



## Inter-correlations among IQ, EQ and SQ

Dr. AchintaYajnik  
Associate Professor,  
Department of Psychology  
B. D. Arts College,  
Ahmedabad, Gujarat (India)  
Email: [achinta1960@gmail.com](mailto:achinta1960@gmail.com)

**Abstract:** *The fundamental difference between Man and animal is Rationality with which Intelligence Quotient (IQ) deals. The fundamental difference between Man and Machine (Robot) is Emotionality with which Emotional Intelligence (EQ) deals. Thus IQ and EQ are human specific qualities. Both are reflected in man's social behavior and interactions with which Social Intelligence (SQ) deals. Present paper aims at examining whether these three typically human faculties are independent or are inter-correlated. Three questionnaires measuring IQ, EQ and SQ respectively were given to 60 college students, including males and females. Pearson and Partial Correlations were calculated through SPSS 15.0. The results showed no significant correlation of IQ with EQ and SQ, but the correlation between EQ and SQ was found to be statistically significant. This implies that IQ is independent faculty but EQ and SQ are correlated.*

**Keywords:** *Intelligence Quotient, Emotional Quotient, Social Quotient, IQ, EQ, SQ*

### I. INTRODUCTION

The distinguishing attribute of man from animal lies in Intelligence which has its neurological and evolutionary base in man's highly developed cerebral cortex. The concept of Intelligence in psychology implies a number of abilities like ability to learn, to develop a new way of doing something (Guilford, 1977), judgment (Alfred Binet, 1905) global capacity of an individual to act purposefully, to think rationally and to deal effectively with the environment" (Wechsler, 1944), Ability to think Abstractly (Terman), Innate general cognitive ability (Cyril Burt, 1931) Goal-directed adaptive behavior, (Sterberg R.J., 1982) Problem solving, (Howard Gardner, 1993), The ability to deal with cognitive complexity (Linda Gottfredson, 1998), etc. Over and above these, human intelligence has been characterized in psychology also as perception, cognition, consciousness, self-reflexive consciousness, volition, reasoning, verbal abilities, various cognitive abilities like to plan, comprehend ideas, communication through verbal language, to discriminate and differentiate, spatial imagery, abstract & arithmetic reasoning, reading, vocabulary, memory, general knowledge, global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment, etc. We have a number of theories of Intelligence like

- Spearman's two-factor Theory (1904)- according to which human intelligence as measured by different psychological tests has two factors- one is 'g' factor is basically a reasoning factor which is innate and refers to the general form of intelligence which underlies all mental activities and there is task specific factor of Intelligence which is called 's' factor. 'S' factor develops through environment.
- Edward Lee Thorndike's Multifactor theory according to which intelligence is a combination of numerous separate elements or factors like Level, Range, Area and Speed. These four attributes of mental activity distinguish one activity from the other. Additionally he also distinguished among mutually independent abilities which characterize Intelligence, namely,
  - **Abstract intelligence** - the ability to verbal and symbolic thinking
  - **Mechanical intelligence** - the ability to effectively control one's body and manipulate objects
  - **Social intelligence** - the ability to communicate with people, understand and perform in social relations
- Thurstone's Group factor or Primary Mental Abilities Theory, (1938) according to which there are seven independent primary mental abilities which constitute the human intelligence. These are the following:
  - 1. Verbal Comprehension, 2. Verbal Fluency, 3. Number or Arithmetic Ability, 4. Memory 5. Perceptual Speed, 6. Inductive Reasoning, 7. Spatial Visualization
- Cattell's Fluid and Crystallized theory (1966), according which Intelligence has two aspects: the fluid intelligence and the crystallized intelligence. The fluid intelligence refers to the innate biological aspect of intelligence which is measured by the speed of reasoning and memory capacity. Fluid intelligence increases into adulthood and decreases with aging process. While the crystallized intelligence refers to that aspect of intelligence which is developed through learning and experience in the environment. As the sources of learning and experiences are unlimited, this type of intelligence increases with age during our lifetime.



- Gardner's Theory of Multiple Intelligence (1983) states that that people possess eight types of intelligence :
  - 1.Linguistic 2. Logical 3.Spatial 4.Musical, 5.Motor ability 6.Interpersonal, 7. Intrapersonal and 8.Naturalistic
- Sternberg's Triarchic theory (1985) according to which there are three types of Intelligence: Analytic, Creative and Practical Intelligence. Analytical Intelligence refers to man's reasoning ability reflected in academic learning, problem solving and information processing. Creative Intelligence refers to man's creativity one's abilities to cope with novel situations and to profit from experience, while Practical Intelligence to adapt to the demands of environment. Practical Intelligence—or "street smarts", enable people to adapt to the demands of their environment.

Thus we find number of definitions and different theories about the concept of Intelligence without any consensus. As the famous report of published by the Board of Scientific Affairs of the American Psychological Association (APA) says,

"Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Although these individual differences can be substantial, they are never entirely consistent: a given person's intellectual performance will vary on different occasions, in different domains, as judged by different criteria. Concepts of "intelligence" are attempts to clarify and organize this complex set of phenomena. Although considerable clarity has been achieved in some areas, no such conceptualization has yet answered all the important questions, and none commands universal assent. Indeed, when two dozen prominent theorists were recently asked to define intelligence, they gave two dozen, somewhat different, definitions." (Report of a Task Force established by the Board of Scientific Affairs of the American Psychological Association Released August 7, 1995 Chaired by Ulric Neisser, PhD, Chair; Emory University)

Overall the evolution of the concept of Intelligence and its measurement suggests that intelligence tests usually aspired to measure the reasoning, logical and analytical faculty of the brain, but after Gardner's concept of Multiple Intelligence emotional and aesthetic aspects were also covered under the gamut of Intelligence. Daniel Golman's best seller books on Emotional Intelligence and later social intelligence, there standardized tests of measurement and its observed high correlations with many personality variables leading to success forced present researcher to investigate here whether all these three types of Intelligence are inter-correlated and underlie a common continuum or they are independent faculties.

## II. EMOTIONAL INTELLIGENCE (EI)

As the *Dictionary of Psychology* defines, Emotional Intelligence is the ability to monitor one's own and other people's emotions, to discriminate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior.

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

## III. SOCIAL INTELLIGENCE

Social intelligence is the capacity to effectively negotiate complex social relationships and environments. Psychologist Nicholas Humphrey believes that it is social intelligence, rather than quantitative intelligence, that defines humans. Social scientist Ross Honeywill believes social intelligence is an aggregated measure of self- and social-awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social change.

Daniel Goleman (propose that social intelligence is made up of social awareness (including empathy, attunement, empathic accuracy, and social cognition) and social facility (including synchrony, self-presentation, influence, and concern).

The original definition by Edward Thorndike in 1920 is "the ability to understand and manage men and women, boys and girls, to act wisely in human relations". It is equivalent to Howard Gardner's interpersonal intelligence, one of the multiple intelligences.

Present paper aims at examining the inter-correlation among IQ, EQ and SQ which can be operationally defined as the scores obtained by the subject on their respective scales.



#### IV. REVIEW OF LITERATURE

Some studies, quoted by Conte, (2005) analyze the correlation between IQ and EQ as under:

1. The EQ-i is a 133-item self-report measure that takes approximately 30 minutes to complete (Bar-On, 2000) ... With respect to discriminant validity, the EQ-i correlated 0.12 with the Wechsler Adult Intelligence Scale (Bar-On, 2000), and the average correlation between the EQ-i and the Big Five personality measures was approximately 0.50 (Dawda& Hart, 2000)
2. Data from several studies indicate that the MEIS correlates between 0.30 and 0.40 with traditional measures of cognitive ability (Roberts et al., 2001; Van Rooy&Viswesvaran, 2004)
3. Mayer et al. (2000) found that the MSCEIT and Bar-On scales correlated 0.36, indicating that they share approximately 13 percent of their variance. In a more recent study, Brackett and Mayer (2003) found that the MSCEIT and Bar-On scales correlated 0.21, indicating that they share approximately 4 percent of their variance.
4. By using brain scans from 152 Vietnam veterans with a variety of combat-related brain injuries, researchers claim to have mapped the neural basis of general intelligence and emotional intelligence.
5. There was significant overlap between general intelligence and emotional intelligence, both in behavioral measures and brain activity. Higher scores on general intelligence tests and personality reliably predicted higher performance on measures of emotional intelligence, and many of the same brain regions (in the frontal and parietal cortices) were found to be important to both.
6. Two of the components of general intelligence were strong contributors to emotional intelligence: verbal comprehension/crystallized intelligence, and processing speed. Verbal impairment was unsurprisingly associated with selective damage to the language network, which showed some overlap with the network underlying emotional intelligence. Similarly, damage to the fronto-parietal network linked to deficits in processing speed also overlapped in places with the emotional intelligence network.

One may come to a conclusion that emotional intelligence depends on social information processing and general intelligence both. Traditionally, general intelligence has been thought to be distinct from social and emotional intelligence. But humans are fundamentally social animals, and... it has become increasingly clear that emotions and reason are inextricably intertwined. It is not, surprising that general and emotional intelligence might be interdependent. It is more surprising that conscientiousness might be rooted in your degree of social empathy. In this study, emotional intelligence was measured by the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT), general IQ by the Wechsler Adult Intelligence Scale, and personality by the Neuroticism-Extroversion-Openness Inventory.

7. Feinberg, H. found the evidence suggesting that the EQ cannot be substituted for the IQ." (PsycINFO Database Record (c) 2012 APA)

In short, on the basis of neural overlapping, it can be said that IQ and EQ may be interrelated. But the studies based on the standardized psychological measurement do not show consistently significant correlation between IQ and EQ. While EQ and SQ can be said to be correlated if the Implications of EQ measurement are considered. EQ measurement itself included some of the social skills. Few studies are found studying the correlation between IQ and SQ. Lay man observations suggest inverse correlation between IQ and SQ which need to be checked empirically. The review of literature above justifies the present research problem of analyzing inter-correlation among IQ, EQ and SQ of college students including males and females. Following are the research questions of present research:

Research Question: 1. Are IQ, EQ and SQ inter-correlated?

Research Question: 2. Are there any Gender differences in IQ, EQ and SQ?

Research Question: 3 Do the correlations among IQ, EQ and SQ of Males differ significantly from those of Females?

#### V. METHOD

Present research can be said to be a separate-group design so far as the research question of Gender differences is concerned. As the said research aims towards examining the inter-correlations among IQ, EQ and SQ, present research design can be said to be correlational research.

Participants: 60 college students constituting of 30 males and 30 females were selected as the participants on the basis of non-probabilistic purposive sampling.



**Tools:**

- Alexander Pass Along test was used to measure the IQ of Participants
- Multifactor Emotional Intelligence (MEIS) by Vinod Kumar Shanuwal was used to measure EQ.
- Social Intelligence Scale (SIS) by N. K. Chadha and UshaGanesanwas used to measure SQ.

**VI. RESULTS AND DISCUSSIONS**

**PARTIAL CORRELATION WITH GENDER AS CONTROL VARIABLE**  
**Correlations**

Control Variables			IQ	EQ	SQ
GENDER	IQ	Correlation	1.000	.041	-.139
		Significance (2-tailed)	.	.760	.293
		Df	0	57	57
	EQ	Correlation	.041	1.000	.530
		Significance (2-tailed)	.760	.	.000
		Df	57	0	57
	SQ	Correlation	-.139	.530	1.000
		Significance (2-tailed)	.293	.000	.
		Df	57	57	0

**BIVARIATE PEARSON CORRELATIONS**

		IQ	EQ	SQ
IQ	Pearson Correlation	1	.062	-.147
	Sig. (2-tailed)		.638	.262
	N	60	60	60
EQ	Pearson Correlation	.062	1	.523(**)
	Sig. (2-tailed)	.638		.000
	N	60	60	60
SQ	Pearson Correlation	-.147	.523(**)	1
	Sig. (2-tailed)	.262	.000	
	N	60	60	60

\*\* Correlation is significant at the 0.01 level (2-tailed).

**CORRELATIONS: ONLY MALES**  
**Correlations**

		IQ	EQ	SQ
IQ	Pearson Correlation	1	.065	-.157
	Sig. (2-tailed)		.732	.408
	N	30	30	30
EQ	Pearson Correlation	.065	1	.548(**)
	Sig. (2-tailed)	.732		.002
	N	30	30	30
SQ	Pearson Correlation	-.157	.548(**)	1
	Sig. (2-tailed)	.408	.002	
	N	30	30	30

\*\* Correlation is significant at the 0.01 level (2-tailed).

**CORRELATIONS: ONLY FEMALES**

		IQ	EQ	SQ
IQ	Pearson Correlation	1	.019	-.124
	Sig. (2-tailed)		.923	.515
	N	30	30	30
EQ	Pearson Correlation	.019	1	.510(**)
	Sig. (2-tailed)	.923		.004
	N	30	30	30
SQ	Pearson Correlation	-.124	.510(**)	1
	Sig. (2-tailed)	.515	.004	
	N	30	30	30

\*\* Correlation is significant at the 0.01 level (2-tailed).



**VII. T-TEST: GENDER DIFFERENCES IN IQ**

**GROUP STATISTICS**

GENDER		N	Mean	Std. Deviation	Std. Error Mean
IQ	Males	30	101.7280	12.28016	2.24204
	Females	30	95.9837	10.79245	1.97042

		Levene's Test for Equality of Variances						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
IQ	Equal variances assumed	1.454	.233	1.924	58	.059	5.74433	2.98485
	Equal variances not assumed			1.924	57.059	.059	5.74433	2.98485

**VIII. T-TEST: GENDER DIFFERENCES IN EQ**

**GROUP STATISTICS**

Gender		N	Mean	Std. Deviation	Std. Error Mean
EQ	Males	30	63.3667	10.16242	1.85539
	Females	30	61.4667	10.52332	1.92129

**INDEPENDENT SAMPLES TEST**

		Levene's Test for Equality of Variances						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
EQ	Equal variances assumed	.005	.943	.711	58	.480	1.90000	2.67092
	Equal variances not assumed			.711	57.930	.480	1.90000	2.67092

**IX. T-TEST: GENDER DIFFERENCES IN SQ**

Gender		N	Mean	Std. Deviation	Std. Error Mean
SQ	Males	30	102.8000	9.54264	1.74224
	Females	30	103.8000	10.47625	1.91269

**INDEPENDENT SAMPLES TEST**

		Levene's Test for Equality of Variances						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
SQ	Equal variances assumed	.602	.441	-.387	58	.701	-1.00000	2.58724
	Equal variances not assumed			-.387	57.502	.701	-1.00000	2.58724

**X. DISCUSSIONS**

The Partial Correlations among IQ, EQ and SQ with the Gender as controlled variable calculated through SPSS 15.0 suggest that

1. The correlation between IQ and EQ is 0.041 which is very less and statistically non-significant which suggests that IQ and EQ seem to function quite independent of each other. However, neural overlapping between General Intelligence and Emotional Intelligence poses serious anomaly for the psychologically independent- appearing EQ and IQ.



2. The correlation between IQ and SQ is -0.139, which is negative and statistically non-significant. This supports common sense belief that higher the IQ lesser the social competence.
3. The correlation between EQ and SQ is 0.548 which is statistically significant. This also supports previous finding. The reason for this significant correlation between EQ and SQ lies in the fact the components of Emotional Intelligence as proposed by Goleman and others are like empathy and such other qualities which are very much conducive for higher social competence. The very concept of EI includes components of social skill which enhance one's scores on Social Intelligence.
4. The T-test results suggest no significant gender differences in IQ, EQ and SQ. This finding uproots the common sense beliefs that 1. Females are more emotional beings so they must have high EQ, 2. Females are more social, so they must have high SQ. and 3. Males are more analytic and rational and so they must have high IQ. All these beliefs proved to be non-scientific.
5. The correlations among IQ, EQ and SQ in males and females also do not differ noticeably. All the values of inter-correlations among males and females are very near and having same direction. These also imply the same conclusions. No significant gender differences are observed in the obtained values of correlations among IQ, EQ and SQ.

### REFERENCES

1. Binet, Alfred (1916) [1905]. "New methods for the diagnosis of the intellectual level of subnormals". *The development of intelligence in children: The Binet-Simon Scale*. E.S. Kite (Trans.). Baltimore: Williams & Wilkins. pp. 37–90. Retrieved 10 July 2010. "originally published as Méthodes nouvelles pour le diagnostic du niveau intellectuel des anormaux. L'Année Psychologique, 11, 191-244"
2. Wechsler, D (1944). *The measurement of adult intelligence*. Baltimore: Williams & Wilkins.
3. Burt, C. (1931). "The Differentiation of Intellectual Ability". *The British Journal of Educational Psychology*.
4. Gardner H. (1993) *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
5. Gottfredson, L. (1998). "The General Intelligence Factor" (pdf). *Scientific American Presents* 9 (4): 24–29.
6. Sternberg R J; Salter W (1982). *Handbook of human intelligence*. Cambridge, UK: Cambridge University Press
7. Sternberg, Robert (1988) *The Triarchic Mind: A New Theory of Intelligence*. NY: Viking Press.
8. Spearman, C. (1904). "General intelligence" objectively determined and measured. *American Journal of Psychology*, 15, 201–293. (K. R-26)
9. Raven, J. C. (1936). *Mental tests used in genetic studies: The performance of related individuals on tests mainly educative and mainly reproductive*. MSc Thesis, University of London
10. Thorndike,
11. Thurstone L.L. (1938), *Primary Mental Ability*, Chicago: University of Chicago Press
12. Wechsler d (1944) *Measurement of Adult Intelligence*, Baltimore, MD : Williams & Wilkins
13. Urbina, Susana (1996). "Intelligence: Knowns and unknowns". *American Psychologist* 51: 77–101
14. Coleman, Andrew (2008). *A Dictionary of Psychology* (3 ed.). Oxford University Press.
15. Salovey, Peter; Mayer, John; Caruso, David (2004), "Emotional Intelligence: Theory, Findings, and Implications", *Psychological Inquiry*: 197–215
16. Petrides, Konstantin; Furnham, Adrian (2001), "Trait Emotional Intelligence: Psychometric Investigation with Reference to Established Trait Taxonomies", *European Journal of Personality*: 425–448
17. Goleman, Daniel (1998), *What Makes a Leader?*, Harvard Business Review
18. Ross Honeywill, Research Director, Social Intelligence Lab - <http://www.socialintelligencelab.com/>
19. Thorndike, E.L. (1920). *Intelligence and its use*. Harper's Magazine, 140, 227-235.
20. Bar-On, R. (2000). Emotional and social intelligence: insights from the Emotional Quotient Inventory (EQ-i). In R. Bar-On, & J. D. A. Parker (Eds.), *Handbook of emotional intelligence* (pp. 363–388). San Francisco, CA: Jossey-Bass.
21. 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
22. Conte, J.M. (2005). A review and critique of emotional intelligence measures. *Journal of Organizational Behavior*, 26, 433-440.
23. Dawda, D., & Hart, S. D. (2000). Assessing emotional intelligence: reliability and validity of the Bar-On Emotional Quotient Inventory (EQ-i) in university students. *Personality and Individual Differences*, 28, 797–812.
24. Mayer, J. D., Caruso, D., & Salovey, P. (2000). Selecting a measure of emotional intelligence: the case for ability scales. In R. Bar-On, & J. D. Parker (Eds.), *Handbook of emotional intelligence* (pp. 320–342). New York: Jossey-Bass.
25. Barbey, A. K., Colom R., & Grafman J. (2012). Distributed neural system for emotional intelligence revealed by lesion mapping. *Social Cognitive and Affective Neuroscience*. ([www.eurekalurt.org](http://www.eurekalurt.org))
26. Feinberg, H. *Journal of Educational Psychology*, Vol 32(8), Nov 1941, 617-623.