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## Testing the Cross-Cultural Validity of Schutte Self-Report Emotional Intelligence Test (SSEIT) Scale

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### Abstract

This study examined the cross-cultural validity of Schutte Self-Report Emotional Intelligence Test (SSEIT) among 186 undergraduate students at a public university in Malaysia. Data were collected using a revised SSEIT scale. Confirmatory factor analysis (CFA) was conducted to assess the goodness of fit indices for the four-factor emotional intelligence construct: perceiving emotion, understanding emotion, facilitating emotion and managing emotion. CFA results of the SSEIT model demonstrated cross-cultural construct validity of the SSEIT scales, indicating a good fit for measuring EI. The composite reliability index (CRI) and average variance extracted (AVE) further revealed evidence of convergent reliability and validity for the EI sub-scales. The results of this study confirm the usefulness of SSEIT for assessing EI among undergraduate students and research in general. Implications for research are discussed.

**Keywords:** Emotional Intelligence, Self-Report, Construct Validity, Confirmatory Factor Analysis, Schutte Self-Report Emotional Intelligence Test.

### Introduction

The theory of emotional intelligence (EI) has since its introduction generated extensive debate on its definition, conceptualization, and measures, giving rise to several approaches to understanding the concept. Of the different conceptions of EI, two paradigms remain consistent in the research today. These are ability EI and trait EI. Ability EI focuses on performance in assessing an individual EI whereas trait EI focuses on self-report of EI (Petrides, 2011). In self-report tests, participants are asked to reflect on emotional experiences across different set of circumstances and report subjective perceptions. These perceptions are indicative of an individual's predispositions or *traits*. Research in the last decades has supported the existence of these two dimensions of EI (Bar-On, 2004; Daus & Ashkanasy, 2005; Murphy, 2008; Petrides,

Furnham, & Frederickson, 2004; Yatin, Mohammed, Nasir, Wahid, & Kiroh, 2018; Al-Manaseer & Al-Qudah, 2018).

In consequence of the different perspectives on the nature of emotional intelligence, some researchers attempted to delineate the scope and factors that constitute the EI model and terminologies to describe these factors (Pérez, Petrides & Furnham, 2005). One such attempt is the work of Schutte, Malouff, Hall, Haggerty, Cooper, Golden, and Dornheim (1998) who developed the self-report approach instrument based on Salovey and Mayer's (1990) original model of the EI. This work focused purely on ability conceptualization. Mayer and Salovey's (1997) work laid a foundation for defining EI and formed the basis on which future theorists and researchers (Cherniss, Extein, Goleman, & Weissberg, 2006; Petrides, Coumans, & Luminet, 2009) were to develop an operational definition of the EI concept. They (Salovey et al., 1990, p.5) defined of EI as "the ability to perceive and express emotions, assimilate emotion in thought, understand and reason with emotion and regulate emotion in the self and others". This definition addressed the question: what intelligence about EI by incorporating the necessary requirement needed for the concept to be considered as an intelligence.

However, Schutte, Malouff, and Bhullar (2009) questioned Mayer et al. (1990) approach and conceptualization of EI, which suggest a dichotomous approach to EI, and present ability and trait dimensions as mutually exclusive alternatives. According to Schutte et al. (2009), both approaches are important and complementary dimensions of adaptive emotional functioning. Therefore, in 2009, Schutte and associates developed the EI measurement known as the Schutte Self-Report Emotional Intelligence Test (SSEIT). This work has been widely recognized in the literature, particularly with studies conducted with college and university students (Sjöberg, 2001; Schutte, Malouff, Bobik, Coston, Greeson, Jedlicka, Rhodes & Wendorf, 2001; Thingujam & Ram, 2000) and professionals like sports teachers and psychologist (Lane et al., 2009).

Notwithstanding, there is still a significant void in understanding the scope and nature of the validity of the SSEIT among university and college students, particularly in the Southeast Asian region. Lane et al. (2009) in their study of 1,681 athletes only found partial support for a single factor model after removing the 13-items lacking emotional content. They noted that there is a need for further validation work with the EI. Therefore, this study was conducted to assess the cross-cultural validity and reliability of Schutte Self-report Emotional Intelligence Test SSEIT sub-scales with university students in the context of Malaysian culture.

### **Literature Review**

Numerous studies have shown the link between EI and academic achievement, educational and developmental goals (Barchard, 2003; Petrides, et. al., 2004), constructive behavior and quality of social interactions (Behjat, 2012; Mavroveli, Petrides, Rieffe, & Bakker, 2007; Zawawi & Tsang, 2009). Studies were also conducted to depict the relationship between EI and mental health related issues such as Asperger's Disorder (AD) (Montgomery, Schwean, Burt, Dyke, & Thorne, 2008), workplace and work motivation (Adeyemo, 2008; Othman, Abdullah, & Ahmad, 2009) as well as sports performance (Bal, Singh, Sood, & Kumar, 2011).

EI researchers moreover continue to examine and revise the constructs, to assess the accuracy and relevance of the concept. Hence, several models were introduced and used to measure EI

including Executive (EQ) Map (Cooper & Sawaf, 1997), Emotional Competency Inventory (ECI) (Steven & Wolff, 2005), Bar-on EQ-I (Bar-On, 2004), Wong and Law Emotion Intelligence Scale WLEIS (Law, Wong, & Song, 2004), Bradberry and Greaves Emotional Intelligence Appraisal (EIA) (Bradberry & Greaves, 2009), Workshop Emotional Intelligence Profile WEIP (Jordan, Ashkanasy, Härtel, & Hooper, 2002). Arguably, the maximum-performance method by Mayer-Salovey-Caruso EI Test MSCEIT has been found to be a better approach to measuring EI. The SSEIT however proposes that EI consists of assessing the self and others. The SSEIT method, although based on Mayer et al. (1990) original EI, gathers information regarding the display of emotional experiences in daily life (Schutte et al., 2009; Petrides et al., 2004). Several studies used SSEIT to measure EI. Most of these studies reported internal consistency for the SSEIT 33-item scale. For example, Kim, Wang, & Ng (2010) and Schutte et al. (1998) reported a reliability score of .87 from a diverse sample of participants. Schutte et al. (2009) in their subsequent study reported internal consistency for the EI subscales as follows: Perceiving Emotion, .76, .80; Managing Emotion, .63, .78; Managing Others' Emotion, .66, .66; and Utilizing Emotion, .55; while a two-week test-retest revealed a reliability of .78 for the total EI scores.

A confirmatory factor analysis of the Emotional Intelligence Scale (EIS) data from 1,681 athletes revealed unacceptable fit indices for the 33-items single factor model while a revised data after discarding 13-items demonstrated fit indices for a 5-factor model and partial support for single factor model (Lane et al., 2009). In a study of 860 students across various educational institutes, Arunachalam & Palanichamy, (2017) identified a four factor structure for the modified 28-items (English version) of SSEIT using a confirmatory factor analysis among Indian population. Arunachalam et al. (2017) study also emphasized the superiority of multi-dimensional models over the unidimensional. Similarly, Harris et al. (2016) used 33 bilingual items based on principal axis factoring exploratory factor analysis among Malaysian sample and found a four-factor model that describes mood regulation, emotion appraisal, emotion utilization and social skills. They also reported a correlation between the factors, stressing that although theoretically it is ideal that factors are only minimally related, but in reality, some correlation among the factors should be expected because a person will not be able to regulate his/her mood without the ability to appraise the emotion. They cautioned the use of reverse-coded items in Malaysia and suggested a slightly longer scale.

The above review suggests the need for further investigation into the SSEIT. Therefore, this study focused on assessing the validity and reliability of SSEIT based on the data collected among Malaysian students. This study was guided by the following research questions:

1. Is there any evidence in support of a four-factor model construct validity of the SSEIT scales?
2. What is the convergent reliability and validity for the SSEIT sub-scales using data from undergraduate students?

## **Methodology**

### **Participants**

The participants were 186 Malaysian undergraduates in their fourth-year studies (Age range 19-24 years, 52 were male and 134 were female). The participants were pursuing a Bachelor of

Education in various specializations including language and literacy, curriculum and instruction, psychology and counseling, instructional technology, and educational management. The Participants were randomly selected to participate in this study and were assured of anonymity and confidentiality of their responses.

### *2.2 Data collection procedures and analysis*

This study used the SSEIT scale. The scale is a 33-item self-report inventory focusing on typical EI. The participants rated themselves on each of the 33 items using a five-point Likert scale. It took an average of five minutes to complete the test. The instrument comprises of four widely recognized sub-scales, which were described as follows: 1. Perception of emotions comprising 10 items, for example "I am aware of my emotions as I experience them". 2. Managing own emotion with nine items, for example "I use good moods to help myself keep trying in the face of obstacles". 3. Managing other's emotion with eight items, for example "other people find it easy to confide in me". and 4. Utilization of emotion with six items, for example "emotions are one of the things that make my life worth living".

Of the 186 questionnaires distributed, 176 usable questionnaires were returned and analyzed. The returned questionnaires accounted for a response rate of 88%. Prior to the data analysis, the reliability of the pool of the items structured EI dimensions were examined. The results revealed a Cronbach Alpha value of .88. This result is an indication of a good internal consistency of the EI items (Nunnally, 1978).

A confirmatory factor analysis (CFA) was conducted to assess the appropriateness of the measurement model of the EI dimensions and how each item practically and significantly loaded on its proposed dimensions. Practitioners recommend that the measurement model should be verified for the reliability of items (Hair, Anderson, Tatham, & Black, 2010; Schumacker & Lomax, 2004) prior to investigating any relationships, in this study, SSEIT was assessed to verify its reliability in the Malaysian context. AMOS software version 20.0 was used to perform the analysis (Arbuckle, 2008). The EI model was measured by four sub-constructs; perceiving emotions, managing emotions, facilitating emotions and understanding emotions.

## **Results and Findings**

### Confirmatory Factor Analysis (CFA) of EI sub-constructs

The results of the full CFA of the four-factor construct showed that the overall fit of the model was  $\chi^2(490) = 1052.656$   $p = 0.001$ , which was statistically significant, indicating an inadequate fit between the covariance matrix of the observed data and the implied covariance matrix of the model. Other indices showed poor fit; CFI .64, TLI .61, IFI .65. However, some parameter estimates were as low as .23 (e.g. item4 of sub-construct facilitating emotion "Other people find it easy to confide in me"). As it can be seen from Figure 1, although REMSEA fell within the range of acceptable value .081. Most of the obtained fit indices are not encouraging as they fell well below the desired indices of model fit.

Given that most of the obtained fit indices did not meet the desired cutoffs, Post *Hoc* model modification indices were investigated in order to identify a more parsimonious model. Therefore, the measurement model of EI latent construct was re-estimated and six inter-correlations among 6 errors were freed based on the suggestions of modification indices (MIs).



More specifically, the following connections were established; error 4 (item 18) and error 9 (item 32), error 5 (item 19) and error 2 (item 9) and error 1 (item 5) and error 2 (item 9). These connections were allowed to co-vary to reduce the total amount to 1052.565  $\chi^2$ , and therefore, ameliorate the fit indices. These connections were supported methodologically through the use of AMOS and theoretically owing to the fact that the two elements of the measurement errors were correlated showing commonalities among pairs of observed variables.

Furthermore, items structure for each factor were further investigated. Consequently, items 10, 21, 23, 28, 31 of managing emotions, 11, 13, 26 of facilitating emotions, and 15, 25, 29, 33 of perceiving emotions were discarded due to factorial complexity, offending estimate and low loading issues at different stages of inspection. Figure 2 shows that the overall goodness of fit indices for the revised EI measurement model was consistent with the observed data. The  $\chi^2$  statistic was (201) = 427.434,  $p = 0.001$  indicating significant  $\chi^2$  value and thus showing discrepancies in the observed data. The  $\chi^2$  significance was overlooked by the researchers because of the fact that  $\chi^2$  is very sensitive to sample size, which will likely lead to its significance in this analysis.

Interestingly, the revised model fits the observed data since the value of the Normed  $\chi^2$  ( $\chi^2/df$ ) was 2.127. The cut-off values recommended by statisticians is  $\leq 3$  for  $\chi^2/df$  to reflect a good fit for the model (Hair et al., 2010; Kline, 2016). Moreover, other fit indices also showed substantial threshold values for the revised model (CFI=.96, TLI =.92, IFI =.96, and RMSEA=.08). Based on the recommendation of Byrne (2010) and Hair et al. (2010), CFI threshold of more than .90 and RMSEA threshold of less than  $\leq .08$  reflects a good fitting model. In addition to this, the parameter estimates or the regression weights were also examined and were found to be statistically significant and practically important as shown in Figure 2. The loadings ranged from .51 (item4 of FE) to .83 (item2 of ME). All the values were free from any offending estimates and showed logical direction.

### **Convergent Validity and Reliability Measures**

In order to identify and report the convergent validity of the retained measures, standardized factor loadings were checked. Parameter estimates of each item loaded on a given factor were investigated through the methods explained below. Composite reliability index (CRI), which indicates how well each component has been described by the indexed items was first performed to establish more accurate reliability values. This test was performed because researchers have cautioned about potential issues when using only Cronbach's Alpha as a measurement of the reliability of a construct due to its limitations (Raykov, 1998; Zinbarg, Revelle, Yovel & Li, 2005; Gordon, 2008). Thus, while the traditional reliability measure of Cronbach's Alpha considers equal weight for the items measuring a given construct in which it is influenced by the number of items in the construct, the CRI estimates rests on the actual readings to compute the factor scores which is a better indicator of internal consistency reliability (Ranganathan, Dhaliwal & Teo, 2004). As such, CRI was used instead of Cronbach's Alpha to measure the convergent reliability of the retained items. The conventional cut-off value for CRI is 0.70 or greater, which provides evidence of construct reliability if the CRI of each factor is 0.70 or greater (Fornell & Larcker, 1981; Bagozzi & Burnkrant, 1985; Hair et al., 2010).

The average variance extracted (AVE), which measures the amount of variance that captured by the construct in association with the amount of variance due to the measurement error (Fornell & Larcker, 1981) was also calculated. The cut-off value of an AVE  $\geq$  .50 or greater which establishes evidence of construct and convergent validity of a given construct (Fornell & Larcker, 1981; Bagozzi, 1981; Hair et al., 2010).

The results of the CRI calculations of the EI construct revealed an adequate estimation of CRI for the evaluated factors (perceiving emotions .85, managing emotions .84, facilitating emotions .77 and understanding emotions .85). The estimates (.77 through .85) had fulfilled the recommended value of CRI (Fornell & Larcker, 1981). These results fulfilled the guidelines of Hair et al. (2010) and Fornell and Larcker (1981) of CRI .70 cut-off, which suggests the establishment of the convergent reliability of the retained items.

Furthermore, the convergent validity of the scales was examined through the application of AVE method. The results of AVE revealed reasonable evidence of construct validity as shown in Table 1. Though estimates for the factor facilitating emotions .45 and understanding emotions .49 were a little below the recommended cut-off point, but they were very close to the recommended ratio. Taken together, these findings of the CRI and AVE demonstrate evidence of convergent reliability and validity for the EI sub-scales. Table 1 depicts the details of construct validity and reliability of the EI subscales.

## Discussion

This study examined the validity and reliability of the SSEIT scale among a sample of Bachelor of Education students at a public university in Malaysia. The CFA results; TLI, IFI, and RMSEA fit indices suggest that the EI supported a four-dimensional factors. These results are consistent with those of Petrides and Furnham (2000) who found a four-dimensional factor for the 33-items SSEIT, which they described as Optimism/Mood Regulation, Appraisal of Emotions, Social Skills and Utilisation of Emotions. In this study, different terms we used to describing the EI dimensions, drawing on Mayer and Salovey's definition of EI that proposed Perceiving Emotion, Understanding Emotion, Managing Emotion and Facilitating Emotion. Importantly, these four dimensions were found to converge into two broad dimensions which were the knowledge-based dimension, representing (perceive and understand emotions factors); and skill-based dimension, representing (manage and facilitate emotions factors). These findings are important because they are two aspects of EI that are complementary of each other. Goleman (1995) emphasized on the importance of incorporating intelligence and emotion in the concept of EI, signifying that human beings can be rational while staying in touch with their feelings (Tharbe, Mun, & Sumari, 2012). Furthermore, the .85 CRI value for both perceive and understand emotions indicates the extent to which perceive emotion is related to understand emotion, while the CRI value .84 for manage emotion also indicates a close association, the CRI revealed a relatively low value for facilitate emotion at .77. Nonetheless, as suggested by Harris et al. (2016) some correlation among the factors should be expected because a person would not be able to manage and facilitate his/her emotion without a proper perception and understanding of the emotion he is experiencing.

The four-dimensional model found in this study, however, contradicts other studies conducted among university students. For example, in their study of (300 bachelor students, Jonker and Vosloo's (2008) found a six-dimensional factor structure for SSEIT, which they defined as Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-Verbal Emotions, and Emotional Management. Whereas the inventors of the instrument Schutt & Scole found a uni-dimensional model. The results of this study are also in consistent with studies that have used samples other than the general population. For example, in their investigation of 1681 university athletes, Lane et al. (2009) found that content validity results indicated five factors: an appraisal of own emotions, regulation of own emotions, utilization of own emotions, social skills, and appraisal of others' emotions. They ascribed these differences in results of methodological factors. For instance, they explained that the usage of exploratory factor analysis (EFA) techniques to develop a factor structure by Schutte et al. (1998) and subsequent validation studies represent a methodological limitation. The reason has been that EFA is a data-driven approach in which a factor structure is produced from the data, rather than testing the extent to which data were consistent with a hypothesized model. Evidence of four-dimensional model for EIS was also reported by (Harris et al., 2016) after examining the factor structure of the bilingual version of the scale (Malay translation by Abd Hamid & Kimin, 2004) in a study involving 187 employees of government agency and a college community. These findings further emphasized the role of the language and culture in determining the multidimensionality of the scale particularly within the local Malaysian context, contrary to the developers' (Schutte et al., 1998) unidimensional claim for the EIS, because certain concepts and measures may be reliable but not culturally valid (Tharbe et al., 2012).

The results also show some factors that were affected due to items deemed offending estimate and/or low loading issues during the analysis. These factors are managing emotions affected by items 10, 21, 23, 28, 31, facilitating emotions, affected by items 11, 13, 26, and perceiving emotions, affected by items 15, 25, 29, 33, those items were hence discarded due to factorial complexity. This means the omitted items should be either excluded from the original 33 items or modification of their content is needed to guarantee celerity or appropriateness of the content. This is important given that the general assumption is that the EI scales are valid and reliable. However, as indicated by the findings of the present study, the EIS contains some items lacking an emotional or intelligence focus. A number of previous researches has identified similar limitations (Gignac, Palmer, Manocha, & Stough, 2005; Lane et al., 2009). However, despite the fact that some items were omitted due to low loading, this study has established the usability of the SSEIT in a diverse culture and among undergraduate students. Lastly, the composite reliability index CRI analysis demonstrated the convergent reliability of the retained items of SSEIT. The results of the CRI consequently established construct and convergent reliability of emotional intelligence subscales.

## **Conclusion**

In conclusion, this study contributes significantly to the discourse on EI theory and literature. The results of the study unveiled SSEIT as one of the validated tools that can be used in measuring total EI; and a standard tool that could be employed precisely in assessing undergraduate



students' ability to perceive, understand, manage and facilitate emotion. Moreover, the four-factor model of EI consisting of perceiving emotion, understanding emotion, managing emotion and facilitating emotion is affirmed with adequate convergent reliability.

This study however targeted undergraduate students in a specific academic course, hence future studies should include a wider and bigger population, to ensure findings that can be generalized to the Malaysian population. Because this study used the English-version of SSEIT, while English is not the native language of the respondents, this could be the reason of having problematic items, which were subsequently omitted, therefore future study on SSEIT in Malaysia might also consider translating the instrument into Malay-version to be tested among Malay students.

### Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Figures

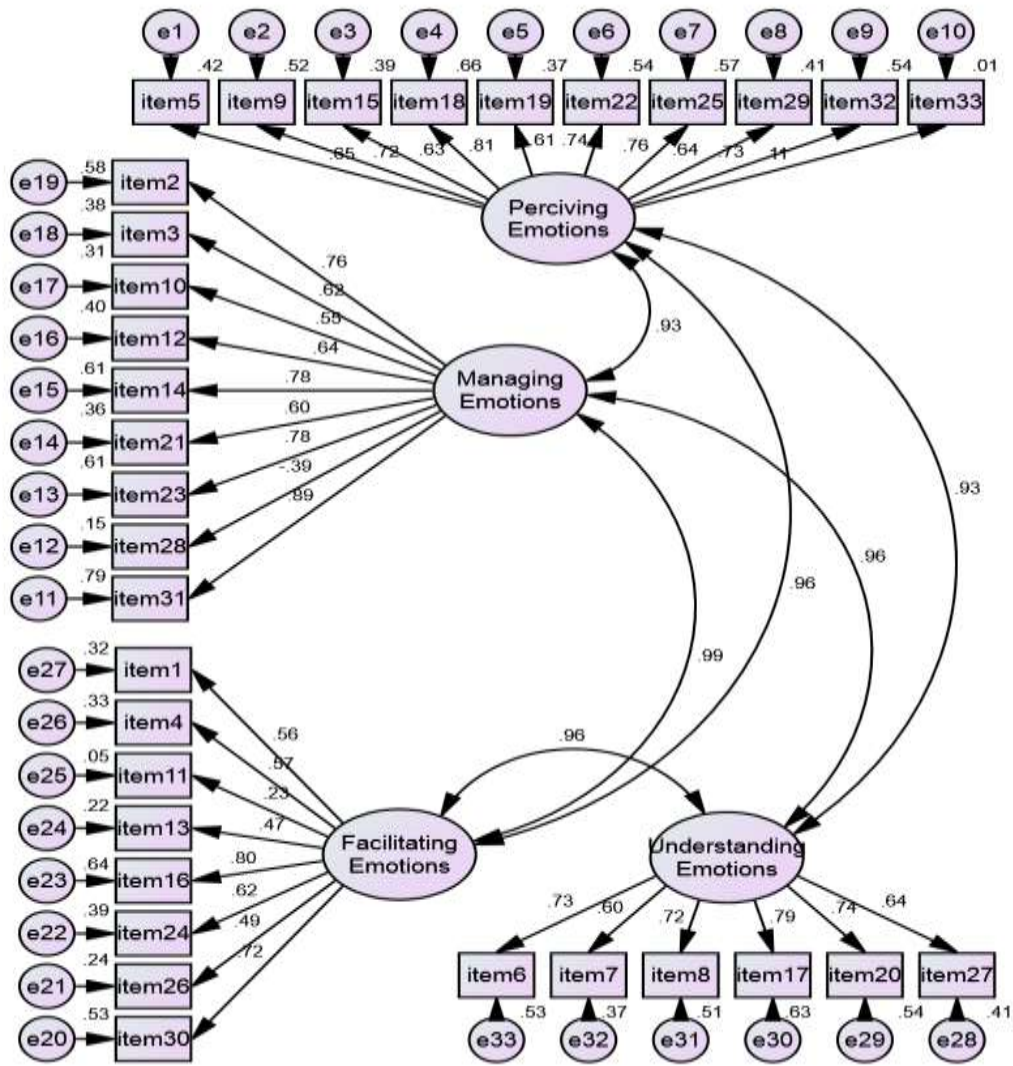


Figure 1: Results of the full CFA of the emotional intelligence sub-construct

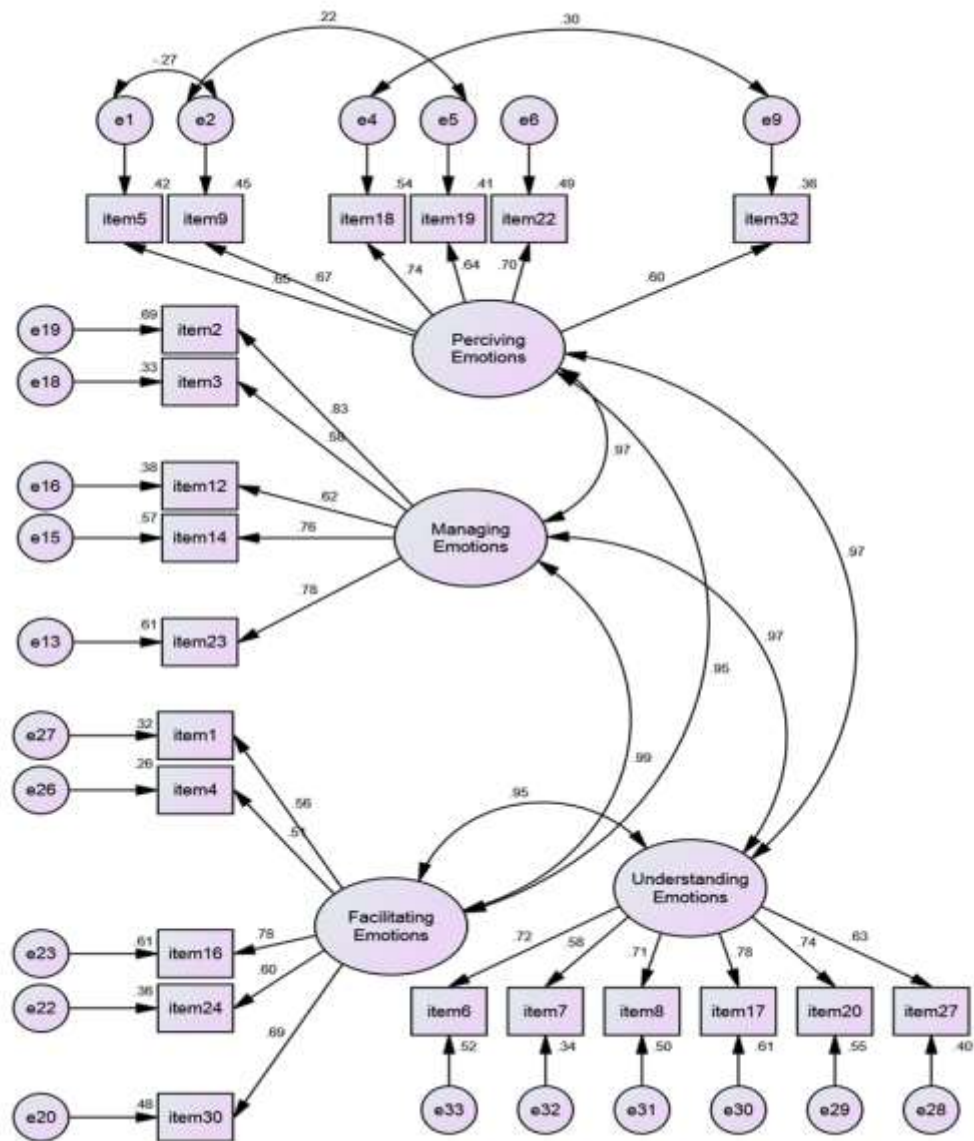


Figure 2: Revised Model of the Emotional Intelligence Construct

Tables

Table 1 Construct Validity and Reliability of Emotional Intelligence Subscales

Construct	AVE	CRI
Perceiving Emotions	.85	.85
Managing Emotions	.52	.84
Facilitating Emotions	.45	.77
Understanding Emotions	.49	.85