

Ten Years Emotional Intelligence Scale (TYEIS): Its Development, Validity and Reliability

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Abstract

This study aims to develop a reliable and valid measurement instrument of emotional intelligence based on mixed model. Mixed model of emotional intelligence and literature on it were investigated, and then an item pool with 53 items was developed. 14 expert of emotional intelligence examined 53 items. In order to make the expert's judgments standardized, Lawshe Content Validity Ratio was used. As a result of the ratio analysis, 18 items were discarded from initial draft of the scale. Data were collected from 492 children for the exploratory factor analysis (EFA). EFA results indicated the scale includes unidimensionality. Confirmatory Factor Analysis (CFA) yielded good model fit indices. Results indicated that the scale is reliable and valid instrument in measuring emotional intelligence.

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1. INTRODUCTION

Happier, more productive and peaceful way of life has become main agenda for all individuals. It is emphasized in the literature that IQ is not strong enough to predict success in life. Moreover, it is known that those who have higher level of social and emotional skills are happier, more successful in life.

Emotional intelligence (EI) has offered new paradigm for educationalists that try to explain success and adjustment to environment. Concept of the EI first was developed by Mayer and Salovey (1990). However Goleman (1995) made it popularized and publicized. Large body of the research has proved that EI has positive impact on educational attainment, social adjustment, happiness, and academic self-efficacy (Hen and Goroshit, 2012; Hogan, Parker, Wiener, Watters, Wood, & Oke, 2010; MacCann, Fogarty, Zeidner, Roberts, 2011; Mavrovelli and Ruiz, 2010; Newsome Day, & Catano, 2000; Qualter Gardner, Pope, Hutchinson, Whiteley, 2012; Tariq, Qualter, Roberts, Appleby, Barnes, 2013; Saklofske, Auistin, Mastoras, Beaton, & Osborne, 2012; Sanchez-Ruiz, Mavrovelli, Poullis, 2013; Van Der Zee, Thijs, & Schakal, 2002). However there are disagreements and conflicts about definitions, qualities, and

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conceptualization of the EI. Those disagreements have stemmed from measurement paradigm of the EI (Zeidner, Matthews, & Roberts, 2009).

There are mainly three streams in EI: ability model, mixed models, and trait model (Zeidner et al., 2009). Salovey and Mayer (1990) developers of the ability model, described as that EI is the capacity to recognize and manage emotions in ourselves and in others, process emotional information. In the ability model, EI is assumed as capability of carrying out accurate emotional reasoning (Mayer, Roberts, & Barsade, 2008). The ability model constructs emotion and reasoning under same phenomena. The model consists of four abilities (those accurately perceiving emotion, using emotion to facilitate thought, understanding emotion, and managing emotion) (Salovey and Mayer, 1990; Mayer, Salovey, Caruso, & Sitarenios, 2003; Mayer, Salovey, & Caruso, 2004). In the ability model, there is a close interaction among the skills. For instance a child cannot be efficacious without perceiving emotion in herself (Mayer and Salovey, 1997).

Mixed models, another approach to the EI, view the EI as an integration of skills and qualities such as personality and motivational dispositions that are necessary to use the EI in real life. Proponents of the EI (Goleman, 1998; Bar-On, 2006; Petrides, 2001; Petrides, Pita, & Kokkinaki, 2007) deal with a wide range of skills and competencies rather than to define it as a single construct. In other words, EI is explained through broad definitions such as noncognitive capability, competency, skill or emotionally intelligent behavior, and dispositions of personality (Bar-On, 2006; Boyatzis, Goleman, & Rhee, 2000; Petrides, 2001; Petrides and Furnham, 2003). Bar-On (2000) describes the EI as cluster of noncognitive skills that are necessary to cope with effectively environmental demands. Bar-On (2006) suggests that the EI is one of the main determinants of effective human behavior. Bar-On (1997) developed EI model consisting of intrapersonal capacity, interpersonal skills, adaptability, stress management, motivation, and general mood. The Bar-On model claims that the EI is a joint of interrelated competencies, skills, and facilitators that influence how effectively an individual understands and expresses himself, recognize emotions in others, has good relationships with others, and fulfill social and environmental pressures (Bar-On, 2006). Goleman (1998) model is another model in the mixed models. It has five sub-dimensions as self-awareness, self-management, empathy, motivation and social skills.

Trait model developed by Petrides (2001) is another approach to the EI. Trait EI is a constellation of self-perception of the lower level of personality constructs. Trait EI includes 15 facets as adaptability, low impulsiveness, self-esteem, self-motivation, stress management, trait happiness, trait optimism, assertiveness, relationship skills, social competence, trait empathy, emotional expression, emotional management, emotional perception, and emotional regulation (Petrides, 2001; Petrides, 2010).

The difference between the EI models stems from way of measurement and assessment of the EI (Mayer, Salovey, Caruso, 2008; Perez, Petrides, & Furnham, 2005; Wigelsworth Humphrey, Kalambouka, & Lendrum, 2010, Zeidner et.al., 2009). The ability model deals with measurement and assessment of the EI in the same way as traditional intelligence standard test measures and assesses. The ability model measures and assesses through performance-based test because of the fact that the ability model deals with the EI as a single construct and standard intelligence type. According to the ability model, the EI is the capacity in reasoning with emotions. Therefore, the EI can be measured and quantified through the way in which standard traditional intelligence is measured. Participants' response on the EI related tasks are measured and assessed in accordance with such objectively right answer that measurement and assessment of the EI capabilities through the ability model does not include any bias or exaggerated evaluation of emotional capabilities. However, measurement and assessment in the

ability model are tough, not easy to administer due to the fact that expert panelists are needed to assess which respond is true, make decision about what respond is right according to objective rules (Wigelsworth et al., 2010; Wilhelm, 2005).

There are several instruments aiming to measure the EI related skills through the ability model and performance based tasks. Salovey and Mayer (1990) developed four branch of the EI, and devised the Multi Factor Emotional Intelligence Scale (MEIS). However, it was not found satisfactory in terms of validity and reliability. Mayer et al. (2002) developed the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT) to attenuate lengthy MEIS and ameliorate psychometric properties of the MEIS. Construct validation of the MSCEIT via confirmatory factor analysis by Rossen, Kranzler, & Algina (2008) revealed that the MSCEIT does not cover all constructs developed by Mayer et al. (2002), although Mayer, et al. (2003) founded that the MSCEIT has good model fit indices.

Furthermore, Fan, Jackson, Tang, & Zhang (2010) suggested that three factor solution of the MSCEIT has the best fitting model. Mayer et al. (in press) designed the MSCEIT Youth Version for children and youth between the ages 10 and 18 years. Peters, Kranzler, & Rossen (2009) investigated the MSCEIT-YV's construct validity and criterion-related validity and concluded that it is a valid instrument in measuring emotional intelligence based on the ability model. Similarly, Rivers, Brackett, Reyes, Mayer, Caruso, & Salovey (2012) found that the MCEIT-YV produces valid results in measuring emotional intelligence among children aged from 10 to 13.

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. Freudenthaler and Neubauer Emotional Intelligence Performance Test is another instrument use to assess emotional intelligence through performance-based approach and the ability model in EI (Freudenthaler and Neubauer, 2003). Emotional Accuracy Research Scale was developed by Mayer and Geher (1996) in accordance with the ability model. Both of the scales do not have any child or adolescent form.

The mixed models make emotions quantifiable through self-report. Self-assessment of emotions assumes that participants are competent enough to evaluate how much they have quality in emotions or their behaviors about the EI skills. In contrast to the ability model and performance based assessment, self-report of emotional responds may not have any objective criteria. Therefore, it is easy to administer and evaluate. However, this kind of assessment of emotions is risky. Participants may have such bias towards their EI skills that they can overrate their emotional intelligence skills. In order to reduce this risk, responds of participants through self-report can be checked with different source of information. For instance, responds of children can be compared and checked with observation checklist of teachers and evaluation of parents (Perez et al., 2005; Wigelsworth et al., 2010; Wilhelm, 2005; Zeidner et al., 2009).

There are numerous scales measuring the EI via self-report. Emotional Quotient Inventory developed by (Bar-On, 1997) is a self-report inventory with 133 items. Bar-On and Parker (2000) devised its youth version that measures the EI of children adolescents who are aged between 7 and 18 years. Another seminal measurement instrument of the EI is Trait Emotional Intelligence Questionnaire (TEIQue) developed by Petrides (2001). Petrides et al.(2006) adapted it to child and adolescent characteristics by shortening its length and named as Trait Emotional Intelligence Questionnaire- Adolescent Short Form (TEIQue-ASF). The TEIQue-ASF consists of 30 items, two for each of the 15 facets of Trait Emotional Intelligence and measures global trait EI. Its internal consistency reliability coefficient was found as 0.84. In addition to that, Cooper and Petrides (2010) tested its psychometric construction by using item-response theory and found that TEIQue-ASF has good psychometric properties. However,

the fact that the TEIQue and TEIQue-ASF consist of too broad definitions and sub-dimensions, has drawn considerable criticism (Wigelsworth et al., 2010).

1.2. Purpose of the research

There are self-report emotional intelligence scales but they do not have any child form (Dulewicz and Higgs, 2001; Gignac, 2010; Palmer and Stough, 2002; Schutte Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998; Tapia, 2001; Tett, Fox, Wang, 2005; Van Der Zee et al., 2002).

In this present study, an emotional intelligence scale, which measures emotional intelligence through self-report and are originated from Goleman (1998) conceptualization. There are two essential reasons why the TYEIS was developed for the children who are 10 years old. The first reason is about requirements of measurement of emotional intelligence through self-report. Measuring emotional intelligence via self-report assumes that participants in the sample have an insight about their social and emotional skill in depth and are objective, consistent, and genuine in assessing those skills. Age of 10 is a period in which metacognitive awareness, abstract reasoning, and objective thinking without being impressed with events, and objects begin to emerge among children. Therefore, they can be efficacious in assessing emotional skills through self-report in themselves. When developmental characteristics of primary school children are taken into consideration, 10 years old primary school children are more competent and efficacious to assess and evaluate emotional intelligence skills more accurately than younger children.

The second reason is about gender characteristics. 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 et al., 2013). Therefore, during primary school process, age of 10 is a period in which both female and male children are equal in terms of emotional intelligence skills.

When the literature is closely investigated, it can be seen that emotional intelligence scales for children and adolescents were designed in accordance with the Ability Model, the Bar-on Model, the Trait Emotional Intelligence Model but there is no emotional intelligence scale which originated from Goleman's conceptualization of the EI. Therefore, existing scale were grounded on such different models were there is no use in modifying them. Therefore, the present study aims to develop valid and reliable instrument of the EI based on Goleman's conceptualization of the EI.

2. METHODOLOGY

The aim of the present study is to develop a self-report emotional intelligence for primary school children so as to measure and assess level of social emotional learning, and reveals its psychometric properties. Item development, content validity, structural validity, reliability, and validity analysis were orderly carried out in the development process. The present study consists of two factor analysis as Exploratory Factor Analysis (EFA) discovering factor structures, internal consistency coefficients and Confirmatory Factor Analysis (CFA) which investigates how well data fit into previously revealed factor structures (DeVellis, 2012).

2.1. Participants

791 primary school children studying four grade and aged ten years old participated the study from different regions of Turkey in order to ensure representation of the sampling. Sample of exploratory factor analysis consists of 492 children, as sample of the confirmatory factor analysis includes 399 children.

2.2. Process

Studies of Goleman (1995, 1998) were scrutinized to build theoretical framework for the items. Moreover, several studies about the EI and its models were investigated in depth (Bar-On, 2006; Boyatzis et al., 2000; Humphrey et al., 2007; Killick, 2006; Mayer and Salovey, 1995; Mayer et al., 2004; Mayer et al., 2008; Petrides and Furnham, 2000; Perez et al., 2005; Warwick and Nettlebeck, 2004; Wigelsworth et al., 2010; Zeidner et al., 2009). On the other hand, 23 fourth grader children were asked to write a composition describing good and bad persons whom they encounter in their daily living so as to write appropriate items for 10 years old children and closely comprehend their emotional and social characteristics. Initially, 53 items were prepared in accordance with the literature review and compositions from the children. After constituting of the item pool, 53 items were formatted for expert investigation by inserting them into three points grade as 'Essential', 'Useful but not essential', and 'not necessary'. The Content Validity Ratio developed by Lawshe (1975) was employed to make expert feedback standardized and ensure systematic content validity. Therefore, an expert panel was composed and comprised 14 experts whose expertise is on the EI. The Content Validity Ratio was determined as 0.51 for 14 expert panelists (Lawshe, 1975). After feedback from the expert panelists was received, 18 items were decided to remove from draft of the scale. Draft of the scale for the EFA was formed by placing 35 items onto three points scale as 'not true', 'somewhat true' and, 'completely true'.

2.3. Item analysis

Before the EFA, item analysis was conducted according to the corrected item total correlation. The corrected item-total correlation coefficient discovers the items that does not correlate the scale overall and measure different dispositions or characteristics and obstruct constructs. It was decided that the items whose item-total correlation coefficient is less than 0.30 discarded from the EFA. As a result of the item analysis, 5., 8.,9.,10., 11., 14., 16.,17., 19., 21., 22., 23., 24., 25., 28., 29., 30., 31., 33., 34. and 35 were excluded and 1., 2., 3.,4., 6., 7., 12., 13., 15., 18., 20., 26., 27. 32. were included in the EFA (Everitt, 2002; Field, 2009; Nunnally ve Bernstein, 1994). Initially those items' internal consistency coefficient was calculated and 1., 6., 15., and 26. Items were discarded from the EFA because of the fact that they caused a decrease in internal consistency coefficient. Consequently, based on the item analysis, the EFA was carried out with ten items.

Table 1. Results of Item Analysis

Item No	Value of Corrected-Item Correlation	Item No	Value of Corrected-Item Correlation
Item 1	.304	Item 19	.188
Item 2	.362	Item 20	.380
Item 3	.533	Item 21	-.012
Item 4	.427	Item 22	.186
Item 5	-.301	Item 23	.174
Item 6	.368	Item 24	.044
Item 7	.518	Item 25	.192
Item 8	.109	Item 26	.351
Item 9	-.198	Item 27	.460
Item 10	-.139	Item 28	.129
Item 11	-.407	Item 29	.151
Item 12	.407	Item 30	.181
Item 13	.427	Item 31	.165

Exploratory Factor Analysis (EFA): The EFA is a statistical process that enables one to identify inter-correlated variables and cluster them under same constructs (Field, 2009; Harrington, 2008; Rummel, 1967). In the EFA process, Kaiser-Meyer-Olkin (KMO) coefficient and Barlett Test are necessary to determine whether data is suitable for the EFA. KMO Coefficient was found as 0.93, and Barlett Test was significant ($X^2=2056, 806; p \leq 0.001$). These findings indicated that the sample is large enough to conduct the EFA (Field, 2009; Henson and Roberts, 2006; Pohlman, 2004; Thompson, 2004). Varimax rotation method makes factors such as interpretable clusters by maximizing dispersion of loadings that it was chosen as rotation method (Field, 2009). Eigenvalues were employed to make a decision about the number of factors. Eigenvalue indicated that there is one factor whose eigenvalue is more than 1. Therefore, it was decided that the scale includes one factor with 10 items (Field, 2009; Pohlman, 2004). It was also observed that one factor solution with 10 items explains 50% of total variance. According to Merenda (1997) number of factor must explain at least 50% of total variance. Consequently, this value was found as enough for identifying strong construct from the data. Factor loadings of the items in the one factor solution ranged between 0.433 and 0.818. As for reliability, overall internal consistency coefficient of the scale was found to be 0.89.

Table 2. Exploratory Factor Analysis Results

Item	Factor Loadings	M	SD	Alpha If Item Deleted
Item 18	.818	2.27	.91	.86
Item 3	.811	2,26	.90	.86
Item 4	.785	2,27	.93	.87
Item 32	.778	2,27	.87	.87
Item 27	.725	2,26	.91	.87
Item 13	.713	2,21	.92	.87
Item 7	.711	2,24	.83	.87
Item 12	.595	2,22	.88	.88
Item 2	.514	2,56	.70	.89
Item 20	.433	2,14	.82	.89
<i>Eigenvalues = 4,98</i>		<i>Total Variance Explained: 50%</i>		<i>KMO =.93</i>
<i>Barlett Test: $X^2= 2056, 806; p \leq 0.001$</i>				

M: Mean, SD: Standard Deviation

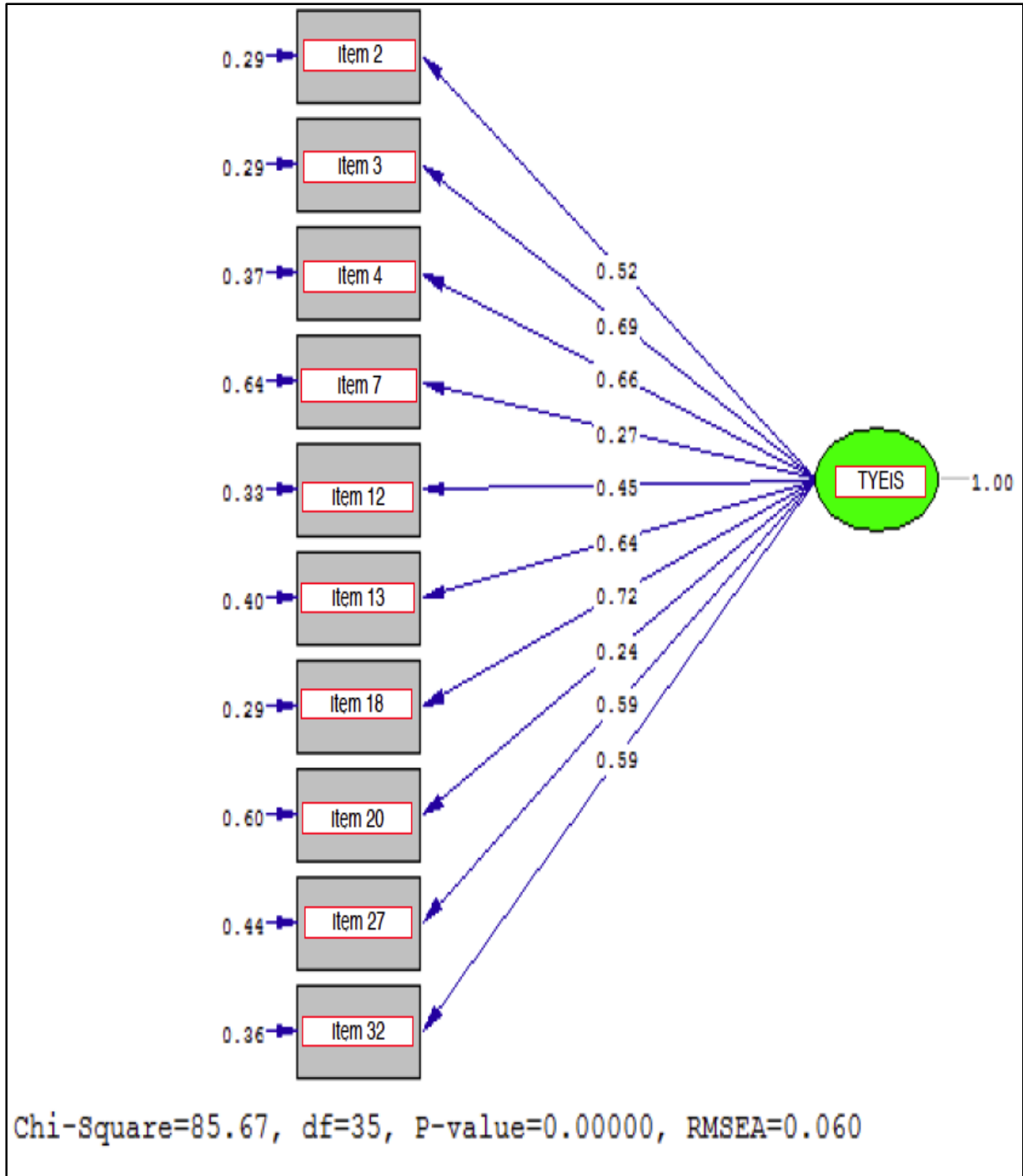
Based on findings about the EFA, single factor solution is reliable construct to measure the EI through self-report. It was decided that the Scale was named as Ten Years Emotional Intelligence Scale (TYEIS).

2.4. Confirmatory factor analysis (CFA)

The CFA is a factor analysis which reveals whether a defined model is confirmed or not, and previously determined factors are related to each other. Furthermore, the CFA determines such construct validity that the CFA allows researchers to accept or refuse the model. The CFA was conducted based on several fitting indices rather than single fitting index in order to test the model in depth (Harrington, 2008; Thompson, 2004). The TYEIS consisting of one factor and 10 items was applied on 399 children. In the CFA, results on x^2/df , RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Indices), IFI (Incremental Fit Index), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), NFI (Normed Fit Index),

and RFI (Relative Fit Index) were reported. It was found that RMSEA is 0.06, CFI is 0.97, IFI is 0.9, RFI is 0.93, GFI is 0.95, AGFI is 0.94, NFI is .95, SRMR is 0.03. These findings indicate that the model with one factor has good fit indices.

Figure 1. Result of the Confirmatory Factor Analysis



3. DISCUSSION

This research reported the development and validation of the TYEIS which measures the EI through self-report. It consists of one factor and comprises 10 items. The TYEIS is based on Goleman (1998) conceptualization of the EI. On the other hand, it is a typical emotional intelligence scale for

The literature is full of instruments measuring social and emotional aspects of learning. However, their conceptualizations are originated from different concepts such as social and emotional skills, social competence, emotional competence and emotional literacy. The EI is one of the concepts about social and emotional aspects of learning (Wigelsworth et al., 2010). However, researches about the EI focus on adults while development of the EI for children is scarce (Peters et al., 2009).

EI scales for children are adaptation of adult scales to child characteristics. These scales are MSCEIT: Youth Version (Mayer et al., in press), EQI: Youth Version (Bar-On and Parker, 2000), TMMS-C (Rockhill and Greener, 1999), TEIQ: Adolescent Form. However, the TYEIS is typically developed for primary school children. Therefore, the TYEIS is confined to children who are at the age of 10.

There is difference in terms of conceptualization among those scales. The MSCEIT:YV was constructed upon Salovey and Mayer (1990) emotional intelligence model, the EQI:YV is based on Bar-On (1997) emotional intelligence model, the TEIQ: AV is framed within Trait Emotional Intelligence Model developed by Petrides (2001) while the TYEIS is based on Goleman (1995, 1998) conceptualization of the EI which is a mixed model.

The TYEIS is such a self-report emotional intelligence scale that it displays similarity with EQI:YV, TEIQ: ASF in terms of ways of measuring emotional intelligence. On the other hand, there is a difference between MSCEIT:YV and the TYEIS due to the fact that the MSCEIT:YV measures the EI through performance based approach.

4. CONCLUSION

The present study was conducted to develop the TYEIS, and confirm its reliability and validity through the EFA and the CFA. The item pool with 53 items was constituted through literature review on the EI, and compositions of the 23 children. The items were placed in three point grade such as 'Essential', 'Useful but not essential', and 'Not necessary' to prepare for expert review. In order to ensure standardization in expert review, the Content Validity Ration was used. For this reason, an expert panel consisting of 14 experts was composed.

The Content Validity Ratio was determined as 0.51 due to the number of experts (Lawshe, 1975). As a result of the Content Validity Ratio Results, 18 items were removed from final form before the EFA. 492 primary school children, who are 10 years old, attended the EFA. Before the EFA, item analysis was carried out and 25 items were discarded from the EFA. Results of the KMO and Barlett Test indicated that the sample is large enough to conduct the EFA. There is single factor construct which account for 50% percent of total variance.

Overall, internal consistency coefficient was found as 0.89. After the EFA, the scale was named as Ten Years Emotional Intelligence Scale (TYEIS). The TYEIS with one factor and ten items was conducted on 399 children for the CFA. Results of the CFA revealed that the TYEIS with single factor solution has good model indices. Based the results, it was concluded that the TYEIS is a reliable and valid instrument in measuring and assessing the EI of primary school children through self-report.

The TYEIS can be used by teachers to evaluate impact of the activities on the EI and monitor students' emotional development. Besides, researchers can employ it to investigate correlation between the EI and other variables, to reveal impacts of the EI on various variables. Moreover, prospective studies whose purpose is to test its reliability and validity on children who are either younger or older than age of 10 can be carried out.

5. REFERENCES

- Bar-On, R. (1997). *The Emotional Intelligence Inventory (EQ-I): Technical Manual*. Toronto: Multi-Health Systems.
- Bar-On, R. (2000). Emotional and social intelligence: Insights from the Emotional Quotient Inventory. In R. Bar-on & J.D.A. Parker (Eds.), *Handbook of emotional intelligence*, (pp: 363-388). San Francisco: Jossey-Bass.
- Bar-On, R. (2006). The Bar-on model of emotional-social intelligence. *Psicothema*, 18, 13-25.
- Bar-On, R., & Parker, J. D. (2000). *Bar-On Emotional quotient inventory (EQ-i-YV): Youth version*. Toronto: Multi-Health Systems.
- Boyatzis, R. E., 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.
- Cooper, A., & Petrides, K. V. (2010). A psychometric analysis of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue–SF) using item response theory. *Journal of Personality Assessment*, 92(5), 449-457.
- DeVellis, R.F. (2012). *Scale development*. California: Sage Publications.
- Dulewicz, S.V., & Higgs, M.J. (2001) *EI general and general 360 user guide*. Windsor: NFER-Nelson.
- Dulewicz, V., & Higgs, M. (1999). Can emotional intelligence be measured and developed. *Leadership & Organization Development Journal*, 20(5), 242-253.
- Everitt, B. S. (2002). *The Cambridge dictionary of statistics*. Cambridge: Cambridge University Press.
- Fan, H., Jackson, T., Yang, X., Tang, W., & Zhang, J. (2010). The factor structure of the Mayer–Salovey–Caruso Emotional Intelligence Test V 2.0 (MSCEIT): A meta-analytic structural equation modeling approach. *Personality and Individual Differences*, 48(7), 781-785.
- Field, A. (2009). *Discovering statistics using SPSS*. London: Sage Publications.
- Freudenthaler, H.H., & Neubauer, A.C. (2003) *The localization of emotional intelligence within human abilities and personality*. Poster presented at the 11th Biennial Meeting of the International Society for the Study of the Individual Differences (ISSID), Graz, Austria.
- Gignac, G. (2010). Seven-factor model of emotional intelligence as measured by Genos EI. *European Journal of Psychological Assessment*, 26(4), 309-316.
- 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.
- Harrington, D. (2008). *Confirmatory factor analysis*. New York: Oxford University Press.
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research common errors and some comment on improved practice. *Educational and Psychological Measurement*, 66(3), 393-416.

- Hogan, M. J., Parker, J. D., Wiener, J., Watters, C., Wood, L. M., & Oke, A. (2010). Academic success in adolescence: Relationships among verbal IQ, social support and emotional intelligence. *Australian Journal of Psychology*, 62(1), 30-41.
- Humphrey, N., Curran, A., Morris, E., Farrell, P., & Woods, K. (2007). Emotional intelligence and education: A critical review. *Educational Psychology*, 27(2), 235-254.
- Keefer, K. V., Holden, R. R., & Parker, J. D. (2013). Longitudinal assessment of trait emotional intelligence: Measurement invariance and construct continuity from late childhood to adolescence. *Psychological Assessment*, 25(4), 1255-1272.
- Killick, S. (2006). *Emotional literacy at the heart of the school ethos*. London: SAGE.
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563-575.
- MacCann, C., Fogarty, G. J., Zeidner, M., & Roberts, R. D. (2011). Coping mediates the relationship between emotional intelligence (EI) and academic achievement. *Contemporary Educational Psychology*, 36 (1), 60-70.
- Mavroveli, S., & Sánchez-Ruiz, M. J. (2011). Trait emotional intelligence influences on academic achievement and school behavior. *British Journal of Educational Psychology*, 81(1), 112-134.
- Mayer, J. D. & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.). *Emotional development and emotional intelligence: Implications for educators* (pp. 3-31). New York: Basic Books.
- Mayer, J. D., & Salovey, P. (1995). Emotional intelligence and the construction and regulation of feelings. *Applied and Preventive Psychology*, 4(3), 197-208.
- Mayer, J. D., Roberts, R. D., & Barsade, S. G. (2008). Human abilities: Emotional intelligence. *Annual Review of Psychology*, 59, 507-536.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer– Salovey–Caruso Emotional Intelligence Test (MSCEIT) item booklet*. Toronto: MHS Publishers.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2004). Target Articles: Emotional intelligence: Theory, findings, and implications. *Psychological inquiry*, 15(3), 197-215.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotional intelligence: new ability or eclectic traits?. *American Psychologist*, 63(6), 503.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (in press). *Mayer– Salovey–Caruso Emotional Intelligence Test: Youth Version-Research Edition (MSCEIT-YV)*. Toronto: MHS Publishers.
- Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2. 0. *Emotion*, 3(1), 97-105.
- Mayer, J.D., & Geher, G. (1996). Emotional intelligence and the identification of emotion. *Intelligence*, 2, 89-113.
- Merenda, P. F. (1997). A guide to the proper use of factor analysis in the conduct and reporting of research: Pitfalls to avoid. *Measurement and Evaluation in Counseling and Development*, 30, 156-154.
- Newsome, S., Day, A. L., & Catano, V. M. (2000). Assessing the predictive validity of emotional intelligence. *Personality and Individual Differences*, 29(6), 1005-1016.
- Nunnally, J. C. Bernstein. I. H. (1994). *Psychometric theory*. New York: McGraw Hill.

- Palmer, B.R., & Stough, C. (2002) *Swinburne University Emotional Intelligence Test (Workplace SUEIT). Interim technical manual (Version 2)*. Victoria: Swinburne University of Technology.
- Pérez, J. C., Petrides, K. V., & Furnham, A. (2005). Measuring trait emotional intelligence. In R. Schulze, R.D. Roberts (Eds.). *Emotional intelligence: An international handbook*, (pp: 181-201). Massachusetts: Hogrefe Publishing.
- Peters, C., Kranzler, J. H., & Rossen, E. (2009). Validity of the Mayer—Salovey—Caruso Emotional Intelligence Test: Youth Version—Research Edition. *Canadian Journal of School Psychology*, 24(1), 76-81.
- Petrides, K. (2001). *A psychometric investigation into the construct of emotional intelligence* (Unpublished Doctoral Dissertation). University College London, London.
- Petrides, K. V. (2010). Trait emotional intelligence theory. *Industrial and Organizational Psychology*, 3(2), 136-139
- Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioral validation in two studies of emotion recognition and reactivity to mood induction. *European journal of Personality*, 17(1), 39-57.
- Petrides, K. V., Pita, R., & Kokkinaki, F. (2007). The location of trait emotional intelligence in personality factor space. *British Journal of Psychology*, 98(2), 273-289.
- Petrides, K. V., Sangareau, Y., Furnham, A., & Frederickson, N. (2006). Trait emotional intelligence and children's peer relations at school. *Social Development*, 15(3), 537-547.
- Pohlmann, J. T. (2004). Use and interpretation of factor analysis in The Journal of Educational Research: 1992-2002. *The Journal of Educational Research*, 98(1), 14-23.
- Qualter, P., Gardner, K. J., Pope, D. J., Hutchinson, J. M., & Whiteley, H. E. (2012). Ability emotional intelligence, trait emotional intelligence, and academic success in British secondary schools: A 5year longitudinal study. *Learning and Individual Differences*, 22(1), 83-91.
- Rieffe, C., Terwogt, M. M., Petrides, K. V., Cowan, R., Miers, A. C., & Tolland, A. (2007). Psychometric properties of the Emotion Awareness Questionnaire for children. *Personality and Individual Differences*, 43(1), 95-105.
- Rivers, S. E., Brackett, M. A., Reyes, M. R., Mayer, J. D., Caruso, D. R., & Salovey, P. (2012). Measuring emotional intelligence in early adolescence with the MSCEIT-YV psychometric properties and relationship with academic performance and psychosocial functioning. *Journal of Psychoeducational Assessment*, 30(4), 344-366.
- Rossen, E., Kranzler, J. H., & Algina, J. (2008). Confirmatory factor analysis of the Mayer—Salovey—Caruso emotional intelligence test V 2.0 (MSCEIT). *Personality and Individual Differences*, 44(5), 1258-1269.
- Rummel, R. J. (1967). Understanding factor analysis. *Journal of Conflict Resolution*, 11(4), 444-480.
- Saklofske, D. H., Austin, E. J., Mastoras, S. M., Beaton, L., & Osborne, S. E. (2012). Relationships of personality, affect, emotional intelligence and coping with student stress and academic success: Different patterns of association for stress and success. *Learning and Individual Differences*, 22(2), 251-257.
- Salovey, P., Mayer, J.D. (1990) Emotional intelligence. *Imagination, Cognition, and Personality*, 9 (3), 185-211.
- Sanchez-Ruiz, M. J., Mavroveli, S., & Poullis, J. (2013). Trait emotional intelligence and its links to university performance: An examination. *Personality and Individual Differences*, 54(5), 658-662.

- Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and individual differences, 25*(2), 167-177.
- Sullivan, A. K. (1999). *The emotional intelligence scale for children* (Unpublished Doctoral Dissertation). University of Virginia, Virginia.
- Tapia, M. (2001) Measuring emotional intelligence. *Psychological Reports, 88*, 353-365.
- Tariq, V. N., Qualter, P., Roberts, S., Appleby, Y., & Barnes, L. (2013). Mathematical literacy in undergraduates: role of gender, emotional intelligence and emotional self-efficacy. *International Journal of Mathematical Education in Science and Technology, 44*(8), 1143-1159.
- Tett, R. P., Fox, K. E., & Wang, A. (2005). Development and validation of a self-report measure of emotional intelligence as a multidimensional trait domain. *Personality and Social Psychology Bulletin, 31*(7), 859-888.
- Van der Zee, K., Thijs, M., & Schakel, L. (2002). The relationship of emotional intelligence with academic intelligence and the Big Five. *European Journal of Personality, 16*(2), 103-125.
- Warwick, J., & Nettelbeck, T. (2004). Emotional intelligence is...?. *Personality and Individual Differences, 37*(5), 1091-1100.
- Wigelsworth, M., Humphrey, N., Kalambouka, A., & Lendrum, A. (2010). A review of key issues in the measurement of children's social and emotional skills. *Educational Psychology in Practice, 26*(2), 173-186.
- Wilhelm, O. (2005). Measures of emotional intelligence: Practice and standards. In R. Schulze, R.D. Roberts (Eds.), *Emotional intelligence: An international handbook*, (pp: 131-154). Massachusetts: Hogrefe Publishing.
- Zeidner, M., Matthews, G., & Roberts, R. D. (2009). *What we know about emotional intelligence: How it affects learning, work, relationships, and our mental health*. Massachusetts: MIT press.