Pakistan Journal of Social and Clinical Psychology
2018, Vol. 16, No.2, 17-26

Construction and Validation of Emotional Intelligence Scale for Children and Adolescents

Syeda Shahida Batool & Fozia Hayat
Government College University, Lahore

The current study was designed to develop an emotional intelligence scale for children and adolescents of age between 9 and 17 year, and to determine its psychometric properties. The objectives of the study were achieved in four phases. In Phase-1, items for the development of the scale of emotional intelligence were empirically generated by following Bar-On's model of emotional intelligence (1997, 2001). In Phase-II, the dimensionality and internal consistency of the scale was determined with a sample of 390 children and adolescents of age (9-15 year) via exploratory factor analysis. In Phase-III, the confirmatory factor analysis was run to confirm the factor structure appeared in Phase-II on a sample consisted of 555 children and adolescents of age (9-17 year). In Phase IV, the convergent validity of the scale was determined by correlating scores on the newly developed scale of emotional intelligence and the measure of social competence with a sample of 50 children and adolescents of age (12-15 years) that established the convergent validity of the scale. The final scale comprised 26 items under five well defined factors (viz., Intrapersonal, Interpersonal, Stress Management, General Mood and Adaptability) with reasonable reliabilities. It was concluded that the new emotional intelligence scale for children and adolescents was a promising measure.
*Key words***:** emotional intelligence scale, factor analysis, children, adolescents, social competence

The scholars have been working on the concept of emotional intelligence (EI) since the last decade of 20th century. One of the reasons behind this interest is the fact that some individuals of average intelligence succeed in their lives, while other individuals struggle and fail in their lives despite being more intelligent (Al-Shayeb, 2010). The origin of this wider concept can actually be traced back to the 19th century, when Charles Darwin published his renowned work "The Expression of the Emotions in Man and Animals" in 1872. However, emotional intelligence gained popularity in the scientific community after the publication of a best seller book on emotional intelligence "Emotional intelligence: Why it can matter more than IQ?" by Goleman in 1995. Goleman believes that despite the acquisition of cognitive intelligence and cognitive skills in order to gain employment, emotional intelligence offers the professional success for individuals. According to Goleman (1998, 2001), cognitive intelligence contributes to success by between 10 percent and 20 percent, and 80-90 percent of this success is attributed to other factors. Modern theorists like, Salovey and Mayer (1990, p. 189) presented emotional intelligence as an element of social intelligence, which suggested that both concepts were interrelated of the same construct. For years, this concept was referred as "emotional and social intelligence (ESI).

Social competence and social intelligence constructs overlap with emotional intelligence. Social competence is defined as an aspect of social intelligence (Cantor & Kihlstrom, 1989, Gardner, 1983). Social intelligence is the ability of social adaptation and positive social interactions and is generally defined as the ability to understand others in the framework of social interaction and smooth communication. Therefore, social competence is evaluated by the interaction between the individual and his/her social settings.

Correspondence concerning this article should be addressed to Prof. Dr. Syeda Shahida Batool- Chairperson Department of Psychology, Government College University, Lahore. Email: shahidaphd@yahoo.com

Shure and Spivack in 1974 suggested that children's social competence can be best defined as a set of five interrelated interpersonal cognitive problem solving (ICPS) skills: a) Recognition of interpersonal problems, b) Ability to generate alternative solutions, c) Ability to consider means to achieve social goals, d) Ability to understand the consequences of actions for oneself and others, and e) Ability to recognize and understand the aims and behaviors of others. Moderate positive relationship between emotional intelligence and social competence has been reported in the literature (Gil-Olarte, Palomera, & Brackett, 2006).

Salovey, Mayer, and Caruso (2000) bifurcated the models of emotional intelligence as 'ability' and 'mixed' models. Ability based model stresses on cognitive abilities and usually requires maximal performance. Mixed model assesses mental abilities and personality traits like, empathy etc. and generally relies on self-report. Salovey, et al., (1990) were the first who proposed a formal ability model of emotional intelligence that identifies four aspects of emotions as: a) perception of emotions, b) understanding emotions, c) managing or regulating emotions, and d) using emotions of one's self and others to facilitate thinking.

The trait model of emotional- social intelligence (Bar-On, 1997, Bar-On & Parker, 2000) describes a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves and others. It is measured by self-report and within a potentially expandable multi-model approach including interview and multi-rater measurements (Bar-On & Handley, 2003). Bar-On (1997) described five scales comprising by 15 sub-scales: 1) Intrapersonal i.e., self-awareness and self-expression (viz., self-regard, emotional self-awareness, assertiveness, independence, and self-actualization); 2) Interpersonal i.e., social awareness and social relationship (viz., empathy, social responsibility, and interpersonal relationship); 3) Stress management i.e., emotional management and regulation(viz., stress tolerance and impulse control); 4) Adaptability i.e., change management (viz., flexibility, and problem solving); 5) General mood i.e., self-motivation(viz., optimism and happiness).

Goleman's model (1998) views this construct as a wide array of competencies and skills that drive managerial performance, measured by multi-rater assessment (Boyatzis, Goleman, & Rhee,

2000). Goleman has given the five domains, knowing your emotions, managing your own emotions, motivating yourself, recognize and understand other people's emotions, and managing relationship.

Despite the distinct features of three above mentioned models of emotional intelligence, there are some theoretical and statistical similarities in these models. All of the models aim to understand and measure the factors involved in the recognition and regulation of one's own and others' emotions (Goleman, 2001), and agree on certain key components of emotional intelligence for example, these models of emotional intelligence implicate the awareness (or perception) of emotions and the management of emotions.

Multiple measurement scales based on the models of emotional intelligence are available. These scales are divided into two categories: ability measures based on performance, and trait based-self-report measures. Some of the widely used performance based measures of emotional intelligence are: Mayer, Salovey- Caruso Test Battery (MSCEIT, 2002a); Emotional Accuracy Research Scale (EARS, 1996) by Mayers and Geher; and Levels of Emotional Awareness Scale (LEAS, 1990) by Lane, Quinlan, Schwartz, Walker and Zeitlin; Trait Emotional Intelligence Questionnaire (Teique, 2003) by Petrides and Furnham; Emotional Competence Inventory (ECI, 2002) by Sala; Schutte Self Report Index (SSRI, 1998) by Schutte et al. ; Emotional Quotient Inventory (EQ-i, 1997) by Bar-On; Trait Meta-Mood Scale (TMMS, 1995) by Salovey et al.; Toronto Alexithymia Scale (TAS-20, 1994) by Bagby et al. (as cited in MacCann, Matthews, Zeidner, & Roberts, 2004, p.26). The validity and reliability of these measures are well established. However, the researches have shown that ability measures of EI have low to moderate correlations with trait measures of emotional intelligence. It shows that these measures of emotional intelligence are not measuring the same construct (Brackett & Mayer, 2003).

Gender and age differences in EI have been reported in the literature. Some report that overall levels of the EI are equivalent however, men and women may have different profiles of strengths and weaknesses in different aspects of emotional intelligence (Goleman, 1998). Some studies found women obtaining higher scores on measures of emotional intelligence than men, both in personal and professional settings (e.g., Mandell & Pherwani, 2003; Mayer & Geher, 1996; Mayer, Caruso, & Salovey, 1998). The controversy may be due to measurement choice. Women scored higher than men on EI when measured by a performance measure. However, when self-report measures such as the Bar-on Emotion Quotient Inventory (EQ-i) were used, no evidence of gender differences in emotional intelligence appeared.

Emotional intelligence is a construct that enhances with the age and with life experiences (Goleman, 1998; Boyatzis & Sala, 2004). The older individuals score higher on EI than younger individuals. Emotional intelligence tend to peak between 35 and 44 age interval (Derksen, Kramer, & Katzko, 2002). Bar-On (2004) found that the individuals in their late 40s obtain highest mean score on Emotional Intelligence. However, emotional factors can be improved and taught (Al Said, Birdsey, & Stuart-Hamilto, 2013).

The studies measuring age differences in EI are restricted to the adult population. There are very few studies that report differences in the levels of EI among adolescents and children. One of the reason might be the scarcity of EI measures for this segment of population. Very few standard, valid and reliable measures of EI for children and adolescents have been developed. Mayer et al. (in press) designed the MSCEIT Youth Version for children and youth between the ages 10 and 18 years. Peters, Kranzler, and Rossen (2009) investigated the MSCEIT-YV's construct validity and criterion-related related validity and concluded that it was a valid instrument in measuring emotional intelligence based on the ability model. Similarly, Rivers et al. (2012) found that the MCEIT-YV produces valid results in measuring emotional intelligence among children aged from 10 to 13 year. Emotional Intelligence Scale for Children (EISC) was developed by Sullivan (1999) through the ability model. However, internal consistency between subscales of the EISC varied low to moderate. The Bar-On's Emotional Quotient Inventory Youth Version™ (EQ-i:YV™, 2000) is a self-report valid and reliable instrument designed to measure emotionally and socially intelligent behavior in children and adolescents from 7 to 18 year of age. It is based on the of emotional-social intelligence model of Bar-On. Four clearly-defined factors appeared after factor analysis conducted on a sample of nearly 10,000 children and adolescents and the items loaded from all EQ-scales. The final version of the EQ-i:YV™ consists of 60 items that are distributed across 5 factors. Based on the structure of factors, these factors were labeled as Intrapersonal (capability for understanding and expressing feelings), Interpersonal (capacity for understanding others and connecting with people), Stress Management (capacity for controlling and managing emotions), Adaptability (capacity for managing change and solving problems), and General mood (capacity for being positive and optimistic). Two indexes: Positive Impression (validity), and Inconsistency Index (validity) are in addition to the five well-defined factors appeared upon factor analysis. A 30-item short version of EQ-i:YV™ is also available that provides all of the above-cited scales excluding the General Mood scale score and the Inconsistency Index. Both the 60- and 30-item versions have a 4-point response format. Ten Years Emotional Intelligence Scale (TYEIS) is the most recent measurement tool for children developed by (Coskun, Oksuz, & Yilmaz, 2017) for Turkish children. The TYEIS is based on Goleman (1998) conceptualization of the EI, and is a self-report measure consists of one factor and comprises 10 items.

The cultural differences in the expression and management of emotions are evident in Eastern and Western cultures. Both cultures deal with emotions in different ways (Keiko, Ohara, Antonucci, & Akiyama, 2002; Niedenthal, Krauth-Gruber, & Ric, 2006). In western cultures, individuals are free in expression of their emotions so more individuality is observed here, in which they can freely express their needs, wishes and liking. Whereas, in Eastern culture, there are some restrictions on individuals in expressing their emotions. The gap between cultures leads to inconsistency in different human traits (e.g., emotional intelligence), which needs to be studied in different cultures with reference of their surroundings, language, societal norms and developmental ways of individual. It creates the justification to measure the traits like emotional intelligence with the measurement tools developed and validated in the indigenous perspective.

Rationale of the Study

Though the extant measures of EI for adults, adolescents and children are valid and reliable, but when we use these measures with the sample from countries other than the Western and American population, there are certain issues pertaining to the psychometrics of these measures. So there is a need to either validate the existing measures in different cultures or develop a valid and reliable measure in the indigenous perspective. An

important issue related to these measures is a sample and language bias, as most of the measures had been validated on North American normative sample in English language, so cultural validity of these scale would be suspicious (Barchard & Russell, 2002; Ghorbani, Bing, Watson, Davison, & Mack, 2002; MacCann et al., 2004). Most of the scales are available on commercial terms and conditions that require huge cost and lengthy procedure of permission that wastes valuable time of academic researchers. So in order to save time and money, and unbiased measurement of the trait EI, development of a valid and reliable scale at indigenous level is imperative. Given that very few EI measures for children and adolescents are available globally and there is no indigenous scale for this segment of population available, the current study is the first ever attempt to develop and validate an EI measure for children and adolescents in the local context of Pakistan.

Objectives of study

a) To construct an indigenous self- report scale of emotional intelligence for children and adolescents of age between 9 and17 years.
b) To establish the psychometric properties of the newly constructed scale.

Plan of Study

The study was completed in in four phases. In Phase-1, an indigenous scale of emotional intelligence for the children and adolescents was developed in Urdu language. In Phase-II, the dimensionality and internal consistency of the scale was determined. In Phase-III, the confirmatory factor analysis (CFA) was run to confirm the factor structure appeared in Phase-II, after exploratory factor analysis (EFA). In Phase IV, the convergent validity of the scale was determined by correlating scores on EI measure and measure of social competence.

Method

Sampling

As the study was completed in four phases, four distinct samples of different sizes were used according to the need of analyses carried out in these phases.

Sample 1. In the first phase for generating an item pool, children and adolescents (male and female) with the age range of 9-17 years were approached in different rural and urban areas of Lahore district through a convenient sampling. However, children of 9 and 10 year were not able to generate items, so the final sample included 40 (11-17 year old) children and adolescents.

Sample II. In the second phase, to test the dimensionality and internal consistency of the scale, a sample of 400 adolescent children (220 female, 180 male) was selected with an age range of 9-15 years ($Mean_{age}$=14.67, *SD*= 1.869) through a convenient sampling technique from 6 major cities of Pakistan (Lahore, Sheikhupura, Islamabad, Multan, Bahawalpur, and Sargodha), including rural and urban areas of these cities. The sample was representing different socio economic classes. Some of the questionnaires were not properly completed, so the final sample comprised 390 participants.

Sample III. For confirmatory factor analysis, a sample of 555 (female =262, male= 233 male) children and adolescents were selected from Lahore, Multan, Rawalpindi, and Sheikhpura, cities and outskirts. The age range of this sample was 9-17 years ($Mean_{age}$=14.39, *SD*= 1.90) and belonged to different socio economic status and from different private and public schools.

Sample IV. A convenient sampling technique was used to select children and adolescents for the present study. A sample of 50 children and adolescents (male =25, female=25) having age 12-15 year ($Mean_{age}$= 13.64, *SD*=.859) were selected from Lahore city. The sample belonged to public and private schools.

Inclusion/ Exclusion criteria. The children/adolescents who were reported normal in their academic performance and conduct in the classes by teachers and parents were included. Those who were reported with any clinical and psychiatric diagnoses were not included the study.

Ethical consideration. The requirements of ethical consideration were fulfilled by taking departmental permissions prior to the study and the permission of different private and public academic institutions for conducting the study. Before starting the study, consent was taken by the parents of children through school administrations. The children were briefed about their right of withdraw from the study at any stage. At the end of the study, the students, teachers and their parents were appreciated for their cooperation.

Instruments

In the first phase of the study, a proforma was prepared in Urdu language based on Bar-On's model of emotional and social intelligence (1997, 2000). Short, lucid and understandable definitions given by Bar-on of the 15 dimensions of the model were used in that Performa.

Out of pool of 71 items generated in Phase-1, 37 items were finalized after experts' opinion and try-out phase was used in Phase-II to explore the dimensionality via exploratory factor analysis, and determining the reliability of the scale. A Likert type, 5 points rating response pattern was preferred (i.e., 1= *never*, 2 = *occasionally*, 3 = *sometime*, 4 = *often* and 5= *always*) for the scale.

Newly developed 31 items Emotional Intelligence Scale for Children and Adolescents (EIS-CA) with the factor structure emerged in Phase-II was used to confirm the factor structure of the scale in Phase III. It has 5 sub scales (viz., Intrapersonal, Interpersonal, Stress Management, General Mood and Adaptability) with reliabilities as .87, .71, .63, .59 and .55 respectively. Scale total Cronbach's Alpha was .81. The higher score represented higher EI.

For the purpose of measuring social competency of adolescents, Social Competence Scale for Teenagers (12-17 years), developed by (Child Trends, 2003) was used. It is a self-report measure having 9 items with .79 Cronbach's alpha and concurrent validity was checked with better grade and relatively lower smoking, depression and fighting tendencies. The first three items are the indication of how much given statement describe the person (not at all like me, a little like me, somewhat like me, a lot like me, exactly like me) and rest of the six items are the indication of how often the given statements happen (none of the time, a little of the time, some of the time, most of the time and all of the time). The scoring of this scale follows Likert type format, as (0 to 4). The maximum score of the scale is 36. The higher score indicates higher social competence. The scale was translated in Urdu by the permission of author and its reliability was = .89 in the study.

Procedure

In the first phase, a pool of items (in Urdu) was empirically generated. The first list of items was generated by consulting the related literature on emotional intelligence as recommended by (Burisch, 1984). The second list of items was generated by children and adolescent (11-17 years) as children below 11 years of age (9 and 10 year old) were not able to produce items and felt very hard to follow instructions, so it was decided to exclude them from this stage of study. The Proforma was distributed among 40 children and adolescents (male and female) with the age range of 11-17 year and they were asked to generate at least two items on each dimension. These children had no previous knowledge about the construct of EI. The children were very excited during the process, because they were doing something new, out of their everyday academic routine and they tried enthusiastically to generate items. Total 120 items, covering all the domains of the Bar-On's model were pooled up. After initial meetings of the first and second authors, 71 items were finalized by excluding inappropriate and redundant items. The 71 items were placed in front of 4 judges(a professor of psychology, a lecturer of psychology and two students of M. Phil psychology) to check the structure of the items (e.g., clarity and face validity of the statements). On the basis of experts' consensus, 57 items were finally selected that were recommended by at least 75% of the judges to be retained. These items were evaluated on clarity, fidelity, comprehensibility and redundancy of the items. Some overlapped and irrelevant items were removed, some items were revised or reconstructed on the recommendation of experts. The 51 items scale after judges' and experts' opinion was used for a try-out on a sample of 30 children and adolescents (15 male, 15 female) of age 9-15 years from Lahore city selected via convenient sampling. The purpose of try-out phase was the initial test of psychometrics of the scale and to ensure the clarity and understandability of the statements through the proposed segment of population. The sample was approached in their schools during break time and questionnaires were distributed. The children of age 7-8 were completely incapable to understand the items, children of 9- 10 year also felt difficulty in some items, so these items were either excluded or rephrased with easier substitute words. It took 30-35 minutes in completing the scale. The normality of each item was checked on skewness and kurtosis on the criteria given Field (2004), and 14 out of 51 items were excluded due to non-normality or non-comprehensibility by the children. Twenty two items were given reverse coding (3, 4, 9, 11, 16, 21, 23, 33, 34, 36, 39, 41, 43, 44, 45, 47, 56, 58, 60, 62, 65& 67) before checking the normality.

In Phase-II, to explore the factor structure of the scale, the sample was approached in their schools. The questionnaires comprising 37 items were distributed among children and adolescents in their classes in the presence of their teachers and were invited to complete the questionnaires honestly. All the participants returned back the questionnaires to the second author on the same day. But 10 questionnaires were incomplete, so these 10 proformas out of 400 were excluded and 390 were used for analysis. The assumptions of EFA (e.g., normality, sample size, linearity, communality etc.) were found satisfactory as recommended by (Field, 2004; Hair, Babin, Black Anderson & Tatham, 2006).

In Phase- III, to confirm the factor structure of the scale, 600 children and adolescents were approached in their schools. The students were ensured confidentiality of the provided information. The sample did not report any problem in understanding the scale items and it took 15-20 minutes to complete the scales. Out of 600 completed questionnaire, 45 were found incomplete, so data of 555 participants were found appropriate for analysis.

In Phase- IV, to establish the convergent validity, the sample was approached at two public/ private schools. The consent of parents for the participation of their children was taken through school administration.

Analyses and Results

After item generation and try-out phase in the first phase of the study, the data were analyzed via EFA to explore the factor structure of the scale in Phase-II.

Note: Through all analyses, we used the original item numbers of 71 items scale developed in Phase-I, to evade any confusion to understand the process of items inclusion.

Exploratory Factor analysis and Reliability

Table 1

Factor Loadings on the Scale via Exploratory Factor Analysis (N=390)

Old/ New Items	Components				
	1	2	3	4	5
q(68/1) intrapersonal	**.798**	.160	.023	.085	.001
q(71/2) intrapersonal	**.774**	.141	.031	.106	-.072
q(14/3)intrapersonal	**.721**	.065	.042	.073	-.164
q(63/4) intrapersonal	**.682**	.226	.162	.069	.053
q(42/5) intrapersonal	**.676**	.117	-.005	.061	.050
q(12/6) intrapersonal	**.656**	.253	.070	.154	-.036
q(5/7) intrapersonal	**.591**	.151	.003	.092	.166
q(50/8) intrapersonal	**.590**	.322	-.001	.157	.080
q(1/9)intrapersonal	**.556**	-.231	-.033	-.093	.052
q(49/10) intrapersonal	**.546**	.131	.067	.352	-.140
q(51/11) interpersonal	.210	**.683**	.094	-.070	.167
q(22/12) interpersonal	.134	**.615**	.024	.215	-.162
q(24/13) interpersonal	.038	**.590**	.002	.285	-.058
q(17/14) interpersonal	.147	**.569**	-.010	.253	-.185
q(19/15) interpersonal	.099	**.519**	-.215	.178	.001
q(3/16) interpersonal	.085	**.450**	.243	-.145	.094
q(2/17)interpersonal	.015	**.441**	.161	-.152	.105
q(10/18) interpersonal	.189	**.433**	.088	.161	-.127
q(4/19) interpersonal	.138	**.415**	-.004	-.139	.184
q(7/20) interpersonal	.198	**.346**	.089	.119	.181
q(65/21)stress management	-.022	.015	**.707**	-.014	-.021
q(60/22)stress management	.129	.074	**.650**	.065	.130
q(58/23) stress management	.037	-.048	**.616**	-.018	.084
q(67/24) stress management	.012	-.119	**.576**	-.083	-.122
q(29/25) stress management	-.039	.156	**.403**	-.208	-.066
q(54/26) stress management	.097	.176	**.391**	.012	.011
q(37/27) stress management	.030	.235	**.378**	.062	-.241
q(69/28) general mood	.047	-.008	-.039	**.582**	.032
q(48/29) general mood	.114	-.042	-.081	**.570**	.110
q (38/30) general. mood	.094	.167	-.050	**.556**	-.153
q(66/31) general mood	.120	.182	.164	**.552**	.095
q(31/32) general mood	.162	.087	-.063	**.525**	.140
q(64/33) adaptability	-.120	.024	-.129	.001	**.810**
q(46/34) adaptability	.083	.123	-.011	.312	**.567**
q(45/35) adaptability	-.116	-.079	.271	.131	**.560**
q(61/36) adaptability	.179	.060	-.148	-.148	**.455**
q(53/37) adaptability	-.022	.020	.311	.188	**.328**

Note: Factor loadings > .3 are given in bold phase against pertinent factors. Principal component analysis with an orthogonal varimax rotation method was used.

Table 1 shows that maximum loadings emerged on the first factor. Dual or multiple loadings are also found. Because all the items measure the same construct, therefore there is inter correlation among them. While interpreting the structure, relatively higher loading, construct relevance and conceptual distinction was kept in view. Five well-structured factors with eigenvalues > 1.0 emerge that support Bar-On's model of social and emotional intelligence (1997, 2001), on which Bar-on EQ-i (youth version) was constructed are retained. These factors are theoretically relevant, clear and well- defined, and a significant amount of total variance (56.49 %) is accounted for by the retained factors. Kaiser (1960) criteria was used to retain factors.

Factor 1 (Intrapersonal). Maximum number of items loaded on factor-1. Items (1, 5, 12, 14, 42, 49, 50, 63, 68, and 71) showed higher loadings on it. These items theoretically represent the need of self-regard, self-actualization, awareness and expression of one's own feeling/ emotions and need for independence (e.g., I don't like to take responsibility; I do my work independently, No one can force me to do something). So factor 1 was labelled as 'Intrapersonal'. It comprises of 10 variables and 20.23 percent of variance is accounted by this factor.

Factor 2 (Interpersonal). Items (51, 24, 22, 19, 17, 10, 7, 4, 3, and 2) loaded independently on factor 2 and showed high loading on it. These items represent the worth in social relationships, social responsibility, social skills, cooperation and empathy (e.g., I respect others' emotions; I can easily understand others' emotions; I help others), so it was labeled as 'Interpersonal'. It comprises of 10 variables and 12.99 percent of variance was accounted for this factor.

Factor 3 (Stress Management). Third factor comprises seven items (67, 65, 60, 58, 54, 37, and 29). All items represented the skill to control and manage stressful situations, tendency to solve the problem, positive coping to stressors and challenges of life (e.g., when I am stressed, I quarrel with others; I become upset on trivial things). So keeping in view the theoretical concept of the variable (Bar-On's model), it was named as 'Stress Management' and accounted 10.23 percent variance of the scale.

Factor 4 (General Mood). The forth factor comprises five items (31, 38, 48, 66, and 69). These items reflect the tendency of optimism, positivity, satisfaction and happiness (e.g., I can feel happiness: I stay optimistic: I enjoy jumping and plying), so it was labelled as 'Generl Mood'. It accounted for 7.50 percent of variance

Factor 5 (Adaptability). Items (64, 61, 53, 46, 45) loaded on factor five. These high loading variables represented the overall ability of adjustment in new, unpredictable and changing situations without rigidity (e.g., I like going for excursion; I easily adjust with new people; I readily learn new technology. This factor was labelled as 'Adaptability' on theoretical and empirical basis. This factor accounted 5.54 percent of variance.

Table 2

Item- total Correlations of 37 Items of Emotional intelligence Scale (N = 390).

Serial No	Item No	r	Serial No	Item No	r
1	1	**.25**	20	46	.35**
2	2	**.28**	21	48	.35**
3	3	.34**	22	49	.51**
4	4	.30**	23	50	.59**
5	5	.51**	24	51	.51**
6	7	.38**	25	53	**.25**
7	10	.39**	26	54	.31**
8	12	.60**	27	58	.35**
9	14	.51**	28	60	.39**
10	17	.41**	29	61	.39**
11	19	.32**	30	63	.62**
12	22	.44**	31	64	.38**
13	24	.44**	32	65	.35**
14	29	**.16**	33	66	.41**
15	31	.33**	34	67	.34**
16	37	**.23**	35	68	.60**
17	38	.32**	36	69	.33**
18	42	.52**	37	71	.58**
19	45	**.17**			

Note: **p < .001. Six Items (1, 2, 29, 37, 45, and 53) show item-total correlations < .30, so these items were excluded from the further analysis.

Table 3

Final Factors with the Items of Emotional Intelligence Scale (N= 390)

Factors	Factor Label	Items	% variance	Alpha
1	Intrapersonal	71, 68, 63, 50, 49, 42, 14, 12, 5 (9 items)	20.23%	.87
2	Interpersonal	51, 24, 22, 19, 17, 10, 7, 4, 3(9 items)	12.99%	.71
3	Stress Management	67, 65, 60, 58, 54 (5 items)	10.23%	.63
4	General Mood	69, 66, 48, 38,31 (5 items)	7.50%	.59
5	Adaptability	64, 61, 46 (3 items)	5.54%	.55
6	EIS(CA)	31 items	56.49%	.81

Note: EIS-CA (Emotional Intelligence Scale for Children and Adolescents)

Table 3 shows that a significant amount of variance is accounted for by the retained five factors and all the factors and total scale show reasonable internal consistency, ranging from .55 to .87.

Table 4

Inter-correlations among the Sub-scales and Total Scale (N = 390).

Factors	1	2	3	4	5	6
1.Intrapersonal		.41**	.12**	.31**	.24**	.71**
2.Interpersonal			.18**	.26**	.19**	.70**
3.Stress management				.03	.11	.46**
4.General Mood					.154**	.49**
5. Adaptation						.5**
6. Total EIS-CA						-

Note: **p <.001, EIS-CA (Emotional Intelligence Scale for Children and Adolescents)

The results in Table 4 indicate significant relationships among total Emotional Intelligence and the subscales. The highest correlation appears between total emotional intelligence and Intrapersonal skill (r = .71, P< .001). However stress management does not significantly correlate with general mood and adaptation, it significantly correlates with total emotional intelligence (r= .46, P<.001))

Confirmatory Factor Analysis

Confirmatory Factor Analysis was run on the data of 555 children and adolescents to confirm the factor structure of the newly developed scale. Thirty one retained items through exploratory factor analysis were analyzed on confirmatory factor analysis by using AMOS-20 version through structural equation modeling (SEM).

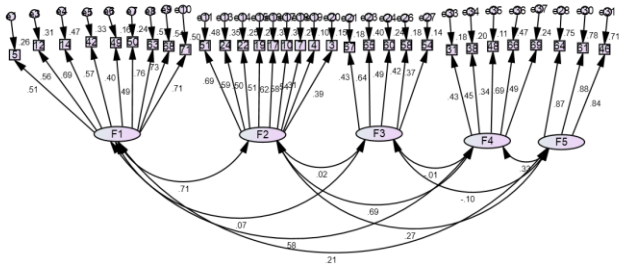

Figure 1. Illustrates Model 1. The structure of the 31 items scale emerged through exploratory factor analysis is examined on confirmatory factor analysis, and it illustrates that this factor structure does not demonstrate a good fit model of the data as Chi square = 1200 (P=.000), chi-squre/df= 2.83, RMR= .094, GFI=.87 and CFI =.84 whereas GFI and CFI should be .90 or above, however, RMSEA = .060, was good.

After removing 3 items (i.e., item 4, Factor 2= .31, item 58, Factor 3= .37, and item 48, Factor 4= .34) showing factor loadings less than .40, Model 2 illustrates the following results.

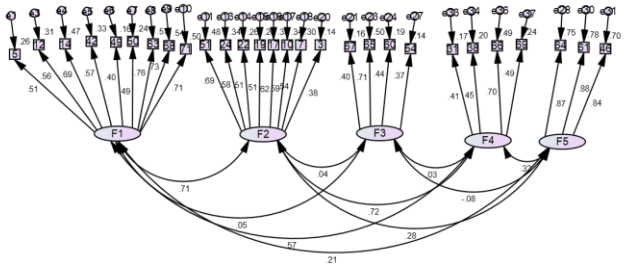

Figure 2. Illustrates Model 2 with Chi square = 963 (P= .000), chi-square/df= 2.80, RMSEA =.058. RMR=.092, but the values of GFI=.88 and CFI=.86 whereas, the recommended range of GFI and CFI commonly considered acceptable as .90 and above (Joreskog & Long, 1993). After removing 2 items showing factor loadings < .40 (i.e., item 3, Factor 2= .38, and item 54, Factor 3= .37), and inserting some covariance in error terms as indicated by modification indices, Model 3 illustrates the following results.

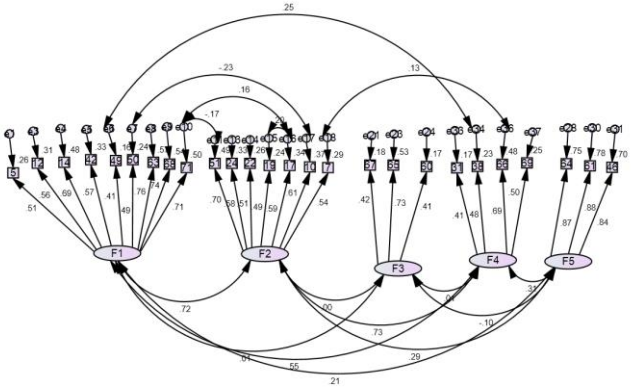

Figure 3. Illustrates Model 3, which is our final model after removing 2 items, showing factor loading < .40 and inserting some covariance between error terms.

Model 3 shows Chi square = 712 (P= .000), chi-square/df= 2.51, RMSEA =.052. RMR=.084, GFI=.91, CFI=.90, which suggests that model is the best fit (Joreskog & Long, 1993). So our final scale appears with 26 items.

Table 5
Summary of Model Fit Indices (N= 555)

Models	Chi-square(sig)	*df*	Chi-square/ *df*	RMR	GFI	CFI	RMSEA
1	1200 (.000)	428	2.83	.094	.87	.84	.057
2	963 (.000)	340	2.80	.092	.88	.86	.058
3	712 (.000)	283	2.51	.084	.91	.90	.052

Table 6
Final Retained Items under Five Factors of Emotional Intelligence Scale after CFA (N= 555)

Sr No.	Factors	Final Items	Potential Range	Actual Range	Alpha
1	Intrapersonal	1-9 (9 items)	9-45	20-40	.89
2	Interpersonal	10-16 (7items)	7-35	18-31	.74
3	Stress Management	17-19 (3 items)	3-15	7-12	..77
4	General Mood	20-23 (4 items)	4-20	14-18	.78
5	Adaptability	24-26 (3 items)	3-15	6-13	.71
6	EIS(CA)	1-26 (26 items)	26-130	65-114	.86

Note: EIS-CA (Emotional Intelligence Scale for Children and Adolescents).

Table 6 shows final numbers of items and reveals that after the CFA, items were pooled in a sequence and put under the relevant factors. Cronbach alpha of the final factors show good reliabilities.

Group Differences

Table 7
Multivariate Analysis of Variance for Gender and Age on Emotional Intelligence (N=555)

Source	MS	F	P	η^2
Gender	117.300	1.122	.293	.016
Age	1.699	.016	.997	.001
Gender x Age	50.741	.485	.488	.007

Note: MS = mean square, η^2 = partial eta square EI= emotional intelligence

The results in Table 7 show non-significant differences on emotional intelligence in terms of age and gender. The results show non-significant mean scores in boys and girls, and between children (9-12 year), and adolescents (13-17 year).

Convergent Validity

In order to determine the convergent validity of the scale, it was hypothesized that there would be a positive correlation between scores on EIS (CA) and the scale of social competence. The hypothesis was based on the literature for example, Saarni's claim (1990) that emotional competence includes eight interrelated emotional and social skills.

Table 8
Convergent Validity of Sub-scales and Total Emotional Intelligence Scale for Children and Adolescents and Social Competency Competence (N= 50)

Scales	k	Social Competence	Alpha
Intrapersonal	9	.74**	.89
Interpersonal	7	.87**	.77
Stress Management	3	.68**	.56
General Mood	4	.45**	.60
Adaptability	3	.69**	.89
Total EIS-CA	26	.68**	.84

Note: ***p*< .001, EIS-CA (Emotional Intelligence Scale for Children and Adolescents)

Table 8 shows significant positive correlations between total EIS-CA, its subscales and Social Competence. So it is concluded that the indigenously developed scale has good convergent validity. Total EIS-CA and its sub-scales show good alpha reliability values ranging from (.56 to .89).

Discussion

The study was conducted to construct a scale for assessing emotional intelligence of children and adolescents between the ages 9-17 year in Pakistan. We followed Bar-On's model of social and emotional intelligence (1997, 2001) for defining the dimensions of EI to generate items. The psychometrics of the newly constructed scale were determined for example, the dimensionality of the scale was explored via EFA, final factor structure was established via CFA and convergent validity was establish by correlating the scores on the scale with a scale of social competence.

As the results of EFA concern, a five well defined factor structure appeared. Total 37 items were retained that showed factor loadings > .30 on the theoretically relevant factors (see Table 1). The factor structure was similar to the Bar-on EQ-i (youth version) consisting 60 items that also classified EI in five dimensions (viz., Intrapersonal, Interpersonal, Stress Management and Adaptability and Stress Management), however, short version (30 items) scale lacks General Mood. The newly constructed EIS- CA is a self-report emotional intelligence scale that also demonstrates similarity with EQI:YV, TEIQue: ASF, and TYEIS in terms of ways of measuring emotional intelligence. On the other hand, there is a difference between MSCEIT:YV and the EIS- CA due to the fact that the MSCEIT:YV measures the EI through performance based approach.

The reliability analysis supported the scale as a reliable measure however, 6 items were excluded due to their lower items- total correlations <.03(see Table 2). The CFA supported the factor structure retained in EFA (see Table 5; Figures 1-3). However, 3 more items were deleted due to low loadings < .40 on the relevant factors and for the fitness of the final model. The final model comprised 26 items.

As gender and age differences on EI concerns, result of MANOVA showed no significant differences between boys and girls and different age groups (see Table 7). The findings regarding non-significant gender differences on emotional intelligence are consistent with Goleman's claim (1998) that no gender differences exist on emotional intelligence, their overall levels of emotional intelligence are equivalent. However, men and women may have different profiles of strengths and weaknesses in different areas of emotional intelligence. The findings are also consistent with (Meshkat & et al., 2017) that showed no significant difference between the genders on their total score measuring emotional intelligence, but the genders did tend to differ in emotional self-awareness, interpersonal relationship, self-regard, and empathy with women scoring higher than women (Chandra, Gayatri, & Devi, 2017). Evidence from recent studies are inconsistent on gender differences and EI; however, previous meta-analyses and reviews on gender differences in emotion recognition have shown a small to moderate female advantage (e.g., Ahmad, Bangash & Khan, 2009; Dunn, 2002; Fische, Kret, Broekens, 2018; Singh & Kapur, 2015). The reason of lack of gender differences in the present study might be the age range of the sample. Gender differences are clear between early childhood and age of 8 in favor of female children with respect to emotional intelligence skills. However, this difference disappears between 10 to 12 years because of more increase in male children's emotional intelligences (Keefer, Holden, & Parker, 2013). Therefore, during 9 and 17 year (age of the sample of study) is a period in which both female and male children were equal in terms of emotional intelligence skills. Non-significant differences in scores of children (9-12) year, and adolescents (13-17) year on emotional intelligence in the present study coincides with the study of Fariselli, Ghini, & Freedman, 2006) that the relationship between emotional intelligence and age is minor. Bar-On (1997) also found relatively small magnitude of differences in different dimensions of EI and different age groups.

Emotional intelligence appeared to be positively correlated with social competence (see Table 8). The results support the convergent validity of the newly constructed scale as one half of EQ is related

to the 'social competencies', we show within our life or work role. This requires to expand our awareness to include the emotions of those people around us. It also includes the need to develop our ability to read the emotional environment and power relationships we encounter in our roles. The results are consistent with a study by Gil-Olarte, Palomera, et al., (2006) that investigated the discriminant, criterion and incremental validity of an ability measure of emotional intelligence. The results indicated that EI of high school students were significantly moderately and positively correlated with social competence in their scores on Mayer-Salovey-Caruso Emotional Intelligence Test - Spanish Version (MSCEIT V. 2.0, 2002), and a social competence inventory (AECS; Moraleda, González, & García-Gallo, 1998). The results are in line with the study by (Yip & Martin, 2006) that revealed that emotional management facet of EI was positively correlated with several social competence domains in the undergraduate students. The results are also consistent with the results of a study by Moreno-Manso et al. (2016) that analyzed the relationship between the dimensions of their EI and social competence of adolescents of age 12 – 17 years in residential care. The results reported positive correlations between emotional attention, clarity of feelings and emotional repair dimensions of EI and lack of confidence and firmness in their interactions, and the tendency towards social mistrust and suspicion dimensions of social competence. The results are also consistent with (Cerado & Abdullah, 2015) that reported significant positive association between emotional intelligence and social competence of the school administrators.

Implications

No scale of EI for children and adolescents had ever been developed or culturally validated in Pakistan. The study has filled the gap and addressed the assessment issue of EI for children and adolescents. The scale will be beneficial for parents, educationists, social and developmental psychologists, to assess the role of EI in the social, behavioral, educational and health issues of adolescents and children along with other correlates during the sensitive period of development.

Limitations

Although a valid and reliable scale has been developed in the present study, still there are certain limitations. The samples of the study comprised children and adolescents from different cities of Punjab, Pakistan that does not represent other provinces of Pakistan, so in future data should be collected from all regions of Pakistan for unbiased representation and generalizability of the results. Though factor structure was established via EFA and CFA, and convergent validity has been well established, future studies are recommended to test discriminant, concurrent and incremental validity of the scale. The present study included sample that represented middle and upper socio-economic classes, so in future studies, the scale should be validated on the sample from poor class also. The sample of study was adolescents and children between 9- 17 year, because children of 7-8 were unable to understand statements of the questionnaire in try-out phase, so they were not included at any stage of analyses. As 7 and 8 year are important stages of child's development, so future studies should work on performance measures for children below 9 years in Pakistan.

Conclusion

The study was a successful attempt to develop a promising, valid and reliable measure of EI for children and adolescents that established that boys and girls did not score differently on the measure and no significant difference in the level of EI appeared between the scores of children (9-12) year, and adolescents (13-17) year. We may also conclude that EI and social competence are moderately related traits, so low or high score on one may predict the other.

References

Ahmad, S., Bangash, H., & Khan, S. A. (2009). Emotional intelligence and gender differences. *Sarhad Journal of Agriculture, 25* (1), 127-130.

Al Said, T.B.T., Birdsey, N., & Stuart-Hamilto, I. (2013). Psychometric properties of Bar-On Emotional Quotient Inventory Youth Version among Omani children. *International Journal of Learning Management System, 1* (2), 13-24. http://dx.doi.org/10.12785/ ijlms/010202

Al-Shayeb, A. (2010). Psychometric properties of the Arabic version of the Wakeman Emotional Intelligence Questionnaire. *Jordan Journal of Educational Sciences, 6*(1), 53-71.

Barchard, K. A., & Russell, J. A. (2006). Bias in consensus scoring, with examples from ability emotional intelligence tests. *Psicothema, 18,* 49–54.

Bar-On, R. (1997). *The emotional intelligence inventory (EQ-I): Technical manual*. Toronto, Canada: Multi-Health Systems.

Bar-On, R., & Parker, J. D. A. (2003). *Bar-On Emotional Quotient Inventory Youth Version (EQ-i YV) Technical Manual*. North TonaWanda, NY: Multi Health System Inc**.**

Bar-On, R., & Handley, R. (2003). *The Bar-On EQ-360™*. Toronto, Canada: Multi-Health Systems.

Bar-On, R., & Parker, J. D.A. (2000). *Emotional Quotient Inventory: Youth Version™* (*EQ-i:YV™*). Toronto, Canada: Multi-Health Systems.

Boyatzis, R., Goleman, D., & Rhee, K. (2000). Clustering competence in emotional intelligence: Insights from the emotional competence inventory (ECI). In R. Bar-On & J. D.A. Parker (Eds.), *Handbook of emotional intelligence* (pp. 343-362). San Francisco: Jossey-Bass.

Boyatzis, R.E. & Sala, F. (2004). Assessing Emotional Intelligence Competencies. In G. Geher. (ed.), The Measurement of Emotional Intelligence (pp. 147-180). Hauppauge, NY, Novas Science Publishers.

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.

Burisch, M. (1984). Approaches to personality inventory construction: A comparison of merits. *American Psychologist, 39*(3), 214-227. http://dx.doi.org/10.1037/0003-066X.39.3.214

Cantor, N., & Kihlstrom, J. F. (1989). *Social intelligence and cognitive assessment of personality*. Article retrievedfromhttps://www.researchgate.net /publication /232523201_Social_ intelligence_and_cognitive_assessment_ of_personality/references

Cerado, E. C., & Abdullah, S. N. (2015). Emotional intelligence and social competence: Antecedents of school administrators' transformational leadership qualities. *Journal of US-China*

Public Administration, 12, (3), 180-184. doi: 10.17265/1548-6591/2015.03.002

Chandra, A., Gayatri, A., & Devi, D. (2017). Assessment of emotional intelligence in first year medical graduates-A Questionnaire based study. *International Journal of Physiology, 5*, 124-126. doi:10.5958/2320-608X.2017.00027.0

Child Trends. (2003). *Indicators of Positive Development Conference Summary*. Washington, DC: Child Trends. http://performwell.org/index.php/find-surveyassessments/outcomes/ social-development/social-competencesocial-skills/social-competence-scale-for-teenagers

Coskun, K., Oksuz, Y., & Yilmaz, H. B. (2017). Ten Years Emotional Intelligence Scale (TYEIS): Its development, validity and reliability. *International Journal of Assessment Tools in Education, 4* (2), 122-133.

Darwin, C. R. (1872). *The expression of the emotions in man and animals*. London: John Murray.

Derksen, J., Kramer, I., & Katzko, M. (2002). Does a self-report measure of emotional intelligence assess something different from general intelligence? *Personality and Individual Differences 32*(1), 37-48. doi: 10.1016/S0191-8869(01)00004-6

Dunn, P. (2002). *The impact of starting a new venture on the entrepreneur and their family: Expectations, reality, and willingness to start again*. Presented at the Association for Small Business and Entrepreneurship 2002 Annual Conference.

Fariselli, L., Ghini, M., & Freedman, J. (2006). *Emotional intelligence and age*. Retrieved from http://www.6seconds.org/sei/ wp-age.php

Field, A. (2005). Discovering statistics using SPSS (2nd ed.). London: Sage Publications Ltd.

Fischer A. H., Kret M. E., & Broekens, J. (2018). Gender differences in emotion perception and self-reported emotional intelligence: A test of the emotion sensitivity hypothesis. *PLoS One, 13*(1), e0190712. doi: 10.1371/journal.pone.0190712.eCollection 2018.

Gardner, H. (1983). Frames of mind: The theory of multiple intelligences. New York: Basic Books

Gil-Olarte, M. P., Palomera, M. R., & Brackett, M. A. (2006). Relating emotional intelligence to social competence and academic achievement in high school students. *Psicothema,18* (Suplemento), 118-123.

Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Books.

Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books.

Goleman, D. (2001). An EI-based theory of performance. In C. Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace* (pp. 27-44). San Francisco, CA: Jossey- Bass.

Jöreskog, K. and Long, J.S. (1993). Introduction. In K. A. Bollen and J. S. Long. (Eds.), *Testing Structural Equation Models.* Newbury Park, CA: Sage.

Hair, J., Black, B., Babin, B., Anderson, R. and Tatham, R. (2006) Multivariate Data Analysis. Prentice-Hall, Upper Saddle River.

Kaiser, H. F. (1960).The application of electronic computers to factor analysis. Educational and Psychological Measurement, 20, 141-151.

Keefer, K. V., Holden, R. R., & Parker, J. D. A. (2013). Longitudinal assessment of trait emotional intelligence. Measurement invariance and construct continuity from late childhood to adolescence. *Psychological Assessment, 25*(4), 1255-1272. http://dx.doi.org/10.1037/a0033903

Keiko, T., Ohara, N., Antonucci, T. C., & Akiyama, H. (2002). Commonalities and differences in close relationships among the Americans and Japanese: A comparison by the individualism /collectivism concept. *International Journal of Behavioral Development, 26*, 453-465.

MacCann, C., Matthews, G., Zeidner, M., & Roberts, R. D. (2004). The assessment of emotional intelligence: On frameworks, fissures and the future. In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy* (pp. 21-52). Hauppauge, New York: Nova Science Publishers, Inc.

MacCann, C., Roberts, R. D., Matthews, G., & Zeidner, M. (2004). Consensus scoring and empirical option weighting of performance-based emotional intelligence (EI) tests. *Personality and Individual Differences, 36*, 645-662.

Mandell, B., & Pherwani, S. (2003).Relationship between emotional intelligence and transformational leadership style: A gender comparison. *Journal of Business and Psychology, 17* (3), 387–404.

Mayer, J. D., & Geher, G. (1996). Emotional intelligence and the identification of emotion. *Intelligence, 22*, 89- 113.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & J. D. Mayer (Eds.), *Emotional development and emotional intelligence* (pp. 3-31). New York: Basic Books

Mayer, J. D., Caruso, D. R., & Salovey, P. (1998). *Multifactor Emotional Intelligence Test (MEIS)*. Available from John D. Mayer, Department of Psychology, University of New Hampshire, Conant Hall, Durham, NH, 3824.

Mayer, J., Salovey, P., & Caruso, D. (in press). *Mayer-Salovey-Caruso Emotional Intelligence Test: Youth Version-Research Edition (MSCEIT-YV (R)*. Toronto, Ontario: Multi-Health Systems, Inc.

Meshkat M, Nejati, R. (2017). *Does emotional intelligence depend on gender? A study on undergraduate English majors of three Iranian Universities*. SAGEOPEN. Retrieved fromhttp://journals.sagepub.com/doi/pdf/10.1177/2158244017725796

Moreno-Manso, J. M., García-Baamonde, E., Guerrero-Barona, E., Godoy-Merino, J., Blázquez-Alonso, M., & González-Rico, P. (2016). Perceived emotional intelligence and social competence in neglected adolescents, *Journal of Youth Studies, 19* :(6), 821-835. doi: 10.1080/13676261.2015.1112883

Niedenthal, P. M., Krauth-Gruber, S., & Ric, F. (2006). Psychology of emotion: interpersonal, experimental, and cognitive approaches. New York: Psychology Press.

Nima Ghorbani , Mark N. Bing , P. J. Watson , H. Kristl Davison & Dan A. Mack (2002). Self-reported emotional intelligence: Construct similarity and functional dissimilarity of higher-order processing in Iran and the United States. *International Journal of Psychology,37* (5), 297-308. doi.org/10.1080/00207590244000098

Peters, Christine., Kranzler, John, H., Rossen, E.(2009). Validity of the *Mayer-Salovey-Caruso Emotional Intelligence* Test: Youth Version-Research Edition. ERIC Educational Resources Information Center.

Saarni, C. (1990). Emotional competence: How emotions and relationships become integrated. In R. A. Thompson (Ed.), *Current theory and research in motivation, Vol. 36. Nebraska Symposium on Motivation, 1988: Socioemotional development* (pp. 115-182). Lincoln, NE, US: University of Nebraska Press.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*,185-211.

Salovey, P., Mayer, J. D., & Caruso, D. (2002). The positive psychology of emotional intelligence. In C. R. Snyder, & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 159-171). Oxford: Oxford University Press.

Shure, M. B., & Spivack, G. (1974). *The PIPS test manual*. Philadelphia PA: community mental health/ mental retardation center, Department of mental health sciences, Hahnemann medical college and hospital

Singh K., & Kapur, S. (2015). Gender difference in relation to emotional intelligence and conflict among elite boxing players. *Saudi Journal of Sports Medicine*, 15, 276-80.

Sullivan, A. K. (1999). *The Emotional Intelligence Scale for Children*. (PhD dissertation). U.S.A: The Faculty of the Curry School of Education, University of Virginia.

Received: 21st July 2018
Revisions Received: 8th September 2018