

# Construction of Social Intelligence Tool

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**Abstract:** *The main purpose of this investigation was to construct and standardize a research tool for the students who are 14 and above on the topic 'Social Intelligence'. 370 students which consist of male 192 and female 178 from three Schools from Lucknow District of Uttar Pradesh State were selected through simple random sampling technique. A total number of items consist of 140 which were given to various experienced persons to scrutinize. Thereafter 37 items were eliminated and the revised version of scale consists of 103 items, which was then given for item analysis. Before undertaking the item analysis, the inventory was administered to a sample of 200 students to remove the language difficulties, if any, reported by them in understanding clearly the different items. Thereafter item analysis has been done by finding out its item difficulty and decimating value which eliminated 28 items since it did not discriminate the items. Then the sample of 200 students were taken to test Reliability of remaining 65 items through test-retest method and cronbach's reliability test. Test-retest was taken after a gap of 15 days. It was followed by Content and construct validity on these 65 items. Thereafter norms were constructed by finding out Z score for the interpretation of the tool. The main conclusions emerged from this study reveals that the Social Intelligence Inventory has satisfactory levels of internal consistency among students who are of 14 + and above.*

**Keywords:** Social Intelligence, Item Analysis, Reliability, Validity

## 1. Introduction

The educational system at present is undergoing a paradigm shift on account of the advent of Corona Virus Pandemic. To encounter these challenges in the educational system and for catering individual difference, it is trying to implement new strategies and discovering new paths to reach the goal of quality educational prospects for all. The conventional approach of imparting education offers a much-needed human touch in the arena of education besides having few limitations. The positive attitude of the teachers also affects the students a great extent to form their personality. Personal interaction of students with their teachers caters affective domain along with cognitive and psychomotor and thereby it helps the students to imbibe a strong value system.

School plays a significant share in the intellectual formation of every student. In general, Intelligence can be explained as the person's ability to acquire and apply knowledge along with the skills. Different psychologists have contributed various theories on intelligence over the period of time. The awareness of Social Intelligence was first propounded by Thorndike in 1920. He defines, "Social Intelligence as the ability to understand and manage men and women, boys and girls-to act wisely in human relations". (Zaccaro S. J. & et al, 1995 p.2). This definition suggests two significant characteristics about Social Intelligence. The first characteristic regarding Social Intelligence is about Social Understanding or Social Awareness and the Psychological Dynamics of other individuals. The second aspect signifies to a behavioural competence in social domain or the display of situationally effective behaviours. (Zaccaro SJ & et al, 1995 p.2)

The concept about Social Intelligence entered the academic stream only in the 1980s through the publication of various papers and books. (Essex, S, 2018) Psychologist Howard Gardner in his book, Frames of Mind, published in 1983 describes that the Theory of Multiple Intelligences

distinguished intelligence into specific 'modalities', instead of seeing intelligence as controlled by a single general ability. He identified eight modalities including logical, visual, intrapersonal and interpersonal. (Essex, S, 2018) The intrapersonal and interpersonal modalities are closely aligned with what today we call emotional intelligence & more broadly Social Intelligence (Essex, S, 2018)

Bureau of Public Personnel Administration (1930) defines Social Intelligence as the, "ability to adjust to new situations involving relations with the other & to adopt a course of action which is effective in the sense that it aims others to do consistently and voluntarily the thing it is desired that they should do." (p.73). Similarly, Marlowe, H. A., Jr. (1986) defines Social Intelligence as, "the ability to understand the feelings, thoughts and behaviours of persons, including oneself, in interpersonal situations and to act appropriately upon that understanding". (p.52). According to O'Sullivan & Guilford, (1975 a) Social Intelligence is the, "ability to understand other people's thoughts, feelings and intentions". (p.256). According to Wechsler (1958) defined social intelligence as "facility in dealing with human beings" (p.8) Merrill and others realized that traditional intelligence measures only education, which includes work experience of an Individual but it does not fully explain the reason why some people become very successful in their lives with limited resources. His work also acknowledged the four social styles and their preferred behavioural patterns. More significantly it showed that understanding other's style and modifying one's behaviors help others meet their needs and preferences – a skill known as Versatility. This is the skill that makes some people very successful in their lives with their limited resources. Social Intelligence, therefore, can be defined as "the trait that is developed over a period of time which involves skills of effective communication, Recognition of Social Environment, Self-awareness, Management of Emotions, Foster Leadership, empathetic concern, and Confidence". The construction and

standardization of Social Intelligence Research Tool is divided into three phases;

- 1) Construction of the items and Purpose of the study
- 2) Item analysis
- 3) Standardisation and validation of research tool

**Phase 1: Construction of the items and purpose of the study**

**Purpose of Study**

Since the time, Thorndike brought to the forefront the important aspect of Intelligence i.e., Social Intelligence, a great curiosity has been created to find out the significant role it plays to lead a successful life. It is this skill, help the individuals, to connect with the, prevent conflicts, and enables learning through effective conversation. Hence it contributes significantly in understanding people's emotions which is a crucial component in exercising empathy. Therefore, Social intelligence could be well-defined as the trait that is developed over a period of time which involves skills of effective communication, Recognition of Social Environment, Self-awareness, Management of Emotions, Foster Leadership, empathetic concern, and Confidence". Hence this study will help to have a basic understanding of those phenomenon.

**Selection of items**

Before the construction of scale, a comprehensive study of literature, along with discussion with various experienced persons, were done. Thereafter a series of 140 questions from different aspects of Social Intelligence were prepared. The Scale was developed by using Likert technique. The suggestions were invited from the experts from different fields such as psychology, Sociology and human development. The final form of the scale was thus prepared retaining only those items on which the experts were unanimous. This led to elimination of 37 items. Before undertaking the item analysis, the inventory was administered to a sample of 200 students to remove the language difficulties, if any, reported by them in understanding clearly the different items.

**Try-out**

The first try-out was administered on 370 students from 3 schools in Uttar Pradesh. Gender wise sample distribution is given in Table 1

Groups		N		Percentage	
Gender	Male	192	370	52%	
	Female	178		48%	

**Age Group**

The scale can be applied on all the students who are 14 and above. i. e., the students of secondary, higher secondary, graduate and post graduate, to measure the level of Social Intelligence.

**Scoring**

The scale comprises of two categories of statement –positive and negative statements. Different weightage is allotted to every response of the item. For the positive statement, Strongly Agree has been given 5 weightages of scores, agree

has been given a weightage of 4, Neutral has been given 3 scores, disagree has been given 2 scores and strongly Disagree scored 1 weightage. For all the negative statements the scoring has been reversed.

**Phase II: Item Analysis**

**Item Analysis**

Item analysis of a test comes after the preliminary draft of a test has been constructed, administered on a sample and scored out. The main aim of item analysis is to improve test items by rewriting or removing ineffective items. For the construction of the present scale 370 students from above 14 + were given the questionnaire to respond. The result of 370 students then, arranged in descending order. Thereafter 27% from upper and 27% lower scores were selected. Thereafter data tabulation is done to determine following points.

- 1) Item Difficulty
- 2) Item Discrimination

**Difficulty Level of Item**

Boopathiraj & Chellamani (2013) defined Item difficulty as the proportion of the examinees that marked the item correctly. Item difficulty is the percentage of students that correctly answered the item, also referred to as the p-value. (p.190) The range is from 0% to 100%, the higher the value, the easier the item. P values above 0.90 are very easy items and might be a concept not worth testing. P-values below 0.20 indicate difficult items and should be reviewed for possible confusing language or the content needs re-instruction. Optimum difficulty level is 0.50 for maximum discrimination between high and low achievers. Generally, items of moderate difficulty are to be preferred to those which are much easier or much harder. (Boopathiraj, C. & Chellamani, K.2013)

**Interpretation of Difficulty Index**

Range	Difficulty Level	Items	Result
0.20 –0.29	Most Difficult	17	Rejected
0.30 – 0.39	Difficult	3	Accepted
0.40 – 0.59	Moderate Difficult	40	Accepted
0.60-0.69	Easy	22	Accepted
0.70 – 0.80	Most Easy	21	Rejected
Total Number of Items		103	

**Distribution of Difficulty Values of items of Social Intelligence Test**

Range	Difficulty Level	Items	Result
0.30 – 0.39	Difficult	3	Accepted
0.40 – 0.59	Moderate Difficult	40	Accepted
0.60-0.69	Easy	22	Accepted
Accepted Items after finding out the Difficulty Value and Discrimination Power		65	

**Discriminating Power**

Discrimination index can be explained as the possibility that a specific item might distinguish between students who possess the essential knowledge to respond to a question correctly and others who lack such knowledge. (Boopathiraj, & Chellamani, 2013) It determines the extent to which the given item discriminates among examinees in the function or ability measured by the item. The value of the discrimination index can range from -1.00 to +1.00. In the construction this

scale two methods have been used in order to discriminating power of each item.

On the basis of t-ratio, 38 items were rejected as they don't discriminate even at 0.01 (2.58) level of confidence. The t-ratio of the selected items have been given in table

**T-ratio**

**Distribution of Discriminating Powers (D. P) of Items**

Discriminatory Power	Number of Items	Remarks
0.40 & above	42	Very Good Items
0.30 – 0.39	23	Reasonably Good (Subject to Improvement)
0.20 – 0.29	18	Marginal Items (Need Improvement)
0.19	20	Poor Items
Total Items	103	

**Distribution of Discriminating Power of items of Social Intelligence Test**

Range of Discriminatory Power	Number of Items	Remarks
0.40 & above	42	Very Good Items
0.30 – 0.39	23	Reasonably Good (Subject to Improvement)
Total Number of Items Selected	65	

**Table 7: Items Distributed in Area-Wise**

S. No	Area	Nature of items	Number of Items	Total Number of items	Total
1	Effective Communication	Positive	1, 31, 37, 52, 60	5	8
		Negative	13, 27, 46	3	
2	Recognition of Social Environment	Positive	8, 19, 23, 24, 49, 62	6	8
		Negative	16, 58	2	
3	Self-awareness	Positive	2, 20, 30, 39	4	8
		Negative	6, 10, 11, 33	4	
4	Management of Emotions	Positive	5, 9, 18, 41, 42	5	11
		Negative	3, 12, 14, 22, 28, 57	6	
5	Foster Leadership	Positive	4, 17, 21, 35, 38, 50, 54	7	12
		Negative	25, 44, 47, 51, 56	5	
6	Empathetic Concern	Positive	7, 26, 36, 40, 43, 48, 63	7	9
		Negative	53, 55	2	
7	Confidence	Positive	29, 32, 34, 59, 65	5	9
		Negative	15, 45, 61, 64	4	
Total Number of Items (Positive 39 and Negative 26)				65	

**Phase III: Standardization of the Scale**

**Standardization of the Scale**

The 65-item inventory (Positive and Negative) in its final form, was administered to a randomly selected representative sample of 370 students (Boys and Girls) age group from 14 and above studying in Senior Secondary Class of Lucknow District of Uttar Pradesh India. The distributions of scores were tested for normality by applying Chi-square technique. The distributions did not depart significantly from normality. The result of Chi square is given in the table. (D'Sa J. L & Visbal-Dionaldo M. L., (2017)

**Gender-wise Distribution of the sample**

	Male	Female	Total
Number	187	183	370

**Scoring System**

S. No	Type of Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Positive	5	4	3	2	1
2	Negative	1	2	3	4	5

The minimum and maximum possible scores are 65 and 365 respectively

**Reliability**

Reliability measures stability and consistency of a test scores. It is an essential characteristic of any test. There are numerous methods of estimating reliability coefficient. The researcher has used two methods for estimating the reliability coefficient in the construction of Social Intelligence Scale;

- 1) Test-retest reliability
- 2) Cronbach's Internal consistency reliability

**Test-retest Reliability**

To find out reliability of the present scale by test-retest method, the scale was administered on a sample of 200 boy and girls of age group 14+ and on the same sample the scale was administered after a gap of 15 days.

**Test-retest Reliability Co-efficient**

S. No	Areas	Rel. Coeff.
1	Effective Communication	0.99
2	Recognition of Social Environment	0.98
3	Self-Awareness	0.99
4	Management of Emotion	0.96
5	Foster Relationship	0.88
6	Empathetic Concern	0.92
7	Confidence	0.95

Over all coefficient of correlation found was 0.95 which is significant at 0.01 level of significance.

### Cronbach's Internal consistency reliability

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is observed to be a measure of scale reliability. The computed result of Cronbach's Internal consistency of the scale of Social Intelligence is 0.91 which is acceptable level as per Cronbach's Internal Consistency Table.

### Cronbach's Internal Consistency Table

Cronbach's alpha	Internal Consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable

### Validity

Validity can be well-defined as the degree to which a concept is accurately measured in quantitative research. It is imperative to study validity of data collection instruments when either conducting or evaluating research. With the aim of validating the present scale, following validity techniques were used.

- 1) Content Validity
- 2) Construction Validity

When a test is constructed so that its content of term measures what the whole test claims to measure, then, the test is said to have content or curricular validity. With the aim of ensuring the content validity of the present scale, every single item was analysed by the experts, through rational logical analysis.

One of the measures for Determining construct validity is the correlation between all or some of those measures of construct and it is verified by comparing one test to the other tests, that measure comparable qualities, to distinguish how extremely correlated the two measures are. In the construction of present scale, correlation between total and item scores were also used for validity. Thus, the item correlation with the total score indicates the construct validity.

### Norms

Norms denotes the score distribution of any test in a representative sample. (Encyclopaedia of quality of life and well research, 2014, p.190) Norms also helps test users interpret test scores. Before the interpretation, the test users transform raw scores in some meaningful ways. Test users then apply the derived scores to evaluate an individual's performance (Encyclopaedia of quality of life and well research, 2014, p.190)

In the present scale construction, the researcher has used Standard Score Norms. It has a specified or fixed mean and fixed standard deviation. There are several types of standard scores and in the construction of Social Intelligence Test, the researcher has used Z score or sigma score, since the z score is very popular and has been frequently used in preparing norms. On the basis of the scores of 200 samples, the

statistical results are calculated and the result is given in Table.

S. No	Sample	N	Mean	SD
1	Male	103	242.33	25.45
2	Female	97	247.01	22.83
Total Sample		200	244.33	24.69

Z-scores range from **-3 standard deviations** that would fall to the left of the normal distribution curve up to **+3 standard deviations** that would fall to the right of the normal distribution curve. (Glen S., 2021) On the basis of Statistical results, gender free Z score Norms have been prepared which is given in Table.

### Norms for the interpretation of the level of Social Intelligence Test

S. No	Range of Z Scores	Grade	Level of Social Intelligent
1	+2.01 and above	A	Extremely High
2	+1.26 to +2.00	B	High
3	+0.51 to 1.25	C	Above Average
4	-0.50 to +0.50	D	Average
5	-1.25 to -0.51	E	Below Average
6	-2.00 to -1.26	F	Low
7	-2.01 to Below	G	Extremely Low

## 2. Conclusion

The main goal of this research is to construct and standardize the Social Intelligent tool for measuring existing traits and attributes, providing a benchmark or an equally objective measure on Social Intelligence. In other words, the final outcome of the study is to construct a scale or standardize a data that describes the relative situation thus provide a general framework for comparing the scores. In this study, in order to facilitate the interpretation of the obtained scores, the standard score norms have been used.

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