ORIGINAL ARTICLE Received 22 December. 2018 Accepted 28 June. 2019

ISSN: 2423-6985

IRANIAN JOURNAL OF POSITIVE PSYCHOLOGY

Vol. 5, Issue 3, 142-149, 2019

Iranian Journal of Positive Psychology

ISSN: 2423-6985

ijpp.worldofresearches.com

Relationship between emotional intelligence and meta-cognition with problem solving skills of junior high school students of smart schools and ordinary schools

Hengameh Monemian[1], Ahmad Shabani[*2]
Department of Educational Psychology, Isfahan University, Isfahan, Iran.

A B S T R A C T

The current research examines the relationship between emotional intelligence and meta-cognition with problem solving skills of junior high school students of smart schools and ordinary schools in Isfahan. The study was descriptive and correlative and its statistical population includes 70,741 students at the junior high schools which were smart and ordinary schools of Isfahan city in the academic year 2015-2016. For this purpose a sample size of 400 students (200 boys and 200 girls) were selected according to Morgan table and random multi-stage cluster sampling. For data collection, Emotional Intelligence Scale of Bradbury and Graves (2005) and Problem Solving Inventory PSI of Heperto Peterson (1982) and MCQ-state students O'Neal and Abedi (1996) were used. Data were analyzed by Pearson correlation coefficient and Multiple Regression. The results of Pearson analysis showed a significant and positive correlation in the following six cases. 1. Between emotional intelligence, problem solving and meta-cognition. 2. Between emotional intelligence and problem-solving components except – Avoidance/attitude style .3 - Between emotional intelligence and meta-cognitive components. 4. Between meta-cognitive skills and problem-solving component except attitude – avoidance style. (5) Between components of emotional intelligence and problem-solving skills. (6) Between meta-cognitive skills and emotional intelligence components. Moreover, the results of multiple regression analysis showed that emotional intelligence is a good predictor of problem solving skills and the components of Problem solving confidence (PSC) and personal control (PC). Meanwhile emotional intelligence is a suitable predictor for meta-cognition and meta-cognitive components.

Keywords: Emotional Intelligence, Meta-Cognition, Problem Solving Skills, Smart And Ordinary Schools.

INTRODUCTION

Emotional intelligence is the latest development in the field of understanding the relationship between thinking and emotion. It was first proposed by Salovey and Mayer (1990), as a form of social intelligence including the ability to control emotions and feelings in ourselves and others, accepting other people's views and controlling social relations(Peña-Sarrionandia, Mikolajczak, & Gross, 2015; Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016). Emotional intelligence is the ability to understand the environment, spontaneity, understanding and controlling our emotions and those of others, so that this process can facilitate the flow of thought and communication(Mayer & Salovey, 1995; Mayer, Salovey, & Caruso, 2008). According to Goleman (2006), emotional intelligence is awareness of feelings and using it and the ability to withstand shock and controlling mental confusion. One of the

* . Corresponding Author: Shabani, A.

DOI: In prossing
To cite this article: Monemian, H., Shabani, A. (2019). Relationship between emotional intelligence and meta-cognition with problem solving skills of junior high school students of smart schools and ordinary schools. *Iranian Journal of Positive Psychology*, 5 (3), 142-149.

influential mechanisms involved in the formation and activation of EQ in individuals is the recognition of the effective use of cognitive processes. meta-cognitive process is a process in which learners know how to learn, how to use the information to reach the goal, the ability to judge cognitive processes in a particular task and how to use strategies to achieve the goals, and they evaluate their progress during the performance and after the performance(Brick, MacIntyre, & Campbell, 2015; Flavell, 1979; Flavell & Miller, 1998; Özsoy, Memiş, & Temur, 2017).

Huang (2002) and Kolb and Kolb (2009), argues that the main emphasis of cognitive psychology is the emphasis on learning how to learn (meta-cognition): meta-cognitive knowledge is the knowledge regarding desired activities, strategies that can be used to perform the activity and consciousness of the abilities and their relationship with these strategies. In general, the meta-cognition is required as a mechanism for planning, monitoring and evaluation of the process of thinking in problem solving(Kazemi, 2012).

One of the fundamental thinking skills is problem solving skill. Problem is a conflict or difference between the current position and another position that one wants to achieve. In fact, when a person faces a situation and cannot respond quickly to that position through the existing information and skills, s/he faces a problem(Beaubouef, Lucas, & Howatt, 2001; Sadeghi & Mousavian, 2017).

In fact, problem-solving method is a form of active learning technique and consists of five steps: identifying and defining the problem, gathering information, preliminary conclusions, testing the results and the evaluation and decision-making. Problem-solving ability is an important strategy that enables the person to control difficult life situations and their negative influence and reduces psychological stress. Many researchers, including Moradi, Pishva, Ehsan, and Hadadi (2011) believe that there is positive relationship between emotional intelligence and problem-solving coping skills. Emotional intelligence has significant positive correlation with self-esteem, assertiveness, empathy, interpersonal relations and problem solving.

With respect to the emphasis of developmental psychologists on the importance of maturation and adolescence and the importance of problem solving abilities and meta-cognition on the quality of personal life and social skills, the present study sought to answer the following question. Is there a significant relationship between emotional intelligence, problem solving and meta-cognitive skills in the junior high school students of smart and ordinary schools? If there is any relationship between these components, a plan must be provided for the schools to teach these components to the students to increase emotional intelligence of the students, problem solving abilities and meta-cognition and consequently result in academic achievement. The results of this study are also beneficial to parents, psychologists and all those who are associated with teenagers.

METHODOLOGY

The purpose of the present study is practical and based on the method of data collection; it is among descriptive research which was done by correlative survey. The study population included all junior high school students of Isfahan city in the academic year 2016-2017.

According to the latest official statistics, the number was 70 741 students, including six districts. Using random cluster sampling method, three regions were selected among these regions and 4 high schools were randomly selected, and among these high schools, the students were randomly selected. Thus, a total of 400 samples were evaluated according to Morgan table.

Emotional Intelligence Questionnaire: This test was developed by Travis Bradbury and Jane Graves. In this study, Cronbach's alpha was calculated and it was 0.83. In this emotional intelligence test, the highest score is 100 and has four subtests:

Problem Solving Inventory: Problem Solving Inventory is provided by Heppner and Petersen (1982), for assessment of the respondent's understanding of their problem solving behavior. (PSI) includes 35 articles designed to measure how people react to their daily problems. Three items of the questionnaire are used for research purposes and will not be scored. Problem Solving Inventory based on the rotation of factor analysis has three distinct subscales: 1. Problem Solving Confidence (PSC) 2. Attitude/avoidance style (AA) 3. Personal Control (PC).

Students' MCQ-state: MCQ-state was designed by O'Neil Jr and Abedi (1996), in order to obtain information about the skills necessary to solve a complex task (the ability of the students to think systematically about one exercise). The test contains 20 items and four scales: awareness, cognitive strategy, planning and self-monitoring. Five items are dedicated to each subscale and based on the Likert 4-point scale (from no to very high) participants should specify their agreement or disagreement with each of these statements.

RESULTS

The main hypothesis: There is a significant relationship between emotional intelligence and problem-solving skills with meta-cognition of elementary school students of smart and ordinary schools.

Given the normal distribution of data, Pearson correlation coefficient was used to evaluate this hypothesis.

Table 1. shows the correlation coefficient between emotional intelligence and problem-solving skills with meta-cognition of elementary school students

	Meta-cognition state		
	correlation coefficient	the square of the correlation coefficient	significance level
Emotional Intelligence	0.527**	0.278	0.001
Problem Solving Skills	0.315**	0.099	0.001

Results of table 1 show that the correlation coefficient is significant between emotional intelligence and problem-solving skills of elementary school students with meta-cognition. In other words, there is a significant relationship between emotional intelligence and meta-cognition (r=0.527). Based on the coefficient of determination (r^2) 27.8 percent of the variance in emotional intelligence and meta-cognition is common. Moreover, there is a significant and

direct relationship between problem-solving skills and meta-cognition (r=0.315). Based on the coefficient of determination (r^2) 9.9 percent of the variance of problem-solving skills and meta-cognition is common. Therefore, the main hypothesis of the study (there is a significant relationship between emotional intelligence and problem-solving skills with meta-cognition in elementary school students) is confirmed.

The first sub-hypothesis: There is a significant relationship between emotional intelligence and meta-cognition of elementary school students in smart schools.

Table 2. shows the correlation coefficient between emotional intelligence and meta-cognition of elementary school students in smart schools

	Meta cognition		
	Correlation coefficient	The square of correlation coefficient	Significance level
Emotional intelligence	0.617**	0.381	0.001

P <**0.01****

Results of table (2) show that the correlation coefficient is significant between emotional intelligence and meta-cognition of elementary school students in smart schools. It means that there is a significant and direct relationship between emotional intelligence and meta-cognition (r=0.617). Thus, the first hypothesis (there is a significant relationship between emotional intelligence and meta-cognition of elementary school students in smart schools) is confirmed.

The second sub-hypothesis: There is a significant relationship between emotional intelligence and meta-cognition of elementary school students in ordinary schools.

Table 3. shows the correlation coefficient between emotional intelligence and meta-cognition of elementary school students in regular schools

	Meta cognition		
	Correlation coefficient	The square of correlation coefficient	Significance level
Emotional intelligence	0.42**	0.177	0.001

P <**0.01****

The results of table (3) show that the correlation coefficient is significant between emotional intelligence and meta-cognition of elementary school students in regular schools. It means that there is a significant relationship between emotional intelligence and meta-cognition (r=0.42). Therefore, the second hypothesis (there is a significant relationship between emotional intelligence and meta-cognition of elementary school students in ordinary schools) is confirmed.

The third sub-hypothesis: there is a significant relationship between problem solving skills and meta-cognition of elementary school students in smart schools.

Table 4. shows the correlation coefficient between problem-solving skills and meta-cognition of elementary school students in smart schools

	Meta cognition		
	Correlation coefficient	The square of correlation coefficient	Significance level
Problem solving skills	0.418**	0.174	0.001

P <**0.01****

The results of table 4 show that the correlation coefficient is significant between meta-cognition and problem solving skills of elementary school students in smart schools. In other words, there is a direct and significant relationship between the problem solving skills and meta-cognition (r=0.418). Therefore, the third sub-hypothesis (there is a significant relationship

between problem solving skills and meta-cognition of elementary school students in smart schools) is confirmed.

The fourth sub-hypothesis: There is a significant relationship between problem solving skills and the meta-cognition of elementary school students in ordinary schools.

Table 5. shows the correlation coefficient between problem solving skills and meta-cognition of elementary school students in regular schools

	Meta cognition		
	Correlation coefficient	The square of correlation coefficient	Significance level
Problem solving skills	0.2**	0.174	0.048

The findings of table 5 show that the correlation coefficient is significant between problem solving skills and the meta-cognition of elementary school students in regular schools. In other words, there is a direct and significant relationship between the problem solving skills and meta-cognition (r=0.2). Therefore, the fourth sub-hypothesis (there is a significant relationship between problem solving skills and the meta-cognition of elementary school students in ordinary schools) is confirmed.

CONCLUSION

The main hypothesis: There is a significant relationship between emotional intelligence and problem-solving skills with meta-cognition of elementary school students of smart and ordinary schools.

Results of table 1 show that the correlation coefficient is significant between emotional intelligence and problem-solving skills of elementary school students with meta-cognition. In other words, there is a significant relationship between emotional intelligence and meta-cognition (r=0.527). Based on the coefficient of determination (r^2) 27.8 percent of the variance in emotional intelligence and meta-cognition is common. Moreover, there is a significant and direct relationship between problem-solving skills and meta-cognition (r=0.315). Based on the coefficient of determination (r^2) 9.9 percent of the variance of problem-solving skills and meta-cognition is common. Therefore, the main hypothesis of the study (there is a significant relationship between emotional intelligence and problem-solving skills with meta-cognition in elementary school students) is confirmed.

The results of this study are in line with the findings of Nadi, Gordanshekan, and Golparvar (2011), who studied the influence of teaching critical thinking, problem solving and meta-cognition, on self-directed learning in students. They concluded that teaching critical thinking, problem solving and meta-cognition increased learning that is the result of meta-cognition.

The findings of the research are also similar to the findings of TalebzadehNobarian and Norouzi (2011) They found that there was a relationship between emotional intelligence and meta-cognitive awareness. Among foreign studies, the study of Márquez, Martín, and Brackett

(2006), can be pointed out, he found that there was a relationship between emotional intelligence and academic achievement.

The current research is also in line with the study of Auhta et al (2012). They found that there is a significant difference in problem solving ability between the two groups with high and low meta-cognitive skills. In explaining the findings of this hypothesis, it can be confirmed that one of the ways through which information gain meaning is meta-cognition. Awareness of recognition occurs when the students are aware of their cognitive skills. Students who are aware of their memory loss may take note of their daily assignments so as not to forget to do them.

The first sub-hypothesis: There is a significant relationship between emotional intelligence and meta-cognition of elementary school students in smart schools.

The second sub-hypothesis: There is a significant relationship between emotional intelligence and meta-cognition of elementary school students in ordinary schools.

Results of tables relating to the first and second hypotheses show that the correlation coefficient is significant between emotional intelligence and meta-cognition of elementary school students in smart schools. It means that there is a significant and direct relationship between emotional intelligence and meta-cognition (r=0.617). Thus, the first hypothesis (there is a significant relationship between emotional intelligence and meta-cognition of elementary school students in smart schools) is confirmed. The results of the tables relating to the first and second hypothesis show that the correlation coefficient is significant between emotional intelligence and meta-cognition of elementary school students in regular schools. It means that there is a significant and direct relationship between emotional intelligence and meta-cognition (r=0.42). Therefore, the second hypothesis (there is a significant relationship between emotional intelligence and meta-cognition of elementary school students in ordinary schools) is confirmed. The results of the study are in line with the findings of Ramezan AliPour and Akbari (2016). They found that emotional intelligence relates to problem solving skills that results in meta-cognition. The findings of the research are also similar to the findings of TalebzadehNobarian and Norouzi (2011). They found that there was a relationship between emotional intelligence and meta-cognitive awareness. In explaining the findings of this hypothesis it can be stated that Meta-Cognition is described by psychologists as knowledge about thinking and learning activities and their control or the study of individual knowledge, cognitive processes or related things. It is defined as any knowledge or cognitive activity that involves a cognitive object or arranges a cognitive activity. Also meta-cognition is the people's knowledge about their nature as a cognitive system as well as knowledge about the nature of different cognitive tasks. Therefore, it is our awareness and our knowledge of our own cognitive processes and their optimal use to achieve the goals of learning. With respect to the fact that emotional intelligence is comprehension of others' feelings and abilities to manage behavior properly and understanding our own feelings and that of the others and using them to make suitable decisions, the existence of relationship between emotional intelligence and meta-cognition emphasizes this important matter that individuals reach such an understanding of themselves that can make correct decisions without the influence of feelings and emotions. The existence of this relationship in the students of smart schools and ordinary schools inspires the

teachers to help the students achieve more meta-cognitive skills.

The third sub-hypothesis: there is a significant relationship between problem solving skills and meta-cognition of elementary school students in smart schools.

The fourth sub-hypothesis: There is a significant relationship between problem solving skills and the meta-cognition of elementary school students in ordinary schools.

The results of tables which relate to the third and fourth hypotheses show that the correlation coefficient is significant between meta-cognition and problem solving skills of elementary school students in smart schools. In other words, there is a direct and significant relationship between the problem solving skills and meta-cognition (r=0.418). Therefore, the third sub-hypothesis (there is a significant relationship between problem solving skills and meta-cognition of elementary school students in smart schools) is confirmed.

The findings of tables relating to the third and fourth hypotheses show that the correlation coefficient is significant between problem solving skills and the meta-cognition of elementary school students in regular schools. In other words, there is a direct and significant relationship between the problem solving skills and meta-cognition (r=0.2). Therefore, the fourth sub-hypothesis (there is a significant relationship between problem solving skills and the meta-cognition of elementary school students in ordinary schools) is confirmed.

REFERENCES

Beaubouef, T, Lucas, R, & Howatt, J. (2001). *The UNLOCK System: Enhancing Problem Solving Skills for Students*. Paper presented at the ACM SIGCSE Bulletin.

Brick, Noel, MacIntyre, Tadhg, & Campbell, Mark. (2015). Metacognitive processes in the self-regulation of performance in elite endurance runners. *Psychology of Sport and Exercise, 19*, 1-9.

Flavell, John H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American psychologist, 34*(10), 906.

Flavell, John H, & Miller, Patricia H. (1998). Social cognition: In W. Damon (Ed.), Handbook of child psychology: Vol. 2. Cognition, perception, and language (pp. 851-898). Hoboken, NJ, US: John Wiley & Sons Inc.

Goleman, Daniel. (2006). *Emotional intelligence*: Bantam.

Heppner, P Paul, & Petersen, Chris H. (1982). The development and implications of a personal problem-solving inventory. *Journal of counseling psychology, 29*(1), 66.

Huang, Hsiu-Mei. (2002). Toward constructivism for adult learners in online learning environments. *British journal of educational technology, 33*(1), 27-37.

Kazemi, H. (2012). An Assessment of the Relationship between metacognitive States, Problem Solving and Psychological wellbeing. *Journal Of New Educational Approaches, 7*(1), 91-106 [In Persian].

Kolb, Alice Y, & Kolb, David A. (2009). The learning way: Meta-cognitive aspects of experiential learning. *Simulation & gaming, 40*(3), 297-327.

Márquez, Paloma Gil-Olarte, Martín, Raquel Palomera, & Brackett, Marc A. (2006). Relating emotional intelligence to social competence and academic achievement in high school students. *Psicothema, 18*, 118-123.

Mayer, John D, & Salovey, Peter. (1995). Emotional intelligence and the construction and regulation of feelings. *Applied and preventive psychology, 4*(3), 197-208.

Mayer, John D, Salovey, Peter, & Caruso, David R. (2008). Emotional intelligence: New ability or eclectic traits? *American psychologist, 63*(6), 503.

Moradi, Afsaneh, Pishva, Nooshin, Ehsan, Hadi Bahrami, & Hadadi, Parvaneh. (2011). The relationship between coping strategies and emotional intelligence. *Procedia-Social and Behavioral Sciences, 30*, 748-751.

Nadi, MohammadAli, Gordanshekan, Maryam, & Golparvar, Mohsen. (2011). Effect of Critical Thinking, Problem Solving and Meta-Cognitive on Students' Self-Learning. *Research in Curriculum Planning, 8*(1-2), 53-61.

O'Neil Jr, Harold F, & Abedi, Jamal. (1996). Reliability and validity of a state metacognitive inventory: Potential for alternative assessment. *The Journal of Educational Research, 89*(4), 234-245.

Özsoy, Gökhan, Memiş, Aysel, & Temur, Turan. (2017). Metacognition, study habits and attitudes. *International Electronic Journal of Elementary Education, 2*(1), 154-166.

Peña-Sarrionandia, Ainize, Mikolajczak, Moïra, & Gross, James J. (2015). Integrating emotion regulation and emotional intelligence traditions: a meta-analysis. *Frontiers in psychology, 6*, 160.

Ramezan AliPour, Zeinab , & Akbari, Bahman. (2016). Studying the Relationship between Early Maladaptive Schemas and Defensive Styles with Emotional Intelligence in Patients with Irritable Bowel Syndrome. *International Journal of Humanities and Cultural Studies, 3*(May (Special Isuue)), 140-150.

Sadeghi, Abbas, & Mousavian, Seyed Hamed. (2017). Comparative Study of Learning Style, Resiliency and Problem Solving Skills in Iranian Chess Players. *Advances in Physical Education, 8*(1), 58-65.

Salovey, Peter, & Mayer, John D. (1990). Emotional intelligence. *Imagination, cognition and personality, 9*(3), 185-211.

Sánchez-Álvarez, Nicolás, Extremera, Natalio, & Fernández-Berrocal, Pablo. (2016). The relation between emotional intelligence and subjective well-being: A meta-analytic investigation. *The Journal of Positive Psychology, 11*(3), 276-285.

TalebzadehNobarian , M, & Norouzi, AA. (2011). The relationship between emotional intelligence and metacognitive awareness of reading strategies with the academic performance of students of education. *Journal Of New Approach In Educational Administration, 2*(2), 1-21 [In Persian].