

**A PSYCHOMETRIC EVALUATION OF A MEASURE OF EMOTIONAL  
INTELLIGENCE FOR UNIVERSITY STUDENTS**

Cristel Vosloo, Honours B.A.

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**Supervisor:** Dr. C.S. Jonker

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## COMMENTS

The reader is reminded of the following:

- The references as well as the editorial style as prescribed by the *Publication Manual (5<sup>th</sup> ed.)* of the American Psychological Association (APA) were followed in this dissertation. This practice is in line with the policy of the Programme in Industrial Psychology at the North-West University to use APA in all scientific documents as from January 1999.
- The mini-dissertation is submitted in the form of a research article. The editorial style specified by the *South African Journal of Industrial Psychology* (which agrees largely with the APA style) is used, while the APA guidelines were followed in constructing tables.
- Each chapter of this mini-dissertation has its own reference list.

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*“It’s in Christ that we find out who we are and what we are living for. Long before we first heard of Christ, He had his eye on us, had designs on us for glorious living, part of the overall purpose he is working out in everything and everyone” (Ephesians 1:11, Msg).*

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## SUMMARY

**Title:** A psychometric evaluation of a measure of emotional intelligence for university students.

**Key words:** Psychometric evaluation, measure, validity, reliability, emotional intelligence (EI), students, economic sciences, higher education institution.

Business leaders are increasingly coming to recognise that there is more to business success than technical and cognitive competence. Personnel leadership is proving to be critical for business bottom-line achievements considering that most business outcomes are achieved through human capital. Emotional intelligence can be used to the advantage of organisations by developing an emotional intelligence audit. The objective of this study was to investigate the psychometric properties of the Emotional Intelligence Scale (SEIS) developed by Schutte, Malouff, Hall, Haggerty, Cooper, Golden and Dornheim (1998) for Economic Science students from a higher education institution in the North-West Province, South Africa. The psychometric soundness of the SEIS was tested. The general objective of the research is to standardise a psychometric instrument of emotional intelligence and determine the validity of The Schutte Emotional Intelligence Questionnaire (SEIS) (Schutte, et al., 1998). Specific objectives include the conceptualisation of the importance of a standardised psychometric instrument of emotional intelligence in South Africa; the conceptualisation of the nature and evolution of emotional intelligence measurements in general; determining the validity and internal consistency of the SEIS; and establishing whether any possible group differences in terms of biographical data exist in emotional intelligence. A valid and reliable measure of emotional intelligence could be valuable in the organisation to identify specific EI needs that could be developed through the implementation of EI development programmes. In this context a standardised psychometric instrument of EI could be of use in organisations during the training and development of employees.

A cross-sectional method with an availability sample ( $N = 341$ ) from Economical Science students from a higher education institution was used. The results supported a six-factor model

of emotional intelligence, consisting of Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-verbal Emotions and Emotional Management. The multi-analysis of variance (MANOVA) was used to determine differences in terms of biographical data. The results indicated significant differences between gender and language groups. African language groups compared with Afrikaans and English language groups experienced higher levels of positive affect. Females compared with males experienced higher levels of understanding of the emotions of other people.

Recommendations for future research were made.

## OPSOMMING

**Titel:** 'n Psigometriese evaluering van 'n meetinstrument van emosionele intelligensie vir universiteitstudente.

**Sleutelwoorde:** Psigometriese evaluering, meetinstrument, geldigheid, betroubaarheid, emosionele intelligensie (EI), studente, ekonomiese wetenskappe, hoër onderwysinstelling.

Sakeleiers besef toenemend dat sakesukses meer beteken as tegniese en kognitiewe bekwaamheid. Personeel-leierskap het van kritiese belang begin word vir wins, inaggenome dat die meeste sake-uitkomst deur menslike kapitaal bereik word. Emosionele intelligensie kan gebruik word tot voordeel van organisasies deur 'n emosionele intelligensie-oudit te ontwikkel. Die doelstelling van hierdie studie was om die psigometriese eienskappe van die Emosionele Intelligensieskaal (SEIS) wat deur Schutte, Malouff, Hall, Haggerty, Cooper, Golden en Dornheim (1998) ontwikkel is, te ondersoek by Ekonomiese Wetenskap studente in 'n hoër onderwys-instelling in die Noordwes Provinsie, Suid-Afrika. Die psigometriese gegrondheid van die SEIS is getoets. Die algemene doelstelling van die navorsing is om 'n psigometriese instrument van emosionele intelligensie te standaardiseer en die betroubaarheid van Die Schutte Emosionele Intelligensieskaal (SEIS) (Schutte, et al., 1998) te bepaal. Spesifieke doelstellings sluit in die konseptualisering van die belangrikheid van 'n gestandaardiseerde psigometriese instrument van emosionele intelligensie in Suid-Afrika; die konseptualisering van die aard en ontwikkeling van emosionele intelligensie-meetinstrumente in die algemeen; om die geldigheid en interne konsekwensie van die SEIS te bepaal; en vas te stel of daar enige moontlike groepsverskille bestaan wat betref biografiese data in emosionele intelligensie. 'n Geldige en betroubare meetinstrument van emosionele intelligensie kan van waarde wees in die organisasie om spesifieke EI-behoeftes te identifiseer wat ontwikkel kan word deur die implementering van EI-ontwikkelingsprogramme. Binne dié konteks kan 'n gestandaardiseerde psigometriese instrument van EI nuttig gebruik word in organisasies tydens die opleiding en ontwikkeling van werknemers.

'n Dwarsdeursnee-opname ontwerp met 'n beskikbaarheidsteekproef ( $N = 341$ ) van Ekonomiese Wetenskap-studente aan 'n hoër onderwys-instelling is gebruik. Die resultate het 'n sesfaktor-model van emosionele intelligensie ondersteun, bestaande uit Positiewe Affek, Emosies-Ander, Positiewe Emosies, Emosies-Eie, Nie-verbale Emosies en Emosionele Bestuur. Die multivariansieontleding (MANOVA) was gebruik om verskille met betrekking tot biografiese data te bepaal. Die resultate dui betekenisvolle verskille tussen geslag- en taalgroepe aan. Afrikataalgroepe in vergelyking met Afrikaans en Engelse taalgroepe ervaar hoër vlakke van positiewe affek. Vroue ervaar hoër vlakke van begrip vir die emosies van ander persone teenoor mans.

Aanbevelings vir toekomstige navorsing is gedoen.

# **CHAPTER 1**

## **INTRODUCTION**

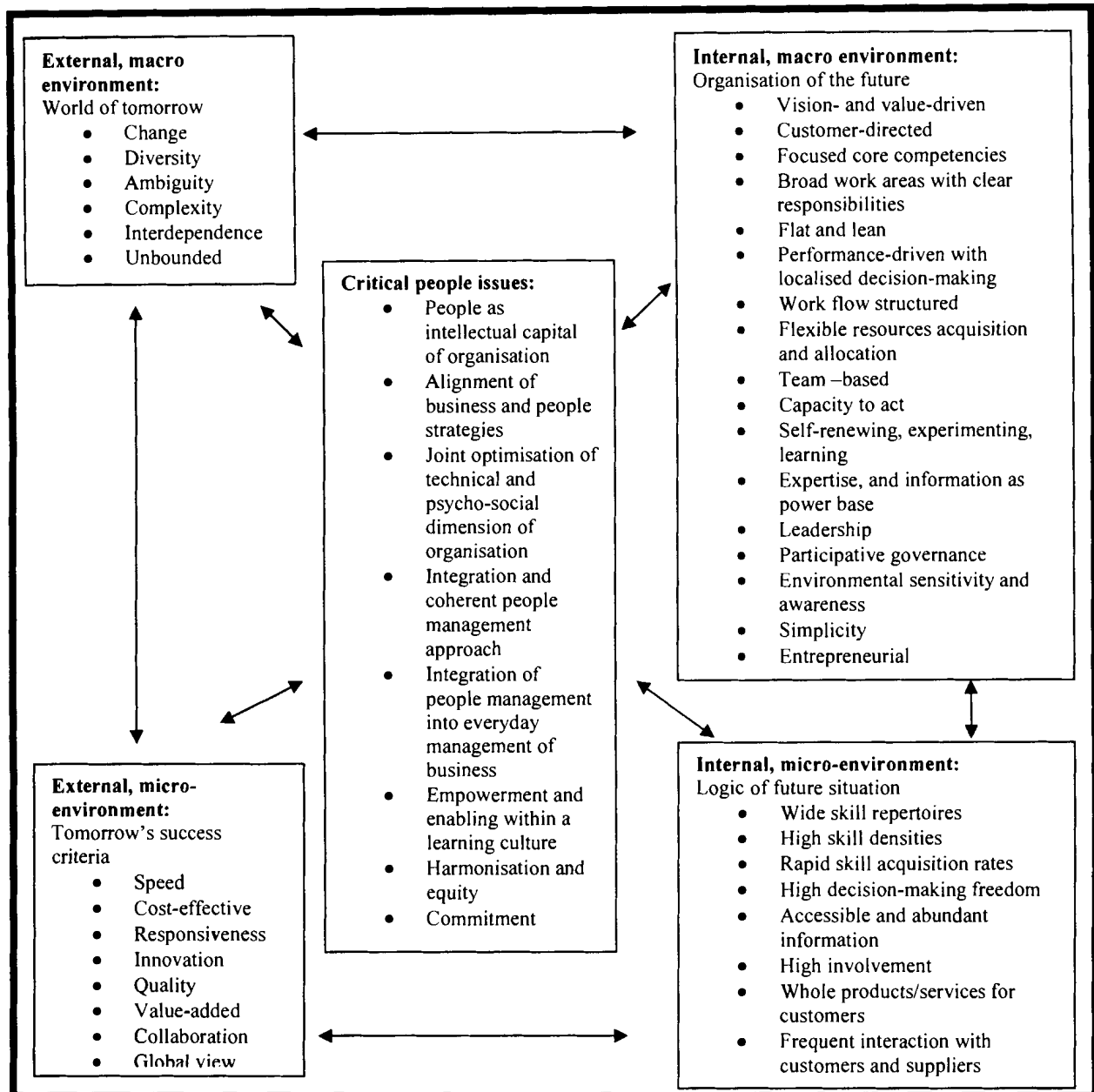
This mini-dissertation deals with the psychometric properties of a measurement of emotional intelligence (EI). In Chapter 1 the motivation for the research is discussed in terms of the problem statement and aims of the research. Thereafter the research method and division of chapters are discussed.

### **1.1 PROBLEM STATEMENT**

We live in an era of continual change and increasing complexity. Consequently, the relationship between individuals and the organisation should never be static but should be continually evolving (Bendix, 2001). Only fluid, flexible, highly adaptive organisations will thrive in the fast-paced global economy. The shifting face of tomorrow with emerging critical people issues that depicts several external and internal, micro and macro, environmental issues (Grobler, Wörnich, Carell, Elbert, & Hatfield, 2002). Veldsman (1996, p.15) illustrates this with the following diagram:

Figure 1

*The shifting face of tomorrow*



SOURCE: Grobler, P.A., Wörnich, S., Carell, M.R., Elbert, N.F., & Hatfield, R.D. (2002, p. 5). *Human resource management in South Africa* (2<sup>nd</sup> ed.). Canada: Thomson Learning.

Veldsman (1996) shows that the environment influences people excessively, implying organisational changes. A major organisational change influences the individual as well.

Organisation effectiveness is influenced by the interaction between individuals, groups and organisational factors (Robbins, 1996). The need for development and training of personnel is increasing, stressing the importance of the realisation of employees as organisational assets. The optimal development and utilisation of individual characteristics and skills are crucial to better organisation effectiveness (Jonker, 2002). In this regard, the measurement and development of emotional intelligence could play a significant role (Wolmarans, 1998), because emotional intelligence holds a hidden benefit for organisations (Cooper, 1997; O'Connor & Little, 2003).

Increased levels of unemployment have become a feature of the South African economy, while the number of candidates per vacant position has increased rather dramatically in some instances. Some of these candidates could also be regarded as quite desperate, considering the fact that they have been unemployed for some time. The so-called brain drain is forcing organisations to search harder for the right talent. Affirmative action and equal employment opportunity legislation have created a new dimension in industries (Pengilly, 2002).

Emotional intelligence (EI) is vital to the success of the chief executive officer (CEO) or managers in general, to have the EI ability to manage and lead people as opposed to pre-conceived notions that past experience is the main determinant of success in a position. Potential CEOs need to understand the importance and potential of EI, which is strongly related to leadership skills, group performance, individual performance, interpersonal/social exchange and managing change (Pengilly, 2002).

Arumugam (2003) states that Daniel Goleman popularised the EI concept. He (Arumugam, 2003) continues to say that Goleman made a strong claim that EI is a significant contributory factor to success stating that only 20% of success (however it is defined) is attributed to conventional definitions of intelligence. Of what relevance is this to the business world? Increasingly, business leaders are recognising that there is more to business success than technical and cognitive competence. People leadership is proving to be critical for business bottom-line achievements, considering that most business outcomes are achieved through human capital (Arumugam, 2003).

Handley (2001) states that emotional intelligence can be used to the advantage of organisations by developing an emotional intelligence audit. This would allow the organisations to profile and understand what skill sets are associated with high performance. This profile would help in two areas. In the first instance, during recruitment or selection, a profile of emotional intelligence skill sets is associated with high performance in various corporate positions (for example leadership and sales). This would make companies more effective in finding and hiring employees with the right emotional intelligence competencies (Handley, 2001). Arumugam (2003) states that EI is essentially the adhesive of organisational life, showing itself from the time that a potential employee is recruited, to the termination of employment. In the recruitment process, EI is a critical entry gate criterion. The attraction of potential employees that are emotionally stable and competent in interpersonal relations is crucial for business performance.

Handley (2001) continues to say that secondly, the profile helps the company to find and enhance those skill sets that truly constitute a corporate asset or competitive advantage. This knowledge of skill sets is vital for high-leverage, on-target investments in human capital development (Handley, 2001). EI is an important building block in the development process of employees (Arumugam, 2003).

A number of scales assess possible components of emotional intelligence, while some scales attempt to measure global emotional intelligence. However, researchers, clinicians, educators and trainers seeking a measure for emotional intelligence or one of its components are facing a daunting task. Firstly, they must consider relevant measures. Secondly, they must obtain the actual relevant scales and scoring instructions. This sometimes requires writing to the scale developer, who may have died, moved to another university, or is otherwise unavailable. Thirdly, they must collect relevant articles on the scale in order to determine whether the initial findings with regard to reliability, validity and factor structure have sustained a period of time (Jonker, 2002).

Kreitner and Kinicki (2001) state that self-assessment instruments that is supposed to measure EI have appeared in popular management literature. Sample questions include: "*I believe I can stay on top of tough situations,*" and "*I am able to admit my own mistakes*" (Kreitner & Kinicki,

2001, p. 158). The reliability and validity of such instruments have been questioned in recent research. Even Goleman (1998, p. 158) concedes, "*It's very tough to measure our own emotional intelligence, because most of us don't have a very clear sense of how we come across to honest people...*" Honest feedback from the participants is essential. According to Kreitner and Kinicki (2001), the area of EI is still useful for teachers and trainers in organisations based on the fact that social problem solving and the ability to control one's emotions can be taught and learnt, which is not the case with IQ. Thus, before valid EI measuring instruments have been developed, EI test scores should definitely not be used to make hiring and/ or promotional decisions (Kreitner & Kinicki, 2001).

Jonker (2002) refers to the importance of reliable and valid measures of emotional intelligence and its components and the value that standardised psychometric instruments of emotional intelligence could provide. Schutte and Malouff (1998) explain that standardised measures of EI are important efforts to:

- "Make theoretical advances in the area of emotional intelligence;
- explore the nature and development of emotional intelligence;
- predict the future functioning of individuals, for example in training, programmes, work situations, or marriages;
- identify individuals likely to experience problems because of deficits in emotional skills; and
- evaluate the effectiveness designed to increase emotional intelligence" (Schutte & Malouff, 1998, quoted by Jonker, 2002, p. 157).

The use of testing in the selection process has gone through periods of both growth and decline. Some tests were not found reliable, while others were found to be inaccurate predictors of job performance. The primary problem in the past had been the use of very general tests for a variety of jobs without seriously considering their validity.

Today, employers are more cautious in the selection and use of tests. The following are two concepts that need consideration:

- “**Reliability** of a test refers to consistency of measurement, usually across time and interpreters. Put differently, reliability is a measure of how much error is present in a measure” (Grobler, et al., 2002, p. 182).
- “**Validity** is the extent to which scores on a test or interview correspond to actual job performance. It represents how well the technique being used to assess candidates for a certain job is related to performance in that job” (Grobler, et al., 2002, p. 182).

The contents of Section 8 of the Employment Equity Act (Act 55 of 1988) stresses that psychological testing and other similar assessments of an employee is prohibited unless the test or assessment being used

- a) Has been scientifically shown to be valid and reliable;
- b) can be applied fairly to all employees; and
- c) is not biased against any employee or group (Nel, 2002).

A non-standardised psychometric test cannot be used due to the fact that it leads to unfair discrimination. Care should therefore be taken only to use tests that have been validated for specific applications (Nel, 2002). A popular criticism is that psychometric instruments that are based largely on middle-class white values and knowledge are culturally biased and less valid for other population groups (Van Zyl & Visser, 1998). The testing of persons with highly diverse cultural backgrounds has received increasing attention and has led to widespread debate and research over the past few years (Anasti & Urbina, 1997; Gregory, 1996). Cross-cultural studies suggest that the patterns of belief involve different patterns of salience across diverse cultures (Schaap, Buys, & Olckers, 2003). This is very likely the case in South Africa with its cultural richness.

It is important to consider the following aspects when contemplating the use of psychometric tests, which have thus been validated (Nel, 2002):

### **Guidelines for the use of psychometric tests**

#### **a) Relevance, reliability and validity:**

- Tests should be relevant and properly analysed for the job for which the applicants are being considered.
- Tests should be reliable for all applicants.
- Tests should be valid for the purpose of selection. Validity studies conducted outside the organisation for similar purposes may be used as interim measures if data within the organisation were not immediately available. The validity of the test for different groups should be investigated empirically; and
- apart from conventional validation, which is often not properly done because it has to be repeated for all job types, validation based on job analysis should be done and this procedure should also be used to set realistic cut-offs (Nel, 2002, p. 282).

#### **b) Bias:**

- Experts should assess bias in tests.
- Separate norms for different groups should be used until the bias in the test has been accounted for, or different groups of applicants have more equitable experience.
- If the applicant is tested in a language different from his or her first language, a non-verbal assessment should be included. A correlation factor should also be built into the interpretation of the test score, e.g. additional time allocation; and
- selection decisions based on a single test score should be avoided (Nel, 2002, p. 282 - 283).

A major weakness with EI research literature is the lack of scientifically sound, objective measures of the EI construct. Unlike the many carefully developed cognitive ability measures, measures of EI are almost all based on self-report instruments, lacking norms or a

standardisation group, and if measures exist at all, they have unacceptable levels of internal consistency or stability. Almost none of the EI measures provide any data to support the particular interpretations that the test developers claim to make, using a test score (Pfeifer, 2001). This does not necessarily mean that EI may not eventually prove to be a valid or useful psychological construct. Rather, it simply means that, at present, there are not any scientifically acceptable instruments to measure EI constructs (Pfeifer, Soldivera, & Norton, 1992). Without objective, psychometrically sound measures, it is simply impossible to know what EI is or what it is not (Pfeifer, 2001). Still, there remains a need for brief, validated measures of emotional intelligence that are based on a comprehensive model of emotional intelligence.

With the exception of one South African sample in determining validity of the BarOn EQ-i, no other instrument have been validated and standardised for employees in South Africa. There also exists a need for a more simplified and more cost effective measure of emotional intelligence (Jonker, 2002). For this reason, it is difficult to assess the levels of EI amongst different groups in South Africa. Consequently, it is difficult to identify levels of emotional intelligence. There is also a lack of South African norms that hamper the implementation and development of emotional intelligence programmes (Jonker, 2002).

The Emotional Intelligence Scale (Schutte, Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998) assesses perception, understanding, expression, regulation and harnessing of emotion in the self and others. The brevity of the scale and its accumulating reliability and validity evidence makes this scale a reasonable choice for those who are seeking a brief self-report measure of global emotional intelligence. Potential uses of the scale in theoretical research involve exploring the nature of emotional intelligence, the effect of emotional intelligence, and whether emotional intelligence could be enhanced (Schutte, et al., 1998).

No study has been undertaken to examine the validity of the EI measure of emotional intelligence developed by Schutte, et al. (1998) in different occupations in South Africa, and also not amongst Economic Sciences students that can be expected to form part of the future workforce in most business organisations.

From the problem statement above, the following research questions can be identified:

- How is the importance of a standardised psychometric instrument of emotional intelligence in South Africa conceptualised in literature?
- What is the nature and evolution of emotional intelligence measures?
- What is the validity and internal consistency of the SEIS?
- What are the possible group differences of emotional intelligence regarding biographical data?
- What are the recommendations about the use of the psychometric instrument of emotional intelligence – the SEIS?
- What recommendations for future research can be made that needs to be done on psychometric testing and emotional intelligence?

## **1.2 RESEARCH OBJECTIVES**

Arising from the problem statement described above, the following general and specific objectives are set for this research.

### **1.2.1 General objective**

The general objective of the research is to standardise a psychometric instrument of emotional intelligence and determine the validity of The Schutte Emotional Intelligence Questionnaire (SEIS) (Schutte, et al., 1998).

### **1.2.2 Specific objectives**

The following specific objectives are formulated for this research, namely to:

- Conceptualise the importance of a standardised psychometric instrument of emotional intelligence in South Africa;
- Conceptualise the nature and evolution of emotional intelligence measures;

- Determine the validity and internal consistency of the SEIS;
- Establish any possible group differences of emotional intelligence in terms of biographical data;
- Make recommendations about the use of the psychometric instrument of emotional intelligence – the SEIS;
- Make recommendations for future research that needs to be done on psychometric testing and emotional intelligence.

### **1.3 RESEARCH METHOD**

The research consists of a literature review and an empirical study.

#### **1.3.1 Phase 1: Literature review**

The literature review focuses on the factorial validity and internal consistency of a measure of emotional intelligence.

#### **1.3.2 Phase 2: Empirical study**

The following components of the empirical study are designed to assist in achieving the research objectives.

##### **1.3.2.1 Research design**

The research objectives will be achieved by employing a survey design. The specific design selected is the cross-sectional design. In this design, information is collected from the sample population at a given point in time (Shaughnessy & Zechmeister, 1997). The information gathered is used to describe the population at that point in time.

The cross-sectional design is used to examine groups of subjects in various stages of development simultaneously, while the survey describes a technique of data collection in which

questionnaires are used to gather data about the identified population (Burns & Grove, 1993). The design can also be used to assess interrelationships. According to Shaughnessy and Zechmeister (1997), this design is ideal to address the descriptive functions with correlational research.

### **1.3.2.2 Participants**

A sample ( $N = 341$ ) was taken from Economical Science students from the North-West University, North-West Province, South Africa. Only 324 (95%) of the responses could be utilised. Of this sample, 201 respondents were Afrikaans-speaking, 17 respondents were English speaking and 106 respondents and 150 were from the remaining 10 African languages.

### **1.3.2.3 Measuring battery**

The Schutte Emotional Intelligence Questionnaire (SEIS) (Schutte, et al., 1998) comprises of 33 items, of which three items (5, 28 and 33) are reverse-scored. Participants' reply on a Likert scale and a total score was derived by summing up the item responses. Validation studies included correlations with theoretically related constructs (e.g. alexythimia, pessimism and depression), *t*-tests between various groups (e.g. therapists, prisoners, clients in a substance abuse programme) and correlations with each of the Big 5 higher-order factors (Petrides & Furnham, 2000).

### **1.3.2.4 Statistical analysis**

The statistical analysis was carried out with the SPSS programme (SPSS, 2003). The dataset was studied to identify bivariate and multivariate outliers. To identify bivariate outliers, the data were standardised (to z-scores). Values higher than 2,58 were inspected to decide whether they should be removed from the dataset. The anti-image scores of the different items were also inspected. Items with scores lower than 0,60 is problematic and will therefore be excluded from the rest of the statistical analyses.

Furthermore, missing values were analysed and replaced where possible. Principal factor extraction with oblique rotation was performed on the measuring instrument to determine the factor structure. Principal component extraction was used prior to principal factor extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices. The eigen values and scree plot were studied to determine the number of factors underlying the specific measuring instrument.

Descriptive statistics (e.g. means, standard deviations, range, skewness and kurtosis) and inferential statistics were used to analyse the data. In terms of statistical significance, it was decided to set the value at a 95% confidence interval level ( $p \leq 0,05$ ). Effect size (Steyn, 1999) was used to decide on the practical significance of the findings. Pearson product-moment correlation coefficients were used to specify the relationship between the variables. A cut-off point of 0,30 (medium effect) (Cohen, 1988) was set for the practical significance or correlation coefficients. T-tests, ANOVA and MANOVA were used to determine the differences between groups.

Cronbach alpha coefficients were used to determine the internal consistency, homogeneity and unidimensionality of the measuring instrument (Clark & Watson, 1995). Coefficient alpha contains important information regarding the proportion of variance of the items of a scale in terms of the total variance explained by the particular scale.

#### **1.4 RESEARCH PROCEDURE**

The measuring battery will be compiled. In co-operation with the lecturers at the Economical Sciences Department of the Potchefstroom and Vaal Triangle campuses of the North-West University, the measuring battery with a letter that explains the background of and the motivation for the empirical research requesting their participation, will be handed out to students during certain scheduled periods for completion.

## **1.5 CHAPTER DIVISION**

The chapters of this mini-dissertation will be divided as follows:

Chapter 1: Introduction

Chapter 2: Research article

Chapter 3: Conclusion, limitations and recommendations

## **1.6 CHAPTER SUMMARY**

In this chapter the problem statement and motivation for the research were discussed. The purpose of the research was formulated, the methodology of the research was outlined and the methods used for the statistical analysis were described.

A research article on a validation study on emotional intelligence is presented in Chapter 2.

*In this study the abbreviation EI will refer to emotional intelligence.*

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## **CHAPTER 2**

### **RESEARCH ARTICLE**

# **A PSYCHOMETRIC EVALUATION OF A MEASURE OF EMOTIONAL INTELLIGENCE FOR UNIVERSITY STUDENTS**

C. VOSLOO

C.S. JONKER

*Workwell: Research Unit for People, Policy and Performance, Faculty of Economic and Management Sciences, Potchefstroom Campus North-West University*

## **ABSTRACT**

The objective of this study was to investigate the psychometric properties of The Schutte Emotional Intelligence Scale (SEIS). The psychometric soundness of the SEIS was tested. A cross-sectional survey design was used for this study. A sample ( $N = 341$ ) was taken from Economical Science students from a higher education institution. The results supported a six factor structure of the SEIS. The six factors are Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-verbal Emotions and Emotional Management. A multi-analysis of variance (MANOVA) was used to determine differences in terms of biographical data. The results indicated significant differences between gender and language groups.

## **OPSOMMING**

Die doelstelling van die studie was om die psigometriese eienskappe van Die Schutte Emosionele Intelligensieskaal (SEIS) te ondersoek. Die psigometriese betroubaarheid van die SEIS is ondersoek. 'n Dwardeursnee-opname ontwerp met 'n beskikbaarheidsteekproef ( $N = 341$ ) van Ekonomiese Wetenskap-studente aan 'n hoër onderwys-instelling is gebruik. Die resultate ondersteun 'n sesfaktor-struktuur van emosionele intelligensie bestaande uit Positiewe Affek, Emosies-Ander, Positiewe Emosies, Emosies-Eie, Nie-verbale Emosies en Emosionele Bestuur. 'n Multi-variantsieontleding (MANOVA) is gebruik om groepsverskille met betrekking tot biografiese data te bepaal. Die resultate dui betekenisvolle verskille tussen geslag- en taalgroepe aan.

Organisations and organisational life are characterised by change and complexity. Relationships between the individual and the organisation should never be static but should continually evolve (Bendix, 2001). This continuous evolving process requires organisational change. Grobler, Wörnich, Carell, Elbert, and Hatfield (2002) state that only fluid, flexible, highly adaptive organisations will thrive in the fast-paced global economy. The shifting face of tomorrow is emerging with critical people issues that depict several external and internal, micro and macro, environmental issues (Grobler, et al., 2002). Due to the complexity of today's organisational environment, those that are able to anticipate, react and respond to change and learn, will likely be the ones that manage to maintain a competitive advantage (Dwyer, 2001). Dwyer (2001) implies that the organisation will only be able to maintain a competitive advantage through change.

Organisation effectiveness is influenced by the interaction between individuals, groups and organisational factors (Robbins, 1996). Organisational change is a determining organisational factor that will influence the individual. Cooper (1997) identifies the importance of the realisation of employees as organisational assets, stressing the increasing need for development and training of personnel. Arumugam (2003) confirms that business leaders are increasingly recognising that there is more to business success than technical and cognitive competence. People leadership is proving to be critical for business bottom-line achievements, considering that most business outcomes are achieved through human capital (Arumugam, 2003). The latter can be done by the measurement and development of emotional intelligence (EI) in organisations (Jonker, 2002).

The continuing search for a way to ensure a sustainable competitive advantage in an ever changing environment, an advantage that can be developed through attention to people issues, causes organisations to be interested in the potential value of EI (Dulewicz & Higgs, 2000). Pengilly (2002) stresses that EI is vital to the success of personnel in general, but more specifically the success of management in order to have the EI ability to manage and lead people as opposed to pre-conceived notions that past experience is the determining factor for success in a position. The research of Jonker (2002) indicates that training programmes aimed at EI could lead to better overall emotional intelligence. Potential management candidates need to

understand the importance and potential of EI, which is strongly related to leadership skills, group performance, individual performance, interpersonal or social exchange and managing change (Pengilly, 2002). Cooper (1997) contributes to this notion by saying EI is a hidden advantage in organisations.

Handley (2001) confirms that emotional intelligence can be used to the advantage of organisations through developing an EI audit. This will allow organisations to profile and understand what skill sets are associated with maximum performance (Handley, 2001).

Research on the application of EI indicates that optimised emotional intelligence distinguishes between performers and non-performers and plays an important role in determining which organisations will outperform the competition (Kapp, 2000). Goleman (1998) provides research data that indicates the benefits of EI to enhanced business results. Steiner (1997), Salovey and Mayer (1990), Furnham (1996), and Dulewicz and Higgs (2000) point to the impact of EI and IQ in combination on determining successful performance outcomes. According to Zeidner, Matthews, and Robberts (2004), EI is claimed to affect a wide range of work behaviours, including employee commitment, teamwork, development of talent, innovation, quality of service, and customer loyalty. Watkin (2000) states that over 25 years of empirical studies show the impact that EI, not IQ, has on business success. Cooper (1997) found research indicating that people with high levels of EI experience more career success, build stronger personal relationships, lead more effectively, and enjoy better health than those with a low EI.

According to Handley (2001), an EI audit profile will help in two areas: firstly, during recruitment or selection, a profile of emotional intelligence skill sets is associated with high performance in various corporate positions. This will ensure effectiveness in recruiting and hiring employees with the right EI competencies (Handley, 2001). Arumugam (2003) states that EI is essentially the adhesive of organisational life showing itself from the time a potential employee is recruited to termination of employment. In the recruitment process EI is a critical entry criterion. The attraction of potential employees that are emotionally stable and competent in interpersonal relations is crucial for business performance (Arumugam, 2003).

The second area that Handley (2001) identifies is that the profile helps the company to find and enhance those skill sets that truly constitute a corporate asset or competitive advantage. This knowledge of skill sets is vital for high-leverage, on-target investments in human capital development (Handley, 2001). According to Arumugam (2003), EI is an important building block in the employee development process.

The application of an emotional intelligence audit could add value to organisations in South Africa. Pengilly (2002) states that increased levels of unemployment have become a feature of the South African economy and that the number of candidates per vacant position has increased rather dramatically in some instances. Some of these candidates could also be regarded as desperate, considering that they have been unemployed for some time (Pengilly, 2002). According to Pengilly (2002), the so-called “brain drain” is causing South African organisations to search more intensely for the right talent, taking into account the previous statement by Handley (2001) that the EI audit profile will firstly make companies more effective in recruiting and hiring employees with the right emotional intelligence competencies (Handley, 2001).

Affirmative action and equal employment opportunity legislation have created a new dimension in industries in South Africa (Pengilly, 2002). Other forces that have an influence on organisations in South Africa are for example a diverse employee population, a relatively young working population, stereotyping and prejudice regarding diverse groups, and the political climate (Carrell, Elbert, Hatfield, Grobler, Marx, & Van der Schyff, 1998). Jonker (2002) states that the optimal development and utilisation of individual characteristics and skills are crucial to improve the effectiveness of South African organisations. Affirmative action, diverse employee population and a relatively young working population call for development and training in organisations in this country. The need for development and training in South African organisations indicates the applicability of the second area that Handley (2001) identifies where an EI audit profile could be of use to South African organisations. In this regard Wolmarans (1998) states that the measurement and development of EI could play a significant role. Watkin (2000) elaborates that while EI is often seen as the integrating thread weaving consistency into organisational effectiveness interventions, a measurement tool is needed to bring the concept of EI to life.

Pérez, Petrides, and Furnham (2005) quote Eysenck (1958), where he poses the question whether personality could ever be measured. Eysenck (1958) notes that the answer depends on what is meant by personality and what is meant by measurement. Although EI has been the subject of much attention, at both popular and academic level, only now are answers provided to some of the fundamental questions posed about the construct (Pérez, et al, 2005). Dulewicz, Higgs, and Slaski (2003) confirm that in literature there appears to be some debate about what constitutes the domain of EI, about terminology used to describe the construct and about methods used to measure it.

Taking into account the statement made by Eysenck (1958) that personality could be measured if personality and measurement were defined, it would be possible to say that it is feasible to measure EI if the concepts of EI and measurement or assessment were well defined.

### **Emotional Intelligence**

Dulewicz, et al. (2003) state that emotional intelligence is not a new concept. Mayer, Salovey and Caruso (2004) define the concept of emotional intelligence as the capacity to reason about emotions, and of emotions to enhance thinking. EI includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thoughts, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth (Mayer, et al., 2004).

Dulewicz and Higgs (1999) define EI as being concerned with being aware of, and managing one's own feelings and emotions; being sensitive to, and influencing others; sustaining one's motivation; and balancing one's motivation and drive with intuitive, conscientious and ethical behaviour. It is apparent that from this theoretical perspective EI refers specifically to the cooperative combination of intelligence and emotion (e.g., Ciarrochi, Chan, & Caputi, 2000; Mayer & Salovey, 1997; Roberts, Zeidner, & Matthews, 2001). Emotional intelligence emphasises the importance of self-awareness and understanding, redressing a perceived imbalance between intellect and emotion in the life of the collective Western mind (Zeidner, et al., 2004). Zeidner, et al. (2004) state further that EI also connects with several cutting-edge areas of psychological

science, including the neuroscience of emotion, self-regulation theory, studies of meta-cognition, and the search for human cognitive abilities beyond “traditional” academic intelligence. Given the core proposition that it is a combination of IQ and EI that determines life success (Goleman, 1996), a question arises as to whether or not it is feasible to measure emotional intelligence (Dulewicz & Higgs, 2000).

Dulewicz and Higgs (2000) state that in exploring the issue of whether it is possible to measure EI or not, the literature tends to polarise. There appears to be a dominant view that the somewhat complex and diverse nature of EI works against its effective measurement (Dulewicz & Higgs, 2000). In 1996, Goleman stated that between 1990 and 1996 no pencil and paper test that measures emotional intelligence existed. Other authors tend to endorse this view, for example Steiner (1997), who claims that EI is a marketing term that is impossible to measure. According to Dulewicz and Higgs (2000), the complex nature of EI and its assessment may not be appropriate for measurement by means of a pencil and paper test.

The assessment of EI is therefore still a topic of considerable interest and debate (Austin, Saklofske, Huang, & McKenney, 2004). The reason for this is that much has been written about EI; less about how to measure it or develop employees in it; or what an emotionally intelligent organisation looks like (Watkin, 2000). Schutte, et al. (1998) state that the assessment of EI has not kept pace with the interest in the construct in general. Pfeiffer (2001) and Petrides and Furnham (2003) confirm this by saying that the development of EI measures has not nearly kept pace with the theory and popular interest in the EI construct.

According to Pfeifer (2001), there was in 2001 no brief, objective, theoretically grounded measure of EI that enjoyed acceptable reliability or validity. Pfeifer (2001) states that a major weakness with the extant EI research literature is the lack of scientifically sound, objective measures of the EI construct. Pfeifer (2001) explains that unlike the many carefully developed cognitive ability measures, measures of EI are almost all based on self-report instruments, lack norms or a standardisation group, and if measures exist at all, have unacceptable levels of internal consistency or stability. Pfeifer (2001) concludes that almost none of the EI measures

provide any data to support the particular interpretations that the test developers claim they can make by using a test score.

Davies, Stankov, and Roberts (1998) examined the relationship among various measures of emotional intelligence and personality. They concluded that objective measures of emotional intelligence are unreliable and that self-report measures show considerable overlap with traditional measures of personality (Newsome, Day, & Catano, 2000). This does not necessarily mean that EI may not eventually prove to be a valid or useful psychological construct. Rather, it simply means that Pfeifer, Soldivera, and Norton (1992) found that no scientifically acceptable instruments were available in 1992 to measure EI constructs. Only recently are researchers beginning to identify valid EI measures (Ciarrochi, et al., 2000; Ciarrochi, Deane, & Anderson, 2002; Mayer, Caruso & Salovey, 1999; Schutte, et al., 1998). However in 2003, Saklofske, Austin and Minski (2003) stated that research on the psychometrics of EI was still in its early stages, leaving a number of unresolved research issues that needed to be addressed. Conte (2005) therefore states that serious concerns still remain for EI measures, ranging from scoring concerns for ability-based EI measures to discriminant validity concerns for self-report EI measures.

While the lack of a scientifically acceptable method for assessing EI is widely acknowledged by Goleman (1996) and Kreitner and Kinicki (2001), there is a continuing search for a measure of EI (Dulewicz & Higgs, 2000). The latter is evident in the number of EI measures that give the impression that the construction of psychometrically sound questionnaires is easy (Pérez, et al., 2005). Conte (2005) emphasises that EI measures cannot be applied in the organisation unless more rigorous, predictive and incremental validity evidence for EI measures is shown. EI has been characterised by some researchers as a cognitive ability (involving the cognitive processing of emotional information), which should be measured by ability-type tests (Saklofske, et al., 2003). An alternative approach to EI proposes that it is a dispositional tendency, which can therefore be measured by a self-report questionnaire (Saklofske, et al., 2003).

The process of validating an EI measure requires convincing empirical evidence that a measure of EI predicts career success or other important on-the-job criteria. The most basic task for

validation research is to show that EI measures reliably differentiate between low- and high-performing groups on particular work-related criteria. Such studies should focus on predicting success both across and within jobs, identifying the occupations for which EI is more and less important (e.g. social workers versus financial analysts). The use of EI component sub-tests also needs to be validated, using large-scale trait-performance validation designs. It is highly plausible that effective performance in different occupations involves different patterns of emotional (or social) characteristics (Zeidner, et al., 2004).

Schutte and Malouff (1998) as quoted by Jonker (2002, p. 157) state that reliable and valid measures of EI and its components are important efforts to:

- Make theoretical advances in the area of EI;
- explore the nature and development of EI;
- predict the future functioning of individuals, for example in training, programmes, job or marriages;
- identify individuals likely to experience problems because of deficits in emotional skills; and
- evaluate the effectiveness designed to increase EI.

### **Trait EI versus Ability EI**

Pérez, et al. (2005) report that in the rush to create EI measures, researchers and theorists (for example Ackerman & Heggstad, 1997; Hofstee, 2001) overlooked the fundamental difference between typical versus maximal performance. Thus, while some researchers developed and used self-report questionnaires, others embarked on the development of maximum-performance tests of EI (Pérez, et al., 2005). According to Pérez, et al. (2005), all these researchers assumed that they were operationalising the same construct.

Pérez, et al. (2005) state that the method used to measure individual difference variables (self-report versus maximum performance) has a direct impact on their operationalisation. In recognition of this basic fact, Petrides and Furnham (2000; 2001) distinguish between trait EI (or

emotional self-efficacy) and ability EI (or cognitive-emotional ability). Petrides and Furnham (2001) propose that these two types of measures should be termed ability and trait EI respectively (Austin, et al., 2004).

According to Pérez, et al. (2005), it is important to understand that trait EI and ability EI are two different constructs. The former is measured through self-report questionnaires, whereas the latter ought to be measured through tests of maximal performance. This measurement distinction has far-reaching theoretical and practical implications. For example, trait EI would not be expected to correlate strongly with measures of general cognitive ability or proxies thereof, whereas ability EI should be unequivocally related to such measures (Pérez, et al., 2005).

### **Mixed versus ability models of EI**

The former distinction between trait EI and ability EI is predicated according to Mayer, Salovey and Caruso (2000) with regard to the method used to measure the construct and not the elements that the various models are hypothesised to encompass. As such, it is unrelated to the distinction between mixed and ability models of EI (Mayer et al, 2000), which are based on whether or not a theoretical model mixes cognitive abilities and personality traits (Pérez, et al., 2005).

The distinction between mixed and ability models pays no attention to the most crucial aspect of construct operationalisation (i.e., the method of measurement) and are compatible with the idea of assessing cognitive ability variables via self-report procedures, which is not the case when differentiating between trait EI and ability EI. Indeed, correlations between actual and self-estimated scores tend to hover around  $r = 0,30$  (Furnham, 2001).

The distinction of Mayer, et al. (2000) between mixed versus ability models is at variance with both established psychometric theories. This is because it neglects the issue of the measurement method as well as with all available empirical evidence, which clearly shows that self-report measures of EI tend to intercorrelate strongly, irrespective of whether or not these measures are based on mixed or ability models (Pérez, et al., 2005). All incoming data continues to highlight

the need to distinguish between two EI constructs, namely trait and ability EI (O'Connor & Little, 2003; Warwick & Nettelbeck, 2004).

O'Connor and Little (2003) focus on the difference between self-report and ability-based measures of EI. In recent years, a debate has emerged in the EI literature regarding whether or not self-report measures, such as the Bar-On EQ-i, provide an accurate assessment of one's standing on this construct. Some authors (e.g. Mayer, et al., 1999; Mayer & Salovey, 1997; Mayer, et al., 2000) argue that EI could be more accurately conceptualised as an ability than as a conglomeration of traits and characteristics.

MacCann, Roberts, Matthews, and Zeidner (2004) state that although there are currently several models of EI in the literature, they can be roughly classified under two distinct frameworks.

The first approach, which tends to rely on self-report techniques, suggests that EI is primarily dispositional (i.e. representing a conglomerate of cognitive, personality, motivational and affective attributes). Examples of measurement approaches subscribing to this framework include the EQ-i (Bar-On, 1997), the EQ-map (Cooper, 1996), and the Schutte Self-Report Index (SSRI) (Schutte, et al., 1998).

The second approach upholds a cognitive view of EI, which in turn suggests that its measurement should conform to ability modes. Examples of this approach include the four-branch hierarchical structure of EI, measured empirically by the Emotional Accuracy Research Scale (EARS) (Geher, Warner, & Brown, 2001), the Multi-factor Emotional Intelligence Scale (MEIS) (Mayer, et al., 1999) and its successor, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, Caruso, & Sitarenios, 2003).

Mayer and Salovey (1997) formulated a hierarchical model of emotional intelligence, which they subsequently amended. The original model postulated that EI is an umbrella concept comprising three distinct components, namely appraisal and expression of emotions, regulation of emotions and utilisation of emotional information in thinking and acting (Petrides & Furnham, 2000).

Petrides and Furnham (2000) state that Mayer, et al. (2000) differentiate between mixed and ability models of EI on the basis of Mayer and Salovey's (1997) model and further theoretical development that were vague. According to Mayer, et al. (2000), mixed models incorporate a wide range of personality variables as opposed to Mayer and Salovey's (1997) ability model, which is a strongly cognitive definition of EI.

An even broader differentiation is that between trait EI and information-processing EI. This took into account the different measurement approaches and operational definitions adopted by mixed and ability mode theorists (Petrides & Furnham, 2000).

In fact, Petrides and Furnham (2000) propose that it is the type of measurement rather than the theory *per se* that determines the nature of the model. Trait EI is concerned with cross-situational consistencies in behaviour (manifest in specific traits or behaviours such as empathy, assertiveness, optimism) as opposed to information-processing EI, which concerns abilities (e.g. able to identify, express and label emotions) (Petrides & Furnham, 2000). Trait EI is embedded within the personality framework and is assessed via validated self-report inventories that measure typical behaviour (e.g. Bar-On, 1997; Salovey, Mayer, Goldman, Turvey & Palfai, 1995) this approach to EI research draws heavily on personality variables such as empathy, optimism and impulsivity, but often includes many other, somewhat more vague constructs that seem to be potential correlates (e.g. motivation, self-awareness, happiness) rather than essential elements of EI. By contrast, the information-processing approach is much more focused and explicit as the constituent parts of EI and its relationship to traditional intelligence (Petrides & Furnham, 2000).

Much like traditional intelligence, information-processing EI can be best assessed through measures of maximal (not typical) performance. Whilst there are some trait EI inventories available, for example Bar-On (1997) and Salovey, et al. (1995), the only measure information-processing EI is the Multifactor Emotional Intelligence Scale (MEIS) developed by Mayer, et al. (1999). Schutte, et al. (1998) developed and validated a self-report scale within the trait EI framework that allegedly measures a homogeneous construct of emotional intelligence (Petrides & Furnham, 2000).

Austin, et al. (2004) state that EI has been characterised by some researchers (for instance Mayer, et al., 2000) as a cognitive ability that should be assessed by using problem-solving exercises, while other researchers (e.g. Petrides & Furnham, 2000; 2001) have developed an approach to EI assessment based on self-report questionnaires.

According to Pfeifer (2001), there are a dozen or more self-report instruments that purport to measure EI, and a smaller number of EI measures that are not in a self-report format. The following presentation serves to introduce different instruments that purport to measure the elusive EI construct:

### Measurement of ability emotional intelligence

Table 1 presents a summary of ability EI measures, along with basic information about their reliability, validity and factor structure provided by Pérez, et al. (2005, p. 127-128).

Table 1

*Summary of Ability EI Measures*

Measure	Authors	$\alpha$	Convergent/ Discriminant validity	Structure
<b>EARS.</b> Emotional Accuracy Research Scale	Mayer and Geher (1996)	Low (0,24 for target scoring and 0,53 for consensus scoring)	Small and unstable correlations with self-report empathy	Unclear (4 factors?)
<b>MEIS.</b> Multifactor Emotional Intelligence Scale	Mayer, et al. (1999)	Good for global ability EI (0,70 – 0,80), but low (0,35 - 0,66) for branches 3 and 4 (better to consensus than for expert scoring)	Small to moderate correlation with crystallised intelligence (Gc) Low correlations with the Big Five.	Unclear (3 factors?)

Table 1 (continues)

*Summary of Ability EI Measures*

<b>MSCEIT.</b> Mayer-Salovey-Caruso Emotional Intelligence Test	Mayer, Salovey and Caruso (1997; 2002)	Better for Version 2 than Version 1 (0,68 - 0,71)	Convergence between general consensus and expert consensus scoring. Very low correlations (< 0,30) with trait EI measures	Unclear factors?) (4
<b>FNEIPT.</b> Freudenthaler & Neubauer Emotional Intelligence Performance Test	Freudenthaler and Neubauer (2003)	Moderate: 0,69 for “managing own emotions” and 0,64 for “managing others’ emotions”	“Managing own emotions” correlated with self-reported intrapersonal EI (0,51) and “managing others’ emotions” correlated with self-report interpersonal EI (0,25). both subscales correlated with the Big Five (0,18 to -0,51)	Unclear factors?) (2

*Note.* Information in this table is necessarily succinct and readers are encouraged to consult the original sources for specific details. Entries designated “unclear” do not necessarily indicate conflicting evidence, as they may also refer to lack of adequate data. Question marks indicate that Pérez, et al. (2005) have been unable to obtain data from the relevant entry.  $\alpha$  = Reliability estimate Cronbach’s  $\alpha$ , Convergent/ Discriminant Validity = Convergent/ discriminant validity, Structure = Factor structure. Adapted from Pérez, et al. (2005, p. 127-128).

**Measurement of trait emotional intelligence**

Pérez, et al. (2005) state that only a few trait EI measures have been developed within a clear theoretical framework and even less have a sturdy empirical foundation. Indicative of the

confusion in the field is that most self-report questionnaires purport to measure EI as a cognitive ability (Pérez, et al., 2005).

Table 2 presents a summary of trait EI along with basic information about their reliability, validity and factor structure provided by Pérez, et al. (2005, p. 130-133).

Table 2

*Summary of Trait EI Measures*

Measure	Authors	$\alpha$	Convergent/ Discriminant Validity	Structure
<b>TMMS.</b> Trait Meta Mood Scale	Salovey, et al. (1995)	0,70- 0,85	Moderate correlations with the Big Five	3 factors, but no global score
<b>EQ-i.</b> Emotional Quotient Inventory	Bar-On (1997)	Generally good (about 0,85)	Moderate to high correlations with the Big Five	Unclear
<b>SEIS.</b> Schutte Emotional Intelligence Scales	Schutte, et al. (1998)	0,70 – 0,85	Medium to high correlations with the Big Five	Unclear (3 or 4 factors?) global score
<b>ECI.</b> Emotional Competence Inventory	Boyatzis, Goleman and Hay/McBer (1999)	0,70 - 0,85 for global score > 0,85 for social skills	Unclear (small samples); uncorrelated with critical thinking and analytical reasoning	Unclear (4 factors?)
<b>EI-IPIP.</b> Emotional Intelligence-based IPIP Scales	Barchard (2001)	0,70 - 0,85		
<b>EISRS.</b> Emotional Intelligence Self-Regulation Scale	Martinez-Pons (2000)	0,75 – 0,94	Unclear	Unclear (1 factor?)
<b>DHEIQ.</b> Dulewicz & Higgs Emotional Intelligence Questionnaire	Dulewicz and Higgs (2001)	Low to moderate (0,54 – 0,71)	Unclear	Unclear
<b>TEIQue.</b> Trait Emotional Intelligence Questionnaire	Petrides, Pérez and Furnham (2003)	Generally good (about 0,85)	The TEIQue can be isolated in Giant Three and Five-Factor space (Petrides, 2001)	4 factors, global score
<b>SPTB.</b> Sjöberg Personality Test Battery (EI Scale)	Sjöberg (2001)	0,70 – 0,85	Moderate correlations with extraversion (0,37) and Neuroticism (-0,50)	
<b>TEII.</b> Tapia Emotional Intelligence Inventory	Tapia (2001)	0,70 – 0,85		4 factors, global scale

Table 2 (continues)

*Summary of Trait EI Measures*

<b>SUEIT.</b> Swinburne University Emotional Intelligence Test	Palmer and Stough (2002)	Generally good (about 0,85)	Moderate correlations with neuroticism (-0,41), Extraversion (0,44), openness (0,27)	
<b>WEIP-3.</b> Workgroup Emotional Intelligence Profile (Version 3)	Jordan, Ashkanasy, Härtel, and Hooper (2002)	0,70 – 0,85	Small to moderate correlations with TMMS	Unclear (7 factors)
<b>EIS.</b> Emotional Intelligence Scale	Van der Zee, Schakel, and Thijs (2002)	Adequate for “other ratings” (0,70 – 0,85) Low for self-rating (<0,60)	Low correlations with IQ. Moderate to high correlations with the Big Five	Unclear (3 factors)
<b>WLEIS.</b> Wong & Law. Emotional Intelligence Scales)	Wong and Law (2002)	0,70 – 0,85	Small negative correlations with IQ	4 factors, global score
<b>LEIQ.</b> Lioussine Emotional Intelligence Questionnaire	Lioussine (2003)	0,70 – 0,85	Moderate correlations with the Big Five	Unclear (7 factors)

*Note.* Information in this table is necessarily succinct and readers are encouraged to consult the original sources for specific details. Entries designated “unclear” do not necessarily indicate conflicting evidence, as they may also refer to lack of adequate data. Question marks indicate that Pérez, et al. (2005) have been unable to obtain data from the relevant entry.  $\alpha$  = Reliability estimate Cronbach’s  $\alpha$ , Convergent/ Discriminant Validity = Convergent/ discriminant validity, Structure = Factor structure. (Adapted from Pérez, et al., 2005, p. 130–133).

It is evident from tables 1 and 2 that a number of researchers (Bar-On, 1997; Goleman, 1995, Salovey & Mayer, 1990; Schutte, et al., 1998) have attempted to develop self-report measures of EI or EI-related constructs (Ciarrochi, et al., 2002). However, in recent studies Davies, et al. (1998) uncovered problems with these measures: First, some of them have poor reliabilities. Second, the more reliable self-report measures had salient loadings on the well-established personality factors of Neuroticism, Extraversion, Psychoticism, Agreeableness, and Openness. Third, although there is factor-analytic evidence supporting the discriminant validity of the two EI factors (emotional awareness and clarity), these factors no longer emerge when unreliable measures are dropped from factor analysis.

As previously indicated, a wide variety of emotional intelligence measures have been developed. Since there has been difficulty in measuring EI (Rozell, Pettijohn, & Parker, 2002), it seems that it would be desirable to use one of the most comprehensive measures available and a scale that can be used in a variety of context.

The Schutte Emotional Intelligence Questionnaire (SEIS) devised by Schutte, et al. (1998) has subsequently been used in a number of studies (Ciarrochi, Chan, & Bajgar, 2001; Petrides & Furnham, 2000; Saklofske, et al., 2003; Schutte, et al., 2001). Interest in this scale has been in part motivated by its relative brevity compared with the main commercial trait EI instrument, the Bar-On (1996), which comprises 133 items. Findings from studies of the SEIS suggest that it provides a reliable and valid trait EI measure. Test-retest and internal reliabilities are good and group differences in score and correlations with other measures have generally been found to be in accordance with theoretical expectations (Ciarrochi, et al., 2001; Saklofske, et al., 2003; Schutte, et al., 1998; Schutte, et al., 2001). Nonetheless, this scale has been criticised for a lack of reverse-keyed items (Petrides & Furnham, 2000; Saklofske, et al., 2003), which could potentially lead to a confounding of SEIS score with acquiescent responding (Austin et al., 2004). Pérez, Petrides and Furnham, (2005) state that the SEIS has been used extensively in the literature and can be employed as a short measure of global trait EI.

The Emotional Intelligence Scale (SEIS) comprises of 33 self-referencing statements and requires subjects to rate the extent they agree or disagree with each statement on a five-point scale (1=strongly disagree; 5=strongly agree)(Ciarrochi, et al., 2000). Participants reply on a Likert scale and a total score is derived by summing up the item responses (Petrides & Furnham, 2000). The Emotional Intelligence Scale (Schutte, et al., 1998) assesses perception, understanding, expression, regulating and harnessing of emotion in the self and others. The brevity of the scale and its accumulating reliability and validity evidence makes this scale a reasonable choice for those that are seeking a brief self-report measure of global emotional intelligence. Potential uses of the scale in theoretical research involve exploring the nature of emotional intelligence, the effect of emotional intelligence and whether emotional intelligence could be enhanced (Schutte, et al., 1998). Schutte, et al. (1998) developed a self-report measure of EI based on the subcategories of Salovey and Mayer's original EI model (Petrides &

Furnham, 2000). The evidence suggests that this measure may be both reliable and distinct from the big five personality factors (Schutte, et al., 1998), which is an improvement over many of the old measures (Ciarrochi, et al., 2002). According to Ciarrochi, et al. (2002), The Schutte Emotional Intelligence Questionnaire (SEIS) shows some discriminant and criterion validity.

In terms of South African studies, no evidence of the validity, reliability and established norms of the SEIS for future employees or different occupational groups were found. A lack of research in terms of emotional intelligence of future employees and in different occupational settings necessitates the current study. In a culturally diverse setting such as South Africa, the understanding of differences in the experience of emotional intelligence in various groups will contribute to the effective measurement and the well-needed implementation of emotional intelligence development programmes in this country. The current study focuses on the investigation of the psychometric properties of the SEIS for future employees in the Economic and Business Sciences as a first attempt in validating the instrument within South Africa.

## **RESEARCH METHOD**

### **Research design**

The research objectives were achieved by employing a survey design. The specific design selected was the cross-sectional design. In this design, information is collected from the sample population at a given point in time (Shaughnessy & Zechmeister, 1997). The information garnered was used to describe the population at that point in time.

The cross-sectional design was used to examine groups of subjects in various stages of development simultaneously, while the survey describes a technique of data collection in which questionnaires were used to gather data about an identified population (Burns & Grove, 1993). The design can also be used to assess interrelationships. According to Shaughnessy and Zechmeister (1997), this design is ideal to address the descriptive functions with correlational research.

## Participants

A sample ( $N = 341$ ) was taken from Economical Science students from a higher education institution. Only 324 of the responses could be utilised (95%).

Descriptive information of the sample is given in Table 3.

Table 3

### *Characteristics of the Population (N=341)*

Item	Category	Frequency (Percentage)
Age	16-18 years	174 (53,70%)
	19-21 years	128 (39,50%)
	22-25 years	9 (2,70%)
Gender	Male	155 (47,80%)
	Female	169 (52,20%)
Language	Afrikaans	201 (62,00%)
	English	17 (5,20%)
	African Languages	106 (32,70%)
Campus	Potchefstroom Campus	207 (63,90%)
	Vaal Triangle Campus	117 (36,10%)
Degree	Accountancy	236 (73,10%)
	Economics	52 (15,90%)
	Business economics, tourism and marketing	14 (4,30%)

The sample consisted mainly of Afrikaans-speaking (62,00%) female students (52,20%) registered at the Potchefstroom Campus of the North-West University (63,90%) studying Accountancy (73,10%). Most of the participants were between 16 and 18 years old.

## Measuring battery

The Emotional Intelligence Questionnaire (SEIS) (Schutte, et al., 1998) were administered. This instrument comprises 33 items, of which three items (5, 28 and 33) are reverse-scored.

Participants' reply on a Likert scale and a total score was derived by summing up the item responses. Validation studies included correlations with theoretically related constructs (e.g. alexythymia, pessimism and depression), *t*-tests between various groups (e.g. therapists, prisoners, clients in a substance abuse programme) and correlations with each of the Big 5 higher-order factors (Petrides & Furnham, 2000).

### **Statistical analysis**

The statistical analysis was carried out with the SPSS programme (SPSS, 2003). The dataset was studied to identify bivariate and multivariate outliers. To identify bivariate outliers, the data was standardised (to z-scores). Values higher than 2,58 were inspected to decide whether they should be deleted from the dataset. An inspection was also made of the anti-image scores of the different items. Items with scores lower than 0,60 is problematic and may therefore be excluded from the rest of the statistical analysis.

Furthermore, missing values were analysed and replaced where possible. Principal factor extraction with oblique rotation was performed on the measuring instrument to determine the factor structure. Principal component extraction was used prior to principal factor extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices. The eigen values and scree plot was studied to determine the number of factors underlying the specific measuring instrument.

Descriptive statistics (e.g. means, standard deviations, range, skewness and kurtosis) and inferential statistics were used to analyse the data. In terms of statistical significance, it was decided to set the value at a 95% confidence interval level ( $p \leq 0,05$ ). Effect size (Steyn, 1999) was used to decide on the practical significance of the findings. Pearson product-moment correlation coefficients were used to specify the relationship between the variables. A cut-off point of 0,30 (medium effect) (Cohen, 1988) was set for the practical significance or correlation coefficients. T-tests, ANOVA and MANOVA were used to determine the differences between groups.

Cronbach alpha coefficients were used to determine the internal consistency, homogeneity and unidimensionality of the measuring instrument (Clark & Watson, 1995). Coefficient alpha contains important information regarding the proportion of variance of the items of a scale in terms of the total variance explained by the particular scale.

## **RESULTS**

Principal factor extraction with oblique rotation was performed on the SEIS to determine the factor structure. After investigating the anti-image scores of the items, item 33 was found to be problematic with a score lower than the recommended 0,60. It was therefore decided to leave this item out in the rest of the statistical analysis.

A simple factor analysis was done on the SEIS. Six factors (with eigen values higher than 1) were extracted, explaining 45,24% of the variance. The results of the factor analysis of the SEIS are shown in Table 2. Loading of variables on factors, communalities and percent of variance and covariance are shown. Variables are ordered and grouped by size of loading to facilitate interpretation. Labels for each factor are suggested in a footnote.

Table 4

*Factor Loadings, Communalities (h<sup>2</sup>), Percentage Variance and Covariance for Principal Factors Extraction and Oblique Rotation on SEIS items*

Item	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	h <sup>2</sup>
2. When I am faced with obstacles, I remember times when I faced similar obstacles and overcame them	0,54	0,00	0,00	0,00	0,00	0,00	0,44
3. I expect that I will do well in most things I try	0,62	0,00	0,00	0,00	0,00	0,00	0,50
6. Some of the major events of my life have led me to re-evaluate what is important and not important	0,54	0,00	0,00	0,00	0,00	0,00	0,42
10. I expect good things to happen	0,43	0,00	0,00	0,00	0,00	0,00	0,37
17. When I am in a positive mood, solving problems is easy for me	0,66	0,00	0,00	0,00	0,00	0,00	0,53
20. When I am in a positive mood, I am able to come up with new ideas	0,45	0,00	0,00	0,00	0,00	0,00	0,34
23. I motivate myself by imagining a good outcome to tasks I take on	0,49	0,00	0,00	0,00	0,00	0,00	0,43
4. Other people find it easy to confide in me	0,00	0,45	0,00	0,00	0,00	0,00	0,32
18. By looking at their facial expressions, I recognise the emotions people are experiencing	0,00	0,39	0,00	0,00	0,00	0,00	0,44
26. When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself	0,00	0,35	0,00	0,00	0,00	0,00	0,29
27. When I feel a change in emotions, I tend to come up with new ideas	0,00	0,42	0,00	0,00	0,00	0,00	0,51
29. I know what other people are feeling just by looking at them	0,00	0,68	0,00	0,00	0,00	0,00	0,52
30. I help other people feel better when they are down	0,00	0,55	0,00	0,00	0,00	0,00	0,48
32. I can tell how people are feeling by listening to the tone of their voice	0,00	0,63	0,00	0,00	0,00	0,00	0,49
12. When I experience a positive emotion, I know how to make it last	0,00	0,00	0,52	0,00	0,00	0,00	0,56
13. I arrange events that others enjoy	0,00	0,00	0,50	0,00	0,00	0,00	0,37
14. I seek out activities that make me happy	0,00	0,00	0,60	0,00	0,00	0,00	0,49
31. I use good moods to help myself keep trying in the face of obstacles	0,00	0,00	0,55	0,00	0,00	0,00	0,52
8. Emotions are one of the things that make my life worth living	0,00	0,00	0,00	-0,63	0,00	0,00	0,42
9. I am aware of my emotions as I experience them	0,00	0,00	0,00	-0,69	0,00	0,00	0,58
11. I like to share my emotions with others	0,00	0,00	0,00	-0,44	0,00	0,00	0,40
19. I know my emotions change	0,00	0,00	0,00	-0,41	0,00	0,00	0,31
22. I easily recognise my emotions as I experience them	0,00	0,00	0,00	-0,59	0,00	0,00	0,52
15. I am aware of the non-verbal messages I send to others	0,00	0,00	0,00	0,00	0,45	0,00	0,53

Table 4 (continues)

*Factor Loadings, Communalities (h<sup>2</sup>), Percentage Variance and Covariance for Principal Factors Extraction and Oblique Rotation on SEIS items (continues)*

Item	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	h <sup>2</sup>
25. I am aware of the non-verbal messages other people send	0,00	0,00	0,00	0,00	0,64	0,00	0,58
5. I find it hard to understand the non-verbal messages of other people	0,00	0,00	0,00	0,00	0,67	0,00	0,48
1. I know when to speak about my personal problems to others	0,00	0,00	0,00	0,00	0,00	0,38	0,40
21. I have control over my emotions	0,00	0,00	0,00	0,00	0,00	0,65	0,54
24. I compliment others when they have done something well	0,00	0,00	0,00	0,00	0,00	0,50	0,47
28. When I am faced with a challenge, I give up because I believe I will fail	0,00	0,00	0,00	0,00	0,00	0,54	0,51

F1 Positive Affect F2 Emotion-Others F3 Happy Emotions F4 Emotions-Own F5 Non-verbal Emotions F6 Emotional Management

Six internally consistent factors were extracted. Two of 32 variables did not load on the factors.

The first factor was labelled *Positive Affect*. Items loading on this factor relate to positive affect in personal experiences. It involves mainly the respondents' tendency to have a positive outlook on life in general, but more specifically when facing problems. The second factor was labelled *Emotion-Others* and included the respondents' experience of other people's emotions. The third factor was labelled *Happy Emotions*. The items that loaded on this factor include aspects such as good mood, positive emotions, happiness and joy. The fourth factor was labelled *Emotions-Own* and included the respondents' perception of their own emotions. The fifth factor was labelled *Non-verbal Emotions*. The items that loaded on this factor included aspects such as non-verbal messages that the person send and receive from others, and how the person interprets these non-verbal emotions. The sixth factor was labelled *Emotional Management*, reflecting respondents' indication that they can control their emotions or fail to manage their emotions.

A second-order factor analysis was done on the six factors that were extracted. The results indicated that one factor (with an eigen value higher as one) could be extracted, explaining 47,18% of the total variance. This factor refers to the total emotional intelligence dimension.

The descriptive statistics and Cronbach alpha coefficients of the factors of the SEIS are given in Table 5.

Table 5

*Descriptive Statistics and Cronbach Alpha Coefficients of the SEIS*

Item	Mean	SD	Skewness	Kurtosis	$\alpha$
Positive Affect	33,64	4,91	-0,94	1,13	0,73
Emotion-Others	28,28	5,47	-0,25	0,04	0,67
Happy Emotions	17,41	3,37	-0,54	0,16	0,63
Emotions-Own	20,72	4,52	-0,73	0,51	0,63
Non-verbal Emotions	11,43	3,11	-0,12	-0,47	0,56
Emotional Management	18,20	3,57	-0,87	1,11	0,54

Table 5 shows that acceptable Cronbach alpha coefficients were obtained that compare reasonably well with the guideline of 0,70 (0,55 in basic research), demonstrating that a large portion of the variance is explained by the dimensions (internal consistency of the dimensions) (Nunnally & Bernstein, 1994), except for Emotional Management. It is evident from Table 5 that most of the scales of the measuring instruments have relatively normal distributions, with low skewness and kurtosis.

The product-moment correlation coefficients between Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-verbal Emotions and Emotional Management are given in Table 6.

Table 6

*Product-Moment Correlation Coefficients between the SEIS dimensions*

Dimension	1	2	3	4	5
1.Positive Affect	.	.	.	.	.
2.Emotions-Others	0,35**	.	.	.	.
3.Happy Emotions	0,42**	0,43**	.	.	.
4.Emotions-Own	0,43**	0,43**	0,38**	.	.
5.Non-verbal Emotions	0,31**	0,29*	0,32**	0,33**	.
6.Emotional Management	0,49**	0,24*	0,38**	0,34**	0,31**

\* $p \leq 0,05$  – statistically significant\* $r > 0,30$  – practically significant (medium effect)\*\* $r > 0,50$  – practically significant (large effect)

Inspection of Table 6 indicated that Positive Affect is significantly positively related (medium effect) to Emotions-Others, Happy Emotions, Emotions-Own, Non-verbal Emotions and Emotional Management. Emotions-Others is significantly positively related (medium effect) to Happy emotions and Emotions-Own. Happy Emotions is significantly positively related (medium effect) to Emotions Own, Non-verbal Emotions and Emotional Management. Emotions-Own are significantly positively related (medium effect) to Non-verbal Emotions and Emotional Management. Non-verbal Management is positively related (medium effect) to Emotional Management.

A multi-analysis of variance (MANOVA) was used to determine differences between gender and language groups. The following formula was used to determine the practical significance of means of more than two groups (Stein, 1999):

$$d = \frac{\text{Mean}_A - \text{Mean}_B}{\text{Root MSE}}$$

where

$\text{Mean}_A$  = Mean of the first group

$\text{Mean}_B$  = Mean of the second group

Root MSE = Root Mean Square Error

A cut-off point of 0,50 (medium effect) (Cohen, 1988) was set for the practical significance of differences between means.

The MANOVAs of the differences between the Emotional Intelligence of language and gender groups are presented in Table 7.

Table 7

*MANOVAs of Emotional Intelligence of Language and Gender Groups*

Variable	Value	<i>F</i>	<i>Df</i>	Error <i>df</i>	<i>p</i>	Partial eta squared
Language	0,82	11,53	6	317	0,00*	0,18
Gender	0,94	3,64	6	317	0,00*	0,07

\*Statistically significant ( $p \leq 0,01$ )

Table 7 shows that language impacted significantly on the combined dependent variable Emotional intelligence ( $F_{(6,317)} = 11,53, p < 0,01$ ; Wilk's Lambda = 0,82; partial eta squared = 0,18). This effect was large (18% of the variance explained). Analysis of each dependent variable, using a Bonferroni adjusted alpha level of 0,002, showed that language groups differed in terms of the intensity of Positive Affect ( $F_{(1,00)} = 14,64, p < 0,01$ , partial  $\eta^2 = 0,04$ ) and Emotions-Others ( $F_{(1,00)} = 22,03, p < 0,01$ , partial  $\eta^2 = 0,06$ ). African language groups (compared with Afrikaans and English language groups) experienced higher levels of positive affect. Afrikaans and English language groups (compared with African language group) experienced higher levels of understanding of the emotions of other people.

Table 7 also shows that gender impacted significantly on the combined dependent variable Emotional Intelligence ( $F_{(6,317)} = 3,64, p < 0,01$ ; Wilk's Lambda = 0,94; partial eta squared = 0,07). This effect was moderate (7% of the variance explained). Analysis of each dependent variable, using a Bonferroni adjusted alpha level of 0,002, showed that gender groups differed in terms of Emotions-Others ( $F_{(1,00)} = 16,99, p < 0,01$ , partial  $\eta^2 = 0,05$ ). Females (compared with Males) experienced higher levels of understanding the emotions of other people.

## DISCUSSION

The objective of this study was to investigate the psychometric properties of the SEIS for Economic Science students from a higher education institution in the North-West Province, South Africa. The psychometric soundness of the SEIS was tested. Firstly, the results obtained using the cross-sectional design supported a six-dimensional factor structure of the SEIS explaining 45,24% of the variance. The six factors are Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-verbal Emotions and Emotional Management. In contrast, Petrides and Furnham (2000) identified a four-dimensional factor structure of the SEIS, namely Optimism/ Mood Regulation, Appraisal of Emotions, Social Skills and Utilisation of Emotions. Research by Saklofske, et al. (2003) provides a replication of the four-factor structure obtained by Petrides and Furnham (2000). Austin, et al. (2004) findings differed from that found in the two previously mentioned studies of Petrides and Furnham (2000) and Saklofske, et al. (2003) with only three factors identified: Optimism/Mood Regulation, Utilisation of Emotions and Appraisal of Emotions. Secondly, reliability analysis confirmed sufficient internal consistency of the SEIS. Research by Petrides and Furnham (2000) confirmed evidence of construct, predictive and discriminant validities.

Based on both conceptual and empirical grounds, item 33 ("It is difficult for me to understand why people feel the way they do") was eliminated from the original SEIS, resulting in a 32-item scale being fitted to the data in the *post hoc* analysis. These problems might be caused by the ambivalent nature of this item. On the one hand, a high score may indicate disengagement and social isolation by closing oneself off from contacts with others.

In examining the factor structure, some undesirable psychometric characteristics were found to be associated with several items of the SEIS. Principal factor extraction with oblique rotation was performed on the SEIS to determine the factor structure. After investigating the anti-image scores of the items, item 33 was found to be problematic with a score lower than the recommended 0,60. It was therefore decided to omit this item from the rest of the statistical analysis. These findings suggest that the item may require either deletion or content modification, in which instance the latter must rather be considered. The particular item may be

problematic because it does not correspond with the conceptual domain of the particular dimension. However, it is more likely that the item is somewhat ambiguous, or that it is either sample- or country-specific.

The deletion of the item from the SEIS for reasons of bias and model-fit improvement resulted in the sacrifice of model parsimony, in other words, relationships have been eliminated that could be viewed as an erosion in meaning of the emotional intelligence construct. Also, it is possible, due to the relatively small sample size and sampling procedure (sub-group representation), that these findings could have been obtained by pure chance.

Also, the problems of some of the items may be related to words that some of the participants could have found difficult to understand and/or interpret (e.g. vigorous, immersed and resilient).

The prominent correlated errors in this study presented another problem. In general, the specification of correlated error terms for the purpose of achieving a better-fitting model is not an acceptable practice. Correlated error terms in measurement models represent systematic, rather than random, measurement error in item responses. They may derive from characteristics specific either to the items or the respondents (Aish & Jöreskog, 1990). For example, if these parameters reflect item characteristics, they may represent a small omitted factor. However, as may be the case in this instance, correlated errors may represent respondent characteristics that reflect bias such as yea-/nay-saying, social desirability (Aish & Jöreskog, 1990), as well as a high degree of overlapping in item content (when an item, although worded differently, essentially asks the same question) (Byrne, 2001).

Previous research with psychological constructs in general (e.g. Jöreskog, 1982; Newcomb & Bentler, 1988; Tanaka & Huba, 1984), and with measuring instruments in particular (Byrne, 2001), has demonstrated that the specification of correlated errors can often lead to substantially better fitting models. Bentler and Chou (1987) also argue that the specification of a model that forces these error parameters to be uncorrelated is rarely appropriate with real data. Therefore, it was considered more realistic to incorporate the correlated errors in this study, rather than to ignore their presence.

It is believed that this confusing state of affairs regarding the SEIS does not reflect weaknesses inherent in the instrument, but is rather due to more general factors. First, the SEIS is a recently constructed measuring instrument. Therefore, relatively few studies have critically reviewed its psychometric properties. Secondly, the SEIS is an instrument that was originally constructed from data based on 346 participants in the south-eastern United States of America. Participants included university students and individuals from diverse community settings (Schutte, et al., 1998). The results obtained in this study were based on a homogeneous group of 341 participants (Economic Science students from a higher education institution in the North-West Province, South Africa). Thirdly, in the original data obtained by Schutte, et al. (1998), the average age of the participants was 29 years and in this study most of the participants were between 16 and 18 years old. And lastly, in the original research by Schutte, et al. (1998), it could be assumed that the first language of the participants was English, while in this study the questionnaires were completed by multi-language groups. Despite a few studies of the SEIS in Canada (e.g. Saklofske, et al., 2003; Austin, et al., 2004) and Europe (e.g. Petrides & Furnham, 2000), no research has ever been conducted regarding the SEIS in South Africa. Therefore, more research regarding the SEIS is required. The hypothesised six-factor model of emotional intelligence identified in this study contradicted the evidence found invariant across Canadian and British samples. Furthermore, the dimensionality of the SEIS could have been influenced because of the high reported correlations between the six dimensions. Explicit theory indicating exactly how the six-scales relate to one another and to other variables must be developed before one could thoroughly evaluate the theoretical validity of a six-component conceptualisation.

In conclusion, the results of this study could serve as a standard for measuring emotional intelligence of economic science students in a higher educational institution. The six-factor structure of the SEIS is largely confirmed with suitable internal consistency of its factors *Positive Affect*, *Emotion-Others*, *Happy Emotions*, *Emotions-Own*, *Non-verbal Emotions* and *Emotional Management*. The results further show that the SEIS is a suitable instrument for measuring emotional intelligence of Economic Science students in higher education. Further possibilities in terms of research are made possible along similar lines.

A multi-analysis of variance (MANOVA) was used to determine group differences in emotional intelligence regarding biographical data. The data shows significant differences between language groups (African language versus Afrikaans and English language) and gender groups (Male versus Female). African language groups experienced higher levels of positive affect than the Afrikaans and English language groups. Afrikaans and English language groups experienced higher levels of understanding of the emotions of other people than the African language groups. Although the first language of most of the respondents was not English, the questionnaires were available only in English. Therefore a possible explanation for the differences between the language groups could be related to words that some of the participants could have found difficult to understand and/or interpret (e.g. vigorous, immersed and resilient). Due to semantic differences, the SEIS may therefore need to be rewritten in a more acceptable South African language format. The data also indicated that gender differences impacted significantly on emotional intelligence. Females compared with males experienced higher levels of understanding of emotions of other people. Roothman, Kirsten and Wissing (2003) found that males scored significantly higher on cognitive, physical and self aspects, while females scored significantly higher on somatic symptoms, the expression of affect and spiritual aspects. This could provide an explanation for the higher levels of understanding of emotions of other people amongst females. Previous research by Cakan and Altun (2005) found no significant gender differences in terms of emotional intelligence amongst Turkish educators. Cakan and Altun (2005) explain that gender differences have been observed in EI in previous results from studies conducted on individuals living in Western cultures, for example research by Schutte, et al. (1998) and Saklofske, et al. (2003).

This study had several limitations. First, self-report measures were exclusively relied upon. Future studies conducted in this manner would confirm whether bias and equivalence do indeed exist for the different language groups. Also, items of the SEIS were allowed to correlate in the model specification. This may impose interpretation problems on the SEIS, because, as correlated error terms are added to the model, the correspondence between the posited construct of interest and the empirically defined factor becomes unclear (Gerbing & Anderson, 1984). Another limitation is the size of the sample, specifically the distribution of language groups and the sampling procedure in the present study, which has significant limitations in terms of the

generalisation of the findings applied to the total study population. Future studies could benefit hugely in terms of a stratified random-sample design, which would ensure sufficient representation of the different groups in the total population of students in higher education.

## **RECOMMENDATIONS**

According to the results obtained in this study, the use of the SEIS is recommended to assess emotional intelligence of Economic Science students at higher education institutions. Due to semantic differences, the SEIS may therefore need to be rewritten in a more acceptable South African language format.

It is suggested that future research should focus on the reliability and validity of the SEIS for other occupational settings, as the SEIS was found to be reliable and valid for this sample specifically. It is also important to determine norm levels for other occupations in South Africa for both questionnaires respectively. It is recommended that larger samples with a more powerful sampling method be utilised to enable generalisation of the findings to other similar groups. Also, the use of adequate statistical methods, such as structural equation modelling, equivalence and bias analysis is recommended. It might also be necessary to translate the SEIS into other languages used in South Africa.

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## CHAPTER 3

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter conclusions are presented, based on the specific research objectives in Chapter 1. Shortcomings of the study will be highlighted and recommendations will be made.

#### 3.1 CONCLUSIONS

The general objective of this study was to standardise a psychometric instrument of emotional intelligence and to determine the psychometric properties of the 33 SEIS questionnaire.

➤ *The first specific research objective was to conceptualise the importance of a standardised psychometric instrument of emotional intelligence in South Africa. The following conclusions are made regarding the first research objective:*

Pfeifer (2001) emphasises the importance of an objective sound measure of EI, while Kreitner and Kinicki (2001) contribute by stating that the area of emotional intelligence is useful because, unlike IQ, social problem solving and the ability to control one's emotions can be taught and learnt (Kreitner & Kinicki, 2001). Kreitner and Kinicki (2001) emphasise that scores on EI tests should definitely not be used for making hiring and promotion decisions until valid and reliable measuring tools have been developed. Schutte and Malouff (1998) state that reliable and valid measures of EI and its components are important efforts to make theoretical advances in the area of EI; explore the nature and development of EI; predict the future functioning of individuals, for example in training, programmes, job or marriages; identify individuals likely to experience problems because of deficits in emotional skills; and evaluate the effectiveness designed to increase EI.

A standardised psychometric instrument of emotional intelligence can be applied in the organisation during selection, recruitment, training and development of employees from senior executive to new-entrant employees. Handley (2001) states that an EI audit profile will be of

value during recruitment or selection. A profile of emotional intelligence skill sets is associated with high performance in various corporate positions (for example leadership and sales). This will make companies more effective in finding and hiring employees with the right emotional intelligence competencies (Handley, 2001). Arumugam (2003) states that EI is essentially the glue of organisational life, showing itself from the time that a potential employee is recruited to the time of exit. In the recruitment process EI is a critical entry gate. The attraction of potential employees that are emotionally stable and competent in interpersonal relations is crucial for business performance (Arumugam, 2003).

Selection for different types of jobs (based on different EI competencies) can be done. Within specific domains in the organisations, to which development of emotional intelligence can be applied, leaders and groups within the organisations can be targeted.

Emotionally intelligent employees are better equipped in this era of continual change and increasing complex domain that organisations function in. Bendix (2001) states that the organisation should never be static but should be continually evolving. This continual evolving requires organisational change. Grobler, Wärmich, Carell, Elbert, and Hatfield (2002) state that only fluid, flexible, highly adaptive organisations will thrive in the fast-paced global economy, implying that only fluid, flexible, highly adaptive employees will thrive in this fast-paced global economy. Due to the complexity of today's organisational environment, those who are able to anticipate, react and respond to change and learn, will likely be the ones that manage to maintain a competitive advantage (Dwyer, 2001). Dwyer (2001) implies that only through change would the organisation be able to maintain a competitive advantage. A standardised EI measure will assist organisations in recruiting employees with the needed EI competencies. Handley (2001) confirms this by stating that emotional intelligence can be used to the advantage of organisations through developing an EI audit. This would allow the organisations to profile and understand which skill sets are associated with high performance (Handley, 2001).

Pengilly (2002) states that the growth of unemployment has become a feature of the South African economy and that the number of candidates per vacant position has increased rather dramatically in some instances. Some of these candidates could also be regarded as quite

desperate, as they have been unemployed for some time (Pengilly, 2002). Handley (2001) refers to the so-called brain drain and states that it is causing South African organisations to search harder for the right talent. This takes into account the previous statement by Handley (2001) that the EI audit profile will firstly make companies more effective in finding and hiring employees with the right emotional intelligence competencies.

Organisation effectiveness is influenced by the interaction between individuals, groups and organisational factors (Robbins, 1996). Cooper (1997) identifies the importance of the realisation of employees as organisational assets, stressing the increasing need for development and training of personnel. Arumugam (2003) confirms that business leaders are increasingly recognising that there is more to business success than technical and cognitive competence. People leadership is proving to be critical for business bottom-line, considering that most business outcomes are achieved through human capital (Arumugam, 2003). Corporate interest in the potential value of EI appears to be strongly related to the continuing search for a way of securing a sustainable competitive advantage in this ever changing environment, which can be developed through attention to “people issues” (Dulewicz & Higgs, 2000). The ability to manage emotions and relations permits the emotionally intelligent leader to understand followers’ needs and to react accordingly (Barling, Slater, & Kelloway, 2000). A standardised psychometric instrument of EI could be an important tool to identify the specific training and development needs.

By working to establish norms from emotional awareness and regulation at all levels of interaction, teams can build the solid found foundation of trust, group identity and group efficacy they need for true co-operation and collaboration as well as high performance overall (Druskat & Wolf, 2001). Within human resources functions, emotional intelligence can be applied to performance feedback (Abraham, 1999). An emotionally intelligent delivery of criticism provides valuable information to employees to take corrective action before problems escalate out of control (Korsgaard, 1996). Pengilly (2002) stresses that EI is vital to the success of personnel in general, but more specifically the success of management, to have the EI ability to manage and lead people as opposed to pre-conceived notions that past experience is the key to success in a position. Potential management candidates need to understand the importance and potential of EI, which is strongly related to leadership skills, group performance, individual

performance, interpersonal or social exchange and managing change (Pengilly, 2002). Cooper (1997) contributes to this notion by saying EI is a hidden advantage in organisations. Jonker (2002) indicates that EI could enhance organisational commitment, foster organisational citizenship; could be a moderator of role conflict and might even moderate the impact of job control. It is thus evident that a standardised psychometric instrument of EI could be of great value in the organisation to determine EI shortcomings and to develop these EI shortcomings in order to benefit the employee and the organisation in general.

Handley (2001) states that an EI profile helps the company to find and enhance those skill sets that truly constitute a corporate asset or competitive advantage. This knowledge of skill sets is vital for high-leverage, on-target investments in human capital development (Handley, 2001). According to Arumugam (2003), EI is an important building block in the employee development process.

Affirmative action and equal employment opportunity legislation has created a new dimension in industries in South Africa (Pengilly, 2002). Further forces that have an influence on organisations in South Africa are for example a diverse employee population, a relatively young working population, stereotyping and prejudice regarding diverse groups, and the political climate (Carrell, Elbert, Hatfield, Grobler, Marx, & Van der Schyff, 1998). Jonker (2002) states that the optimal development and utilisation of individual characteristics and skills are crucial to improve the effectiveness of South African organisations. Affirmative action, diverse employee population and a relatively young working population call for development and training in South African organisations. The need for development and training in local organisations indicates the applicability of the second area that Handley (2001) identifies, where an EI audit profile could be of use to South African organisations. In this regard, Wolmarans (1998) states that the measurement and development of EI could play a significant role. Watkin (2000) elaborates that while EI is often seen as the integrating thread weaving consistency into organisational effectiveness interventions, a measurement tool is needed to bring the concept of EI to life.

➤ *The second specific research objective was to conceptualise the nature and evolution of emotional intelligence. The following conclusions are made regarding the second specific research objective:*

Much has been written about EI, less about how to measure EI or to develop employees EI skills, or what an emotionally intelligent organisation looks like (Watkin, 2000). Researchers (e.g. Petrides & Furnham, 2003; Pfeiffer, 2001; Schutte, et al., 1998) state that the assessment of EI has not kept pace with interest in the construct in general. In addressing the issue of whether or not it is feasible to measure EI, the literature tends to polarise (Dulewicz & Higgs, 2000). There appears to be a dominant view that the somewhat complex and diverse nature of EI militates against its effective measurement (Dulewicz & Higgs, 2000). Goleman (1996) comments that unlike the familiar tests for IQ, there is as yet no single pencil and paper test that yields an emotional intelligence score, and there may never be one. Others tend to endorse this view, for example Steiner (1997), who claims that EI is a marketing term that is impossible to measure. According to Dulewicz and Higgs (2000), the complex nature of EI and its assessment may not be appropriate for measurement by means of a pencil and paper test.

In 2001, according to Pfeifer (2001), there was no brief, objective, theoretically grounded measure of EI that enjoyed acceptable reliability or validity. Pfeifer (2001) states that a major weakness with the extant EI research literature is the lack of scientifically sound objective measures of the EI construct. Pfeifer (2001) explains that unlike the many carefully developed cognitive ability measures, measures of EI are almost all based on self-report instruments, lack norms or a standardisation group, and if measures exist at all, have unacceptable levels of internal consistency or stability. Pfeifer (2001) concludes that almost none of the EI measures provide any data to support the particular interpretations that the test developers claim they can make by using a test score.

Davies, Stankov, and Roberts (1998) examined the relationship among various measures of emotional intelligence and personality. They concluded that objective measures of emotional intelligence were unreliable and that self-report measures showed considerable overlap with traditional measures of personality (Newsome, Day, & Catano, 2000). This does not necessarily

mean that EI may not eventually prove to be a valid or useful psychological construct. Rather, it simply means that at the present time, there are no scientifically acceptable instruments to measure EI constructs (Pfeifer, Soldivera, & Norton, 1992). Only recently have researchers begun to identify valid EI measures (Ciarrochi, Deane & Anderson, 2002; Ciarrochi, Chan & Caputi, 2000; Mayer, Caruso & Salovey, 1999; Schutte, et al., 1998). However Saklofske, Austin and Minski (2003) state that research on the psychometrics of EI is still in its early stages, leaving a number of unresolved research issues that need to be addressed.

While the lack of a robust and researched method for assessing EI is widely acknowledge by Goleman (1996) and Kreitner and Kinicki (2001), there is a continuing search for a measure of EI (Dulewicz & Higgs, 2000).

A number of researchers (Bar-On, 1997; Goleman, 1995; Salovey & Mayer, 1990; Schutte, et al., 1998) have attempted to develop self-report measures of EI or EI-related constructs (Ciarrochi, et al., 2002). However, in recent studies, Davies et al. (1998) have uncovered problems with these measures. Ciarrochi, et al. (2002) provide a summary of these problems identified by Davies et al. (1998): First, some of them have poor reliabilities. Second, the more reliable self-report measures had salient loadings on the well-established personality factors of Neuroticism, Extraversion, Psychoticism, Agreeableness, and Openness. Third, although there is factor-analytic evidence supporting the discriminant validity of the two EI factors (emotional awareness and clarity), these factors no longer emerge when unreliable measures are dropped form factor analysis.

The Emotional Intelligence Questionnaire (SEIS) devised by Schutte et al. (1998) has subsequently been used in a number of studies (Ciarrochi, Chan, & Bajgar, 2001; Petrides & Furnham, 2000; Saklofske, et al., 2003; Schutte, Malouff, Bobik, Coston, Greeson, Jedlicka, Rodes, & Wendorf, 2001). Interest in this scale has been in part motivated by its relative brevity compared with the main commercial trait EI instrument, the Bar-On (1996), which comprises 133 items. Findings from studies of the SEIS suggest that it provides a reliable and valid trait EI measure: test-retest and internal reliabilities are good and group differences in score and correlations with other measures have generally been found to be in accordance with theoretical

expectations (Ciarrochi, et al., 2001; Saklofske, et al., 2003; Schutte, et al., 1998; Schutte, et al., 2001). Nonetheless, this scale has been criticised for a lack of reverse-keyed items (Petrides & Furnham, 2000; Saklofske, et al., 2003), which could potentially lead to a confounding of SEIS score with acquiescent responding (Austin, Saklofske, Huang, & McKenny, 2004).

Pérez, Petrides and Furnham (2005) state that the SEIS has been used extensively in the literature and can be employed as a short measure of global trait EI. Petrides and Furnham (2000; 2001) distinguish between trait EI (or emotional self-efficacy) and ability EI (or cognitive-emotional ability). The former is measured through self report questionnaires, whereas the latter ought to be measured through tests of maximal performance.

Based on the distinction made by Petrides and Furnham (2000; 2001), a brief summary is provided of different psychometric instruments of ability and trait emotional intelligence.

#### ❖ MEASUREMENT OF ABILITY EMOTIONAL INTELLIGENCE

- Emotional Accuracy Research Scale (EARS) (Mayer & Geher, 1996)
- Multi-factor Emotional Intelligence Scale (MEIS) (Mayer, Caruso, & Salovey, 1999)
- The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey & Caruso, 2002)
- Freudenthaler & Neubauer Emotional Intelligence Performance Test (FNEIPT) (Freudenthaler & Neubauer, 2003)

#### ❖ MEASUREMENT OF TRAIT EMOTIONAL INTELLIGENCE

- The Trait Meta-Mood Scale (TMMS) (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995)
- Emotional Quotient Inventory (EQ-I) (Bar-On, 1997)
- The Schutte Emotional Intelligence Scale (SEIS) (Schutte, et al., 1998)
- Emotional Competence Inventory (ECI) (Boyatzis, et al., 1999)
- Emotional Intelligence IPIP Scales (EIPIP) (Barchard, 2001)
- Emotional Intelligence Self-Regulation Scale (EISRS) (MartinezPons, 2000)
- Dulewicz & Higgs Emotional Intelligence Questionnaire (DHEIQ) (Dulewicz & Higgs, 2001)

- Trait Emotional Intelligence Questionnaire (TEIQue) (Petrides & Furnham, 2003; Petrides Pérez, & Furnham, 2003)
  - Sjöberg Personality Test Battery (SPTB) (Sjöberg, 2001)
  - Tapia Emotional Intelligence Inventory (TEII) (Tapia, 2001)
  - Work-Place Swinburne University Emotional Intelligence Test (Workplace SUEIT) (Palmer & Stough, 2002)
  - Workgroup Emotional Intelligence Profile (WEIP) (Jordan, Ashkannasy, Härtel, & Hooper, 2002)
  - Emotional Intelligence Scale (Van der Zee, Schakel. & Thijs, 2002)
  - Wong & Law Emotional Intelligence Scale (WLEIS) (Wong & Law, 2002)
  - Lioussine Emotional Intelligence Questionnaire (LEIQ) (Lioussine, 2003)
- *The third specific research objective was to determine the validity and internal consistency of the instrument of emotional intelligence. The following conclusions are made regarding the third specific research objective:*

According to Zeidner, Matthews, and Roberts (2004), the process of validating an EI measure requires convincing empirical evidence that a measure of EI predicts career success or other important on-the-job criteria. Zeidner, et al. (2004) state that the most basic task for validation research is to show that EI measures reliably differentiate between low- and high-performing groups on particular work-related criteria. Such studies should focus on predicting success both across and within jobs, identifying the occupations for which EI is more and less important (e.g. social workers versus financial analysts) (Zeidner, et al., 2004). The use of EI component sub-tests also needs to be validated, using large-scale, trait performance validation designs (Zeidner, et al., 2004). It is highly plausible that effective performance in different occupations involves different patterns of emotional (or social) characteristics (Zeidner, et al., 2004).

According to Pérez, et al. (2005), the explosion in the number of EI measures may have given the impression that the construction of psychometrically sound questionnaires is easy but emphasises that anyone familiar with the basic elements of psychometrics, particularly those relating to the validation process, knows that this is not the case.

In this study six internally consistent factors were extracted. Two of the 32 factors did not load on the factors.

The first factor was labelled *Positive Affect*. Items loading on this factor related to positive affect in personal experience. It involves mainly the respondents' tendency to have a positive outlook on life in general, but more specifically when facing problems. Internal consistency for items in factor one was an  $\alpha$  of 0,73 ( $n = 7$ , items 2, 3, 6, 10, 17, 20, 23). The second factor was labelled *Emotions-Others* and included the respondents' experience of other people's emotions. Internal consistency for items in factor two was an  $\alpha$  of 0,67 ( $n = 7$ , items 4, 18, 26, 27, 29, 30, 32). The third factor was labelled *Happy Emotions*. The items that loaded on this factor included aspects such as good mood, positive emotions, happiness and joy. Internal consistency for items in factor three was an  $\alpha$  of 0,63 ( $n = 4$ , items 12, 13, 14, 31). The fourth factor was labelled *Emotions-Own* and included the respondents' perception of their own emotions. Internal consistency for items in factor four was an  $\alpha$  of 0,63 ( $n = 5$ , items 8, 9, 11, 19, 22). The fifth factor was labelled *Non-verbal Emotions*. The items that loaded on this factor included aspects such as non-verbal messages that the person sends and receives from others, and how the person interprets these non-verbal emotions. Internal consistency for items in factor five was an  $\alpha$  of 0,56 ( $n = 3$ , items 15, 25, 5). The sixth factor was labelled *Emotional Management*, reflecting respondents' indication that they can control their emotions or fail to manage their emotions. Internal consistency for items in factor six was an  $\alpha$  of 0,54 ( $n = 4$ , items 1, 21, 24, 28).

➤ *The fourth specific research objective was to establish any possible group differences of emotional intelligence regarding biographical data. The following conclusions are made regarding the fourth specific research objective:*

A multi-analysis of variance (MANOVA) was used to determine group differences in emotional intelligence regarding biographical data. Previous research by Roberts, Zeidner, and Matthews (2001) focused on ethnic group differences in emotional intelligence and found conflicting results. They state the urgency of future research, exploring group differences in emotional intelligence. The data obtained in this research indicates that there are only significant differences regarding biographical specifications between language and gender groups. African

language groups compared with Afrikaans and English language groups experienced higher levels of positive affect. Afrikaans and English language groups compared with the African language group experienced higher levels of understanding of the emotions of other people. Although the first language of most of the respondents was not English, the questionnaires were available only in English. Therefore, a possible explanation for the differences between the language groups could be related to words that some of the participants could have found difficult to understand and/or interpret (e.g. vigorous, immersed and resilient). Nel (2002) emphasises the importance of bias in the use of psychometric instruments and states that if the applicant were tested in a language different from his or her first language, a non-verbal assessment should be included. A correlation factor should also be built into the interpretation of the test score, e.g. additional time allocation (Nel, 2002). Due to semantic differences the SEIS may therefore need to be rewritten in a more acceptable South African language format.

Van Rooyen, Alonso, and Viswesvaran (2005) acknowledge the impact that gender differences have on emotional intelligence. From this study it is evident that gender differences impacted significantly on the emotional intelligence. Females compared with males experienced higher levels of understanding of emotions of other people. Roothman, Kirsten, and Wissing (2003) found that males scored significantly higher on cognitive, physical and self aspects, while females scored significantly higher on somatic symptoms, the expression of affect and spiritual aspects. This could provide an explanation for the higher levels of understanding of emotions of other people amongst females. Previous research by Cakan and Altun (2005) found no significant gender differences in terms of emotional intelligence amongst Turkish educators. Cakan and Altun (2005) explain that gender differences that have been observed in EI in previous studies results from studies conducted on individuals that live in Western cultures, for example research by Schutte, et al. (1998) and Saklofske, et al. (2003).

## **3.2 LIMITATIONS**

- A cross-sectional design was used in this study, which implies that the causality of relationships cannot be identified.
- The research targeted participants in a specialist area (first-year Economic Science students) and as such, has resulted in a limitation to generalisation within other types of higher education.
- Most of the participants were Afrikaans-speaking, female students, which implies certain limitations with regard to the representation of male students and other language groups in South Africa.
- Although the first language of most of the respondents was not English, the questionnaires were available only in English. Therefore respondents might have had problems with some of the items in the questionnaire.
- The problem of limited research regarding the standardisation of a psychometric instrument of emotional intelligence in South Africa were experienced, taking into account that the BarOn EQ-i is the only valid and reliable emotional intelligence measure of South African samples.

## **3.3 RECOMMENDATIONS**

Recommendations for the organisation and future research are made in this section.

### **3.3.1 Recommendations for the organisation**

A standardised psychometric instrument of emotional intelligence could be beneficial to the organisation during the selection, recruitment, training and development of employees. A valid and reliable measure of emotional intelligence could be valuable in the organisation to identify specific EI needs that could be developed through the implementation of EI development programmes. In this context a standardised psychometric instrument of EI could be of use in organisations during training and development of employees.

### **3.3.2 Recommendations for future research**

- The results presented in this study provide supporting evidence for the construct validity of EI, although further work on the development and psychometric properties of the EI measure studied here is indicated.
- Because the SEIS appear to require further development, replications of the findings of the present study using other participants would be appropriate.
- More research is necessary to explore the extent to which EI measures could act as predictors for both self-report and objective life outcomes.
- How EI measures could contribute to the knowledge of individual differences in emotional skills is an important area for future research.
- Further research needs to be conducted with regard to the standardisation of different psychometric instruments of emotional intelligence in South Africa.
- More research, with the inclusion of the SEIS, should be undertaken in South Africa.
- Future research should be done on the validation of EI measures within the South African context, considering that South Africa is one of the countries with the richest cultural diversity and its own unique problems.
- Validation of EI measures should be based on larger population groups. With further research in mind, it is recommended that a larger and representative sample of students from a variety of programmes and programme types should be considered. This would enable the researcher to apply inferential statistical procedures to establish the significance of the results.
- The translation of the SEIS into one or more of the eleven African languages is also recommended.

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