

Emo-Sensory Communication, Emo-Sensory Intelligence and Gender

Elham Naji Meidani^{1*}, Hossein Makiabadi¹, Mohammad Zabetipour¹, Hannaneh Abbasnejad², Aida Firoozian Pooresfehani³, Shaghayegh Shayesteh¹

¹ Ferdowsi University of Mashhad, Iran, ² Tarbiat Modares University, Iran, ³ Imam Reza International University, Iran

Abstract The evolutionary definition of intelligence has made it a multifaceted concept. Emo-sensory intelligence (ESQ), as integration of emotional intelligence (EQ) and sensory intelligence (SQ) is the sensitivity to the emotions evoked by sensory inputs. It puts emphasis on individuals' ability to recognize, label, monitor, and manage sense-induced emotions to guide one's behavior and establish emo-sensory communication. Among the studies done on different types of intelligence and effective communication, gender differences have been a recurring theme. The purpose of this study was to investigate the role of gender in emo-sensory intelligence and emo-sensory communication. To this aim, the emo-sensory intelligence scale (ESIS) was distributed to 1500 participants. The results revealed significant differences between the two genders in ESQ for visual, olfactory, and tactile senses, demonstrating the superiority of females over males. Moreover, a significant difference was found between the two genders in their ability to identify the basic emotions triggered by their senses, and use them in their communications, with females being better than males.

Keywords: *Emo-sensory intelligence; ESQ; Emo-sensory communication; Gender; Senses*

1. Introduction

From the very onset of the 20th century, the issue of the importance of gender differences in intelligence and communicative skills has intrigued many researchers (Liu & Lynn, 2015). The question of whether males or females are the smarter sex has had a long and turbulent history, the answer of which is deeply rooted in sociopolitical agendas defining appropriate roles for them in society (Bocar & Joscon, 2022; Halpern & LaMay, 2000; Miller & Halpern, 2014; Pishghadam et al., 2021). The reply to this question, however, is culture-bound and varies over centuries, as the definition of intelligence has shifted over paradigms. In fact, the answer to this question relies heavily on the way intelligence is conceptualized and measured (Halpern & LaMay, 2000).

*** Corresponding Author:**

Elham Naji Meidani
elhanaji@um.ac.ir

Received: June 2022

Accepted: July 2022

Published: August 2022

© 2022 BCT.

All rights reserved.

Intelligence was initially put forth in the form of a single factor (known as "g"), and was indicative of an individual's ability to solve problems he or she has not met before, as well as the ability to process information. Intelligence was thus seen as a means of predicting health, job performance, educational prowess, and other indices of real life (Jensen, 1998). It was traditionally measured through psychometric intelligence scales (Binet & Simon, 1905a, 1905b; Terman, 1916; Wechsler, 1981, 1987), which were devised in such a way to ensure the equality of average scores for males and females (Halpern & LaMay, 2000). Despite contradictory findings of Lynn (1994) and Ellis et al. (2013) emphasizing the supremacy of men over women in the g factor, an almost unanimous consensus has revealed no significant differences between genders with regard to their overall score, although their performance on specific abilities differs, that is to say, females perform better in some cognitive functions while males excel at others, and they arrive at an eventual equilibrium (Brody, 1992; Jensen, 1998).

Thereafter, with quickening interest in emotional (Bar-On, 1988; Goleman, 1995; Salovey & Mayer, 1990) and embodied (Lakoff & Johnson, 1980) movements in the 20th century, spilling over into the cognitive paradigm of psychological studies, the same shift of approach was also applied to historical studies on intelligence, resulting in an unwitting surrender of psychometric intelligence scales (Binet & Simon, 1905a, 1905b; Galton, 1879) to *emotional intelligence* (EI) (Bar-On, 1988; Goleman, 1995) and *sensory intelligence* (SI) (Lombard, 2007) in time. Although the results of gender differences in EI varied across cultures, it was generally reported that females scored higher than males on social skills. They were reported to be more perceptive, empathic, and adaptable than males (Petrides & Furnham, 2000). Similarly, men were reported to be more sensitive to the stimulations of vision, while women were more sensitive in tactile, olfactory, gustatory, and, to some extent, auditory senses (Velle, 1987, 1992).

The proposed theories of intelligence ceded pride over one another as a result of the relentless pressure of studies endorsing the usefulness of their sources for years. Meanwhile, seeking to redress the imbalance between the three theories and believing that there is a permeable membrane among cognition, sense, and emotion, Pishghadam and Shayesteh (2017) introduced *emo-sensory intelligence* (ESI) as a conciliatory approach, suggesting that intelligence can also be defined as sensitivity to emotions evoked by sensory inputs, which can facilitate everyday communication. This opened up new and hitherto unexplored territories of the past theories of intelligence and enabled a closer examination of this phenomenon by integrating cognition, sense, and emotion into one whole picture which is called *emo-sensory quotient* (ESQ). Forth putting of this concept sparked new interest in gender differences studies of intelligence and communicative skills and made the researchers carry out a comparative analysis of the probable differences between males and females in a 1500-participant sample in the context of Iran.

2. Theoretical Framework

2.1. Gender Differences in General Intelligence

Who is more intelligent? Men or women? Who is a better communicator? Men or women? The answer to this question can be reflected in and influenced by traditional beliefs, political agendas, economic issues, feminism, historical trends, and even the size of the brain. However, according to Halpern and LaMay (2000), answering these questions depends on how we measure and conceptualize intelligence and communicative ability. This debate is better to be considered as a draw since prior literature sometimes supports women's superiority and sometimes men's. However, the idea that there are gender differences in intelligence and the way individuals communicate has a long history in the world of science and psychology (e.g., Bennet, 2011; Colom et al., 2010; Halpern & LaMay, 2000) and has been examined in different contexts such as sports (e.g., Spierer et al., 2010), education (Budrina, 2017; Gras et al., 2010), politics (Rindermann, 2008), and work (Gondal & Husain, 2013).

Numerous studies have been done regarding gender differences in general intelligence (e.g., Bennet, 2011; Colom et al., 2010; Halpern & LaMay, 2000; Lynn, 1998; Nyborg, 2005). Most researchers in the field have asserted that gender makes no difference in general intelligence (e.g., Brody, 1992; Colom, 1998; Halpern & LaMay, 2000).

On the other hand, in a number of studies, it was revealed that there is a significant difference in general intelligence favoring women (e.g., Keith et al., 2008; Reynolds et al., 2008), while some others have shown that men are slightly better in intellectual and communicative abilities (e.g., Irwing & Lynn, 2005; Lynn, 1994, 1998; Nyborg, 2005). The reason beyond such a difference, according to Ankey (1992), is men's larger brain size. Similarly, Jackson and Rushton (2006) and Lynn (1994) found a difference of exactly 4 IQ points favoring men.

While it is not clear whether gender plays a role in general intelligence and communication, what seems evident is that men and women perform differently in different areas of intelligence. For instance, women may be better in verbal abilities and communicative skills (Ankey, 1992), while men are better in spatial abilities (Benet, 2011; Linn & Petersen, 1985).

2.2. Gender Differences in Emotional Intelligence

It was in 1988 that the term Emotional Quotient (EQ) was coined by Bar-On. EQ, as a counterpart to IQ, refers to a series of emotional and social abilities required to overcome challenges in life. Emotional Intelligence (EI) and defined it as the “ability to monitor one’s own and others’ feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and action” (Salovey & Mayer, 1999, p. 281). Following the same trends, Goleman (1998) defined emotional intelligence as having five dimensions, including self-awareness, self-motivation, self-management, social awareness, and social skills, that can all be classified into two broad categories of personal competence and social competence.

Generally, the stereotype that women are more emotional than men is still widely held (Grewal & Salovey, 2006). Considering gender differences in emotional intelligence, prior studies often support women’s superiority (e.g., Harrod & Scheer, 2005; Wing & Love, 2001). However, it does not mean that men cannot regulate or control their emotions. For instance, the literature has shown that women, on average, express more empathy and are more aware of their emotions, while men can control stress better and are more adaptable, self-confident, and optimistic (Ahmad et al., 2009; Pishghadam, Al Abdwani, et al., 2022). Women are also better at dealing with their emotions and can comprehend them better, while men perform better in handling and bearing stress (Fernández-Berrocal et al., 1999).

Concerning gender differences in EI, two major assessment tools have been often used; self-reports that measure one’s EI based on his/her answers to a series of questions through which the level of emotional skills are measured, and ability tests such as Mayer et al.’s (2002) Emotional Intelligence Test (MSCEIT), and Multifactor Emotional Intelligence Scale (MEIS) which measure one’s EI through analyzing how he/she solves emotional problems. A number of studies examining how men and women perceive EQ among themselves and others showed no significant gender difference in self-reported emotional intelligence (e.g., Bar-On, 1997; Brackett & Mayer, 2003; Tiwari & Srivastava, 2004), while other studies have revealed that men are more skillful in regulating emotions and that women are better in empathy and emotional attention (e.g., Austin et al., 2005; Brackett et al., 2005; Petrides et al., 2004).

When it comes to emotional intelligence tests like MSCEIT and MEIS, a significant difference in emotional intelligence is found favoring women (e.g., Brackett & Mayer, 2003; Mayer et al., 2002). Keeping this in mind, Arteché et al. (2008) concluded that there is no significant sex difference in overall EQ; however, when it comes to facets of EQ, a significant gender difference can be found. For instance, females score higher on interpersonal facets, or they can decode facial expressions more accurately than men. Likewise, Craig et al. (2009) hold the view that women are generally better in emotional-related perceptions or, in other words, emotional skills. They also argue that women outscore men in empathy. In addition, a previous meta-analysis on gender differences in EI shows women’s advantage in all emotional intelligence dimensions (Joseph & Newman, 2010). In brief, studies support the superiority of women in EI and thus their communication.

2.3. Gender Differences in Sensory Sensitivity

As stated earlier, there is no significant gender difference in general intelligence; however, when it comes to specific perceptual and cognitive abilities, differences between both genders become clearer. Generally, it is presupposed that men and women differ in their perceptions. According to Rowe (1983),

some differences exist between males and females in sensory sensitivity and sensory communication, and they are likely to be originally due to biological factors and, in some cases, socio-cultural factors. As Velle (1987) states, men have more sensory sensitivity in vision while women show sensory sensitivity in tactile, olfactory, gustatory, and, to some extent, auditory senses.

Regarding gender differences in the tactile sense, a number of researchers have demonstrated that men's and women's expectations, evaluations, and reactions to tactile stimulation are different (Burgoon et al., 1992; Floyd, 1999). Long ago, researchers reported women's superiority in sensitivity to tactile stimulation and pain (Bell & Costello, 1964), and, specifically, sensitivity in the hands and fingers (Axelrod, 1959). Regarding the role of touch in communication and interaction, and based on the results obtained from the Same-Sex Touch Scale (Larsen & LeRoux, 1984), and the Touch Avoidance Measure (Andersen & Leibowitz, 1978), it was found that women have more negative attitudes towards opposite-sex touch (Guerrero & Andersen, 1994), and that men have greater avoidance of same-sex touch (Willis & Rawdon, 1994). Having compared men's and women's reactions toward tactile stimulation, Fisher et al. (1976) discovered that, compared to men, women felt more positive affect and emotions and evaluated the environment and the touch initiator more favorably.

Gender plays an important role in determining smelling capabilities, too, and prior literature gives evidence of women's superiority in and sensitivity to olfaction (e.g., Brand & Millot, 2001). This superiority and sensitivity of women are biological (Maccoby, 1974), and goes back to the first few days after birth (Doty, 1991). Maccoby (1974) takes the stance that "changes in estrogen levels during the normal fluctuations of these hormones in women are associated with changes in the acuity of the sense of smell"; hence, "there ought to be sex differences in smell sensitivity" (p. 19). Moreover, compared to men, women pay more attention to olfaction (Herz & Inzlicht, 2002), and at the same time they are more intolerant to odors than men (Nordin et al., 2004). In terms of gender differences in emotional response to odors, women recall more emotional memories and experience more happiness, sadness, and reduction of stress when they smell an odor (Martin et al., 2001).

Given the important role of sex hormones discussed in the previous section, there are differences in gustation capabilities between men and women, too. According to Velle (1992), women are superior in chemical senses (i.e., olfaction and gustation) as they can distinguish various tastes and odors. Having examined both age and gender differences in taste sensitivity of four basic tastes, Yoshinaka et al. (2016) found that, firstly, such differences did exist; secondly, the sweetness was more rigorous and stronger than other senses; and thirdly, men exhibited higher detection thresholds than women for bitter, sour, and salty tastes while no gender difference was found in the sweet taste. Likewise, Roura et al. (2015) reported no significant sex difference in bitter taste intensity ratings between men and women. Considering that there are gender differences in salt perception (Hayes et al., 2010), Mitchell et al. (2013) reported that men tend to prefer salty foods more than women.

According to Garai and Scheinfeld (1968), "One might postulate a visual stimulus hunger of the boys and an auditory stimulus hunger of girls" (p. 193). What can be implied from this quotation is that men perceive things better from the visual system, and women perceive things better from the auditory system. Generally, the visual system works better for men; they possess keener vision and can perceive an object embedded between bulks of other objects better than women (Geary, 2010). Men's superiority in visuospatial abilities has been put forward by many researchers (e.g., Bennet, 2011; Geary, 2010; Linn & Petersen, 1985; Velle, 1987).

On the other hand, concerning the auditory modality, many researchers insist on women's advantage and superiority in the auditory sense (e.g., Chung, et al., 1983; Rowe, 1983; Melynite et al., 2018). Furthermore, Barker and Watson (2000) hold the view that men and women have different listening styles; men and women are considered to be action-oriented and people-oriented listeners, respectively. While the latter means women like the occurrence of conversation itself and focus on the emotional connection with the message, the former means men only focus on listening to necessary details.

2.4. Purpose of the Study

Having its root in the fundamental assumptions of emotional quotient (EQ) and sensory quotient (SQ), emo-sensory quotient (ESQ) is the ability to recognize, label, monitor, and manage sense-induced emotions to guide one's behavior and establish emo-sensory communication (Pishghadam & Shayesteh, 2017; Pishghadam, Faribi, et al., 2022). In light of the theoretical background presented above and the empirical studies reviewed, the present study seeks to find out the role of gender in emo-sensory intelligence and emo-sensory communication. More specifically, the study addresses the following questions:

1. Is there a significant difference between males and females in their emo-sensory intelligence, and thus emo-sensory communication, in terms of senses (visual, auditory, gustatory, kinesthetic, olfactory, and tactile)?
2. Is there a significant difference between males and females in their emo-sensory intelligence in terms of its components (recognition, labeling, monitoring, and management)?

3. Methodology

3.1. Participants

The participants in the current study comprised 1500 individuals from approximately ten cities belonging to variegated classes in Iran. In our convenience sampling, there were 1092 females and 408 males whose age ranged from 10 to 80 ($M = 25.2$, $SD = 8.1$), and they all spoke Persian as their mother tongue. The reason behind recruiting individuals from all walks of life with different socioeconomic and sociocultural backgrounds was to ensure a representative sample of individuals and consequently to warrant the probability of generalization. Prior to initiating the study, which was approved by the Ferdowsi University of Mashhad Ethics Committee, the participants gave written informed consent in accordance with the Declaration of Helsinki after having been ensured of the confidentiality of their responses.

3.2. Instrumentation

To measure the individuals' level of awareness of their emotions and emo-sensory communicative skills induced by the sensory inputs, the emo-sensory intelligence scale (ESIS) was used (Pishghadam et al., 2020, Pishghadam, Faribi, et al., 2022). This scale, which is in the respondents' native language, consists of 144 items developed to measure the six traditionally well-known senses of hearing, sight, touch, movement, taste, and smell on a five-point Likert-type scale ranging from 1 (very little) to 5 (very much). In accordance with Ekman's (1992) model, the participants' displays of emotion were taken into account regarding the six major emotions of happiness, surprise, sadness, disgust, anger, and fear from which other emotions evoke. The items were written based on a four-component framework aiming to examine the extent to which the participants could identify the basic emotions triggered by their senses: (Recognition, e.g., *I know images that make me feel sad*), their ability to clearly express and label these emotions: (Labeling, e.g., *expressing my feelings toward sounds that are enraging is hard for me*), the degree to which they could monitor and control the induced emotions: (Monitoring, e.g., *I can control and monitor the sorts of tastes that have disgusted me in the past*), and finally their ability to guide and manage the resultant emotions to improve their quality of life: (Management, e.g., *refraining from smelling things that frighten me is hard for me*). Using Cronbach's alpha, the reliability coefficients of .80 (gustatory), .81 (tactile), .84 (kinesthetic), .90 (visual), and .91 (auditory and olfactory) were yielded for the six senses along with the four underlying components.

3.3. Procedure

To evaluate the participants' ESI, the ESIS was administered to various individuals living in different cities in Iran. Participants were informed that their participation was not obligatory, and they could withdraw from the study at any time they wanted. The researchers employed both paper and documented online using Google Docs to administer the scale, and it took almost 40 minutes for the participants to fill out the scale.

As for data analysis, the data gathered from the scale were analyzed using Statistical Package for Social Sciences (SPSS 22) program. To explore the role of gender in each construct along with its sub-constructs, independent samples t-tests were run.

4. Results

To answer the first research question aiming at examining whether ESQ and emo-sensory communicative skills differ significantly between males and females, independent samples t-tests were run. Table 1 demonstrates the descriptive statistics of males' and females' scores in ESQ (visual, auditory, olfactory, gustatory, tactile, and kinesthetic).

Table 1
Descriptive Statistics of ESQ for Senses across Males and Females

	Gender	N	Mean	Std. Deviation	Std. Error Mean
ESQ Visual	male	404	3.11	.63	.03
	female	1079	3.22	.61	.01
ESQ Auditory	male	404	3.12	.67	.03
	female	10	3.18	.61	.01
ESQ Olfactory	male	406	3.10	.76	.03
	female	1078	3.20	.76	.02
ESQ Gustatory	male	407	3.18	.80	.03
	female	1080	3.21	.72	.02
ESQ Tactile	male	404	3.21	.78	.03
	female	1082	3.3055	.72	.02
ESQ Kinesthetic	male	400	3.1201	.78	.03
	female	1078	3.1017	.71	.02
ESQ	male	393	3.15	.65	.03
	female	1058	3.20	.60	.01

To see if these observed differences are statistically significant, independent samples t-tests were run. The results shown in Table 2 indicated that Iranian males and females do not differ in their ESQ auditory ($t = -1.50, p = .13$), ESQ gustatory ($t = -.64, p = .51$), and ESQ kinesthetic ($t = .42, p = .66$), while they do significantly differ in their ESQ visual ($t = -2.96, p = .003$), ESQ olfactory ($t = -2.25, p = .02$), and ESQ tactile ($t = -1.99, p = .04$).

Table 2
The Results of Independent Samples t-test for Determining the Role of Gender in ESQ for Senses

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Std. Error Difference
ESQ Visual	.007	.93	-2.96	1481	.003	.03
			-2.93	707	.003	.03
ESQ Auditory	3.49	.06	-1.50	1484	.13	.03
			-1.43	663	.15	.03
ESQ Olfactory	.31	.57	-2.25	1482	.02	.04
			-2.24	723	.02	.04
ESQ Gustatory	6.76	.009	-.64	1485	.51	.04
			-.61	670	.53	.04
ESQ Tactile	7.90	.005	-1.99	1484	.04	.04
			-1.92	674	.04	.04
ESQ Kinesthetic	5.07	.02	.42	1476	.66	.04
			.41	662	.68	.04

ESQ	5.80	.01	-1.37	1449	.17	.03
			-1.31	649	.18	.03

The next research question concerned the potential differences between Iranian males and females with regard to the four components (recognition, labeling, monitoring, and management) of ESQ. Table 3 depicts the descriptive statistics of these four components.

Table 3
Descriptive Statistics of ESQ Components across Males and Females

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Recognition	male	401	3.40	.82	.04
	female	1075	3.54	.78	.02
Labeling	male	402	2.93	.59	.02
	female	1074	2.93	.52	.01
Monitoring	male	403	3.20	.86	.04
	female	1076	3.29	.86	.02
Management	male	403	3.04	.68	.03
	female	1075	3.04	.59	.01

As indicated in Table 4, independent samples t-tests were conducted to compare the four components of ESQ for males and females. The results indicated that there was no gender difference in labeling ($t = .09$, $p = 0.92$), monitoring ($t = -1.90$, $p = .05$), and management ($t = .17$, $p = .86$), whereas the recognition component differs across males and females ($t = -2.97$, $p = .003$).

Table 4
The Results of Independent Samples t-test for Determining the Role of Gender in each Component of ESQ

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Std. Error Difference
Recognition	3.86	.05	-2.97	1474	.003	.04
			-2.90	685	.004	.04
Labeling	2.46	.11	.09	1474	.92	.03
			.09	646	.92	.03
Monitoring	.007	.93	-1.90	1477	.05	.05
			-1.90	721	.05	.05
Management	7.36	.007	.17	1476	.86	.03
			.16	639	.87	.03

5. Discussion

In today's psychological landscape, many different theories of intelligence, such as IQ, EQ, and SQ, have been developed. ESQ is a new framework for integrating classical EQ and SQ conceptions of intelligence, referring to the ability of individuals to recognize, label, monitor, and manage sense-induced emotions and establish emo-sensory communication (Akbari & Pishghadam, 2022; Pishghadam et al., 2016; Pishghadam & Shayesteh, 2017). Pishghadam et al. (2020) introduced ESI as a conciliatory approach and a leading factor in daily life, defining it as sensitivity to emotions evoked by sensory inputs. Figure 1 illustrates the levels and major components of ESI.

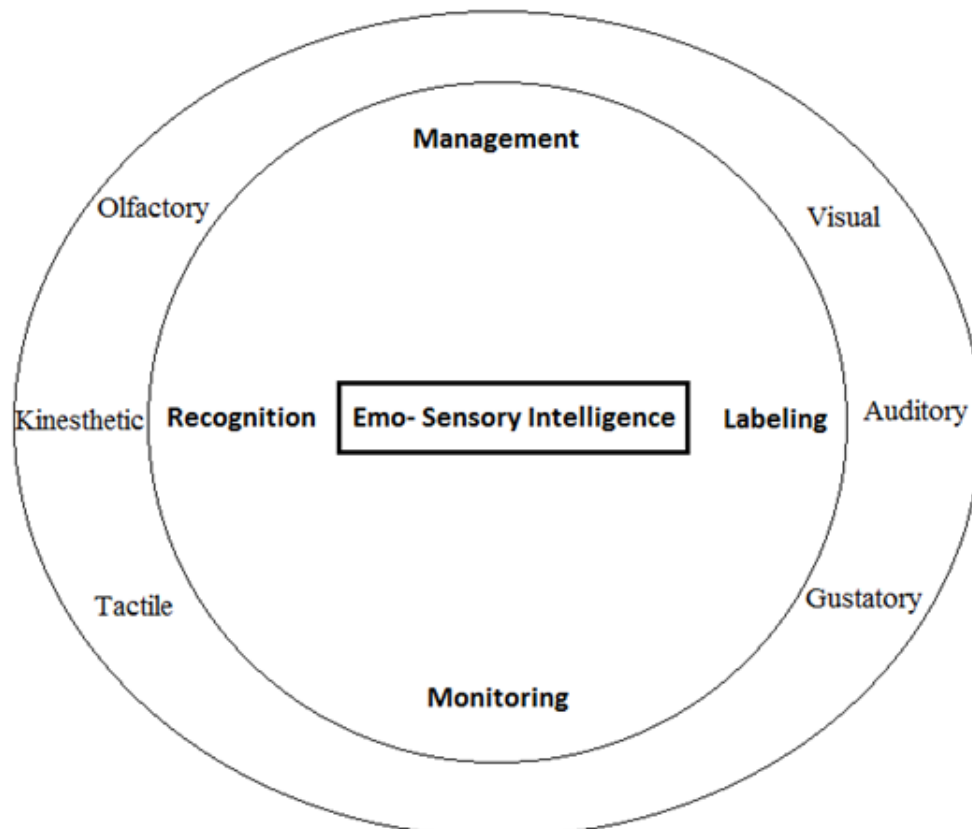


Figure 1
The Levels and Major Components of ESI

The first objective of this study was to compare ESQ for senses and emo-sensory communicative abilities between males and females. The results exhibited no significant differences between males and females in their ESQ auditory, ESQ gustatory, and ESQ kinesthetic. However, they did significantly differ in their ESQ visual, ESQ olfactory, and ESQ tactile. In the case of the auditory modality, these findings are in contrast with those of Chung et al. (1983) and Melynnyte et al. (2018), who insisted on women's advantage and superiority in auditory senses. Moreover, the findings seem to contradict Velle's (1987, 1992), in which women were reported to be more sensitive to gustatory stimulations. Considering visual abilities, the related results are in contrast with that of Garai and Scheinfeld (1968), which postulate a visual stimulus hunger for boys. As for the olfactory system, the findings are in line with those of Wysocki and Gilbert (1989), who claim that women have higher olfactory capabilities compared to men. Also, the results confirm the superiority of women's sensory sensitivity in the tactile sense. This is in line with Velle (1987), illustrating that men's and women's expectations, evaluations, and reactions to tactile stimulation are different (Burgoon et al., 1992; Floyd, 1999). Finally, as Jensen (1998) suggested, there is no significant gender difference in general intelligence; however, when we come to specific perceptual and cognitive abilities, differences between both genders become clearer.

Regarding the second goal, comparing the four components of ESQ between males and females, no significant gender differences in labeling (the ability of individuals to clearly express and label their emotions), monitoring (the degree to which individuals can monitor and control the induced emotions), and management (the individuals' ability to guide and manage the resultant emotions to improve their quality of life) were observed, whereas the results demonstrated significant differences between males and females with regard to the recognition component (the ability to recognize the basic emotions triggered by individuals' senses). Consistent with what was found in Schneevogt and Paggio (2016) and Krems, Neuberger, et al. (2015), the obtained results have shown that there are gender differences in recognition of emotions. Previous studies on the exploration of gender differences in recognition of emotional facial expressions have demonstrated that females are more accurate decoders and

recognizers of emotional expressions than males (Biele & Grabowska, 2006; Hall, 1978; Hall et al., 1999; Mancini et al., 2013; McClure, 2000; Montagne et al., 2005). In addition, several studies on gender differences in this field have revealed a female advantage in recognizing and decoding expressions of emotions. Hall and Matsumoto (2004) found that women are more accurate at identifying the correct pattern when rating emotions on a multiscale rating scale, while this gender difference could not be observed for single-choice tasks (Hall & Matsumoto, 2004). Moreover, women are believed to express sadness and fear more often than men, while men are believed to express anger more frequently (Fabes & Martin, 1991). Most recently, Krems et al. (2015) showed that women are biased to see anger in neutral female faces, whereas no such effect could be found for male faces or other emotions. One possible line of explanation for women's better recognition ability can be related to their effort to compensate for their weaker physical power (Brand & Millot, 2001). Analyzing individual emotions, it becomes clear that this pattern reflects a slight female advantage in recognition of happiness, surprise, disgust, and anger but not in recognition of fearful or sad faces. However, this small but significant female advantage has not been replicated in all studies (e.g., Hall & Matsumoto, 2004), which may relate to differences in methodologies employed together with the sample sizes and age ranges used.

In short, the results of the current study confirmed that ESQ as a kind of intellectual and communicative ability could be considered as one of the determinants influencing and guiding genders' behavior. Taken together, ESQ as a newly-developed theory requires future research endeavors. The present study took a step in gender differences studies of intelligence and communication by comparing differences between Iranian males and females with regard to ESQ. It is recommended that the findings of this study be confirmed through a qualitative study as well. Moreover, further studies can be planned to probe the relationship between individual's ESQ profile and other psychological, social, and socio-economic variables such as personality types, social class, and age in other contexts and cultures. Another line of future endeavors could deal with the difference between individual's ESQ between individualist and collectivist cultures. The relationship between ESQ and other types of intelligence can also be investigated. Overall, ESI is a new area awaiting further research.

Disclosure Statement

The authors claim no conflict of interest.

Funding

The research did not receive any specific grants from funding agencies.

References

- Ahmad, S., Bangash, H., & Ahmad Khan, S. (2009). Emotional intelligence and gender differences. *Sarhad Journal of Agriculture*, 25(1), 127-130.
- Akbari, M. H., & Pishghadam, R. (2022). Developing new software to analyze the emo-sensory load of language. *Journal of Business, Communication & Technology*, 1(1), 1-13.
- Andersen, P. A., & Leibowitz, K. (1978). The development and nature of the construct touch avoidance. *Environmental Psychology and Nonverbal Behavior*, 3, 89-106.
- Ankney, C. (1992). Sex difference in relative brain size: The mismeasure of woman, too? *Intelligence*, 16, 329-336.
- Aquino, A. E. (2003). *Diferencias de Género y Edad en la Inteligencia Emocional de un Grupo de Internautas*. [Gender differences and age in a group of web browsers' emotional intelligence] (Unpublished thesis). Inca Gracilazo de la Vega University, Perú.
- Arteche, A., Chamorro-Premuzic, T., Furnham, A., & Crump, J. (2008). The relationship of trait EI with personality, IQ and sex in a UK sample of employees. *International Journal of Selection and Assessment*, 16(4), 422-426.
- Austin, E. J., Evans, P., Goldwater, R., & Potter, V. (2005). A preliminary study of emotional intelligence, empathy and exam performance in first year medical students. *Personality and Individual Differences*, 39, 1395-1405.
- Axelrod, S. (1959). *Effects of early blindness. Performance of blind and sighted children on tactile and auditory tasks*. American Foundation for the Blind.

- Barker, L. L., & Watson, K. W. (2000). *Listen up: How to improve relationships, reduce stress, and be more productive by using the power of listening*. St. Martin's Press.
- Bar-On, R. (1988). *The development of a concept of psychological well-being* (Unpublished doctoral dissertation). Rhodes University, Johannesburg, South Africa.
- Bar-On, R. (1997). *Bar-On Emotional Quotient Inventory (EQ-i): Technical manual*. Multi-Health Systems.
- Bell, R. Q., & Costello, N. S. (1964). Three tests for sex differences in tactile sensitivity in the newborn. *Biologica Neonatorum*, 7, 335-347.
- Bennett, N. (2011). *Sex differences in intelligence areas and response time tasks* (Unpublished honors research thesis). The Ohio State University, the USA.
- Binet, A., & Simon, T. (1905a). Sur la nécessité d'établir un diagnostic scientifique des états inférieurs de l'intelligence [On the need to establish a scientific diagnosis of lower states of intelligence]. *L'Année Psychologique*, 11, 163-190
- Binet, A., & Simon, T. (1905b). Méthodes nouvelles pour le diagnostic du niveau intellectuel des anormaux (New methods for diagnosing the intellectual level of abnormal). *L'Année Psychologique*, 11(2), 191-244.
- Bocar, A. C., & Joscon, G. G. (2022). Understanding the challenges of social media users: Management students' perspectives in two Asian countries. *Journal of Business, Communication & Technology*, 1(1), 24-34.
- Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin*, 29, 1147-1158.
- Brackett, M. A., Warner, R. M., & Bosco, J. S. (2005). Emotional intelligence and relationship quality among couples. *Personal Relationships*, 12, 197-212.
- Brand, G., & Millot, J. L. (2001) Sex differences in human olfaction: Between evidence and enigma. *The Quarterly Journal of Experimental Psychology*, 54B(3), 259-270.
- Brody, N. (1992). *Intelligence*. Academic Press.
- Budrina, E. G. (2017). Gender characteristics of intelligence and academic achievement of younger schoolchildren. *Procedia-Social and Behavioral Sciences*, 237, 1390-1397.
- Burgoon, J. K., Walther, J. B., & Baesler, E. J. (1992). Interpretations, evaluations, and consequences of interpersonal touch. *Human Communication Research*, 19, 237-263.
- Chung, D. Y., Mason, K., Gannon, R. P., & Willson, G. N. (1983). The ear effect as a function of age and hearing loss. *Journal of the Acoustical Society of America*, 73, 1277-1282.
- Colom, R. (1998). *Psicología de las diferencias individuales. Teoría y práctica* [Psychology of individual differences. Theory and practice]. Pirámide.
- Colom, R., Juan-Espinosa, M., Abad, F., & Garcá, L. F. (2010). Negligible sex differences in general intelligence. *Intelligence*, 28(1), 57-68.
- Craig, A., Tran, Y., Hermens, G., Williams, L. M., Kemp, A., Morris, C., & Gordon, E. (2009). Psychological and neural correlates of emotional intelligence in a large sample of adult males and females. *Personality and Individual Differences*, 46, 111-115.
- Doty, R. L. (1991). Influences of aging on human olfactory function. In D. G. Laing, R. L. Doty, & W. Breipohl (Eds.), *The human sense of smell* (pp. 155-163). Springer-Verlag.
- Duffy, V. B., Bartoshuk, L. M., Striegel-Moore, R., & Rodin, J. (1998). Taste changes across pregnancy. *Annals of the New York Academy of Science*, 855, 805-809.
- Ekman, P. (1992). Are there basic emotions? *Psychological Review*, 99(3), 550-553.
- Ellis, L., Hershberger, S., Field, E., Wersinger, S., Pellis, S., Geary, D., Palmer, C., Hoyenga, K., Hetsroni, A., & Karadi, K. (2013). *Sex differences: Summarizing more than a century of scientific research*. Psychology Press.
- Farrelly, D., & Austin, E. (2007). Ability EI as an intelligence? Associations of the MSCEIT with performance on emotion processing and social tasks and with cognitive ability. *Cognition and Emotion*, 21, 1043-1063.
- Fernández-Berrocal, P., Alcaide, R., & Ramos, N. (1999). The influence of emotional intelligence on the emotional adjustment in high school students. *Bulletin of Kharkov State University N439. Personality and Transformational Processes in the Society. Psychological and Pedagogical Problems of the Modern Education*, 1-2, 119-123.

- Floyd, K. (1999). All touches are not created equal: Effects of form and duration on observers' interpretations of an embrace. *Journal of Nonverbal Behavior*, 23, 283–299.
- Galton, F. (1879). Psychometric experiments. *Brain*, 2(2), 149–162.
- Garai, J. E., & Scheinfeld, A. (1968). Sex differences in mental and behavioral traits. *Genetic Psychology Monographs*, 77, 169–299.
- Geary, D. C. (2010). *Male, female: The evolution of human sex differences*. American Psychological Association.
- Goleman, D. (1995). *Emotional intelligence*. Bantam Books.
- Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books
- Gondal, U. H., & Husain, T. (2013). A comparative study of intelligence quotient and emotional intelligence: Effect on employees' performance. *Asian Journal of Business Management*, 5(1), 153–162.
- Gras, R., Bordoy, M., Ballesta, G., & Berna, J. (2010). Creativity, intellectual abilities and response styles: Implications for academic performance in the secondary school. *Anales De Psicologia*, 26(2), 212–219.
- Grewal, D., & Salovey, P. (2006). Inteligencia emocional [Emotional intelligence]. *Mente y Cerebro*, 16, 10–20.
- Guerrero, L. K., & Andersen, P. A. (1994). Patterns of matching and initiation: Touch behavior and touch avoidance across romantic relationship stages. *Journal of Nonverbal Behavior*, 18, 137–153.
- Halpern, D. F., & LaMay, M. L. (2000). The smarter sex: A critical review of sex differences in intelligence. *Educational Psychology Review*, 12(2), 229–246.
- Harrod, N. R., & Scheer, S. D. (2005). An exploration of adolescent emotional intelligence in relation to demographic characteristics. *Adolescence*, 40, 503–512.
- Hayes, J. E., Sullivan, B. S., & Duffy, V. B. (2010). Explaining variability in sodium intake through oral sensory phenotype, salt sensation and liking. *Physiology and Behavior*, 100, 369–380.
- Herz, R. S., & Inzlicht, M. (2002). Sex differences in response to physical and social factors involved in human mate selection. The importance of smell for women. *Evolution and Human Behavior*, 23, 359–364.
- Irwing, P., & Lynn, R. (2005). Sex differences in means and variability on the progressive matrices in university students: A meta-analysis. *British Journal of Psychology*, 96, 505–524.
- Jackson, D. N., & Rushton, J. P. (2006). Males have greater g: Sex differences in general mental ability from 100,000 17- to 18-year-olds on the Scholastic Assessment Test. *Intelligence*, 34, 479–486.
- Jensen, A. R. (1998). *The g factor: The science of mental ability*. Westport, CT: Praeger.
- Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology*, 95, 54–78.
- Keith, T. Z., Reynolds, M. R., Patel, P. G., & Ridley, K. P. (2008). Sex differences in latent cognitive abilities ages 6 to 59: Evidence from the Woodcock–Johnson III tests of cognitive abilities. *Intelligence*, 36, 502–525.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.
- Larsen, K. S., & LeRoux, J. (1984). A study of same sex touching attitudes: Scale development and personality predictors. *Journal of Sex Research*, 20, 264–278.
- Linn, M., & Petersen, A. (1985). Emergence and characterization of sex differences in spatial ability: A meta-analysis. *Child Development*, 56, 1479–1498.
- Liu, J., & Lynn, R. (2015). Chinese sex differences in intelligence: Some new evidence. *Personality and Individual Differences*, 75, 90–93.
- Lombard, A. (2007). *Sensory intelligence: Why it matters more than IQ and EQ*. Metz Press.
- Lynn, R. (1994). Sex differences in brain size and intelligence. A paradox resolved. *Personality and Individual Differences*, 17, 257–271.
- Lynn, R. (1998). Sex differences in intelligence: Data from a Scottish standardization of the WAIS-R. *Personality and Individual Differences*, 24(2), 289–290.
- Maccoby, E. (1974). *The psychology of sex differences*. Stanford University Press.
- Martin, G. N., Apena, F., Chaudry, Z., Mulligan, Z., & Nixon, C. (2001). The development of an attitude towards the sense of smell questionnaire (SoSQ) and a comparison of different profession's responses. *North American Journal of Psychology*, 3, 491–502.

- Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). Relation of an ability measure of emotional intelligence to personality. *Journal of Personality Assessment*, 79(2), 306-320.
- Melynyte, S., Wang, G. Y., & Griskova-Bulanova, I. (2018). Gender effects on auditory P300: A systematic review. *International Journal of Psychophysiology*, 133, 55-65.
- Miller, D. I., & Halpern, D. F. (2014). The new science of cognitive sex differences. *Trends in Cognitive Sciences*, 18(1), 37-45.
- Mitchell, M., Brunton, N. P., & Wilkinson, M. G. (2013). The influence of salt taste threshold on acceptability and purchase intent of reformulated reduced sodium vegetable soups. *Food Quality and Preference*, 28, 356-360.
- Nordin, S., Bende, M., & Millqvist, E. (2004). Normative data for the chemical sensitivity scale. *Journal of Environmental Psychology*, 24, 399-403.
- Nyborg, H. (2005). Sex-related differences in general intelligence g, brain size, and social status. *Personality and Individual Differences*, 39(3), 497-509.
- Petrides, K. V., & Furnham, A. (2000). Gender differences in measured and self-estimated trait emotional intelligence. *Sex Roles*, 42(5-6), 449-461.
- Petrides, K. V., & Furnham, A. (2006). The role of trait emotional intelligence in a gender-specific model of organizational variables. *Journal of Applied Social Psychology*, 36(2), 552-569.
- Petrides, K. V., Furnham, A., & Martin, G. N. (2004). Estimates of emotional and psychometric intelligence: Evidence for gender-based stereotypes. *The Journal of Social Psychology*, 144(2), 149-162.
- Pishghadam, R., Al Abdwani, T., Kolahi Ahari, M., Hasanzadeh, S., & Shayesteh, S. (2022). Introducing metapathy as a movement beyond empathy: A case of socioeconomic status. *International Journal of Society, Culture, & Language*, 10(2), 35-49.
- Pishghadam, R., Ebrahimi, S., Miri, M., & Shayesteh, S. (2021). Sapioemotionality as a new attribute in socio-cultural studies. *International Journal of Society, Culture & Language*, 9(3), 16-27.
- Pishghadam, R., Faribi, M., Kolahi Ahari, M., Shadloo, F., Gholami, M. J., & Shayesteh, S. (2022). Intelligence, emotional intelligence, and emo-sensory intelligence: Which one is a better predictor of university students' academic success? *Frontiers in Psychology*, 13, 995988.
- Pishghadam, R., Jajarmi, H., & Shayesteh, S. (2016). Conceptualizing sensory relativism in light of emotioncy: A movement beyond linguistic relativism. *International Journal of Society, Culture & Language*, 4(2), 11-21.
- Pishghadam, R., Makiabadi, H., Zabetipour, M., Abbasnejad, H., Firoozian Pooresfahani, A., & Shayesteh, S. (2020). Development, validation and application of an inventory on emo-sensory intelligence. *Teaching English Language*, 14(2), 173-216.
- Pishghadam, R., & Shayesteh, S. (2017). Emo-sensory expression at the crossroads of emotion, sense, and language: A case of color-emotion associations. *International Journal of society, Culture & Language*, 5(2), 15-25.
- Reynolds, M. R., Keith, T. Z., Ridley, K. P., & Patel, P. G. (2008). Sex differences in latent general and broad cognitive abilities for children and youth: Evidence from higher-order MG-MACS and MIMIC models. *Intelligence*, 36, 236-260.
- Rindermann, H. (2008). Relevance of education and intelligence for the political development of nations: Democracy, rule of law and political liberty. *Intelligence*, 36, 306-322.
- Roura, E., Aldayyani, A., Thavaraj, P., Prakash, S., Greenway, D., Thomas, W. G., Meyerhof, W., Roudnitzky, N., & Foster, S. R. (2015). Variability in human bitter taste sensitivity to chemically diverse compounds can be accounted for by differential TAS2R activation. *Chemical Senses*, 40(6), 427-435.
- Rowe, M. A. (1983). *Differences between the sexes in sensory sensitivity and performance in the visual and auditory modalities* (Doctoral dissertation, Loughborough University). Dspace. <https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/10871>
- Salovey, P., & Mayer, J. (1990). Emotional intelligence. *Imagination, Cognition, And Personality*, 9(3), 185-211.
- Spierer, D., Petersen, R., Duffy, K., Corcoran, B., & Rawls-Martin, T. (2010). Gender influence on response time to sensory stimuli. *Journal of Strength and Conditioning Research*, 24(4), 957-963.

- Terman, L. M. (1916). *The measurement of intelligence: An explanation of and a complete guide for the use of the Stanford revision and extension of the Binet-Simon intelligence scale*. Houghton Mifflin.
- Tiwari, P. S. N., & Srivastava, N. (2004). Schooling and development of emotional intelligence. *Psychological Studies, 49*, 151-154.
- Velle, W. (1987). Sex differences in sensory functions. *Perspectives in Biology and Medicine, 30*, 490-522.
- Velle, W. (1992). Sex differences in sensory functions. In J. M. G. Van der Dennen (Ed.), *The nature of sexes: The sociobiology of sex differences and the battle of the sexes* (pp. 29–54). Origin Press.
- Wechsler, D. (1981). *Manual for the Wechsler adult intelligence scale—revised*. Psychological Corporation.
- Wechsler, D. (1987). *Wechsler memory scale-revised*. Psychological Corporation.
- Willis, F. N., & Rawdon, V. A. (1994). Gender and national differences in attitudes toward same-gender touch. *Perceptual and Motor Skills, 78*, 1027–1034.
- Wing, E., & Love, G. D. (2001). *Elective affinities and uninvited agonies: Mapping emotions with significant others onto health. Emotion, social relationships and health series in affective science*. Oxford University Press.
- Wysocki, C. J., & Gilbert, A. N. (1989). National geographic smell survey: Effects of age are heterogeneous. *Annals of the New York Academy of Sciences, 561*, 12–28.
- Yoshinaka, M., Ikebe, K., Uota, M., Ogawa, T., Okada, T., Inomata, C., Takeshita, H., Mihara, Y., Gondo, Y., Masui, Y., & Kamide, K. (2016). Age and sex differences in the taste sensitivity of young adult, young-old and old-old Japanese. *Geriatrics and Gerontology International, 16*(12), 1281-1288.