The Role of Reading Mind from Eyes, Mental Culture and Emotional Intelligence in Social Decision-Making

Manya Rezaeian[1], Mohammadhosein Abdollahi[1], Mahnaz Shahgholian[1]

[1]Department of Psychology, Faculty of Psychology and Educational sciences, Kharazmi University, Tehran, Iran

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Corresponding Author:
Manya Rezaeian, Ms.
Department of Psychology and Educational Science
Kharazmi University
Tehran
Iran
E-mail: Manya.Rezaeian@gmail.com

Abstract

Introduction: The present study aimed to evaluate the role of reading mind from eyes, mental culture and emotional intelligence on decision-making in social situations. To this aim, altruism and attitudes toward gender roles were considered as the indicators of mental culture.
Methods: The study included 30 male and female students (n = 15 per group) in Kharazmi University, who were selected based on simple random sampling. In order to collect data, Baron and Cohen's test of reading the mind in the eyes, ultimatum tasks, the test of social value orientation , Siberia-Shearing emotional intelligence questionnaire and semi-structured interviews were used to examine people's attitudes toward gender roles. Correlation analysis and simple regression were used for data analysis.
Results: Results indicated that a positive correlation was observed between reading the mind in the eyes and making decision in social situations. However, no significant correlation was reported between emotional intelligence and mental culture with making decisions in social situations. Simple regression data could predict the role of emotional intelligence and reading the mind in the eyes in social decision-making. In addition, the results of qualitative observations indicated that people's attitudes toward gender roles can be related to significant predictors of making decisions in social positions.
Conclusion: Based on the results, reading the mind from eyes can play a significant role on social decision making. Therefore, it is necessary to teach important concepts such as social recognition in order to empower the individuals to improve cognitive skills.

Keywords: Social Decision Making, Mental Culture, Emotional Intelligence, Reading Mind from Eyes

Introduction

Studying on decision making has gained particular attention in the last few decades. In this regard, researchers from various fields such as socio-cultural neuroscience, economic science, cognitive science and behavioral science investigated the cognitive process in various situations. According to the Yorkland theory which was quoted by Ardila, there are two types of brain functions; a rule-based functions that regulates and controls the thinking and performance known as the executive function and other non-legal function based on emotions, desires, social recognition and situational factors. Decision-making and in particular social decision-making are non-legal cognitive functioning. Several factors must be studied in order to understand these functions [1]. According to Rilling, King Casas and Sanfey studies, decision making is the person's optimal choice based on subjective values and decision-making in a social situation based on understanding mental states and individual performance [2]. Therefore, when we talk about decision making, different kinds of it comes to mind including decision making in situations that need social interaction [3]. In decision-making in social situations unlike individual decision makings, not only the individual preference and value for the options matter, but the preference of others and social values should also be considered. This feature requires an understanding of the

mental states of self, others, the relationship between self and others and other communications with each other as part of social cognition that facilitate or understand social interactions [4]. Reading the mind from eyes as a social cognitive ability, is a judgment about mental states of the self and others [5]. Most neurologists have pointed the importance of existing networks in the brain as a "social brain" and believe that the mechanisms of brain networks allow understanding of mental states and intentions [6]. Reviewing the research evidence of researchers who are interested in the relationship between psychology and neuroscience approach by computer games, ultimatum game, trust game in social decision-making, shows that when people are engaged in thinking of other people's beliefs and intentions, regions such as anterior medial prefrontal cortex, temporal bridge posterior temporal sulcus and parietal temporal lobes connecting point are involved [7]. Other areas to check social cognition and stages of its formation and development are cultural neuroscience and cultural cognitive neuroscience. Research in cultural neuroscience is motivated by two intriguing questions of human nature: how do cultural traits (e.g., values, beliefs, practices) shape neurobiology (e.g., genetic and neural processes) and behavior, and how do neurobiological mechanisms (e.g., genetic and neural processes) facilitate the emergence and transmission of cultural traits? [8]. There are at least three reasons why understanding cultural and genetic influences on the brain functions likely holds the key to articulating better psychological theory. First, a plethora of evidence from cultural psychology demonstrates that culture influences psychological processes and behavior. When human behavior results from neural activity, cultural variation in behavior emerges from that of neural mechanisms underlying these behaviors. Second, cultural variation in neural mechanisms may be available even in its absence at the behavioral or genetic level. People living in different cultural environments may develop distinct neural mechanisms underlying the same observable behavior or recruit the same neural mechanism at different levels during a given task. Third, the population variation is available in a much smaller scale relative to individual variation while 70% of the genes express themselves in the brain [9]. Nevertheless, early efforts by cultural neuroscientists to address the question of how culture influences brain function have proven to be fruitful, particularly for understanding the differences in social cognitive brain processing between Westerners and East Asians[8]. Antonio Damasio's research in neuroscience has shown that emotion plays a key role in social cognition and decision-making. His theory of physical marker shows how emotions and its biological bases influence decision making (either positive or negative and often unconscious) [10]. Also, due to the emotional intelligence theory, Meyer and Salovey suggest that an individual's ability to perceive, understand, use and manage their emotions and others in interpersonal relationships and social organization is a form of intelligence [11]. Recent studies using brain imaging techniques also show that people who achieve higher scores in emotional intelligence tests are more quick and accurate in solving social problems than their counterparts. This is while when exposed to anti-social problems, their brain areas activities are less [12]. Based on the existing theories and researches, it is expected that people with high emotional intelligence scores can better predict the behavior of other people and take better interpersonal decisions in their social interactions [13]. In fact, this game is one of the most widely used models to simulate decision-making in social situations. Studies using this game show that emotional states and individual differences in emotional traits affect people's cooperation. Furthermore, neurologist researchers point to another network in the brain called emotional network. Based on this network, the avoidance and adaptive behavior of individuals in social context was examined. The emotional brain network includes some areas such as the stratum, amygdala, anterior insula, frontal cortex and frontal ventral -medial cortex. Based on neuroimaging studies, insular region of the brain activity increases dramatically when people are exposed to unfair offers in the ultimatum task and unilateral action in trust tasks [14, 15]. However, a positive relationship was observed between cooperation in ultimatum task and prefrontal ventral - middle cortex areas activity and stratum [14]. It is worth noting that the network traces and predicts the behavior of the other players involved in the Ultimatum task [16]. Thus, it seems that the activity in the insula regions and ventral stratum results in informing and learning pleasant and unpleasant aspects of social interactions. In addition, it is possible to be aware of the low level of activity in this area in order to acquire information to explain about how emotional processes lead to encouragement or discouragement [17]. Thus, the present study aimed to examine whether there is a significant relationship between reading the mind in the eyes, emotional intelligence and mental cultural components with decision-making in a social situation.

Methods

This study was an experimental research. The research method was also mixed method, in which mind reading from the eyes, emotional intelligence, social decision-making and altruism variables were evaluated quantitatively and gender role attitudes were assessed qualitatively. The study population consisted of 30 male and female students (n = 15 per group) of Kharazmi University and all the students were enrolled in the fields of educational technology and general psychology. For data analysis, correlation and simple regression were used, and for sampling simple random sampling was used. In addition to participating in this study, a demographic questionnaire was used in which the lack of involvement of the individuals in cognitive failure, substance abuse, subjective and physical disorders and anxiety state were evaluated.

Reading the Mind from Eyes Test (RMET): Reading mind from the eyes test, is a neurological test to assess mind reading [18]. The revised form of the test is images from the actors and actresses eye (from the eyebrows to the middle of the bridge of the nose) in 36 different states. For each image, four words presented describing the

mental states that have similar emotional capacity. Respondents should choose the option that best describes the mental state of the person in the picture, from four options. In this study, instead of 36 images, 18 image pairs were used. In a study that was conducted by Bakhshipour and colleagues in 1390, the reliability of the test was calculated 0/69 by the Richardson method.

Siberia Sharing Emotional Intelligence Questionnaire: The questionnaire is based on the Likert scale of five options. Questions that were considered for the final implementation were 33 questions. All the 33 questions were related to the consistency test. In the pilot study, the Cronbach's alpha was 85% [19].

Altruism and peoples' view towards the role of gender was considered as a subjective cultural component. Social value orientation scale was also used for the examination of altruism [20].

Scale of Social Value Orientation (SVO): In this test, participants are asked to imagine they have been randomly paired with another person. The person is someone who does not know him and will never meet him in the future. Then, 9 tables including three options A, B and C are given to the participants. All participants are asked to imagine one of the participants. Another person should be carefully read A, B, C as a colleague. Finally, the choices are regarded as the criteria for giving points to the person himself and partners. Thus, the partner's choice results in earning points for both of them.

Given that no tool to measure people's attitudes to gender roles was available in this study, a semi-structured interview was used through which the influence of gender attitudes on social decision making was examined. In this study, questions were raised through which gender attitudes in two social and family occasions were examined.

Questions about gender attitudes in social status

- Women should withdraw from politics in favor of males
- Meetings would be more effective when operated by a man

Questions about gender attitudes in family situation:

-A Woman needs a husband, son or other relatives to protect her

- If there is a limited amount of money for the children's education, money should be spent on studying sons.

To assess the decision in a social status, ultimatum game scenarios were used.

Ultimatum game: In this case, it is said to the person "Imagine you need a colleague to find ten coins of treasure". To do so you have to consider two people one of which you know. If you know someone who accepts your offer, you should give him half the coins, but if someone who you don't know accepts your offer, you can give two coins of ten coins and eight coins remain for yourself. In both cases, if people do not accept your offer, all coins will be lost. Which one will you choose as partners? The validity was shown 67/4 by Cronbach's alpha [21]. The process of the study was in this way that first, subjects read the ultimatum game and selected an option. Then, reading mind through eyes test offered 18 pair of images و of which had identical mental states with different genders. In the next stage, subjects were asked to choose one of the options of ultimatum game once again according to the test and reading mind through eyes. Then the tests of emotional intelligence and social value orientation were available for them and at the end, the interview related to attitudes toward sex role was held.

Results

In order to become familiar with descriptive information, the mean and standard deviation of variables according to sex, as well as the correlation coefficients of the variables are listed in Tables 1 and 2.

Results of correlation coefficients show that mind reading abilities, can affect their decision making in social status. This is due to the fact that mind reading from the eyes has one percent negative correlation with social decision-making (ultimatum game). Mind reading at a significance level has one percent negative correlation with the ultimatum task (familiar option) and positive correlated with ultimatum task (unfamiliar option).

In order to assess the contribution of each of the variables in predicting social decision-making changes, simple regression was used. The results of which are in two stages, before and after reading mind from eyes images, are presented in Tables 3 and 4.

Linear equation is as follows:

(Social decision-making) Y = 2.36- . /18 (mind reading through the eyes) +. /02 (mind reading through the options) - . /066 (altruism) - . /16 (emotional intelligence).

According to table 3, all of the variables shares is not meaningful.

(Social decision-making) Y = 39/21- . /07 (mind reading through the eyes) +. /24 (mind reading through the options) - . /16 (altruism) - . /09 (emotional intelligence).

According to table 4, all of the variables shares is meaningful.

The results of the qualitative findings:

Given that we didn't have appropriate measuring tools to measure cultural attitudes about gender, a semi-structured interview was used to assess cultural attitudes about gender. In this interview we examined gender attitude in two occasions of family and society. According to the results of the quantitative data, there is no significant correlation between gender attitudes with decision making in a social situation, although obtained values were very close to the significance level. This is while what was observed during the study was different from the results of the quantitative data. The process of the research was that, individuals read scenarios of ultimatum game and were then faced with 18 pairs of images. In these 18 pairs, 5 pairs of pictures were provided with the same mental states but varied genders, one of them was man and the other was a woman, the same mental states with different genders. The results indicated that boys in 67 percent chose an option that was contrary to their gender, and girls in 87 percent chose options consistent with their gender. Accordingly, it can be concluded that gender attitudes can greatly affect the decision making.

Table 1. Descriptive statics & demographic data

SEX	n	Min	Max	Mean	STD
Male					
RMET	15	9	16	12/06	1/86
RMET(option)	15	5	9	7/13	1/18
Altruism	15	1	3	1/73	%5
Attitude gender	15	1	3	2/2	1/01
Ultimatum game	15	1	2	1/2	%4
Ultimatum game(familiar option)	15	33	67	45/53	10/52
Ultimatum game(unfamiliar option)	15	33	67	54/46	10/58
EQ	15	93	104	97/73	3/41
Self-awareness	15	20	25	22	1/36
Self-regulation	15	19	27	22/2	2/67
Spontaneous	15	17	24	20/73	1/83
Empathy	15	12	21	16/8	2/48
Social skill	15	13	202	16/47	2/04
Female					
RMET	15	9	16	13/26	2/28
RMET(option)	15	4	11	8/2	2/21
Altruism	15	1	3	1/53	%6
Attitude gender	15	1	2	1/84	%37
Ultimatum game	15	1	1	1	0
Ultimatum game(familiar option)	15	28	61	46/73	9/18
Ultimatum game(unfamiliar option)	15	39	72	53/26	9/18
EQ	15	89	32	101/66	6/3
Self-awareness	15	22	32	25/73	2/57
Self-regulation	15	16	28	21/6	3/33
Spontaneous	15	18	25	20/06	2/08
Empathy	15	13	21	17/46	2/69
Social skill	15	14	21	16/8	2/04

Table 2. Correlation between RMET and social decision making

Ultimatum game (unfamiliar option)	Ultimatum game (familiar option)	Ultimatum game	RMET	
.297*	-.297*	-.159*		RMET
.387*	-.387*			Ultimatum game
-.9**				Ultimatum game(familiar option)
				Ultimatum game(unfamiliar option)

Table 3. Regression coefficients of predictor variables (before viewing the images)

Sample	Non-standard coefficients		Standard coefficients	t	Significance level
	B	STD	B		
Criterion	2.366	296		1.825	.080
RMET	-.026	.048	-.182	-.545	.590
RMET(option)	.004	.055	.024	.072	.943
Altruism	-.033	.105	-.066	-.311	.758
EQ	-.009	.012	-.161	-.786	.439

Table 4. Regression coefficients of predictor variables (after viewing the images)

Sample	Non-standard coefficients		Standard coefficients	t	Significance level
	B	STD	B		
Criterion	39.212	39.686		.988	.333
RMET	-.348	1.461	-.076	-.238	.01
RMET(option)	-1.285	1.683	-.241	-.764	.05
Altruism	2.585	3.205	.163	.807	.01
EQ	.017	.357	.093	.477	.05

Discussion

This study examined the role of reading mind from eyes, mental culture and emotional intelligence on decision making in social situations. Results show that mind reading from eyes is associated with decision making in the social status. In this regard, the results of this study are consistent with the findings of previous studies. For example: Rilling et al. described the optimal individual decision making based on subjective values and decision-making in social situations based on the understanding of mental state and individual performance [2]. Lee and Harris in a research review explored and integrated related researches to decision-making and human perception to find out how social cognition shapes social

decision making. They found that processing a very complex process may affect decision making in social situations. Years of research in social psychology and neuropsychology study proves that many processes such as nerves (Interpreting mental states, the impact of information and spontaneous interpretation of attributes) occurs after seeing another person. This process relies on areas of the retina such as Medial Pre-Frontal Cortex (MPFC), anterior temporal contortion and parietal temporal lobe. They also pointed out that without a doubt, processing social recognition since the automatic and spontaneous interpretation of others' mental states affects decision making in social situation [3]. One of the ideas that led to the assumption that emotional intelligence can be measured as a component of excitement in social status associated with decision making was the Antonio Damasio hypothesis based on somatic marker in which mentioned that excitement and its biological basis influence decision making (either positive, negative and often unconscious)[10]. This is while the results of this study showed that there is no significant relationship between emotional intelligence and its components with decision making in a social situation. Not in line with the results obtained in this study, Nozari showed that self-awareness as one of the components of emotional intelligence plays a very important role in predicting rational decision making. In addition, the social consciousness has a great impact in anticipation of decision making intuitive, self-motivation plays an important role in predicting spontaneous decision-making style and self-management has a big role in the forecast and avoidant decision making style [22]. Also, Singer and Ferrite believe that empathy as one of the components of emotional intelligence has a relation with the decision on social status. The results obtained in this study is contrary to these findings [23]. When studying the relationship between culture and decision making, at first this issue should be raised that research in the field of culture is often intercultural. For example, in 2009, Chiao and his colleagues studied the evidence for the effect of culture on social cognition, self-awareness, empathy and interpersonal relationships between collectivism and individualism cultures. But unfortunately very little cross-cultural studies have been done especially in the area of cognitive science. Thus, in the present study, we investigated the relationship between the altruism and attitude of people to gender roles as an indicator of subjective culture with decision making in a social situation. In response to the question of whether mental culture (altruism component) is associated with decision making in a social situation, the results showed that there is no significant relationship among the components of altruism as an indicator of mental culture with mind-reading from eyes and social decision-making. In the literature review, no information was found that confirmed the relationship between altruism and mind reading from eyes and social decision-making; but since the ultimatum game is a socio - economic scenario, and the tool that we have chosen to measure altruism was based on a numerical value, this question came up to mind that there is maybe a relationship between the examined factors and altruism. Another examined question in this study was whether culture attitudes about gender affect mind reading and social decision-making? The results showed that there is no correlation between individual's cultural attitudes about gender with mind reading from eyes and social decision-making. But the results on the relationship between people's attitudes to gender roles with social decision-making after exposure with images is very close to the significance level.

Conclusion

To conclude, this research confirms that to review cognitive processes from hot recognition perspective, there should be a comprehensive and multi-dimensional overview. It can be noted that the fundamental study has theoretical application as well as practical implications. The research's important theoretical applications in the field of culture and excitement can be noted. Also, the practical implication of this study is a necessity of teaching important concepts such as social recognition in order to empower individuals to improve their cognitive skills.

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