (Downey et.al, 2006). In an earlier study, Ramchunder and Martins (2014) distinguish the predominant result about female skills than male skills about self-efficacy, emotional intelligence and leadership style as attributes of leadership effectiveness. Van

Oosten et al. (2017) have identified a lots of factors to change the few STEM female involving like to engage in professional development, encouraging outcomes, coaching.

Unlike boys, girls have the ability to control, depending on their intended purpose, their feelings and those of others, the ability to differentiate between them in order to be able to coordinate their own actions. The second hypothesis of our research is confirmed.

In the third hypothesis of our research, we anticipated that there is a difference between girls and boys in terms of the ability to perceive emotions. To this end, we have compared the averages obtained by the two sexes at the scale of perceiving emotions in the EQ Moon test.

Table 5. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Moon1Boys	45	10.2444	2.7399	.4084
Moon1Girls	45	9.0000	3.1479	.4693

Table 6. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
Moon2Boys	25.08	45	.000	10.2444	9.4213	11.0676
Moon2Girls	19.179	45	.000	9.0000	8.0543	9.9457

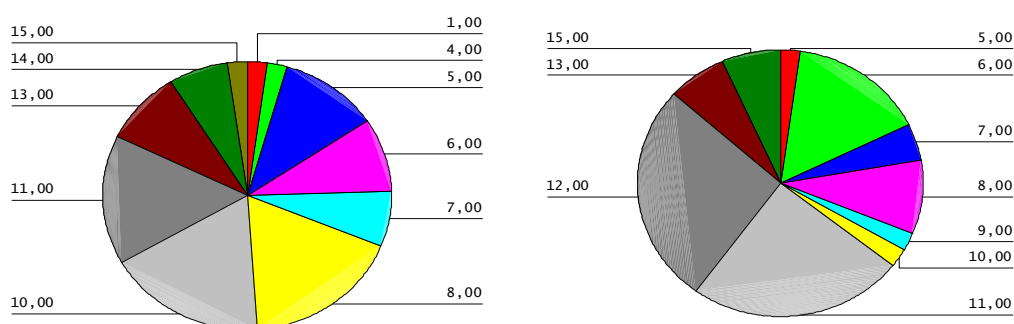


Figure 4. Distribution of the scores for the Moon1 test ( girls and boys)

The average score obtained by boys is higher than that obtained by girls, which shows that, at this age, boys have a greater capacity to perceive emotions than girls, although apparently it could be considered the opposite. This indicates that boys, unlike girls, have the ability to identify their emotion from their own more developed thoughts, feelings and physical states, they also have the ability to distinguish between precise and imprecise or sincere and insincere emotions. This is due to the fact that they, the boys, are more practical and easily notice the important changes inside them but also in the surrounding environment. Unlike boys, girls are more internalized, which causes them to

be more suspicious and reserved in perceiving and externalizing feelings (Berra and all, 2020).

As a rule, students who manage to perceive and express their emotions properly are more relaxed biologically, have a low level of stress hormones which makes them more psychologically relaxed.

We also anticipated that there is a difference between the sexes in terms of how emotions are expressed.

Table 7. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Moon2Boys	45	10.2889	2.7272	.4065
Moon2Girls	45	7.3333	2.0671	.3081

Table 8. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
Moon2Boys	25.308	45	.000	10.2889	9.4696	11.1082
Moon2Girls	23.799	45	.000	7.333	6.7123	7.9543

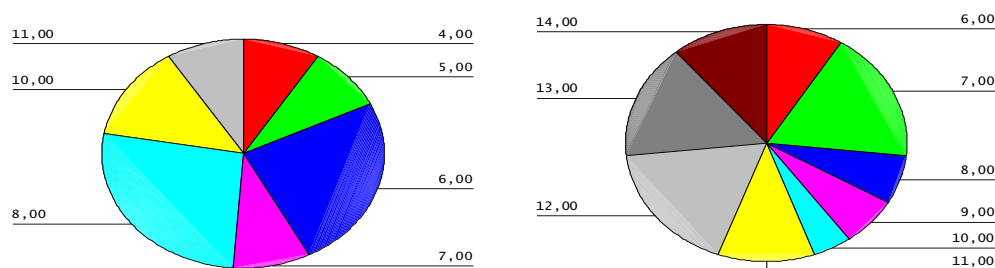


Figure 5. Distribution of the scores for the Moon2 test ( girls and boys)

The difference between the two averages is quite high, also in favour of boys, who averaged 10.29 compared to girls, 7.33. Again it seems strange, but it seems that studentship is a special period, when boys have a greater capacity to express emotions, girls being a little more internalized. At this age, certain feelings fuelled by frustration (injustices, sufferings, insults, etc., caused by others) manifest themselves prominently and especially in girls, which make feelings to be internalized or masked by certain reactions and behaviors more or less predictable.

In terms of empathy, girls have an empathic capacity superior to boys:

Table 9. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Moon3Boys	45	9.3778	3.5694	.5321
Moon3Girls	45	10.8667	2.5990	.3874

Table 10. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
Moon3Boys	17.624	45	.000	9.3778	8.3054	10.4501
Moon3Girls	28.048	45	.000	10.8667	10.0859	11.6475

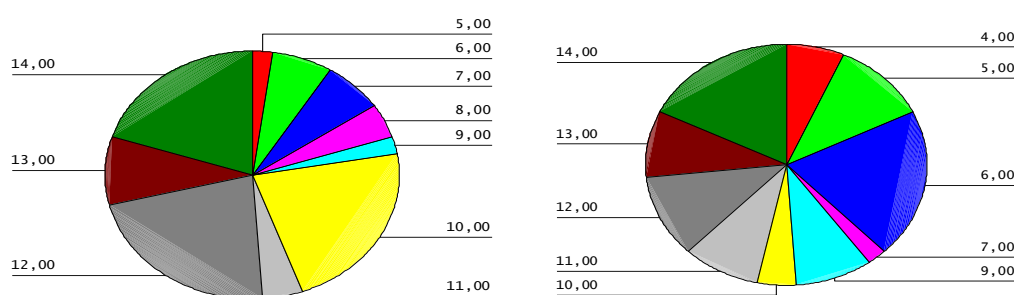


Figure 6. Distribution of the scores for the Moon3 test ( girls and boys)

The average of girls is 10.87, higher than that obtained by boys, at 9.37. Girls are more able to transpose themselves into another person's states, to empathize and understand another person, they are more sensitive. It has also been found that girls are more generous, altruistic, tend to give help to the people who surround them, have a well-defined prosocial behavior, are generally well adapted socially.

Boys, at this age, are more concerned about themselves than about those around them, considering that empathy is the prerogative of girls, as they have much more dynamic preoccupations and are always running out of time. In general, boys empathize more with other boys than with girls, while girls have the ability to empathize with everyone, regardless of gender.

In general, people with a high level of empathy combine the affective experience, which is rich and nuanced, with cognitive flexibility, by using and applying various appreciative criteria adapted to the situation. As a rule, the assessment of empathic empowerment must be largely aimed at attitudes towards the successes, joys of others and the degree of emotional involvement in the achievements of others (UNESCO, 2018).

Also we anticipated that there is a difference in the regulation of emotions between girls and boys:

Table 11. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Moon4Boys	45	21.1778	5.6500	.8422
Moon4Girls	45	21.9333	3.5188	.5245

Table 12. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
Moon4Boys	25.144	45	.000	21.1778	19.4803	22.8752
Moon4Girls	41.814	45	.000	21.9333	20.8762	22.9905

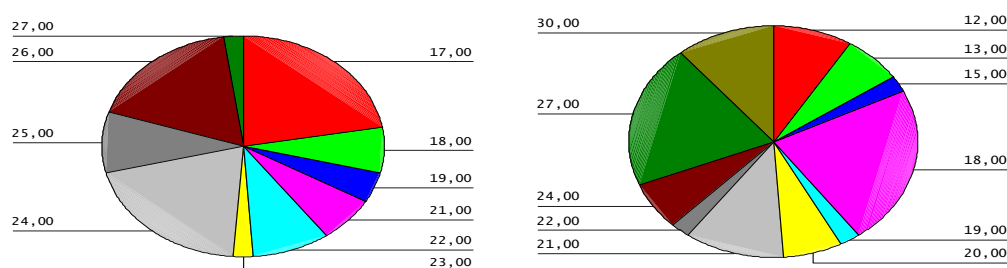


Figure 7. Distribution of the scores for the Moon4 test ( girls and boys)

Girls regulate their emotions better than boys, which correlates with the restraint in expressing emotions shown by them. The regulation of emotions, rewards the ability to be both pleasant emotions or feelings, as well as those less pleasant. According to the research, it appears that girls, unlike boys, tend to monitor their emotions much better, which allows them to have the ability to manipulate both their own emotion and that of others. This phenomenon is mainly due to the ability of girls to hide those feelings of inferiority in relation to boys. For girls, shyness as well as the fear of not seeming ridiculous causes the appearance of difficulties in expressing and externalizing emotions. Controlling emotions seems to be vital for girls of the age. Boys, being more nonconformist, regulate their emotions more difficult, which, to some extent, predisposes them to vulnerability to manipulation.

The last hypothesis of our research also anticipated that girls have a superior ability to use emotions.

Table 13. One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Moon5Boys	45	14.8222	1.4661	.2186
Moon5Girls	45	15.3556	2.1123	.3149

Table 14. One-Sample Test

	<i>t</i>	<i>df</i>	<i>Sig.(2-tailed)</i>	<i>Mean difference</i>	<i>95% Interval of the Difference</i>	<i>Confidence of the Difference</i>
Moon5Boys	67.819	45	.000	14.8222	14.3818	15.2627
Moon5Girls	48.767	45	.000	15.3556	14.7210	15.9901

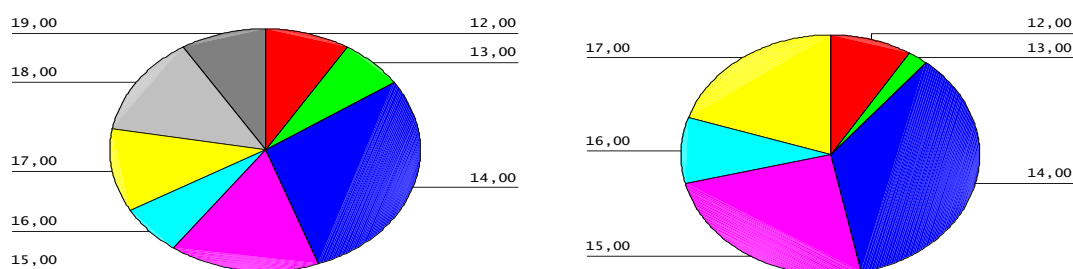


Figure 8. Distribution of the scores for the Moon5 test (girls and boys)

Indeed, girls make better use of their emotions, know better how to dispose of them, control them and use them to get what they want. This allows students to know better the meaning of emotional states depending on the situations and relationships in which they occur (the lag between sadness and loss), the ability to understand emotions and to use them in relationships with others. Boys, being more rational, more practical, use less of emotions, rarely resort to feelings to gain an advantage.

## Conclusions

In this research the results are revealed. Girls have an emotional intelligence superior to boys and there is a difference between girls and boys in terms of perceiving and expressing emotions. Thus, girls tend to be affirmative expressing their feelings directly, naturally, they are sociable, socially balanced, sometimes they can have exaggerated emotional reactions to a situation. Despite this, test results have shown that boys, unlike girls, have the ability to perceive and use emotions within the relationships they establish, much higher. This could be explained by the fact that boys are able to immediately recognize the differences between feelings and actions, to master their anger, and to tolerate their frustrations unlike girls, to whom emotions sometimes take the place of reason. In contrast to this findings, Stewart-Williams and Halsey (2021) found that bias and discrimination are a key factors in STEM choices, also educational experience and life priorities are more likely related to men STEM career. The same authors argue that it can be responded with a family-friendly policies, sufficient support about pursuit of happiness, eliminate the socio-cultural causes linked to the traditional female roles, the main sources of the gender disparities in STEM domain.



Girls have an empathic ability superior to boys. This indicates that girls, unlike boys, are able to listen to others look from the perspective of others, to put their feelings in tune with others, they have altruistic behaviors that give them a dose of generosity that is sometimes lacking in boys. Generosity and altruism also derive from the desire, conscious or unconscious, to associate one's own feelings with that of others, to be receptive to the sufferings of another, as if it is in temporary oscillation with one's own person, with personal experience about suffering. This results are sustained also by Riney and Ku (2021) and Meshkat and Nejati (2017) who found that female students are more responsible than men students about academic emotions and their implications for success in STEM.

Furthermore, the idea to share emotional intelligence in STEM raises another issue about increasing female students to create best teams (Schneider et al., 2018). Also, female STEM learners are working and learning to perform as leaders using the socio-emotional perceptions to create meaning during COVID-19 crisis (Ziegler et al., 2020) or to recharge outcome expectations by mentoring other girls to become better learners (Peterson, 2020). This theme includes solutions presented in evidence-based understanding of girls' barriers about future opportunities in STEM domain, building a global framework for information-sharing, documents best practices, forces public private partnerships, focusing and mentoring of disadvantaged females (United Nations Children's Fund, 2020).

### Acknowledgements

This work was supported by The Research Institute of the University of Bucharest (ICUB), under the project ICUB Fellowship for Young Researchers 2021.

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