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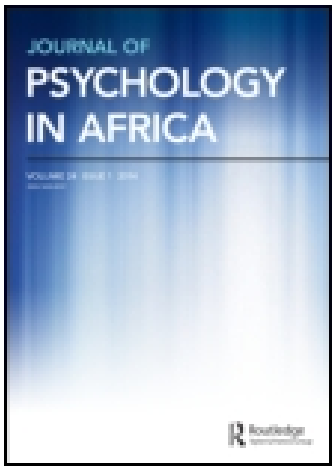

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Confirming the Factor Structure of the 41-Item Version of the Schutte Emotional Intelligence Scale

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Confirming the Factor Structure of the 41-Item Version of the Schutte Emotional Intelligence Scale

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The main aim of this study was to investigate the factor structure of the 41-item version of the Schutte Emotional Intelligence Scale within a South African nursing environment. An availability non-probability sample *(N* = 290) of nurses from hospitals in the North-West and Gauteng Provinces of South Africa were taken. Participants completed the Schutte Emotional Intelligence Scale (SEIS). The data were analysed by employing Structural Equation Modelling (SEM) via AMOS. The data fitted the original model of Emotional Intelligence of Salovey and Mayer (1990), best explaining 58.52% of the variance. The results supported a five-factor structure of the SEIS. The five factors were named: Emotion Utilisation; Emotion Management; Emotion Awareness; Emotion Perceiving and Emotion Integration.

Keywords: emotional intelligence-measurement, 41-Item version of the Schutte Emotional Intelligence Scale, quantitative-cross-sectional, South African nursing context

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Over the past 20 years, Emotional Intelligence (EI) has become a very popular topic within the fields of psychology and organisational behaviour (Mayer, Roberts, & Barsade, 2008; Mayer & Salovey, 1995). Salovey and Mayer (1990) were the first researchers to conceptualise the construct of EI. Their conceptualisation comprises three mental abilities of emotion management: firstly, the appraisal and expression of emotions in oneself and others; secondly, the regulation of emotion in oneself and others; and thirdly, the utilization of emotions to facilitate thought. According to Oginska-Bulik (2005) the ability to manage your own emotions, while having the ability to identify others' emotions, is very important in the work environment.

Salovey and Mayer (1990) were the first to define EI. Their research has proven EI is a mental ability concerning the connection between emotion and cognition. Mayer and Salovey (1995) refined their original definition by claiming that EI is the aptitude to be aware of one's emotions, to appraise and generate one's emotions to assist in thinking, to understand emotions and emotional information, and to control emotions to support emotional and intellectual growth in oneself. A lot of research debate the most appropriate, valid and reliable approach for the measurement of EI (Petrides & Furnham, 2000; Van Rooy & Viswesvaran, 2005). Emotions influence relationships with co-workers, have an effect on patient care and decision-making, and affect nurses at an intrapersonal level (Waddington & Fletcher, 2005). Research indicates that there is a positive link between high levels of EI and high levels of contentment, engagement and satisfaction that nurses experience in their work (Antonakis, Ashkanasy, & Dasborough, 2009). The display of EI and the measurement of EI are thus very important in the nursing environment. Thus, instruments to reliably measure EI are needed.

Several studies have examined the psychometric properties of the Schutte Emotional Intelligence Scale (SEIS) (Austin, Saklofske, Huang, & McKenney, 2004; Carmeli, 2003; Ciarrochi, Chan, Caputi, & Roberts, 2001; Dimitriades, 2007; Grant & Cavanagh, 2007; Hakanen, 2004; Jonker & Vosloo, 2009; Petrides & Furnham, 2000; Schutte et al., 2010). The SEIS is based on the ability model of EI by Salovey and Mayer (1990). There are two versions of the scale available, namely the 33-item version and the 41-item version (Petrides & Furnham, 2000). The 33-item version, the more widely used version, consists of 33 self-referencing statements (items) where respondents rate the extent to which they agree or disagree with each statement on a five-point Likert scale. It has been criticized for having a lack of reverse-keyed items (Petrides & Furnham, 2000). The 41-item version was developed by Austin et al. (2004) as an improvement for the problematic 33-item version. There are certain problems with the 41-item version as well. Differences in factor structures have been found in both the 31 and 41-item versions of the SEIS. Research studies have found that the SEIS have anything between one to six factor structures (Jonker & Vosloo, 2009; Petrides & Furnham, 2000; Vosloo, 2005). Table 1 explains the various studies pertaining to the Schutte Emotional Intelligence scale with altered factor structures, with their factor structures explained.

The fact that the SEIS has only 33 or 41 items has led to it becoming the most frequently used scale for measuring and conducting research on trait EI. Researchers and practitioners prefer this because it is much shorter in comparison to the other leading trait EI scales, namely the 133-item Bar-On Emotional Quotient Inventory (Bar-On EQ-I) (1997) and the 360-item Emotional Quotient Inventory (EQi) (Austin et al., 2004). Another reason that the SEIS is so popular is that, unlike these other major trait scales, it can be used in research. These leading trait scales are also employed commercially and are often very expensive (Grant & Cavanagh, 2007). The SEIS's psychometric properties, items and factor structures have been researched in many studies (Austin et al., 2004; Jonker &

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Vosloo, 2009; Petrides & Furnham, 2000; Saklofske et al., 2003). However these studies found some differences and problems; firstly, with the items and secondly, it has been found to have a large majority of different factor structures for each study.

Sample South African Studies

A South African study by Jonker and Vosloo (2009) among business sciences students yielded a six-dimensional factor structure of the SEIS, explaining 45.24% of the variance. The six factors could be described as Positive Affect, Emotion-Others, Happy Emotions, Emotions-Own, Non-Verbal Emotions and Emotional Management. In their discussion, they found that having the SEIS in only the English language could lead to inconsistency in responses and would possibly lead to biasness. It seemed that respondents found it hard to comprehend and/or grasp some of the items' wording. When comparing these findings to those of international research it differs in terms of what the factors explain, as well as the number of factors. These many different findings in the factor structures of the SEIS in international research and in the research of Jonker and Vosloo (2009) indicate that there is a need for research on a consistent factor structure of the 41-item version of the SEIS before it is used in any other research.

Apart from the study by Jonker and Vosloo (2009), the SEIS have been used by Van der Merwe (2005) in the nursing environment. Van der Merwe (2005) found a five-factor structure when they tested the psychometric properties and accuracy of the SEIS on a South African nursing population. They made use of a basic factor analysis on the 33-item version of the SEIS to establish the factor structure. This five-factor structure explained 50.04% of the total variance. These five factors were categorised as Positive State, Own Emotions, Negative Emotions, Emotions of Others and Emotional Management. The likely reason for the opposing factor explanations for the two studies carried out in South Africa might be the research populations (students and nurses) used. Nurses are embedded in more emotional work than students, so that may explain the diverse factors found. Another example of where the SEIS was used within a nursing environment was the impact of trait EI on nursing-team performance and cohesiveness; the SEIS measured a Cronbach alpha of 0.75 (Quoidbach & Hansenne, 2009).

Goals of the Study

The conclusion can be drawn that there are different findings with regard to the factor structure of the SEIS. These different findings can be viewed in Table 1. According to Table 1, a uni-factorial structure for the SEIS was found by Schutte and Malouff (1998), a three-factor structure was found by Austin and colleagues (2004), a four-factor structure by both Petrides and Furnham (2000), and Ciarrochi, Chan and Bajar (2001). Ciarrochi et al. (2001), Saklofske et al. (2003) and Jonker and Vosloo (2009) reported a six-factor structure of the SEIS. When taking all of this into account, the goal of this research article will be to determine the factor structure of the 41-item version of the SEIS. Reliability and validity of the 41-item version will also be assessed within a nursing population in the South African context.

From the above discussion the following research questions can be formulated:

- What is the reliability of the Schutte Emotional Intelligence Scale as measured by the 41-item version within a South African nursing population?
- Is the 41-item version of the Schutte Emotional Intelligence Scale, as measured in a South African nursing population, a one-, two-, three- or five-factor model as determined by a confirmatory factor analysis?

Table 1

Various Studies Pertaining to the Schutte Emotional Intelligence Scale with Altered Factor-Structures

Item Version	Authors	# of factors	Factor description
33	Schutte and Malouff (1998)	1	Uni-factoral
33	Petrides and Furnham (2000)	4	Optimism/Mood Regulation, Appraisal of Emotions, Social Skills and Utilisation of Emotions
41	Austin, Saklofske, Huang and McKenney (2004)	3	Optimism/Mood Regulation, Utilisation of Emotions and Appraisal of Emotions.
33	Ciarrochi, Chan, Caputi, and Roberts (2001)	4	Optimism/mood regulation, Appraisal of emotions, Social skills and Utilisation of emotions
33	Ciarrochi, Chan, and Bajar (2001);	4	Optimism/mood regulation, Appraisal of emotions, Social skills and Utilisation of emotions
41	Saklofske, Austin, and Minski (2003)	4	Positive Affect, Emotion – Others, Happy Emotions, Emotions – Own, Non-verbal Emotions and Emotional Management
33	Chan (2004)	4	Optimism/mood regulation, Appraisal of emotions, Social skills and Utilisation of emotions
41	Jonker and Vosloo (2009)	6	Positive Affect, Emotion– Others, Happy Emotions, Emotions – Own, Non-verbal Emotions and Emotional Management
41	Van der Merwe (2005)	5	Positive State, Own Emotions, Negative Emotions, Emotions of Others and Emotional Management

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Method

Participants and Procedure

An availability non-probability sample (N = 294) of health professionals from the nursing environment was used. Hospitals from the public and private sector within the North-West and Gauteng Provinces of South Africa were targeted. Table 2 presents the characteristics of the participants.

According to Table 2, the participants were predominantly female (93.6%), between the ages of 18 – 31 years (45.3%), Afrikaans-speakers (44.8%), and African (50.3%). The languages Sepedi, Sesotho and Setswana made up a representation of 49%. The participants were also predominately from the Gauteng Province (71.4%), work in private hospitals (52.4%) and possess a post-graduate degree (42.1%).

Consent to conduct the study on the premises of each hospital was obtained from each hospital's management. Each hospital's Human Resources (HR) practitioner was present throughout the researcher's presence on the hospital's premises. A letter, requesting participation in the study, was e-mailed to all the nurses that could take part in the study. The letter explained the key objectives and the nature of the study. An explanation that the respondents had full anonymity during the study was also put in the e-mail. All the nurses who were available at the time were asked to fill in the form that said they had given their informed consent in the study. Test booklets were provided, which included the biographical questionnaire, the SEIS 41-item scale and an answer sheet. The respondents were given limitless time to complete the paper-based questionnaires. On completion of the questionnaires, the respondents placed their answer sheets into marked boxes according to their demographic characteristics. The different hospitals that participated were given comprehensive feedback via email concerning the summary for EI in the health professions as well as information concerning employee-assistant programs.

Measuring Instruments

A biographical questionnaire and the Schutte Emotional Intelligence Scale *(SEIS:* Schutte & Malouff, 1998*)* were used.

Biographical data were collected included age, gender, place of birth, language, ethnicity, job position, and educational level.

The *SEIS* is a five-point Likert-type scale (1=Strongly disagree to 5=Strongly agree) to measure the knowledge, perception, expression, regulation and control of emotions in the respondent and others.. Ways to utilize the scale in academic research entail investigating the characteristics of EI, the consequence of EI and the development of EI (Schutte & Malouff, 1998). Exampe items from the SEIS includes: "I motivate myself by imagining a good outcome to tasks I take on (Item 29)."; "I use good moods to help myself keep trying in the face of obstacles." (Item 38) and "I don't believe that my emotions give any

Table 2

Characteristics of Participants

Item	Category	Frequency	%
Gender	Male	19	6.6
	Female	271	93.6
Ethnicity	White	144	49.7
	African	146	50.3
Language	Afrikaans	130	44.8
	English	65	22.4
	Sepedi	20	6.9
	Sesotho	28	9.7
	Setswana	47	16.2
Age	18-31	131	45.3
	32-42	64	22.1
	43-52	64	22.1
	53-60	21	7.3
	61-65	8	2.8
Province	Gauteng	207	71.4
	North-West	83	28.6
Sector	Private	152	52.4
	Public	138	47.6
Qualification	Lower than grade 10	19	6.6
	Grade 10	13	4.5
	Grade 12	18	6.2
	Technicon diploma	32	11.0
	Postgraduate degree	122	42.1
	Grade 11	49	16.9
	Technical college diploma	13	4.5
	University degree	23	7.9
	Other – specify	289	99.7

Note. N=294

help in coming up with new ideas" (Item 23). The developers of the 41-item version of the SEIS, Austin et al. (2004), found the overall internal reliability to be 0.85. These researchers established three factors and their internal reliabilities were 0.78; 0.68; and 0.76.

Data Analysis

A confirmatory factor analysis (CFA); by employing Structural Equation Modelling (SEM) in (AMOS 5.0); was used (Arbuckle, 2003). According to Kline (1998) CFA allows the testing of the hypothesis to establish if a relationship between the observed variables and their underlying latent construct(s) exist. Statistically appraising the fit of a model to the covariance matrix is accomplished using a "goodness-of-fit" test referenced against the χ^2 (Model Chi-square) distribution. Additionally, CFA was tested via Structural Equation Modelling to determine the goodness of fit of a One-, Two-, Three- and Five-Factor model of the SEIS. The Chi-Square value is the conventional assessment for determining general model fit and, "assesses the magnitude of discrepancy between the sample and fitted co-variances matrices" (Hu & Bentler, 1999, p. 2). Maximum probability estimation was used and the input for each analysis was the covariance matrix (Byrne, 2001). To test the different factor structures of the SEIS, several nested models were compared by means of the χ^2 difference test. In addition, absolute and relative indices were computed to assess the goodness-of-fit of the different SEIS models. As recommended by Marsh, Balla, and Hau (1996), the following relative goodness of fit indices were computed: (1) The Goodness-of-fit statistic (GFI) is applied as a substitute to the Chi-Square analysis and determines the percentage of variance that is accounted for by the anticipated population covariance (Tabachnick & Fidell, 2007). (2) The Adjusted Goodness-of-fit statistic (AGFI), which adjusts the GFI based upon degrees of freedom, with more saturated models reducing fit (Tabachnick & Fidell, 2007). (3) Parsimony Fit indices (PGFI) are based upon the GFI by adjusting for loss of degrees of freedom (Crowley & Fan, 1997). (4) Normed Fit Index (NFI) evaluates the model by assessing the χ^2 value of the model to the χ^2 of the null model (Bentler & Bonnet, 1980). (5) Incremental Fit Index (IFI) provides a measure of the comparative improvement in fit of a substantive model in relation to a null model that is rooted within the substantive model (Tucker & Lewis, 1973). (6) Comparative Fit Index (CFI) statistics assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model (Bentler, 1990). (7). The RMSEA informs us how well the model, with unknown but optimally selected parameter estimates would fit the population's covariance matrix (Byrne, 2001). As a rule of thumb, values of 0.90 or higher indicate a good fit for all the relative fit indices. Root Mean Square Error of Approximation (RMSEA) ideally the lower value of the 90% confidence interval includes or is very near to zero (or no worse than 0.05) and the upper value is not very large, i.e., less than 0.08 (Byrne, 2001).

Results

Descriptive Statistics

Table 3 shows the means, standard deviations, skewness, kurtosis and Cronbach-alpha coefficients of the five factors found for the best-fit model of which the goodness-of-fit will be provided in the next section.

Table 3 shows that Cronbach-alpha coefficients varying from 0.70 to 0.89 were obtained for all the SEIS factorson the Mayer and Salovey model of emotional intelligence. The factors Emotion Perceiving (α = 0.70) and Emotion Awareness (α = 0.74) showed the lowest alpha values, but are still acceptable, because the alphas are higher than the cut-off point of $>$ 0.70 (Nunnally & Bernstein, 1994). The values for the five factors in the best-fit model were all acceptable. It is evident in the table that the scores from the various scales for each model are relatively normally distributed, with acceptable skewness (between -1 and 1) and kurtosis (between -1 and 1).

Confirmatory Factor Analysis of a One-, Two-, Three- and Five-Factor Model of the SEIS

In Table 4, a confirmatory Factor Analysis was tested by means of Structural Equation modelling to determine the goodness of fit of a One-, Two-, Three- and Five-Factor model of the SEIS. According to Byrne (2010), the objective of Confirmatory Factor Analysis is to test whether the data fit a hypothesized measurement model. This hypothesized model is based on theory and/or previous methodical research. Supreme Fit indices establish how well the a priori model fits, or replicates the data. Supreme Fit indices include, but are not restricted to, the Chi-Squared test, GFI, AGFI, PGFI, NFI, IFI, TLI, CFI AND RMSEA.

Model 1 (one-factor model). The data did not fit the model, even after inspection of the modification indices; the revised model did not fit the data adequately. Inspection of the modification indices (MI) revealed that the fit could be improved if correlation was allowed between measurement errors and items with non-significant regression weights were eliminated from the model. This meant that the fit of the proposed model could be improved if the errors between items 31 and 21 and between items 27 and 21 were allowed to correlate. Items 22, 6, 8 and 3 were eliminated from the model because of the non-significant regression weights (item 22: p = 0.04; item 6: p = 0.16; item 8: p = 0.04 and item 4 p = 0.35. The revised model, however, also indicated a poor model fit (CMIN/DF = 7.82; GFI = 0.59; AGFI = 0.50; PGFI = 0.49; NFI = 0.57; IFI = O.48; TLI = 0.56; CFI = 0.50; RMSEA = 0.15). After the results had thus indicated that a

Table 3

Descriptive Statistics of the Five Factors of the Best-Fit Model

Item	Mean	SD	Skewness	Kurtosis	α
Emotion Management	17.71	5.38	0.01	-0.79	0.75
Emotion Integration	30.83	9.35	-0.56	-0.86	0.89
Emotion Perceiving	14.91	4.29	-0.34	-0.31	0.70
Emotion Awareness	12.14	4.87	-0.06	-0.94	0.74
Emotion Utilisation	43.28	8.75	-0.43	-0.30	0.81

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Table 4

Confirmatory Factor Analysis of a One-, Two-, Three- and Five-Factor model of the SEIS

	CMIN/DF	GFI	AGFI	PGFI	NFI	IFI	TLI	CFI	RMSEA
Model 1: One-factor	8.17	0.48	0.40	0.42	0.45	0.48	0.43	0.48	0.17
Model 1: Revised	7.82	0.59	0.50	0.49	0.57	0.60	0.56	0.50	0.15
Model 2: Two-Factor	6.54	0.56	0.50	0.49	0.53	0.57	0.54	0.57	0.14
Model 2: Revised	6.39	0.57	0.52	0.51	0.54	0.58	0.55	0.58	0.14
Model 3:Three-Factor	6.52	0.62	0.56	0.53	0.54	0.58	0.54	0.58	0.14
Model 3: Revised	6.17	0.64	0.59	0.55	0.57	0.61	0.57	0.61	0.13
Model 4: Mayer-and Solevey-based Five-Factor	3.79	0.79	0.72	0.58	0.78	0.83	0.78	0.83	0.09
Model 4: Revised	3.40	0.82	0.74	0.57	0.82	0.90	0.80	0.90	0.09

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one-factor model indicated poor model fit, it was decided to test a two-factor model.

Model 2 (two-factor model). This model was tested to confirm a possible two-factor model consisting of Management of Emotions/ Integration of Emotions as one factor and perceiving and Awareness as another factor. The results indicated a poor fit (CMIN/DF = 6.54; GFI = 0.56; AGFI = 0.50; PGFI = 0.49; NFI = 0.53; IFI = 0.57; TLI = 0.57; CFI = 0.57; RMSEA = 0.14). In comparison to the first, one-factor model the CMIN/DF was lower and closer to 1, which meant that it had a better fit than the first model. The GFI (0.56) indicated a poorer fit than the first model; AGFI (0.50) indicated a better fit than the first model; PGFI (0.49) indicated a better fit than the first model) NFI (0.53) indicated a better fit than the first model; IFI indicated a better fit; TLI (0.57) indicated an almost equal fit than the first model; while CFI (0.57) indicated a worse fit than the first model. In the case of the RMSEA score, the first one-factor model's score was closer to 0.05.

Inspection of the modification indices (MI) revealed that the fit of the two-factor model could further be improved if regression was allowed between items and factors. This indicated that several factors had cross loadings between the two factors. Items 23, 34, 4, 13, 17, 39, 24, 8, 14 and 10 of Perceiving and Awareness also loaded on the Management/Integration factor. Items 2, 38, 1, 15, 27, 30 and 16 of the Perceiving/Awareness factor also loaded on the Management/Integration factor. The MI also indicated that if the errors between items 27 and 5 (M = 37.7), between items 19 and 18 (M = 50.0) and between items 19 and 18 (M = 39.1), it would result in better fit. The revised model showed a slightly better fit (CMIN/DF = 6.39; GFI = 0.57; AGFI = 0.52; PGFI = 0.51; NFI = 0.54; IFI = 0.58; TLI = 0.55; CFI = 0.58; RMSEA = 0.14), but the overall model fit was still problematic.

Model 3 (three-factor model). Next, the model was fitted according to the proposed three-factor structure of Austin et al. (2004): Regulation, Utilisation and Appraisal of emotion. For model 3 (three-factor model), the indices revealed a poor fit between the model and the data (CMIN/DF = 6.52; GFI = 0.62; AGFI = 0.56; PGFI = 0.53; NFI = 0.54; IFI = 0.58; TLI = 0.54; CFI = 0.58; RMSEA = 0.14). However, inspection of the modification indices (MI) revealed that the fit between model 3 and the data could be further improved if correlation was allowed between the measurement errors of the Regulation, Utilization and Appraisal of Emotion scales. This means that the fit of the model of Austin et al. (2004) could be improved if the errors between items 26 and 28 of the Regulation and Appraisal scales (MI = 40.6). Items 31 and 38 of the Appraisal and Regulation scales (MI=34.57). Items 29 and 31 (MI = 41) were allowed to correlate. The revised model showed an improvement (CMIN/DF = 6.17; GFI = 0.64; AGFI = 0.59; PGFI = 0.55; NFI = 0.57; IFI = 0.61; TLI = 0.57; CFI = 0.61; RMSEA = 0.13).

Model 4: Mayer- and Salovey-based model (five-factor model). The results indicated an overall improvement of the previous models (CMIN/DF = 3.79; GFI = 0.79; AGFI = 0.72; PGFI = 0.58; NFI = 0.78; IFI = 0.83; TLI = 0.78; CFI = 0.83; RMSEA = 0.09). Inspection of the modification indices (MI) revealed that the fit for model 4 and the data could be improved further if correlation was allowed between the measurement errors of the five factors. This means that the fit of the proposed model could be improved if the errors between item 11 and 34 (Integration and Awareness MI = 17.0); items 35 and 19 (M1 = 20.5) (Utilization), items 3 and 33 (Management and Integration) were allowed to correlate. The revised model showed an improvement with acceptable values for the following indices: CMIN/DF = 3.0; IFI = 0.90; CFI = 0.90. Although some of the other indices did not meet the cut-off point of 0.90 it was an improvement over the independent model (GFI = 0.82) compared to 0.24 of the independent model; RMSEA = 0.90, compared to 0.00 of the independence model).

Exploratory and Confirmatory Factor Analysis of the Mayer and Salovey Five-Factor Model

Next, an exploratory factor analysis (principal component analysis) was executed on the data to assist in assigning the items to the original model of EI of Salovey and Mayer (1990). The factor analysis explained 58.52% of the variance.

The factors were labelled in accordance with the EI factors of Salovey and Mayer (1990). Reliability analyses also indicated that the five-factor model of EI could possibly provide a good model fit when testing it in confirmatory factor analysis: Emotion Utilisation (α=0.81); Emotion Management (α= 0.75); Emotion Awareness (α=0.74); Emotion Perceiving (0.70) and Emotion Integration (0.89). The information obtained was used in constructing the model via confirmatory factor analysis.

Figure 1 explains the correlations in the confirmatory factor analysis between EI and the five factors, each individual factor with their items loading on them and error scores.

Discussion

The purpose of this research study was to determine the factor structure of the 41-item version of the Schutte Emotional Intelligence Scale (SEIS) in a nursing work environment. The

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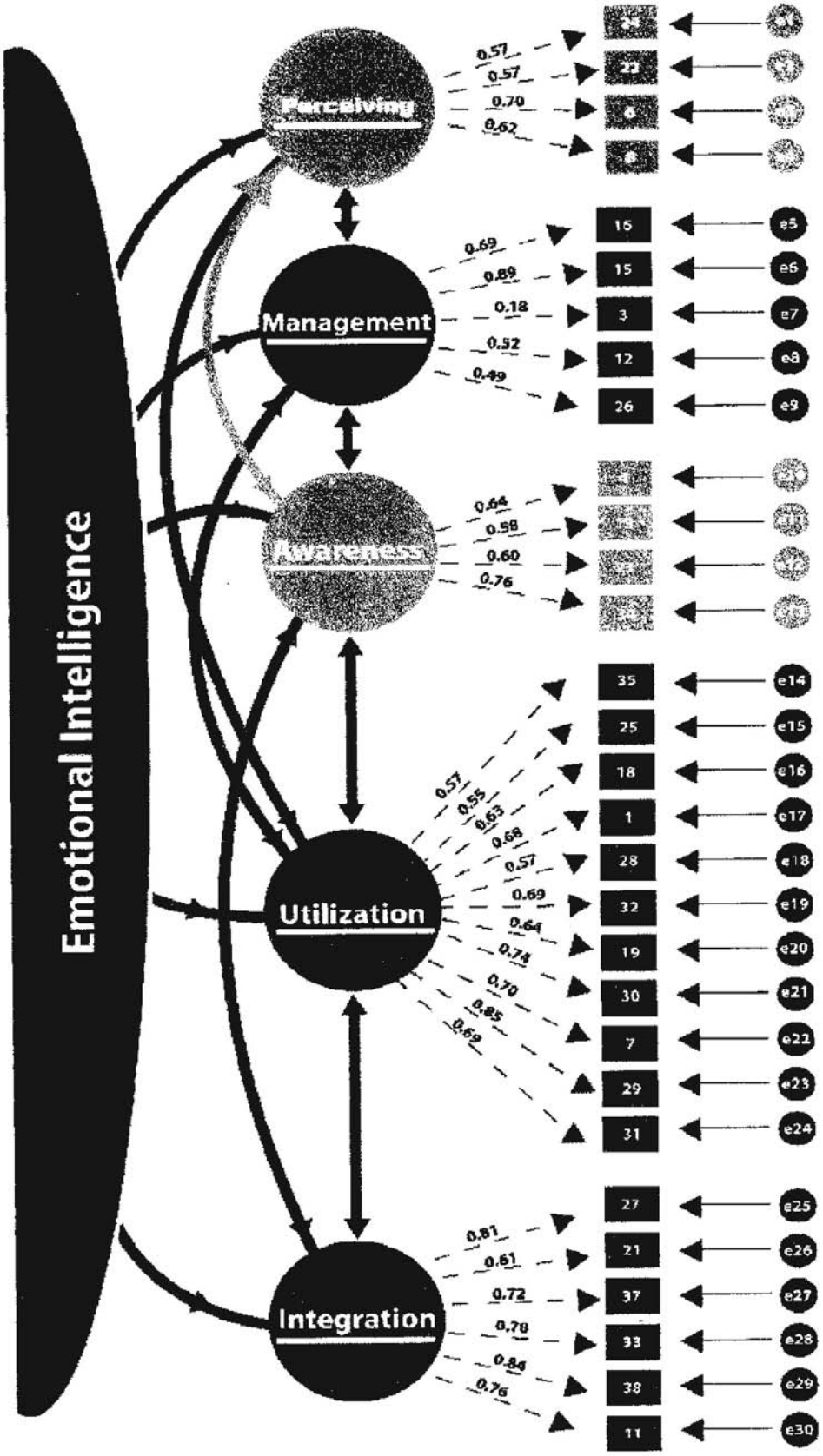

Figure 1. A structural model of Emotional Intelligence, Job Characteristics and Work Wellness

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most distinct demographic differences between the two studies are language and culture. The data gathered in the study of Austin et al. (2004) were obtained from participants who were all from an individualistic Western culture who all spoke English. This study, however, was conducted across both individualistic Western-Germanic languages (Afrikaans (44.8%), English (22.4%)) and collectivistic African languages groups (Sepedi (6.9%), Sesotho (9.7%) and Setswana (16.2%)).

According to Elfenbein and Ambady (2002), culture and language are very important aspects, which should be taken into consideration when discussing EI. Culture and language play a significant function in the comprehension and expression of emotions, because they are such intertwined terms (Sibia, Srivastava, & Misra 2003). Certain cultural norms have a major influence on emotional responses within a social network (Matsumoto, 2002). Due to the fact that the EI construct is strongly embedded in Western research (Bar-On & Parker, 2000; Salovey & Mayer, 1990; Schutte & Malouff, 1998), it has commonly been accepted that EI is universal, without taking into account that EI differs between cultures (Sibia et al., 2003).

Research by Matsumuto, Yoo and Nakagawa (2008) found considerable variations in the understanding and expression of emotions between culture groups. According to their study, individuals from individualistic cultures are able to express their emotions much better, compared to individuals from collectivistic cultures. Their study also showed that in individualistic cultures individuals are more able to express negative emotions compared to those in collectivistic cultures. Parker et al. (2005) state that when measures of EI are developed or adapted, the difference of emotional intelligence between certain culture and language groups must be taken into account. The measures must be adapted in such a way that there is no biasness towards any cultural group.

When the results of the exploratory factor analysis were tested via confirmatory factor analysis the results indicated an overall improvement on the previous models, indicating emotional intelligence as a differentiated construct. A possible hypothesis for the best-fit model may be due to the fact that EI is an advanced, complex and process-orientated construct. This may be the reason that the five-factor structure fits the data better than the one-, two- and three-factor structures measured (Dulewicz & Higgs, 2000; Jordan, Ashkanasy, Hartel, & Hooper, 2002). It must be taken into account that this model still does not have a superior fit. The reason that the model did not have a superior fit could be because the SEIS was not adapted to a South African cultural and language context. Petrides and Furnham (2000) explain that the validation of any EI measure has to be conducted principally in the context in which the measure was developed. This could be a reason why this model did not have a perfect fit. Thomas (2006) adds to this by stating that a measure of EI should be adapted to the language and cultural context of the respondents, because EI is a result of, and restricted to, the culture in which it was developed of the individual (Sharma, Biswal, Deller, & Mandal, 2009). Sharma et al. (2009) further state that a measure's items must be generated and adapted in such a way that it will take cultural differences into account.

It is important to compare the five-factor structure found in this study to other research that has been done on the SEIS in South Africa, more specifically Vosloo (2005) who found a six-factor model. The factors that were extracted were labelled Positive Affect, Emotions-Others, Happy Emotions, Emotions-Own, Non-Verbal Emotions, and Emotional Control. The difference in populations, once again, had an influence on the factor structures found between the two studies. The population used in this study by Vosloo (2005) was a group of Business Sciences students at a tertiary institution in the North-West Province of South Africa. The difference in factor structures found could be that nurses (the population in this study) work in much more emotionally draining circumstances (Murphy & Janeke, 2009). Another determining factor could be that the average age of the participants in the study of Vosloo (2005) was 18 years (53.70%) and in this current study the largest number of participants were between the ages of 18 to 31 (45.3%). In the current study the languages Sepedi, Sesotho and Setswana comprise a representation of 49%, while in the study by Vosloo (2005) the African languages comprise only 32.70%.

The population of this study consisted mainly of female participants (93.6%), compared to the study of Vosloo (2005) that had an equal number of females (52.20%) and males (47.80%). Cakan and Altun (2005) state that certain research conducted in Western cultures (Saklofske et al., 2003; Schutte & Malouff ,1998) have found different results for EI between gender types. Roothman, Kirsten, and Wissing (2003) have found that females obtained higher results on somatic indicators, the articulation of affect and understanding of spiritual characteristics. They also explained that this could be a reason for the ability that females have to empathize with others, compared to males who did not score high on empathy. The differences found between the EI levels of males and females could explain the difference in factor structures found between the two studies.

Implications of the Findings and Suggestions for Further Research

The findings of this current research study may possibly be set as a benchmark for using the SEIS as a five-factor structure within a nursing environment in the South African context. The nursing environment can use the results from this study to determine the individual and overall emotional intelligence of their employees. As discussed earlier in this article nurses with high levels of EI are able to manage their relationships with diverse others, maintain a better attitude towards patient care and form and maintain relationships with patients and co-workers (Dimitriades, 2007; Gignac & Ekermans, 2010). Once emotional intelligence of a certain employee is determined, his/her emotional well-being can be managed accordingly. Interventions can also be put in place in the nursing environment to improve the performance of their employees.

Limitations of the Study

A cross-sectional survey design was applied as a research design in this study. However, this design has been scrutinised in a number of studies. A longitudinal design may provide results that are more desirable. Self-report questionnaires were used to gather the data in this study; thus, the results pertained to the feelings and opinions of the participants. Participants could thus be biased with regard to opinions of themselves, compared to what other uninvolved individuals might have of them (Hofstee, 1994). Another problem that self-report measures of EI may pose is that *optimism* and *general positive mood* may overlap (Ciarrochi, Deane, & Anderson, 2002).

The sample in this study was very homogeneous because the participants were all nurses. The majority of the nurses were between the ages of 18 to 31 (45.3%). Bar-On (2000) states that EI seems to develop with age, which means that older nurses might have given emotionally more mature responses,

which would have been better for this study. The emotionally draining work environment of nurses was not always taken into consideration in this study and this might have had an impact on the responses of the participants. Most of the participants were second-language English speakers and they struggled to understand some of the jargon in the questionnaires.

Conclusion

The five-factor structure of the SEIS, with factors: Emotion Utilization; Emotion Management; Emotion Awareness; Emotion Perceiving and Emotion Integration can be seen as an internally reliable measurement of EI. This research has made related research possible. When comparing this current research to international research on the SEIS, certain language adjustments need to be made. It is recommended that the SEIS be adapted to more acceptable South African language formats, while taking into account certain cultural aspects. Items that take cultural differences into context should be developed.

It is suggested that other research be done outside the nursing environment in a public sector context on the SEIS. It is important to develop other norm groups for the SEIS in other occupations in South Africa. It is also suggested that a population with a more equal representation of both gender groups be used. It can be recommended that a larger sample size by using other research methods like a longitudinal design, using exploratory research, equivalence and bias analysis be used. It can also be suggested that the SEIS can be made a computerised test that would expedite data gathering.

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