

Development of Indigence and Reliable Emotional Intelligence Scale for Children (7 to 11 Years)

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Abstract

It was descriptive, mixed-method research aimed to determine “development of an indigenous and reliable Emotional Intelligence Scale for Children aged 7- 11 years”. Bar- on model of “social and emotional intelligence” (1997, 2000) was followed for the study. The study population consisted of primary level students ranging from grade I to grade V from different cities of Pakistan. A non-probability sampling technique called purposive sampling was used, and a sample of 694 students (boys= 355, girls= 339) was selected for the study. Principal Factor Analysis with Varimax rotation postulated 64 items with ten distinct factors: flexibility, emotional self-awareness, happiness, self-regard, problem-solving, social relations, impulse control, stress control, empathy, and assertiveness. The emotional intelligence scale for children consisting of 64 items was finalized. The Cronbach's alpha emerged to be .88 for the total 64 items and ranged from .69 to .94 for the subscales. Emotional Intelligence Scale for Children (EISC) is a reliable instrument measuring EI based on 5- point Likert scale (1= never, 2= rarely, 3= sometime, 4= often, 5= always). Further research can be conducted to confirm these ten factors extracted through this study by including various other psychological traits of children's emotional intelligence. The present research will help understand different traits that sample the domain of emotional intelligence of children. It is a valuable tool for policymakers, parents, and teachers in assessing primary school children's emotional intelligence (7- 11 years).

Keywords: Emotional Intelligence, Reliable, Primary schools, Indigenous, scale development.

INTRODUCTION

Emotional intelligence that has its basis in childhood is evolving as an essential factor of success in an individual's life as a whole, not only in an individual's personal life but his academic achievements as well. The sustainable relationships remain higher due to it (Six seconds, EI Network 2007,4). The earlier feelings of empathy, motivation, and self-awareness depend on the child's first years of life (Uzsalyiné Pécsi, 2016). According to the Yale university center for EI, emotions determine one's ability to make decisions, learning, creativity, and health (Yale Centre for Emotional Intelligence, 2013). Educational institutes conclude that EQ is the unavoidable feature for progression in academic and social areas.

An overview of research literature supports the notion that emotional intelligence is related to personal and social life performance, which affects an individual's psychological health and being. These results have been reflected enormously among groups and populations such as school principals (Davids, 2016), sports coaches (Lee & Chellandurai, 2016), and business accountants (Galley & Heilmann, 2016). The role of EI has been found in other essential and vast areas such as leadership (Caruso, Fleming, & Spector, 2014; George, 2000),

academic achievement (Bar-On, 2004; Schutte et al., 1998; Slaski & Cartwright, 2002; Zeidner, Matthews, & Roberts, 2012), and the performance of individuals at the workplace (DiFabio & Saklofske, 2014; Schutte & Loi, 2014; Wan, Downey, & Stough, 2014).

EI has a connection with satisfaction in life (e.g., Palmer, Donaldson & Stough 2002), coping and stress related to the exam (Austin Saklofske & Mastros, 2010), stress related to the place of duty (Slask & Cartwright 2002), motivation (Christie, Jordan, Troth, Lawrence, 2007), and variety of clinical disorders (e.g., Hansen, Lloyd & Stough, 2009). It was, therefore, directly felt to devise an instrument with relevance to the country's cultural background to practice EI for enhancement of professional development.

Research teams carried out parallel work based on their theories afresh instead of the already available research theories. Until the 1990s, there was little concurrence on EI definitions, resulting in different theories and assessment measures. Most of the research in emotional intelligence sees the variety of EI models as a good sign of a comparatively new and generative area of study. (Austin, Parker, Petrides, & Saklofske, 2008; Petrides et al., 2016). This practice gave rise to two theoretical models of emotional intelligence: the mixed model and EI's ability model. Emotional intelligence's ability model explicates EI as a cognitive ability of the same sort to verbal ability or quantitative ability, with its material area as emotions instead of words or numbers. (Maccan, Joseph, Newman & Roberts, 2014). On the contrary, EI's Mixed model objectification embraces broader mixtures of constructs that paves to emotionally intelligent behavior, including emotionally intelligent abilities, character characteristics, and motivational factors (Petrides, Pita & Kokkinaki, 2007). Mixed model conceptualizations are as follows.

- 1: The Goleman's Emotional Competence Model (Goleman, 1988).
- 2: The Bar-on Emotional and Social Competence Model (Bar-on, 2006)
- 3: The Petrides and Furnham's trait emotional intelligence Model (Petrides, Perez-Gonzalez, Furnham, 2007; Petrides, Pita, et al., 2007).

Trait emotional intelligence assessment tools are self-report questionnaires designed to grasp an individual's behavior traits, values, and self-concept (e.g., Bar-On, 1997; Petrides, 2009).

The youth version of the Emotional Quotient Inventory, EQ-i: YV (Bar-On & Parker, 2000), is designed on the Bar-On model of emotional intelligence. It is adapted from the adult Emotional Quotient Inventory (EQ-i; Bar-On, 1997) suitable for children and adolescents from 7–18 years. Bar-On (2006) has clearly stated that model of emotional intelligence does not assess personality traits; instead, it measures an individual's competencies, set of skills, and facilitators". Thus Bar-On's Instrument (EQ- i) may be explained as a measure of trait emotional intelligence regarding EI theory trait (e.g., Keeter, Holden, Parker 2013); it gives a validated conceptual frame for all questionnaires simultaneously. As the adult EQ- I narrate that the EQ- I measure four larger EI areas as shown in Bar-On's (2006) model, interpersonal, intrapersonal, stress management, adaptability, three ancillary scales that are not taken in the global EI Score that are the inconsistency scale, positive impression, and general mood.

The EQ-i - YV consists of 60 items measured on a 4-point scale, with responses ranging from 01 (Very rarely true of me) to 04 (very frequently true for me). This procedure takes 25 to 30 minutes with a Grade 4 reading level (Wood et al., 2009). A short form with 30 items is also available (EQ-i: YV-S), omitting two scales that are the mood scale and the inconsistency

scale, which take about 10- 15 minutes to complete. To assess trait emotional intelligence in children, two forms known as the parent and the teacher forms (EQ-i: YV-O) are being used, and they have shown promising results (Wood et al., 2009). These two forms are 38 item scales rated on a 4- 4-point scale by observers.

In Pakistan, efforts have been taken to develop indigenous measures of trait emotional intelligence. A self-report assessment tool of emotional intelligence for heart patients and healthy individuals has been developed by Khan (2008). It is an adult scale consisting of 60 items based on Goleman's mixed emotional intelligence model to study emotional intelligence in a clinical health setting specific to Pakistan's culture. An indigenous scale of emotional intelligence (Sel), following the mixed model Goleman gave emotional intelligence in 1998, was developed by Dawood (2007). It included five domains self-awareness, self-regulation, motivation, empathy, and social skills with their sub-domains. An indigenous self-report measure of the trait emotional intelligence based on the Bar-on model of social, emotional intelligence (1997, 2000) was developed for an adult population ranging from age 16 to 60 (Batool & Khalid, 2011). The relationship of emotional intelligence and academic achievement has been studied by (Malik & Shujja, 2013) in children of grade 4 to grade 8 with the age range of 9 to 13 years. The results showed a good relationship between academic achievement and emotional intelligence.

Statement of the problem

In Pakistan, currently, there is scarce research concerning the role of emotional intelligence and academic achievement in primary school students. However, studies have been conducted to find the connection between emotional intelligence and academic achievement in adults. Some of the researches in the same line include investigations by Fatima, Shah & Kiani (2011), Gillani, Waheed, Saleem, and Shauhat (2015), and Nasir (2012).

To assess children's emotional intelligence, currently, no scale of emotional intelligence is developed in the Pakistani cultural context that can be a reason for the lack of research in the child and adolescent population.

Objective of the study

The study focused on the development of an indigenous and reliable emotional intelligence scale for children of age 7- 11 years.

Significance of the study

The current study has contributed to redefining the construct of emotional intelligence, as it exists in children. It is a help to the educationists and policymakers to assess Pakistani children's emotional intelligence. Further research in the area of emotional intelligence will be flourished.

Method

The study took place in three steps.

Step I: Item Pool

Items were generated for the item pool by the following means for the scale of emotional intelligence.

Firstly, a Literature review of various dimensions of emotional intelligence established on Bar-On (1997, 2000) emotional-social intelligence model was carried out to generate a list of statements.

Secondly, A Performa consisting of operational definitions of the fifteen facets of emotional intelligence denoted by Bar-On (1997, 2000) was prepared. Teachers, parents, and psychologists were urged for the generation of statements aligned with the definition in the prescribed Performa.

In the committee approach, the judges have presented the item pool of 164 items relating to emotional intelligence for analysis of statements' structure, language's placidity, and face validity to be conveniently made out. The items narrowed down to 137 during the evaluation process done independently by the judges presented to them in the second meeting. Consequently, upon consensus, 107 items were approved by the committee. The sequential order of items was changed for the preparation of the final list. A Lickert type 5- point response pattern (1= *never*, 2 = *Seldom*, 3 = *some time* 4= *often* 5 = *always*) was chosen for clear rating of the items. High scores on the scale signify high EI and the low score signify low EI. The items had a reading level of grade three. Before factor analysis, 14 items (Flx4r, Flx7r, Flx11r, ESA9r, SR7r, ImpC2r, STol2r, SA3r, RT2r, RT5r, Opt5r, Ind2r, Ind3r, SRsp5r) were reverse coded.

Step II: Pilot Study

Sample:

A scale consisting of the 107 items recommended by the judges was administered to a sample of 35 students (18 male, 17 female) in the age range of 7- 11 years. A sampling of the students was based on the purposive sampling technique. The Sample was collected from Peshawar, Islamabad.

Instrument

The final list consisting of 107 items of emotional intelligence (Urdu) was administered to the students in school setup after their parent/ guardian, and school authorities' consent was sought.

Data Analysis

Reliability analysis of the item pool was done. The scale's reliability was .928 for the total items that were high enough to consider items appropriate for factor analysis.

Step III: Exploratory Factor Analysis:

To observe the scale's feasibility, i.e., to eliminate items where necessary, exploratory factor analysis was done. The scale was analyzed regarding its factorial validity to confirm the scale's factor structure so that the items for inclusion in the final ranking could be confirmed.

Sample

To obtain a representative sample across the country, 694 individuals from the primary school population that was in the age range of 07 to 11 years (mean = 9.01 & SD = 1.42) were selected using purposive sampling technique from major cities of Pakistan (e.g., Karachi,

Lahore, Peshawar, Quetta, Islamabad, Rawalpindi, and other urban and rural areas. These students were from different socio-economic strata, i.e., Upper class, Middle Class, and Lower class. Approximately half of the students were selected from Private schools while the other half from the Government sector schools.

Procedure

The Sample consisting of primary school students was approached at their schools. Questionnaires were distributed to a sample of 750 children through the schools' teachers from where Sample was selected. The school authorities' and parents' willingness was sought through informed consent, mentioning that the children's information will only be used for research purposes. Explicit instruction regarding marking the items was given. The items were read to the participants from age 7-9, while older children were asked to complete the questionnaire independently. The teachers returned the questionnaire the same day in schools.

Table 2.2
Frequency and Percentage of Demographic Data (N = 694).

Variables	Frequency	Percentage
Gender		
Male	355	51
Female	339	49
Age Group		
7-9 Years	491	71
10-11 Years	203	29
SES		
Low	317	46
Middle	172	25
High	205	29
School Type		
Government	356	51
Private	338	49
Class		
1-3 Class	491	71
4-5 Class	203	29

Factor Analysis: After the pilot study, 107 items were analyzed on a sample of 694 participants. Varimax rotation method was used to obtain the principal component solution to ascertain the construct's factor structure and determine items to include in the final scale of emotional (Field, 2005). As a result, ten straightforward, self-explanatory, and easily interpretable factors were selected on their theoretical relevance to the construct and eigen values (>1.0). The ten factors that were finally retained showed a significant amount of variance (51%). The Component transformation matrix justified the orthogonal rotation method because some factors do not have strong inter-correlations (Coakes & Steed, 2003).

Table 1: Eigen values and Percentages of Variance Explained by 10 factors in the Factor Solution Obtained

Factor	Eigen Values	variance %	Cumulative percentage
1	17.54	16.388	16.388
2	12.37	11.558	27.946
3	6.26	5.854	33.8
4	4.12	3.855	37.655
5	3.31	3.092	40.747
6	2.69	2.516	43.264
7	2.34	2.19	45.454
8	2.17	2.025	47.479
9	1.87	1.901	49.381
10	1.71	1.751	51.132

All the items were constructed mainly to ascertain the major construct of emotional intelligence; thus, there was an optimum level of abundance of variables, although some of the variables have multi loadings. The factor structure of the scale of emotional intelligence was determined by following the criteria for inclusion and relevance of the variables based on the theoretical framework of their relative factors. The ten interpretable and explicated factors yielded by varimax orthogonal rotation exhibited relevance with the Bar-On social-emotional intelligence model's (1997, 2000) dimensions. The ten factors that have been surfaced with different items present relatively perceptible concepts.

Factor-1 (Flexibility):

The eigen value for factor-1 was 16.38 accounted for 16.38% of variance comprised of thirteen variables of flexibility. Flexibility emerged as the most important factor of the study.

Factor-2 (Emotional Self Awareness):

Nine items on factor-2 had independent and $>.3$ loading with eigen value 12.37 and showed 11.56 % of the variance.

Factor-3 (Happiness):

On factor-3, four Items had high independent loading with eigen value of 6.26 and accounted for 5.85 % of the total variance.

Factor-4 (Self Regard):

The eigen value for factor-4 was 4.12 accounted for 3.86% of variance comprised of eight variables of self-regard.

Factor-5(Problem Solving):

Five Items loaded on factor-5, all the loadings were independent, with an eigen value of

3.31 showing 3.09% of the variance.

Factor-6 (Social Relations):

Six items had higher loading on factor-6 with an eigen value of 2 and accounted for 2.52% of the variance.

Factor-7 (Impulse Control):

Seven items had higher loading on factor-7 with an eigen value of 2.34 and 2.19% of variance accounted by it.

Factor-8 (Stress Tolerance):

Four items had an eigen value of 2.17, and factor-8 accounts for 2.02% of the variance.

Factor-9 (Empathy)

Four items had higher loading on factor-9 with an eigen value of 1.87 and a variance of 1.90.

Factor-10 (Assertiveness)

Four Items loaded on factor-10 and reflect assertiveness. It showed an eigen value of 1.71 and 1.75% of variance accounted by this factor.

Table 2.
Final Factors, Items, and Percentage of Variance Account for by Factors (N =694)

Factor no	Factor label	Items	% of variance
1	Flexibility	13	16.38%
2	Emotional Awareness	Self09	11.56%
3	Happiness	04	5.85%
4	Self Regard	08	3.85%
5	Problem Solving	05	3.09%
6	Social Relations	06	2.52%
7	Impulse Control	07	2.19%
8	Stress Tolerance	04	2.02%
9	Empathy	04	1.90%
10	Assertiveness	04	1.75%

Conclusion

After factor analysis of 107 items of the Emotional Intelligence Scale (EIS) based on data of 694 participants using varimax rotation method, factorial validity of the scale was

established on the empirical, rationale, and theoretical grounds. As a result, ten factors comprising of 64 items were finalized.

Study II: Reliability analysis:

To determine the total scale and subscales' internal consistency, reliability analysis using Cronbach's alpha and split-half reliability was assessed on a sample of 694 children.

Table 3.
Reliability Coefficients of Total and Subscale of Emotional Intelligence Scale for Children (N=694)

<i>Note.</i>	Name of Scale	Alpha coefficients	Split-half reliability	No of items
	Flexibility	.94	.92	13
	Emotional Awareness	Self.88	.86	09
	Happiness	.82	.81	04
	Self Regard	.82	.72	08
	Problem Solving	.78	.72	05
	Social Relations	.81	.79	06
	Impulse Control	.77	.78	07
	Stress Tolerance	.88	.85	04
	Empathy	.87	.92	04
	Assertiveness	.69	.70	04
	Total EI	.88	.83	64

Cronbach's alpha coefficient for total emotional intelligence scale $\alpha = .88$ and split-half reliability is .83 given in Table 3. Shows range of excellent for any test (Fieldman, 2005). While Cronbach's alpha coefficients of sub-scales of EIS ranged from $\alpha = .69$ (assertiveness) to $\alpha = .94$ (flexibility) and split half reliability ranged from .70 to .92.

Table. 2.
Correlations of subscales with total Emotional Intelligence Scale for Children (N=694)

No. of sub scale	Correlation
Flexibility	.624**
Emotional Self Awareness	.417**
Happiness	.293*
Self Regard	.517**
Problem Solving	.430**
Social Relationship	.430**
Impulse Control	.484**
Stress Tolerance	.558**

Empathy	.595**
Assertiveness	.308**

Note. ** $p < .01$. The table indicates the highest correlation between flexibility and total EIS, while the lowest correlation existed between happiness and total EIS.

Discussion

The established Bar- on social and emotional intelligence (1997, 2000) was followed in developing an indigenous and reliable self-report measure. It is worth mentioning that the scale evolved here is specific to the Pakistani cultural context as no such scale of emotional intelligence for children existed hitherto, despite various trait and ability-based scales developed in different countries. The work aimed to develop an indigenous and reliable scale of emotional intelligence for children Pakistani cultural context.

The principal component analysis application to 107 items proved instrumental in figuring out the factor structure of the construct of emotional intelligence as it exists in Pakistan's cultural context. Those items which showed a theoretical alignment with one another had eigen values greater than 1 and showed factor loadings of .4 or above were retained in a factor. Consequently, ten factors consisting of 64 items that jointly explained 51 % of the total variance were retained. Ten extracted factors by varimax orthogonal rotation exhibited explicitly a comparative similarity with the facets of Bar-On's social, emotional intelligence model (1997, 2000): later on, engendered the Bar-On emotional quotient inventory (EQ-i, 1997).

Reliability analysis showed that the scale had high internal consistency yielding Cronbach's alpha $\alpha = .88$ and split-half reliability $= .83$ for the total scale. While Cronbach's alpha was found reasonably high for all the 10 factors, ranging from $\alpha = .69$ (assertiveness) to $\alpha = .94$ (flexibility) and split-half reliability ranged from $.70$ (assertiveness) to $.92$ (empathy and flexibility). All the features of EI's scale came up to the expectations in terms of all its intercorrelations. High correlations ($.624$) existed for flexibility and total EI, while low correlations ($.293$) existed between happiness and total EI.

Factor analysis has provided evidence at hand regarding the multi-faceted aspect of the trait emotional intelligence and highlights the correlation among subscales. In the Sample of 694, the statistical analysis approved ten well-defined and theoretically rational subscales. The subscales have been found to correlate at $p < .01$ with the total EI (ranging from $r = .624$ to $r = .293$), showing its correlation with the total EI besides showing the distinctive characteristics of each scale. Overall, the theoretical model of social, emotional intelligence of Bar-On (1997, 2000) has been supported by the study.

Implications

This study yields a good understanding of children's emotional intelligence hailing from the Pakistani cultural context; moreover, a convenient reflection to other cultures of the same age group may also be found with a ready reference in this study. For successful academic and working pursuits, EI is an indispensably needed factor to achieve success in academics, the workplace, and personal life development. The emotional intelligence scale for children (age 7- 11 years) in Pakistan's cultural context will be helpful to see the average level of emotional intelligence of Pakistani children. It will help identify how an individual child's success is

related to different emotional intelligence factors and examine the role of emotional intelligence in determining a student's academic, professional, and personal excellence. Hence, it will prove as a helpful assessment tool to school psychologists, educational professionals, and parents.

Recommendations and Limitations

The study was aimed to develop an indigenous scale of emotional intelligence for children. The age range targeted was 7- 11 years. The age can be extended to 16 years to sample a larger population of girls and boys, including the adolescent population. Hence, an indigenous and reliable instrument will be available to school psychologists, educational professionals, and parents to measure the emotional intelligence of children and adolescents. Besides examining the relationship of emotional intelligence and academic intelligence, other important personality variables regarding the child population can be considered. For generalizing the results on the Pakistani people, a relatively larger sample shall be employed in the future.

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