THE CONSTRUCT EQUIVALENCE OF THE PIB/SPEEX SOCIALIZATION INDEX FOR JOB APPLICANTS FROM DIVERSE CULTURAL BACKGROUNDS.

by

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CONCEPT DECLARATION

I, _____, declare that "The Construct Equivalence of the PIB/SPEEX Socialization Index for job applicants from diverse cultural backgrounds" is my own work. All the resources I used for this study are sited and referred to in the reference list by means of a comprehensive referencing system.

I declare that the content of this article has never before been used for any qualification at any tertiary institute.

_____   _____

Ms. Madelein van Vuuren   DATE

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ABSTRACT

Today's globalised team culture of business places a premium on effective social skill, as social skill is needed for effective leadership, customer services, negotiation as well as for the acquiring and sharing of information. Psychological tests are commonly used as aids in determining whether individuals have the necessary skills for a specific job. Practically all psychometric tests are western in origin, which implies that the measuring of the psychological constructs are based upon a western culture. This brings into question the bias and validity of psychometric instruments when utilised on other cultures, as constructs may not be similarly defined or interpreted in all cultural groups. Construct equivalence implies that the same construct is measured across all cultural groups being studied, regardless of whether or not the measurement of the construct is based on identical instruments across all cultures. Construct equivalence is thus a pre-requisite for valid comparison of scores across the cultural groups being studied. The aim of this study is therefore to determine the construct equivalence of the PIB/SpEEx Socialization Index for job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa. Exploratory- as well as Confirmatory Factor Analytic techniques were used to determine the intercultural equivalence of the sociability and the A-sociability constructs underlying the PIB/SpEEx Socialisation Index. Preliminary single group Confirmatory Factor analysis was conducted to establish how good the data fit the model in respect of each of the cultural groups, followed by a multi-group analysis of factorial invariance. The results of this study revealed that the constructs of the PIB/SpEEx Socialisation Index are equivalent for the Black, Asian, White and Coloured groups.

OPSOMMING

Die span-kultuur in vandag se besigheidswêreld plaas 'n vereiste op effektiewe sosiale vaardighede, aangesien sosiale vaardighede nodig is vir effektiewe leierskap, klientediens, onderhandeling asook vir die verkryging en verspreiding van inligting. Sielkundige toetse word algemeen as hulpbron aangewend om vas testel of 'n individu oor die nodige vaardighede beskik vir 'n spesifieke pos. Bykans alle sielkundige toetse het 'n westerse oorsprong. Dit impliseer dat die meting van sielkundige konstrukte gebasseer is op 'n westerse kultuur. Die vooroordeling en geldigheid van sielkundige instrumente wat op ander kulture toegepas word, kan dus bevraagteken word, aangesien die konstrukte nie noodwendig dieselfde gedefinieer of geïnterpreteer word in alle kulture nie. Konstruk ekwivalensie impliseer dat dieselfde konstruk gemeet word in al die kulture wat bestudeer word, ongeag of die meting van die konstruk

gebasseer is op dieselfde metingsinstrument. Konstruk ekwivalensie is dus 'n voorvereiste vir die geldige vergelyking van tellings wanneer verskillende kulture bestudeer word. Die doel van hierdie studie was om die konstrukgelykwaardigheid van die PIB/SpEEx SosialiseringsIndeks vir diverse groepe toetree-applikante in die openbare veiligheidsektor te bepaal. Verkennende-asook Bevestigende Analitiese tegnieke is gedurende hierdie studie gebruik om die interkulturele gelykwaardigheid van die sosiale en A-sosiale konstrukte onderliggend aan die PIB/SpEEx SosialiseringsIndeks te bepaal. Voorlopige Enkelgroep Bevestigende Faktoranaliese is toegepas op elke kulture groep, om sodoende vas te stel hoe die data die model pas. 'n Multi-groep analise van faktor invariansie is daarna uitgevoer. Die resultate het aangetoon dat die konstrukte van die PIB/SpEEx Sosialiseringsindeks gelykwaardig is vir die Swart, Asiër, Blanke en Kleurling groepe.

CHAPTER 1:   INTRODUCTION AND AIM

1.1.   Introduction

During the industrial age, individual achievement and superb technical skills was expected from employees (Lanser, 2000). This resulted in organisations investing allot of time and money into the development of their employees' job skill and job knowledge. The 21st century is however, characterised for its team-orientated structure (Dilenshneider, 1996; Tarricone & Luca, 2002) which is functioning in a knowledge driven globalised business environment (Akers & Porter, 2003; Smoliar, 2003). This team-orientated business environment, demands much more from employees than the traditional combination of technical skills and job knowledge, as emphasised during the industrial age. Ramsey (1997) posited that technical skills would always be important, but that they're not enough anymore.

Employees now also need to develop their social skills in order to interact effectively with fellow team members and customers. As most organisations rely on knowledge sharing and teamwork to be productive, they need employees who can function effectively within this globalised working environment. Research has indicated effective social skills, as one of the vital ingredients for effective functioning teams (Baron & Markman, 2000; Ferris, Witt & Hochwarter, 2001; Tarricone & Luca, 2002). According to Zaccaro, Gilbert, Thor and Mumford (in Mumford, Zaccaro, Harding, Jacobs & Fleishman, 2000), the globalised team culture of business today, places a premium on effective social skills, especially skills used in negotiation, conflict management as well as in the acquiring and sharing of information. Preliminary support for this notion came from Akers and Porter (2003) who suggested that the development of good interpersonal skills is tantamount to success in ones' life and career.

Psychological tests are commonly used as aids to determine whether employees have the necessary skills for a specific job (Shaw & Human, 1989; van der Merwe, 1999). According to Bedell, van Eeden and van Staden (1999) the cross-cultural validity of psychometric tests has not unequivocally been determined for a number of tests, and this led to perceptions that psychometric testing are irrelevant, discriminating, dehumanising and untrustworthy (Sehlapelo & Terre Blanche, 1996).

According to van der Merwe (1999) there is a clear awareness among those working in the psychometric field that there is a continuous need to validate their instruments, not only to get the buy-in from testees, but also to ensure fair testing procedures and results to all stakeholders, as test users and -developers are obliged by the Labour Relations Act to make use off validated instruments during assessment (Bedell, van Eeden & van Staden, 1999; Kemp, 1999; Sehlapelo & Terre Blanche, 1996; Taylor & Radford, 1986; van der Merwe, 1999).

1.2.   The Problem statement

Psychometric tests are often used in organisations to assist in making decisions concerning the future work of employees (Taylor & Radford, 1986; van der Merwe, 1999). The significant mean differences that existed on the same tests between different cultural groups with similar levels of formal education (Taylor & Radford, 1986), as well as the strange performance of blacks on psychometric tests, brought into question the bias of instruments and the fairness with which they are applied (Shaw & Human, 1989). On this point Peterson (in Taylor & Radford, 1986) stated that fairness in testing situations is related to a concern for securing equility of opportunity for applicants. Psychometric tests that are utilised in an unfair manner would thus result in a direct violation of the Employment Equity Act (van der Merwe, 1999). Of further concern was the lack of validation studies conducted by companies (Shaw & Human, 1989).

Practically all psychometric tests are Western in origin (Retief, 1987). This implies that the measuring of psychological constructs are based upon a western culture. Baron and Kenny (in Bedell, van Eeden & Van Staden, 1999) stated that culture affects behaviour and consequently the psychological constructs that are being measured. This brings into question the bias and validity of the psychometric instruments when utilised on other cultures.

Portinga (in van de Vijver & Leung, 1997) stated that bias and equivalence play an essential role in cross-cultural comparisons. From a theoretical point of view, the two concepts are the opposite of each other. One can say that scores that are equivalent when they are unbiased. From the previous point it is evident that the comparison of biased psychometric scores between different cultural groups, will result in inaccurate interpretations and unfair decisions.

The problem with the utilisation of psychometric instruments, of which construct equivalence has not been proven for the particular cultural groups being measured, is that the results may lead to unvalid evaluations and discrimination.

In a multi-cultural globalised society the need has now arise to not only report the reliability and validity of tests, but to also determine whether the test is non-bias and whether construct equivalence can be proofed. The focus of the psychometric industry is now towards cross-cultural research in terms of bias and equivalence.

1.3.   Purpose and Objectives of the study

The aim of this study is to determine the construct equivalence of the PIB/SpEEx Socialization Index for job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa.

1.4.   Overview of the study

To achieve this purpose, it is necessary to determine whether the different cultural groups have the same definition and interpretation of social skill. Thus, if social skill is an equivalent construct for the relevant cultures. Chapter two begins with an attempt to conceptualise social intelligence, emotional intelligence, and social skill, followed by a brief discussion on the multidimensionality of social skill. An overview is provided concerning the influence that culture has on social skill. The chapter concludes with a discussion on the importance of possessing, developing and assessing social skills in today's globalised team environment.

The stipulation of fair assessment by the Labour Relations Act, as well as the implication thereof on test development and utilisation has been emphasised by numerous researchers (Bedell, van Eeden & van Staden, 1999; Erasmus, 1998; Sehlapelo & Terre Blanche, 1996; Shaw & Human, 1989; van der Merwe, 1999). Chapter three starts with a brief overview on the background, development and current stance of the psychometric field in South Africa. The three types of bias as well as the sources of bias is discussed, followed by an outline of the three levels of equivalence. The focus of this chapter will be on the explanation and discussion of construct equivalence.

The Potential Index Batteries (PIB) was developed to address the challenges (as outlined in chapter three), that psychometric instruments face in today's culture-rich society. The origin, purpose, development and description of the PIB/SpEEx will be discussed within chapter four. The focus of this chapter will then turn to the Socialisation Index (PIB/SpEEX1200). A description of this Index will be provided, followed by an overview of the results from various reliability and validity studies that were performed on the PIB/SpEEx1200.

The focus of chapter five will be the outline of the research method used within this empirical study to obtain the aim of this study. Aspects which will be covered are the purpose of this study, the sample used, the steps followed in the analysis, as well as the research strategy. The two stages of cross-cultural research - that is the Pre-analysis and the analysis stage will also be discussed.

Chapter six contains the article on "The Construct Equivalence of the PIB/SpEEx Socialization Index for job applicants from diverse cultural backgrounds". The article will provide a summary of chapter two and chapter three. Within the article the method of analysis is explained. An outline of the sample, the steps taken in the research and the research strategy is provided. The statistical analysis as well as the results of the research will be discussed in detail. The article concludes were conclusions, recommendations and limitations are discussed.

CHAPTER 2:   SOCIAL SKILL

2.1.   Introduction

According to Hogan and Shelton (in Ferris, Witt & Hochwarter, 2001) the vast majority of present day jobs, at least to some extend, rely on social interaction. The list of social skill that may be necessary in one's job is long and varied. Obtaining a job, presenting an idea to a superior, handling a complaint from a client, communicating with a fellow colleague, negotiating etc, all requires one to have sound social skills (Eisler & Frederikson, 1980). Although Ferris, Witt and Hochwarter (2001) suggested that both social skill and general mental ability are necessary for success at work, there has been little emphasis on the development of behavioural issues such as social skills, in various technical professions, such as accounting, architecture, information technology etc. (Akers & Porter, 2003; O'Brien, 1999). Akers and Porter (2003), Miller (1999) and Lanser (2000) propagated that job performance has been studied in a vacuum, as intelligence and cognitive ability as job performance predictors have actively been researched, while social skill not so (Ferris et al 2001).

Historically, the relationship between an individual's social competence and his or her successful functioning in society has been overlooked by our major educational and remedial institutions (Eisler & Frederikson, 1980). Our universities and schools, have focused almost exclusively on teaching a number of technical skills, from typing and computer skills to budgeting, which do not necessarily prepare individuals to function effectively with others. This technical emphasis has resulted in individuals who do not know how to interact effectively with their authority figures nor their colleagues (Eisler & Frederikson, 1980).

Various researchers have found that technical skills are not enough anymore (Akers & Porter, 2003; Green, 2000; Pfeiffer, 2001; Tarricone & Luca, 2002). An organisation can have the best technical skilled employees, but if they can not interact effectively with each other, ideas will not be shared, differences will stay unresolved, problems will escalate and goals will not be met (Lanser, 2000; O'Brien, 1999; Tarricone & Luca, 2002). According to Malouff and Schutte (in Schutte, Malouff, Bobik, Coston, Greeson, Jedlicka, Rhodes & Wendorf, 2001) social skills are the lubricants of social life that will help individuals to interact effectively. Hence, both technical and social skills are necessary for success (Dulewicz & Higgs, 2000; Gill & Butler, 1993). Harris and Harris (in Tarricone & Luca, 2002) explained that communication at both the technical-

(cognitive) as well as the social level (emotions and feelings) are necessary for successful teamwork. Managers are therefor now placing increased value on behavioural skills that will help their employees to function more effectively within the workplace (Miller, 1999).

2.2   Defining Social skill

Social Intelligence, emotional intelligence, and social skills are constructs that are used interchangeable within discussions, which may lead to confusion for the leak in this area. Within the next paragraphs I will discuss the origin, overlap and difference between these constructs.

2.2.1.   Emotional Intelligence

Bar-On (in Kobe, Reiter-Palmon & Rickers, 2001) differentiated between emotional intelligence and general intelligence in that the focus of emotional intelligence is on the personal, emotional, and social competencies and not on the cognitive dimensions of intelligence. He further said that emotional intelligence predicts an individual's success because it reflects how a person applies knowledge to the immediate situation (Kobe, Reiter-Palmon & Rickers, 2001).

Goleman (in Tishler, Biberman & McKeage, 2002) defined Emotional Intelligence as "the capacity for recognising our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships". Mayer and Salovey (in Dasborough & Ashkanasy, 2002) described Emotional Intelligence as the ability to perceive, access and generate emotions, to understand emotions and emotional knowledge, and to reflectively regulate emotions, so as to promote emotional and intellectual growth.

Emotionally intelligent individuals will thus be able to recognise emotions in themselves and others and are able to respond appropriately during interaction (Kobe, Reiter-Palmon & Rickers, 2001). According to McGarvey (in Johnson & Indvik, 1999) emotional intelligent workers will excel at four interrelated skills; the ability to persist and to stay motivated in the face of frustration, the ability to control impulses, the ability to control their emotions, and the ability to empathise with others. It is stated that emotional intelligence includes components such as, self-awareness, self-regulation, motivation, empathy and social skill (Akers & Porter, 2003; Connolly, 2002; Goleman, 1999, 2000; Kobe, Reiter-Palmon & Rickers, 2001; Miller 1999).

2.2.2.   Social Intelligence

Being able to socialise with people on a formal, as well as on an informal manner, within any situation, is important for personal as well as business success (Albrecht, 2004). This ability presents a particular kind of intelligence, which can be developed (Albrecht, 2004; Lanser, 2000; Salopek, 2004). Sternberg (in Lowman & Leeman, 2001) identified this type of intelligence as being conceptually and factorally distinct from other forms of cognition and ability.

Thorndike (in Lowman & Leeman, 2001) has conceptualised this type of intelligence as "Social Intelligence". Thorndike (in Lowman & Leeman, 2001) defined social intelligence as "the ability to understand men and women, boys and girls - to act wisely in human relations". Marlowe (in Ferris, Witt & Hochwarter, 2001) defined social intelligence as "the ability to understand the feelings, thoughts, and behaviour of persons, including oneself, in interpersonal situations and to act appropriately upon that understanding." This definition *includes* the idea of emotional intelligence (Salovey & Mayer, 1990) and distinguishes between understanding people (social cognition) and acting effectively on that understanding (behavioural performance), where the latter signifies social competence.

According to Marlowe (1986) and Chen and Michael (in Kobe, Reiter-Palmon & Rickers, 2001) social intelligence can be viewed as a multidimensional construct that it is too complex to be explained by a single factor. Albrecht (2004) stated that social intelligence can best be understood as one of a range of interwoven competencies.

A review of social science research findings, ranging from Gardner and Goleman to Carnegie suggested five key dimensions of social intelligence (Albrecht, 2004):

Situational radar	the ability to read situations, understand the social context that influences behaviour, and choosing behavioural strategies that would most likely be successful
Presence	refers to aspects such as self-respect, confidence and self-worth,
Authenticity	behaving in such a way that is honest with oneself as well as with others,
Clarity	the ability to express oneself clearly, appropriate use of language, as well as the ability to persuade others to buy into your idea,
Empathy	the ability to create a sense of connection between yourself and others, to

get them on your wavelength, and inviting them to move with and towards you, rather than away and against you.

Social intelligence thus consists of two components: Firstly, to be aware of or noticing others' needs and problems and secondly to respond- or adapt to different social situations (Gardner, in Lowman & Leeman, 2001; Mayer & Salovey, 1993; Thorndike in Lowman & Leeman, 2001; Zaccaro, Gilbert, Thor & Mumford in Kobe, Reiter-Palmon & Rickers, 2001).

According to Albrecht (2004) socially intelligent individuals will be able to let others feel valued, capable, loved, respected and appreciated. Socially-intelligent individuals will thus be aware of the social situation, as well as the problems and needs of others (social perceptiveness). They will also be able to behave appropriately in different social situations (behavioural flexibility) (Kobe, Reiter-Palmon & Rickers, 2001).

2.2.3.   Emotional Intelligence versus Social Intelligence

So what is the difference, if any, between Social Intelligence and Emotional Intelligence?

Various researchers stated that the theoretical basis of emotional intelligence suggests that it may be a type of social intelligence (Abraham, 1999; Albreht, 2004; Mayer & Salovey, 1993; Salovey & Mayer 1990). On the other hand, researcher's work such as Goleman (2000) and Lanser (2000) proposed a model in which emotional intelligence would not merely be a construct that is subsumed within social intelligence. The proclaimed arguments on both sides are provided within the next section.

Mayer and Salovey (1993) defined social intelligence as the ability to adapt to and act accordingly in a variety of social situations. Salovey and Mayer (1990) stated that emotional intelligence is the subset of social intelligence that involves "the ability to monitor one's own feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions." Their definitions show the overlap between the emotional intelligence and the social intelligence constructs. Mayer and Salovey (in Kobe, Reiter-Palmon & Rickers, 2001) stated that social intelligence is a broader construct that *subsumes* emotional intelligence.

This can best be explained by a current example. Former President of the United States, Ronald Reagan, has crawled deep into the hearts of many Americans, as well as within the hearts of many other people. Reagan was skillful at charming and motivating people both individually and collectively, yet a very few people knew him well, or connected with him on a deeply personal level. even his relationship with his close family members were distant and strained (Albrecht, 2004). Based on these observations, it seems reasonable to characterise Reagan as a man of very high social intelligence (behavioural definition), while low on emotional intelligence. As illustrated by the example above, it is clear that emotional intelligence and social intelligence are closely interwoven, yet they are not the same thing (Albreht, 2004).

Goleman (2000), Lanser (2000) and Tischler, Biberman and McKeage (2002) stated that emotional intelligence has four building blocks (competencies), namely self awareness, self management, social awareness, and social skills. It is clear that the emotional intelligence competencies are of two types; awareness and skills, and that there are two levels; personal and social. According to this matrix, emotional intelligence would **not** merely be a construct that is **subsumed** within social intelligence.

Future research within this area are needed, as Kobe, Reiter-Palmon and Rickers (2001), stated, that if, the suggestion by Mayer and Salovey (1993) and Salovey and Mayer (1990) is correct, that is, if emotional intelligence is indeed a component of social intelligence, one must wonder whether anything new is learned by using the newer emotional intelligence construct instead of or in addition to the better established social intelligence construct.

2.2.4.   Social Skills

The Emotional Intelligent competency framework has four dimensions: self-awareness, self-management, social awareness, and social skill (Goleman, 2000; Lanser, 2000). Social skills are thus one of the cornerstones of Emotional intelligence (Akers & Porter, 2003; Goleman, 1999; Miller, 1999). Emotional intelligence can thus be viewed as the umbrella concept, while social skills are regarded as one of the underlying constructs of emotional intelligence. Social skills is however also one of the cornerstones of Albrechts' Social Intelligence model (Salopeck, 2004).

Garavan (1997) and Sergin (2001) noted that social skill refers to the reception and interpretation of perceptual cues, making appropriate responses both verbally and non-verbally,

and the opportunity to receive feedback and take corrective action. Social skill reflects interpersonal perceptiveness and the capacity to adjust one's behaviour to different situational demands and to effectively influence and control the responses of others (Anonymous, 2001; Goleman, 1999). Social skill thus refers to a person that is able to handle himself, and any relationship well, within various social settings (Connolly, 2002; Goleman, 1999; Lanser, 2000; Sergin, 2001).

From the above discussion, it is clear that researchers do not yet agree on the theoretical basis of emotional and social intelligence. It is however evident that social skill are used as one of the cornerstones of both the social and emotional intelligence models.

In terms of this study the construct social skill, or then socialisation, consists of two subscales, namely sociability and a-sociability. The sociability subscale will refer to individuals who generally have a need for social contact and who enjoys interacting with others. An individual with a high score on the sociability subscale tend to be self-confident, out-going, socially bold, friendly, assertive and socially confident (Gahagan, 1984).

A-sociability will refer to individuals whom tend to shy away from social interaction. Individuals who score high on this subscale tend to be reserved, non-assertive and controlled. They will allow others to be the centre of attention, rarely initiate conversation with strangers and may find it difficult to express themselves in a social situation (Gahagan, 1984).

Although the above definitions, provide us with an outline of what is meant by the construct social skill, Eisler and Frederikson (1980) stated that when trying to conceptualise social skill, one should always consider aspects such as; How does one judge whether a person's social behaviour is effective or not? Can a person be socially skilled in one situation and not in others? These questions point to the multidimensional facet of social skill.

2.3.   Social skill as a multidimensional construct

The ability to function successfully with others, requires mastery of relatively complex social skill (Anonymous, 2001; Eisler & Frederikson, 1980; Gahagan, 1984; Ramsey, 1997; Tarricone & Luca, 2002). Gahagan (1984) stated that there is a hierarchy of sub-social skills which if, performed adequately, enables one to interact effectively in any situation. This can be illustrated

by the following example. When playing golf, the position of the feet, the upper-body posture, the grip of the club, the swing of the arms etc. are all important skills that need to be acquired to become a skilled golfer. Similarly, in social interaction, the positioning and orientation of the body, the facial expression, bodily movements, tone of voice, language use, etc. are all skills that need to be acquired to be socially skilled in any situation (Sergin, 2001).

The sub-skills of social skill can be divided into cognitive, behavioural and emotional components.

The Cognitive elements refer to a person's expectations, thoughts, and decisions about what should be said or done next during interaction (Eisler & Frederiksen, 1980). In the case of social skill, cognitive abilities might include skills in the accurate perception of others' motives, traits, and intentions (Ferris, Wiit & Hochwarter, 2001; Baron & Markman, 2000). According to Mumford, Zaccaro, Harding, Jacobs and Fleishman (2000) social cognition includes the knowledge one need to have about the other people that one is interaction with. Individuals high in social skill are more likely to perceive and accurately interpret subtle social cues; thus to "read between the lines" (Baron & Markman, 2000; Dilenschneider, 1996; Ferris et al, 2001).

The behavioural components refers to the verbal and non-verbal skills one need to have during interaction (Eisler & Frederiksen, 1980). Non-verbal behaviour includes aspects such as facial expression, touching, eye contact, hand gestures etc. (Barker, 2002). Verbal abilities refers to aspects such as, voice volume, asking direct questions, stating one's position clearly, appropriate use of language during conversation, speech fluency etc. (Gahagan, 1984). The unskilled person will show awkward moves, and make inappropriate comments at a party, while the socially skilled person will know what non-verbal behaviour will be appropriate, and what opening sentence to use in the initial contact with a stranger at a social gathering (Gahagan, 1984).

The emotional component refers to the correct discernment of our own, as well as others emotions during conversation (Gahagan, 1984). One thus need to be aware and in control of ones own emotions, as well as ones' emotional expressions (knowing when to express what emotion) (Beagrie, 2004). According to Gahagan (1984) one also need to realise the impact of ones' emotional state (depressed, anxious, happy etc.) on ones' social behaviour. A schematic diagram of the sub-skills of the social skill construct is provided in figure 2.1.

Figure 2.1 Outline of the sub-skills of the social skill

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┌──────────────────────────────────────────────────────────────────────┐
│                      ┌─────────────────────────┐                       │
│                      │ EMOTIONAL INTELLIGENCE  │                       │
│                      └─────────────────────────┘                       │
│                                                                        │
│  SELF-AWARENESS    SELF-MANAGEMENT    SOCIAL SKILL    SOCIAL AWARENESS  │
│                                                                        │
│          ┌──────────────────────┐    ┌──────────────────────┐          │
│          │ BEHAVIOURAL COMPONENT │    │ EMOTIONAL COMPONENT  │          │
│          └──────────────────────┘    └──────────────────────┘          │
│                                                                        │
│                   ┌──────────────────────┐                             │
│                   │  COGNITIVE COMPONENT │                             │
│                   └──────────────────────┘                             │
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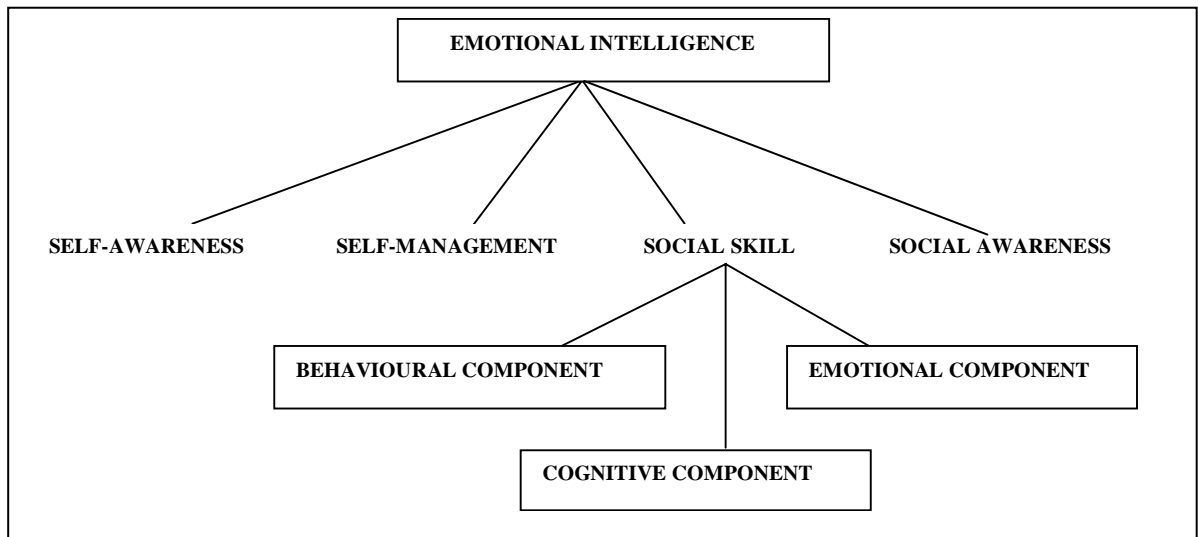
Social adaptability involves the ability to adjust to a wide range of social situations and to feel comfortable with individuals from diverse backgrounds (Anonymous, 2001). These types of people can be described as social chameleons, as they are able to adapt their behaviour in accordance with the demands of the particular situation (Baron & Markman, 2000; Mumford, Zaccaro, Harding, Jacobs & Fleishman, 2000). Knowing when to do what in which situation is of great importance (Ramsey, 1997; Sergin, 2001). For instance, it may be permissible and functionally effective to ask a waitress to take your dinner-plate back. The consequences of requesting the same from your mother-in-law might however lead to negative consequences. This example points out that there are norms governing what is appropriate during particular kinds of interaction with different kinds of people (Gahagan, 1984; Radley, in Miell & Dallos, 1996).

Although no single definition of social skill is either adequate nor sufficiently comprehensive to describe all social interactions, the above discussion outlines the characteristics of a basic interpersonal process which may be regarded as necessary for demonstrating sound social skill. It will thus be our awareness and knowledge of, and our ability to adapt to the overt social behaviour of others, that will enable us to influence others (Anonymous, 2001; Miller, 1999) to negotiate effectively, and to build strong relationships in a culturally diverse country (Akers & Porter, 2003; Goleman, 2000). A white manager needs to know that his black sub-ordinate will

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not necessarily make eye-contact during a conversation. The white manager thus needs to have knowledge of his black sub-ordinates' cultural influenced behaviour. This knowledge will enable the manager to become aware of his behaviour, and then to adapt and to appropriately react on the sub-ordinates' behaviour.

The cognitive-, behavioural- and emotional components represent key elements of social skills. These components lay a foundation for effective interaction, by providing individuals with the capability to understand the social setting and to respond effectively to the dynamics of each social situation. Effective social skill thus refers to the continues knowledge, awareness, and adoption of ones' behaviour in various social settings (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000).

2.4.   The comparison of social skill to other social constructs

In the previous section the multi-dimensional facets of social skill was outlined. Research has indicated that most of the questionnaires that assess social skill, evaluate only a few facets of social skill (Gahagan, 1984). Goleman (2000) and Anonymous (2001) stated that factors such as communication-, listening skills and assertiveness are linked with a persons' social competence. We will begin our discussion with an explanation of why/how these factors are linked with the evaluation of the multi-dimensional social skill construct. As we have determined the definition of social skill in the previous sections, we will also compare various well-known questionnaires to determine what other social constructs show comparison with the social skill construct.

2.4.1.   Factors linked to the assessment of Social skill

- **Communication skills**

Robbins (1998) stated that no group can exist without communication. It is through communication that information gets from one person to another (O'Brien, 1999). Communication include the transference and the understanding of meaning (Robbins, 1998). Simply stated, communication consists of the sending (coding) and receiving (encoding) of messages (Dilenschneider, 1996). Good communication skills will enable the communicator to formulate the correct words so to get the message across to the other person (Robbins, 1998).

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A person that is skilled in terms of communication, will send non-verbal signals that are complementary to the verbalised message being send. He will also be able to correctly observe and read the non-verbal signs of others. Gardner (in Ferris et al, 2001), noted that individuals with high social skill, are able to understand and read other people better. They are able to read between the lines, and are alert to others' true motives and intentions.

Nowicki and Duke (in Collins & Nowicki, 2001) stated that non-verbal behaviour is important to social interaction because it provides reliable information about how the person one is interacting with, are feeling, and it also regulates turn taking during the conversation. This knowledge of one another's affective states is necessary for evaluating the interpersonal situation so that social knowledge and social skills can be applied appropriately (Collins & Nowicki, 2001). For when one misreads another person's emotional state, that is, interpreting a person as satisfied when he or she is actually upset, one's social knowledge and social skill may be applied inappropriately. This will in turn lead to dysfunctional social interaction

- **Listening skills**

Everyday, millions of people speak, but is anybody really listening. Or are they just hearing. Hearing and listening are two distinct activities. We hear with our ears, while we listen with our head, heart and eyes (Brody, Marjorie, Alati & Danine, 2004). Effective listening does not imply hearing what a person is saying; it is about understanding the message (Schweiger, 1987). Well-trained listening- and observation skills will be necessary to read (encode) the intended message correctly. One can thus state that the aim of communication would be the sending of clear and convincing messages (Goleman, 1999). Scarnati (1998) stated that empathetic, interested and active listening skills are the keys to success. Effective listening skills will better ones' job performance, as well as ones' interviewing-, conflict resolution, problem solving and social skills (Linney & George, 1995). This is because good listeners express respect for others, are able to read between the lines, are able to focus on the essential elements of the message, and are able to correctly hear and interpret the message others' intended to convey (Penning, 2001).

- **Assertiveness**

Lindenfieldt (1995) defined assertiveness as the ability to ask directly and concisely what you need, and to sate what you do not want, but to also forcibly speak up for others who are less empowered than you. Luzio-Lockett (1995) stated that assertiveness implies open, direct and

honest communication and interaction, that will enable the other person to respond in a more open and direct way. Darling and Walker (2001) identified four behavioural styles: relater, analiser, director, and socialiser. The Socialiser behavioural style integrates high levels of both emotional responsiveness and assertiveness. Individuals who are assertive (socialisers) have the ability to charm, persuade and inspire others (Darling & Walker, 2001). They tend to be outgoing, optimistic and enthusiastic people who like to be at the center of action (Darling & Walker, 2001). These are all characteristics of individuals who show good social skill.

From the above discussion, it is evident that effective communication and listening skills are necessary to assertively state ones opinion, as well as to influence, negotiate, empathise and persuade others. These aspects are all listed as important facets of social skill (Akers 2003; Goleman, 1999; Lanzer, 2000; Miller 1999; Sergin, 2001; Tarricone & Luca, 2002). It is for this reason that the assessment of communication, listening and assertiveness are most of the time included when evaluating social competence.

2.4.2.   A comparison between various questionnaires to indicate which other constructs show a comparison with the Social Skill construct

The 16PFi, 15FQ, JTI, NEO PI-R, BAR-ON EQI etc. has been examined to determine whether there is a comparison between the social skill construct and other social constructs. Various comparisons have been found, that is consistent with the description and definition of social skill, as outlined in the PIB/SpEEx 1200 (Socialisation Index).

Briefly defined, socialisation, in terms of the PIB/SpEEx 1200, refer to the potential or capacity to mix freely with people; to feel comfortable among people and to be accepted by people (Erasmus, 2003).

A person who scores high on Factor A (warm-hearted), Factor H (Social boldness), Factor F (Enthusiastic), and low on Factor Q2 (Group orientation), of the 16PF questionnaire, will result in a high Extraversion score. A person measuring high on the extraversion dimension, would be regarded as a type of person that likes to interact with people, enjoy meeting new people, are self-assured in most social settings, are talkative and usually make a good first impression. This definition is thus consistent with the definition of social skill, as stated in the PIB Manual (Psytech International Ltd. & The Test Agency Ltd, 2000)

The Interpersonal Relationship Scale of the BAR-ON EQI correlates with factor A (warm-hearted) of the 16PFi, which indicates that an individual that has good interpersonal relationship skills would most probable have good listening skills as well as the ability to be attentive to the needs of others (Psytech International Ltd. & The Test Agency Ltd, 2000).

The substantial correlation between Factor A (Warm-hearted) and the JTI dimension Thinking-Feeling provides strong support for the validity of this 16PFi factor, as both of these scales assess an emphatic concern for others and a sensitivity to others' feelings. The good correlation between Factor F(Enthusiastic) (0,68) and Factor H (Socially Bold) (0,62) of the 16PFi and the Extrovert-Introvert dimensions of the JTI indicates that an extrovert (socially-orientated) individual, would be socially bold, that is, self-assured in most social settings, will initiate social conversations, makes a good first impression, as well as enthusiastic, which is, a talkative individual, who likes to participate in group activities (Psytech International Ltd. & The Test Agency Ltd, 2000).

With regard to the 16PFi Extraversion factors and the NEO PI-R, the following points are noteworthy. Firstly, the strongest correlation with Factor A (Warm-hearted) is the NEO PI-R facet Warmth, followed by the facet Tender-minded. This provides strong support for the validity of this 16PFi factor, which assess a warm-hearted interest in people. Secondly, the strongest correlation between the 16PFi Factor F (Enthusiastic) and the NEO PI-R is with the facet Gregariousness, reflecting the fact that high scores on this factor are associated with an enthusiastic, lively interest in people and a participative approach to social relationships. Thirdly, the negative correlations between the 16PFi Factor H (Socially Bold) and the NEO PI-R facets Self-consciousness and Modesty provide strong support for the validity of this factor, which assesses boldness and confidence in social settings. Lastly, the substantial negative correlations between Factor Q2 (Self-sufficient) and the NEO PI-R facets Gragariousness and Warmth is consistent with the definition of this factor, with high scores on this factor assessing a tendency to be self-reliant and independent, and a preference for avoiding group activities. All the correlations were statistically significant at the 0,1% level (Psytech International Ltd. & The Test Agency Ltd, 2000).

Factor F (Enthusiastic), Factor H (Socially Bold) and Factor Q2 (Group orientation) all correlate substantially (0,64), with the Gregarious dimension on the OPP, and are thus consistent with the

definitions of these 16PFi factors, providing further support for the validity of these dimensions (Psytech International Ltd. & The Test Agency Ltd, 2000).

The FH (Retiring-Socially Bold) dimension of the 15FQ, indicates that high scorers tend to be self confident, initiate conversation, enjoys social situations and are socially venturesome. This definition is consistent with the definitions of Factor H (Socially Bold) and Factor F (Enthusiastic) and Factor Q2 (Group Orientation) of the 16PF.

Individuals whom are assessed as outgoing on the 15FQ tend to be assessed as persuasive, controlling, gregarious and socially confident by the OPQ. Extroverts on the JTI tend to be evaluated as outgoing, enthusiastic and group orientated on the 15FQ. The EPQR Extraversion correlates substantially with the 15FQ Outgoing, Enthusiasm, Socially Bold Factors, and inversely with the Self-sufficiency Factor. The 15FQ factors Outgoing, Enthusiasm, Socially Bold and Group Oriented correlate well with the Firo Expressed Inclusion scale - a measure of individuals need for social activity.

Albrechts' model for measuring Social intelligence consists of a combination of three dimensions, namely the assessment of social skill, self-awareness and interaction style (Albrecht, 2004). When assessing social skill, individuals are evaluated in four areas:
1) Presence: How you affect others through your physical appearance, demeanor and body language.
2) Authenticity: How honest one is with people and yourself, versus how manipulative
3) Clarity.   How clearly you express your thoughts, ideas opinions etc.
4) Empathy.   How aware and considerate you are of others' feelings, thus a sense of connectedness that inspires people to cooperate.

From the above discussion, it is clear that constructs such as extraversion, social boldness, empathy, group-orientation, warm-heartedness, enthusiasm, gregarious etc. show comparison with the description of our social skill construct (Salopeck, 2004).

2.5.   Effective social skill as a competitive advantage

Interpersonal skills top the list of abilities needed by workers, according to Bruton and Smith's employee summary (Schafer, 1996). Garavan (1997) stated that the most common reason for

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people to come together and engage in interpersonal behaviour, would be to complete a specific task. People working on the same production line, ordering food from a roadhouse, fixing a car, doctors operating on a patient, are but a few examples of situations where interaction with others are required. Teamwork, management of inter-cultural working teams, teleconferencing, and mobile technology are buzzwords for any employee working within today's output-driven working environment. Failing to adjust to these working conditions, can cause a serious downfall for any business. Within the next section we will discuss how effective social skill can serve as a competitive advantage within today's competitive global market.

- **Leadership**

Leadership, even at the most basic level, requires some social relationship (Zaccaro, Gilbert, Thor & Mumford, 1991). Leadership is the process of social interaction where leaders attempt to influence the behaviour of their followers (Yukl, in Dasdorough & Ashkanasy, 2002). By its very nature then, leadership involve a social component (Kobe, Reiter-Palmon & Rickers, 2001).

Interacting with others competently and effectively; building relationships, coaching; mentoring; influencing and developing individuals and teams are all components that came out as important for effective leadership, and these all require one to have sound social skills (Anonumous, 2001; Lanser, 2000; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). According to Miller (1999) the hallmarks of social skill would include persuasiveness, change management, empowerment and the effective leading of teams. Leaders must be able to communicate the vision, establish the goals and motivate their subordinates in such a way that they will be able to get the buy-in from your employees. These functions all require sound social skills, as this will enable leaders to read the social setting and to respond effectively to the dynamics of the situation (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). Good social cognition will also be of benefit, as this will provide valuable information about the people one is interacting with.

Good social skills will thus enable a leader to empower, motivate and mentor his followers successfully, as he is able to read, adjust and function effectively within any social setting.

- **Teamwork**

De Vries (in Tarricone & Luca, 2002) stated that research has identified effective teamwork as one of the fundamental elements of high-performing business. The team culture of the business

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environment of today demands much more from employees than the traditional combination of job-specific knowledge and skills (Pfeiffer, 2001; Tarricone & Luca, 2002). Skills such as communication, interpersonal skills, social skills, conflict management, negotiation etc. are essential requirements for team environments (Tarricone & Luca, 2002). Within today's inter-cultural work-team environment, employees must be prepared to learn and work with people and worldviews that are different from their own ideas (Barker, 2000).

Johnson and Johnson (in Tarricone & Luca, 2002) stated that effective social and interpersonal skills help create an environment that empowers team members to contribute, to work with others towards shared goals, and to be actively involved in problem solving (Goleman, 2000; Tarricone & Luca, 2002). They further said that team members should not only possess the social skill that is necessary for high levels of productive cooperation between team members, but that they should also be motivated to utilise these skills to obtain project goals.

- **Interaction management**

Davenport and Prusak (in Chua, 2002) stated that without knowledge, an organisation would not be able to maintain itself as a functioning enterprise. Smoliar (2003) argued that the term interaction management, in stead of knowledge management, would better fit today's workplace, as it is not knowledge per se that is being managed, but the people who possess this knowledge and the transfer of this knowledge between people. As knowledge is power, it would be of great importance to concentrate on the important role that social skill plays in interaction management (Smoliar, 2003). Higher social skill will lead to more communication and thus more information sharing (Baron & Markman, 2000). Chua (2002) found a positive correlation between the level of social interaction and the quality of knowledge created, in a study where he examined the influence of social interaction on the process of knowledge creation.

- **Problem solving and conflict management**

Whether during an informal coffee with a group of friends, or around the boardroom table with colleague, social skills provide the bridge between having something to say and making a contribution effectively (Gaynor, in Beagrie, 2004). Problems are solved, solutions are implemented and conflict is managed within a social context (Mumford et al, 2000). Solutions are often developed interactively or with the help of key subordinates, peers and supervisors. The need to develop and implement solutions with and through others places a premium on social skills (Zaccaro, Gilbert, Thor, & Mumford, 1991), especially skills used in acquiring information

(Mumford et al, 2000). Social skills are also necessary to motivate and direct others during problem solving. When dealing with people, you need to know how to get the right information from them so to make well informed decisions (O'Brien, 1999).

- **Information Technology**

Information Technologists need social skills as much as technical- and other hard skills to become frontiers (O'Brien, 1999). While hard skills will help them perform their jobs well, it is their social skills that will enable them to deal better with crisis situations (O'Brien, 1999) minimise their stress levels, gain greater recognition, find more opportunities for advancement and develop better relationships (Anonymous, 2001; Baron & Markman, 2000; Sergin, 2001). Information Technologist personnel sometimes feel more like counselors than technologists, as they constantly need to re-assure, assist, provide advice and calm their clients down (O'Brien, 1999). Without the necessary listening- social- and communication skills it would be difficult to stay calm with frustrated clients. Socially skilled individuals may even evoke higher levels of positive affects among those with whom they interact (Baron & Markman, 2000; Tarricone & Luca, 2002).

- **Some statistics**

A study of partners at a large public accounting firm showed that those with significant strengths in self-management contributed 78% more incremental profit than partners who did not have these skills. Additionally, partners with strong social skills added 110% more profit than those with only self-management competencies. This resulted in 390% incremental profit annually (Coleman, Boyatzis & McKee in Akers & Porter, 2003).

It is evident from the above discussion, that social skills have a direct as well as an indirect impact on business success (Tarricone & Luca, 2002). Effective social skill will result in better team functioning, conflict management, leadership, negotiation etc. (Lanser, 2000; Miller, 1999; Sergin, 2001; Tarricone & Luca, 2002). Malouff and Schutte (in Schutte, Malouff, Bobik, Coston, Greeson, Jedlicka, Rhodes, & Wendorf, 2001) viewed social skills as the lubricants of social life that help individuals interact effectively within any situation. Green (2000) boldly stated that social skill training is an investment in any organisations' human capital.

2.6.   Social Norms, Social roles and Culture

People dress differently, eat different foods and celebrate different holidays (Miroshnik, 2002). Do peoples' definition of effective social skill also differ? Research conducted in a variety of settings (Radley, in Miell & Dallos, 1996) has provided evidence that it does, as Rogers-Adkinson (1997) noted, what is seen as respectful and good social skills in one culture may be seen as disrespectful and poor social skills in another, as social behaviour is influenced by cultural background (Eisler & Fredericson, 1980; Gahagan, 1984; Radley, in Miell & Dallos, 1996). Social interaction at any level, is orderly and patterned, which suggests the presence of prescribed norms and roles (Eisler & Fredericson, 1980; Gahagan, 1984). Within the next section we will discuss the influence of cultural norms and -roles on social behaviour. Examples of how social behaviour differ in various cultures, will also be provided.

2.6.1.   Social Norms

Taylor (in Havilanh, 1994) defined culture as: "… that complex whole which includes knowledge, belief, art, law, morals, customs and other habits acquired by man as a member of society." Culture thus represents the essence of our differences (Kokt, 2003). Culture is something that is shared by almost all members of some social group (Miroshnik, 2002). The older members of the group teaches the younger members the rules, customs, laws etc. of that specific culture, that will shape the child's' behaviour (Miroshnik, 2002; Kokt, 2003).

According to Robbins (1998) norms are acceptable standards of behaviour that are shared by the group members. Norms tell members what they are expected to do in certain circumstances (Robbins, 1998). Fellow golfers that do not speak while their partners are putting, waiting for all to sit down at the dinner table before eating, are all examples of behaviour that is governed by norms.

According to Radley (in Miell & Dallos, 1996) social interaction appears to be guided by perspectives or frames of reference that are somehow "kept" in mind by each person during the cause of the day. The norms established by a group thus influence individual behaviour (Moghaddam, Taylor & Wright, 1993). It is important to take into consideration the influence that group norms have on individual behaviour, as this can lead to an explanation of the social behaviour of the individual in various social settings (Moghaddam, Taylor & Wright, 1993). In

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order to explain the behaviour that takes place one thus first need to know the context of the norms. When we understand the cultural context, we will be able to explain the ways in which individuals may interact in a social setting (Moghaddam, Taylor & Wright, 1993).

In some black cultures there is a mutual understanding (norm) that subordinates are not allowed to make eye contact with authority figures during conversation. Lack of eye contact during assessment will thus not indicate a deficiency in social skill, but rather a cultural difference in social behaviour. When assessing social skill, it is therefore important to take note of how cultural/group norms have an influence on individuals' social behaviour.

2.6.2.   Social roles

Social roles are slots or positions in the social system (Gahagan, 1984). A rugby team concists of many positions, that need to be occupied. An important aspect of a role position, is that expectations exist about the behaviour of the occupants. Within our rugby example, the expectations of the right-center, the scrum half or the fly-half are quite precise and the individuals assigned into those roles will feel obliged to fulfil the expectations, of that specific role

Social role can thus be defined by a set of norms that prescribe the appropriate behaviour of an individual in a particular position (Radley in Robbins, 1998; Moghaddam, Taylor & Wright, 1993). Consequently, when we say that "Sue is a mother", we immediately formulate certain expectations about Sue's behaviour. The power that social roles have over individuals' behaviour was illustrated by Zimbardo's well-known prison experiment. During this experiment Zimbardo illustrated the power of the learned stereotyped conceptions of prison-guards- and prisoners roles. Zimbardo created a prison environment, hired 12 emotionally stable and physically healthy law-abiding students, and randomly assigned them the role of either prisoner or guard (Robbins, 1998). Zimbardo assigned some basic rules and then stood back to see what would happen. This experiment demonstrated that prescribed roles do have a very strong influence on our social behaviour. For further reading on this experiment, go to Moghaddam, Taylor & Wright, 1993.

Knowledge about culture provides us with an understanding of the behavioural consequences of a given role (Moghaddam, Taylor & Wright, 1993). In some cultures, it is custom that subordinates only speak, when spoken to (Delgado & Rogers-Adkinson, 1997). The fact that an

employee does not initiate a conversation with his boss, will in this scenario not indicate a deficiency in social skill, but rather an accepted role that is being played out by the individual which is placed within a subordinate position. Our role perception, that is, an individuals' view of how he/she is suppose to act in a given situation, influence ones' behaviour in social interaction (Radley, in Robbins, 1998). These role perceptions are formed from stimuli such as books, movies, family, friends etc.

Within the above discussion, it has been shown that the social environment is partially structured through social roles and social norms, which derive from the structure of the immediate family to the wider society. The occupation of these roles has an influence on an individuals' behaviour during interaction. Of importance is thus the realisation that the norms and roles in terms of effective social behaviour may differ from culture to culture, as illustrated by the examples.

2.6.3.   Social behaviour in various Cultures

- **The communication relationship between authority figures and their subordinates**

Rogers-Adkinson (1997) found that cultural variables have a significant influence on children's overt social behaviour. Riviera (in Rogers-Adkinson, 1997) stated that children from a Hispanic American background, for instance, learn to give unquestioned obedience and respect to parents and authority figures, whereas African-American children are taught not to trust authority figures unquestioningly (Cartledge & Milburn in Rogers-Adkinson, 1997). As our social behaviour is transferred into the working world, one can therefor assume that an employee that was raised within a Hispanic American background, would not be assertive, nor challenge authority figures within his work environment, as it would be disrespectful to question authority, whereas African American subordinates may however question or challenge their boss's decisions (Rivera & Rogers-Adkinson, 1997).

- **High-context- vs. Low-context cultures**

The way communication works in various cultures is crucial when it comes to problem solving and negotiation (Chaisrakeo & Speece, 2004). One can differentiate between high-context- and low-context cultures, in terms of communication (Chaisrakeo & Speece, 2004). Within high-context cultures the background information is implicit while much of the message is carried in how the words relate to that implicit information. Thatcher (in Chaisrakeo & Speece, 2004) stated that the main communication depends on contextual and social cues for meaning.

Individuals of high-context cultures are very expressive in terms of their non-verbal language such as voice, gesture, facial expression and periods of silence in their communication (Chaisrakeo & Speece, 2004). There is a focus on relationship building. High-context cultures include Asia, Japan, China, Korea etc. (Graham, Mintu-Wimsatt, Gassenheimer, Simintiras & Thomas in Chaisrakeo & Speece, 2004).

Within low-context cultures, the background information is explicitly expressed because most of the message is carried by the words themselves, and not by the context in which the words are expressed (Chaisrakeo & Speece, 2004). Individuals rely on formal communication which mainly focuses on verbal expression (Foster, Simintiras & Thomas, in Chaisrakeo & Speece, 2004). Low-context cultures include USA, Canada, Switzerland and Germany (Graham et al in Chaisrakeo & Speece, 2004).

Negotiators from high-context cultures will place more emphasis on win-win solutions, as these cultures are more relationship orientated. High-context cultures requires more also "reading" of their counterpart, so to understand what they really mean and care about (Chaisrakeo & Speece, 2004).

- **Non-verbal communication within cultures**

Radley (in Miell & Dallos, 1996), as well as Hall (in Chaisrakeo & Speece, 2004) stated that verbal and non-verbal expressions are cultural specific. There has been an assumption that emotions represented in facial expressions are universally identified across cultures (Ekman & Freisen; Ekman, O'sullivan & Izard, in Collins & Nowicki, 2001; Gahagan, 1984). Recent results have however, questioned the universality of identification of emotion in facial expressions (Carroll & Russell; Nowicki, Glanville, Demertzis & Russel, in Collins & Nowicki, 2001). There is considerable cross-cultural variation in non-verbal elements, for example touching, eye contact or the use of personal space in the regulation of social encounters (Barker, 2002). Anglo Americans tend to maintain distance between themselves and others during conversation, unless they are familiar with those they are interacting with. Hispanic Americans, African Americans, and Native Americans are comfortable with closer conversational proximity, whereas asian Americans prefer more space between the speaker and the listener (Lynch & Hanson, in Rogers-Adkinson, 1997). The amount and type of physical contact permissible is thus highly influenced by culture. For children from Hispanic American groups, for example, lack of contact between the child and the main stream adults and peers may be interpreted as rejection. Among

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many asian American groups, in contrast, hugging, backslapping, and handshaking are not typical and should, therefore, be avoided. These differences can lead to quite serious misunderstandings of motives (Gahagan, 1984).

In a series of studies in which the listening styles of blacks and whites in the USA, was studied, it has been found that blacks give very subtle and minimal cues that they are listening, except at certain points in the interaction (Eisler & Frederiksen, 1980; Gahagan, 1984). White people provide much more vivid evidence that they are listening. One of the major consequences of this is that white people often think that black people are not actually listening or attending at all. Within the Western culture, the maintaining of eye contact, is regarded as a sign of trustworthiness, sincerity and directness (Eisler & Frederiksen, 1980; Gahagan, 1984; Scarnati, 1998). Certain black cultures would however view it as disrespectful when making eye contact in a discussion with an authority figure. These misinterpretations can clearly lead to conflict, or have other devastating negative influences on relationships. (Gahagan, 1984).

African-American language patterns often allow simultaneous talk with a high level of non-verbal communication (Seymor, Champion & Jackson, in Rivera & Rogers-Adkinson, 1997). This type of communication, may cause conflict within the mainstream culture, where turn-taking in communication is expected (Rivera & Rogers-Adkinson, 1997).

The culture in which we grew up has an impact on the social behaviour we exhibit across settings. Employees from culturally diverse backgrounds may display culturally based behaviours that might be misinterpreted by their team members, clients and managers as functioning unsuccessfully in the mainstream work environment. Misinterpretations of culturally linked behaviour may place employees in conflict with co-workers, customers or clients (Rivera & Rogers-Adkinson, 1997).

Misinterpretation in terms of social skill can thus also occur during assessment, if cultural differences are not accounted for. This may lead to not valid and biased results.

2.7.   Assessing social skill

2.7.1.   The history of social skill assessment in South Africa

Earlier studies on the nature of social skill, attempted to delineate some of the behavioural differences between individuals who were evaluated as socially skillful and those individuals who were rated as unskilled. Lewinsohn regarded social skill as the ability of the individual to behave in ways that would elicit positive consequences (reinforcement) from others (Eisler & Frederiksen, 1980). In the process of measuring social skill, Libet and Lewinsohn (in Eisler & Frederiksen, 1980) compared the behaviour of depressed and non-depressed individuals who participated in group-therapy sessions. The results of this study indicated that the social skill of non-depressed individuals initiated conversations more frequently, showed interest in others during conversation, and that they were more apt to make assertive requests to their interpersonal partners (Eisler & Frederiksen, 1980). Later studies by Arkowitz, Lichtenstein, McGovern, Hines, Twentyman and McFall (Eisler & Frederiksen, 1980) found similar results to that of Libet and Lewinsohns' results.

In summarising some of the research done on the behavioural differences between socially skilled and socially unskilled individuals, the results have indicated that the skilled versus the unskilled individuals can be consistently differentiated on the more global impressionistic ratings by trained observers (Eisler & Frederiksen, 1980). The results seem to vary depending on the nature of the definition of social skill employed, the nature of the population studied, the interpersonal situations studied, as well as the kind of measure that is utilsed. Thus, once again, as earlier stated, we can conclude that the behaviour difference between socially skilled and socially unskilled individuals are not likely to fit any single definition.

2.7.2.   Factors that need to be taken into consideration in the development, utilisation and assessment of Social skills

From the discussion in section 2.6.3. it is evident that cultures communicate differently. It seems as if it is not the definition of effective social skills per se, that differs from culture to culture, but rather the way in which cultures communicate; the way in which cultures convey a message; thus their overt social behaviour. A critical area of investigation is whether we have

accommodated these cultural differences in our assessment tools, as Barker (2002), van der Merwe (1999), Human (1989) and Bedell, van Eeden and van Staden (1999) noted that the majority of psychometric tests and training programmes have been designed for the middle-class white South-African.

An awareness of social behaviours displayed by various cultural groups (Eisler & Frederiksen, 1980) is therefore necessary when developing psychometric instruments. When assessing (for selection, performance appraisal etc. purposes) social behaviour, the tester, as well as the psychometric instrument itself, must be able to consider the cultural influence of the individual, so to be able to determine if a given behaviour is in fact a cultural difference rather than a deficit (Eisler & Frederiksen, 1980). When assessing eye contact, for example, the tester must take into consideration that cultures have different perspectives of how and when eye contact is made during conversation.

The complex nature (multifaceted construct) of social skill lead to the fact that the construct as a whole could not be measured with one paper-and-pencil test. (Dulewicz & Higgs, 2000; Tischler, Biberman & McKeage, 2002). To date questionnaires have been developed to assess only a few facets of social skill, such as assertiveness, communication, social anxiety, negotiation skills etc, so that no single questionnaire or group of questionnaires can possible assess all of the relevant dimensions of social competence (Eisler & Frederikson, 1980). It is however recommended that, comprehensive assessment of social skill, should include the evaluation of constructs such as: verbal and non-verbal behaviours, cognitive activity, social boldness, assertiveness, perceptions of others' beliefs and attitudes, adaptability, warm-heartedness etc. (Anonymous, 2001; Eisler & Frederikson, 1980; Salopeck, 2004).

Social skill assessment can take various forms, ranging from behaviour observation to unstructured interviews where one reports one's own behaviour (Eisler & Frederiksen, 1980; Feng, 1996). The method of measurement is largely dictated by the type of information desired, but it is advised that a multi-method assessment is utilised due to the multidimensionality of the social skill construct (Cartledge & Milburn, in Feng, 1996). The multi-method approach will also enhance the accuracy of the results, due to the reliability and validity problems inherent in most social skill assessments (Feng, 1996). It is important to take note of the fact that the information gathered with a self report (eg. a behavioural checklist), is based upon the perceptions of the individual, which are vulnerable to personal biases and distortions (Feng, 1996).

The assessment of social skill will enable us to evaluate **what** a person will do in a particular situation, while the assessment of a person's thoughts and feelings will enable us to establish **why** a person will perform in a certain manner. According to Eisler and Frederiksen (1980) the emphasis, when assessing social skill, is thus on the **effects** of the behaviour, and not which behaviour were employed to be successful. One needs to establish whether the behaviour imposed, produced the intended result.

Furthermore, we can only state that an individual is socially skilled, when our definition is situation specific (Eisler & Frederikson, 1980; Ferris et al, 2001). An individual is socially skilled, in terms of a specific task, or specific job, or occupational level. For example: We can say that an individual is socially skilled in terms of interviewing, but not in terms of public speaking, as the facets of social skill for these tasks differ. The individual might be able to communicate effectively on a one-to-one basis, but might not be able to express himself clearly between a group of people. So to can one state that an employee is competent in terms of his social skills as a HR Officer, but not yet competent in terms of his social skills as HR manager as the social skills of a HR manager will be measured at a higher level (Garavan, 1997).

From the above discussion it is evident that the cultural differences, the multi-dimensional-, and situation specific nature of the social skill construct must be taken into consideration when developing, utilising and interpreting social skill assessment tools.

2.8.   Conclusion

Within this chapter, it is evident that social competence is paramount to function successfully in the organisational environment (Rivera & Rogers-Adkinson, 1997). The definition, characteristics as well as the multi-dimensional facets of social skill was outlined. The importance of effective social skill in today's competitive, global working environment has been exclaimed by the vital role social skill play in teamwork, leadership, problem solving etc. It has been proven that culture has an impact on the social behaviour we exhibit in social settings. As individuals from different cultural backgrounds display different social behaviour, it is of vital importance to accommodate these differences into our assessment tools, so to ensure valid and reliable tests. The importance of the validation of psychometric tests that are used to assess social skills will be discussed within the next chapter.

CHAPTER 3:   PSYCHOMETRICAL CONSTRUCTS THAT ARE IMPORTANT IN CROSS-CULTURAL RESEARCH

3.1.   Introduction

Psychometry touches the lives of thousands of South Africans (Sehlapelo & Terre Blanche, 1996), as psychological tests are used for selection purposes, placement, promotion, transfers, training and development (van der Merwe, 1999; Kemp, 1999; Shaw & Human, 1989; Taylor & Radford, 1986). It is however important that these psychometric tests that we utilise within the human resource field, are reliable, valid, non-bias and culture-fair (Bedell, van Eeden & van Staden, 1999; van der Merwe, 1999). After a brief discussion on the development of psychometrics in South Africa, these prerequisites for psychometric tests will be discussed. the focus of this chapter will however be on bias and equivalence, as these play an essential role in cross-cultural comparison.

3.2.   The history and development of psychometrics in South Africa

Psychological tests are commonly employed as aids in occupational decisions, including the selection and classification of human resources, yet employees tend to have little trust in tests and testing processes (Kemp, 1999; Sehlapelo & Terre Blanche, 1996). It is claimed that the history of psychometrics is that of racism and discrimination (Sehlapelo & Terre Blanche, 1996), as people felt that psychometric tests are biased, irrelevant, and unfair in relation to the black population (Shaw & Human, 1989). Instruments that do not respect the diversity of this country, lead to unfair discrimination against many - and especially against previously disadvantaged individuals (Erasmus, 1998). The issue of fairness in testing can thus be related to a concern for securing equal opportunity for all. The notion has therefor been put forward that alternative methods for assessing potential within the selection process should be developed (Shaw & Human, 1989). This would however not be necessary if the tests can be proven to be scientifically valid and culture-fair (Sehlapelo & Terre Blanche, 1996; Bedell, van Eeden & van Staden, 1999).

Despite the resistance currently experienced, psychological tests are and will probably continue to be widely applied in South Africa (Foxcroft in Bedell et al, 1999). The Employment Equity Bill

and the draft policy of the Professional Board of Psychology on the classification of Psychometric Measuring Devices, Instruments, Methods and Techniques, are now putting pressure on test developers and test users to upgrade, improve and validate existing psychometric instruments so to ensure fair testing practices (Bedell, van Eeden & van Staden, 1999; Eckstein in van der Merwe, 1999). The Equity Bill states: "Psychometric testing of an employee is prohibited unless it has been validated and measures have been taken to ensure that it is culturally fair and unbiased towards members of designated groups." (Erasmus, 1998). According to legislation only psychological tests and similar instruments of which the reliability and validity have been scientifically proven, and that are not biased against any employee or group may be used (Bedell, van Eeden & van Staden, 1999).

The concept of unfair labour practice was introduced in South Africa through the Labour Relations Act. When psychometric testing places any particular individual or sub-group at an unfair disadvantage, this could constitute an unfair labour practice (Taylor & Radford, 1986). It is argued that certain psychometric testing practices can be interpreted as falling under the definition of unfair labour practice, as empirical results indicated that different ethic groups obtained significantly different mean scores (Taylor & Radford, 1986). Psychologists who made quantitative measurements, earned themselves a bad reputation because of the implications of racial differences attached to their results (Poortinga, 1972). Huysamen (1996) stated that one of the major stumbling blocks regarding the use of psychological tests in South Africa stems from the complexity of creating tests which may be used across a diversity of linguistic and cultural backgrounds, as only culture-fair tests may be used for comparisons between races (Poortinga, in Poortinga, 1972). Van der Merwe (1999) and Kemp (1999) also stated that although culture-free tests are not possible, a definite need for culture-fair tests has been expressed. This has placed the spotlight on validity methodology, but more so on the equivalence of tests.

Those working in the field of psychometric testing, are aware that culture-fair tests need to be developed for the multicultural society that is in South Africa (Bedell, van Eeden & van Staden, 1999). In general, studies support the view that South African tests are reliable and valid for the groups for which they were developed and standardised. This means that comparison of scores of individuals within these groups may be justified. However, the fact that cross-cultural validity has not been openly determined for a number of tests implies that cross-group comparison of

scores could yield information that is not valid and which could lead to discrimination (Bedell, van Eeden & van Staden, 1999).

In the beginning era of psychometric testing, it was customary to report data on the reliability and validity of tests. In a multi-cultural globalised society the need has arise to not only report the reliability and validity of tests, but to also determine whether the test is non-bias and whether construct equivalence can be proofed (Taylor & Radford, 1986). Taylor and Radford (1986) stated in this regard that there are only a few validation studies that provide empirical guidelines on the equivalence of test results when individuals from different ethnic groups are competing for the same position in an organisation. The move is now towards cross-cultural research in terms of bias and equivalence.

3.3.   Reliability and Validity

The fairness of any assessment tool firstly depends on the procedures followed in its stamdardisation, validation and reliability (Erasmus, 1997). Researchers in the social sciences study complex constructs for which reliable and valid measures are needed. The measures should be brief, clear, and easy to administer (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). When a measure is created, psychometric testing is required. The first step would be to determine the reliability and validity of the psychometric test, for that specific situation.

3.3.1.   Reliability

Smith and Robertson (1986), stated that reliability is often defined as the extend to which scores on a measure are free from random errors. Price (1997) explained reliability as the extend to which a measure produces the same results when used repeatedly.

Test reliability thus refers to the instrument's degree of accuracy and consistency. Reliability indicates the measure of confidence with which scores obtained with an instrument could be regarded. According to Schaap (in Erasmus & Schaap, 2003) one can not refer to the reliability of an instrument. Schaap (in Erasmus & Schaap, 2003) further stated that the reliability simply tells one how confident one could be that the scores obtained with the instrument are consistent and accurate. Reliability is relative and can be influenced by the group to whom the instrument is administered. Reliability, when used in the appropriate formula, will indicate the relation between

true scores and observed scores. This is known as the standard error or measurement. Standard error or measurement provides a direct indication of the degree of inconsistency or error one could expect with individual scores (Schaap, in Erasmus & Schaap, 2003).

There is no fixed value below which reliability is unacceptable and above which is acceptable (Schaap, in Erasmus & Schaap, 2003). It depends on what the purpose of the score is. Cognitive related ability instruments should have higher reliability coefficients. Generally a reliability coefficient of 0,6 for social and emotional indices and a coefficient of larger than 0,7 for cognitive indices are regarded as being acceptable levels of reliability in psychometric evaluation (Kriel, in Erasmus & Schaap, 2003). It s known that the validity of a scale is always limited by its reliability, and therefore unreliable measurements will hamper efforts to predict behaviour (Kriel, in Erasmus & Schaap, 2003).

When only one measure is available, the reliability coefficient should be as high as possible (Schaap, in Erasmus & Schaap, 2003). A factor that needs consideration and that will influence the size of the reliability coefficient, is the range of individual differences within the group. According to Schaap (in Erasmus & Schaap, 2003) a more heterogeneous group will result in a higher reliability coefficient than a homogenous group. Variance due to content heterogeneity can also influence the reliability coefficient. The more homogenous the items are, the higher the coefficient.

Emotional and socially related scales are inclined to have lower reliability coefficients. This is a general phenomenon in personality related instruments due to multiple dimensions of the constructs in question (Cascio, 1987; Smit, 1991).

The best way to establish the reliability of a measure is to use it repeatedly on the same object (Smith & Robertson, 1986). There are several means by which a measure of reliability can be estimated. Smith and Robertson (1986) distinguished between the following methods of obtaining the reliability coefficients:

- Parallel form reliability is used when two equivalent/parallel versions of the same test are used on the same group, at different occasions.
- Test-retest reliability is used when the same test is re-administered to the same sample after a short time interval.

- Internal consistency. The homogenity of the test items can be determined by the split-half reliability method, the Kuder Richardsons's formula or Cronbach's alpha. The Kuder Richardsons's formula is generally used where the items are scored in terms of pass or fail, whereas Cronbachs alpha is used when items are scored on a continuum. Although recommendations vary, 0,70 is often viewed as the minimum acceptable level for alpha (Price, 1997).

It is important to remember that an indicator can be reliable, without being valid (Smith, 1991). In order for a measure to be valid, though, it must be reliable (Smith, 1991). Reliability can thus be viewed as a necessary but insufficient requirement for validity. Just as reliability does not refer to a single attribute of a test, the concept of validity is also multifaceted.

3.3.2.   Validity

A traditional definition of validity is that it answers the question: "Does a test measure what it is suppose to measure?" Anastasi (in Smith & Robertson, 1986) affirms that validity concerns what is measured and how well it is measured. Gulliksen (in Smith & Robertson, 1986) stated that "validity….. is the correlation with a criterion." Anastasi and Gulliksen's definitions are important because they focus on the fact that the essence of validity is the correctness of inferences that may be made from it. Thus, it is not the measures that have validities, it is the conclusion made from them which have validities (Smith & Robertson, 1986).

Validity is the degree to which a measure captures the concept it is designed to measure (Price, 1997). Adams (1966) confirms this by stating: "Validity is always validity for a specific purpose to aid in making a specific type of judgement concerning members of a specific group."

According to Aiken (1994) a test may have different validities, depending on the purpose of the design of the test, the target population, and the method of determining validity. According to Smit (1991) as well as French and Michael (in Pretorius 2000) a test does not only have to deliver results constantly every time it is utilised, it also has to achieve certain aims and measure what it is designed to measure. Validity is therefore not a characteristic of a test, but a test is valid for the specific purpose it is used for Pretorius (2000). A test thus have a low or a high validity for a specific aim (Guion, 1965).

It is important to note, however, that tests themselves do not possess reliability or validity (Schaap, in Erasmus & Schaap, 2003), rather, reliability and validity estimates are based on data provided by a sample of individuals who complete the test under certain conditions. Consequently, reliability and validity estimates are not static, but assume a range of values that partially depend on variables other than the test itself (Meyer, 1994).

3.3.2.1.   Types of Validity

Three basic kinds of validity are described in the psychometric literature: content validity, criterion-related validity and construct validity (Santavirta, 2003).

- **Criterion-related validity**

Criterion-related validity refers to the degree of correspondence between the measure and some other accepted measure - the criterion (Price, 1997). The three types of criterion-related validity are postdictive, concurrent, and predictive (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). Concurrent validity occurs when the criterion and the measure are assessed at the same point in time (Price, 1997). Predictive validity occurs where the measure is expected to be highly related to some future event or behaviour (the criterion). When the criterion has already occurred, the validity is postdictive (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003).

- **Content validity**

Content validity refers to the extent to which the content of a test covers all the aspects of a specific domain or trait (Peers, 1996). With this type of validity one wants to establish whether the items used in the measure represent a reasonable sampling of the total items that make up the domain of content for the concept (Price, 1997). Content validity refers to the extent to which the items on a measure assess the same content or how well the content material was sampled in a measure (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). With content validity, factor analysis is important in suggesting ways to revise instruments for the better (Santavirta, 2003).

- **Construct Validity**

Construct validity is the most general type of validity and actually subsumes the other two types of validity. According to Kline (1998), construct validity concerns whether an indicator actually measures the construct the researcher believes it does. Anastasi and Urbina (1997) confirmed

this definition by describing construct validity as "the extent to which the test may be said to measure a theoretical construct or trait".

Price (1997) stated that construct validity is the extent to which the empirical relationships based on using the measure are consistent with the theory. Assessing construct validity thus involves the specifying of the theoretical relationship, obtaining the empirical relationship, and then comparing the two. Current use of the term construct validity refers to efforts to justify a particular interpretation of a test score as compared to knowing what a test actually measures (Cronbach, 1969; Moss, in Meyer, 1994).

The essence of construct validity is to provide an answer to the question: "does the test measure the construct that it claims to measure?" It must therefore be shown that a measure correlates highly with other measures with which it could theoretically be expected to correlate (Kriel, in Erasmus & Schaap, 2003). This process is described as convergent validation. A measure should also be shown not to correlate with measures with which it could be theoretically expected not to correlate. This is achieved by means of discriminant validation (Kriel, in Erasmus & Schaap, 2003). With construct validity, factor analysis provides some of the tools that are most useful for determining internal structures for sets of variables (Santavirta, 2003).

3.4.   Bias and Equivalence.

Bias and equivalence play an essential role in cross-cultural comparisons (Portinga, in van de Vijver & Leung, 1997). From a theoretical point of view, the two concepts are the opposite of each other. One can say that scores are equivalent when they are unbiased. Equivalence is more often associated with the measurement level at which scores obtained in different cultural groups can be compared, whereas bias indicates the presence of factors that challenge the validity of cross-cultural comparisons (van de Vijver & Leung, 1997). Therefore, it is necessary to determine whether bias is present, and if so, to eliminate it.

3.4.1.   Bias

We will begin our discussion with a brief introduction to the history and development of bias in South Africa. We will continue our discussion with an explanation on the difference between bias and fairness, followed with an outline of the three types of bias, namely construct, method and

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item bias. The sources of each of these will also be discussed. It is important to note that only construct bias may have an effect on construct equivalence (van de Vijver & Leung, 1997). For this reason we will focus in-depth on construct bias. We will only briefly discuss method bias and item bias, as they influence equivalence only on the measurement/unit- and scalar level of equivalence (van de Vijver & Leung, 1997).

3.4.1.1. The history of Bias Awareness in South African testing

The reason why so little research on bias has been conducted in South Africa is because of the lack of laws to prevent discrimination at work in general and in selection specifically (Shaw & Human, 1989). The poor or strange performance of blacks and the subsequent poor predictive validity of tests brought into question the bias of instruments and the fairness with which they were applied (Shaw & Human, 1989).

In South Africa we were not bound to show that our selection procedures and methods are valid and non-discriminatory (Shaw & Human, 1989), but now, the importance of the validation of any instrument to be used for assessment purposes, is highlighted by recent and ongoing developments in the South African labour legislation, and especially the implications of the Employment Equity Act (Eckstein, 1998). The Employment Equity Act prohibits the psychometric testing of an employee (or prospective employee) unless the test was validated and could be used fairly and unbiased with all persons from all culture groups (Bedell, van Eeden & van Staden, 1999).

These issues once again accentuate the need for responsible use of tests and other psychological assessment procedures (van der Merwe, 1999).

3.4.1.2. Bias versus Fairness

The debate over the terms fairness and bias has been going on for some time and the difference between the two concepts is not always clearly understood (Kriel, in Erasmus and Schaap, 2003).

Brown (in Kriel 1999) defines bias as:

> " a test can be considered biased if it differentiates between members of various groups on bases other than the characteristic being measured. That is, a test is biased if its content, procedures, or use result in a systematic advantage (or disadvantage) to members of certain groups and if the basis of this differentiation is irrelevant to the test purpose."

Instrument fairness, on the other hand, is a broad concept that recognises the importance of social values in the use of various instruments. An instrument that is unbiased according to technical criteria can still be deemed unfair because of the social consequences of its use for selection purposes (Schaap, in Erasmus 1997).

According to Verster (in Taylor & Radford, 1986) fairness has to do with sets of circumstances under which decisions are made about individuals on the basis of their test scores in applied contexts of selection. Murphy and Davidshoffer (in Kriel, 1999) stated that fairness refers to a value judgement regarding decisions or actions taken as a result of test scores. Bias, on the other hand, is a statistical characteristic of the test scores, or of the predictions based upon these scores. Bias will thus exist when a test makes systematic errors in measurement or prediction (Murphy & Davidshoffer, in Kriel, 1999).

Taylor and Radford (1986) indicated that the following models can be applied to determine fairness in psychometric instruments:

regresssion model

Einhorn & Bass's (1971) equal risk model

Thorndike's (1971) constant ratio model

expected utility model

Darlington's (1971) modified criterion model

Cole's (1973) conditional probability model

The equal impact model

It is important to realise that a test is not biased merely because the members of various cultural groups perform differently. However, it is important that as soon as a mean and/or distribution difference between groups are found, the possibility of test bias should be investigated (Brown, in Kriel 1999).

3.4.1.3.   Types of Bias

Verster (1985) stated that a test is biased when scores are differentially, but systematically influenced by sources irrelevant to the intended domain of generalisation. Taylor and Radford (1986) point out that sources of bias may lie within test items, within the test as a whole, within subjects, with the tester, and in the testing context. Three kinds of bias can be distinguished, namely, construct bias, method bias and item bias. Method bias is further broken up into: sample bias, instrument bias and administration bias. Although bias can never be eliminated entirely, steps can be taken to minimise the effects of bias associated with known or potential sources. The sources of bias in cross-cultural assessment are manifold. A detailed list of the sources of bias is provided in Van de Vijver and Leung (1997). For the purposes of this study we will mention the most common sources, with an emphasis on construct bias.

3.4.1.3.1.   Construct bias

Construct bias will occur when the construct measured is not identical across cultural groups (van de Vijver & Leung, 1997). Construct bias can be caused when there is only a partial overlap in the definitions of the construct across cultures. Poor sampling of all the relevant behaviours associated with the construct can also give rise to construct bias. When an instrument is shown to measure different traits for one group than for another, or when the instrument is measuring the same trait but with different degrees of accuracy, bias in terms of construct validity probable exists (Schaap, in Earsmus, 1997).

Broad constructs (such as social skill) are therefore, often represented by only a few amount of items in a questionnaire or test and, thus, not all relevant domains are covered by the items. Embreston (in van de Vijver & Leung, 1997) referred to this insufficient sampling of all relevant domains as "construct under-representation".

3.4.1.3.2.   Method bias

Three types of method bias can occur, namely sample bias, administration bias and instrument bias.

- *Sample bias*

Sample bias or incomparability of samples occurs when the samples used differ in a variety of relevant characteristics ('nuisance factors') other than the target construct (van de Vijver & Tanzer, 1996). This is caused by differential stimulus familiarity, (eg testing African children with a township schooling and children from a modernised western schooling background will not yield scores that can be compared as the african children may not be so familiar with the stimulus - the computer) or a lack of comparability of samples (eg differences in educational background, age, or gender composition).

- *Administration bias*

Administration bias includes all sources of bias, which are caused by the particular form of administration (van de Vijver & Tanzer, 1996). Differences in environmental administration conditions, physical conditions (eg recording devices) or social conditions (eg class size); ambiguous instructions for respondents and/or guidelines for administrators, differential expertise of administrators, halo effects of tester/interviewer, communication problems between respondent and tester are but a few of the examples that may cause administrative bias (van de Vijver & Tanzer, 1996).

- *Instrument bias*

The prediction of future performance is an important use of assessment tools for selection purposes (Schaap, in Earsmus, 1997). Predictive validity is therefore considered one of the most crucial forms of validity in relation to instrument bias. Instrument bias subsumes all sources of method bias which are associated with the particular assessment instrument. Instrument bias is caused by differential familiarity with stimulus material, differential familiarity with response procedures and differential response styles (van de Vijver & Tanzer, 1996).

Unbiased instruments ought to predict the future performance of individuals from different cultural groups, equally well. A constant error in prediction as a function of membership to a certain group constitutes instrument bias (Schaap, in Earsmus, 1997).

Examples and an in-depth discussion on method bias can be found in van de Vijver and Tanzer (1996).

3.4.1.3.3   Item bias

Item bias refers to measurement artifacts at item level (Holland & Wainer, 1993). Item bias occurs when the content of test items gives a systematic advantage to a specific group of testees, for example when the test contains questions that one group is more familiar with than another (van de Vijver & Tanzer, 1997). Item bias can also be found in item format and presentation, when for instance pictorial material only depict white males and never females or blacks. Murphy and Davidshoffer (in Kriel, 1999) refers to this type of bias as cultural bias, where a group of testees had the opportunity to become familiar with the test content and another not.

van de Vijver & Tanzer (1997) stipulated that item bias can be produced by many other sources such as poor item translation, ambiguities in the original item, low familiarity/appropriateness of the item content in certain cultures, (ie some items of an educational test are not in the curriculum in one cultural group) and inadequate item formulation (ie complex wording).

Bias can thus be engendered by the theoretical construct (construct bias), the method such as the form of the test administration (method bias), and the item content (item bias).

3.4.1.4.   Evidence of bias in test scores

Test bias is determined by means of objective, statistical indices that indicate if the test scores have the same or different meanings and implications for different subgroups (van de Vijver & Leung, 1997). It is however important to note that an instrument that reveals bias in a comparison of black and white individuals may not show bias in a comparison between blacks and indians subjects. Many statistical techniques are available to detect bias. We will briefly discuss the methods to detect construct, content and item bias.

- **Construct Bias**

The presence of construct bias can be determined by using factor analysis or some other technique that is aimed at detecting the structure underlying the instrument (van de Vijver & Leung, 1997). Cross-cultural differences in factor-analytic solutions may indicate construct bias. It is important to take note of the fact that construct bias can not always be decided upon from a simple administartion of the instrument (van de Vijver & Leung, 1997).

- **Content Bias**

Various procedures can be utilised to study the influence of administration problems. The first, mainly suitable for cognitive tests, entails the administration of the same instrument in various cultural groups and the examination of score changes, usually score increments, upon re-testing (van de Vijver & Leung, 1997). When subjects with similar scores on the pretest show different gain patterns, strong evidence for method bias is present (van de Vijver & Leung, 1997).

A second method to assess method bias is the systematic variation of stimuli across cultures. The consistency of the various responses are examined through systematic variation of stimulus contents or response modes. A low consistency of responses may indicate method bias (van de Vijver & Leung, 1997)

- **Item Bias**

A schematic overview is presented to explain the various methods one can use to detect Item bias.

In Table 3.1 on p. 42 it is evident that a distinction must firstly be made between models that are based on either linear or nonlinear model equations. Linear models tend to be applied to interval- or ratio-level data, whereas nominal data are more frequently analysed with nonlinear models. Secondly, a known or a unknown sampling distribution is chosen. Thirdly, a distinction is made between conditional and unconditional procedures. With conditional procedures the sample is split up into score-level groups, while unconditional procedures calculate bias statistics for the whole sample without a spilt in score groups (van de Vijver & Leung, 1997). After one has determined the sampling distribution, the model equation and the procedure that was used during the research, one can easily, with the help of the above-mentioned table, determine what technique would be most suitable for the detection of item bias (van de Vijver & Leung, 1997).

Table 3.1:   **Schematic Overview of Differential Item Functioning Techniques (Van & Vijver & Leung, 1997)**

MODEL EQUATION		
SAMPLE DISTRIBUTION	**LINEAR**	**NON-LINEAR**
UNCONDITIONAL PROCEDURES		
UNKNOWN	Item Total Correlations	Delta Plots
KNOWN	Analysis of variance	
CONDITIONAL PROCEDURES		
UNKNOWN		Item Response Theory
KNOWN	Standardised p-difference; Analysis of variance with score level as one of the independent variables	Item Response Theory; Mantel-Haenzel procedure

3.4.2.   Equivalence

While bias exists when scores are influenced by sources irrelevant to the construct for assessment, equivalence refers to the measurement level at which scores can be compared across cultures (van de Vijver & Leung, 1997; van de Vijver & Tanzer, 1997). Three levels of equivalence are possible, namely construct/structural equivalence, measurement/unit equivalence and full scale equivalence.

Summarised briefly, one can say that construct equivalence occurs when the same construct is measured in each cultural group, but the functional form of the relationship between scores obtained in various groups is unknown. Measurement unit equivalence scores implies that the same measurement unit across populations exists, but that they have different origins. full scale equivalence refers to the fact that scores have the same measurement unit and origin in all populations (van de Vijver & Tanzer, 1997).

For the purpose of this article, we will focus on construct equivalence, as we want to establish whether the same construct is measured across the cultures studied in our research. However, before we discuss construct equivalence in more detail, it is important to understand what is meant by the word "construct".

3.4.2.1 Theory/construct

Cronbach and Meehl (in Meyer, 1994) defined a construct as an attribute of individuals evidenced by test performance. Murphy and Davidshofer (in Meyer, 1994) defined constructs as "abstract summaries of some regularity in nature" indicated by observable events. Both of these definitions connect unobservable, latent constructs to observable events or behaviours.

Psychological approaches have placed a strong emphasis on the use of psychometric methods (Bedell, van Eeden & van Staden, 1999; Retief, 1987). Associated with the use of these methods has been the use of the theoretical frameworks underlying them to explain behavioural similarities and differences among cultures (Bedell, van Eeden & van Staden, 1999; Retief, 1987).

Systems of meaning and the transmission of meanings are understood to be essential and important parts of the cultural systems. It is this aspect of cultural systems (or cultures) that becomes especially relevant when comparing cultures with each other; because such a comparison essentially attempts to effect an interface of meanings between two cultural systems that explain their social (and sometimes physical) worlds in non-identical ways (Retief, 1987). Some shared meanings has to exist in order to form a basis for comparison whereby differences and similarities can be illustrated (Retief, 1987). In this sense, psychological tests can be seen as systems of meaning and, more specifically, meaning systems with psychological, explanatory content. Most psychological measuring instrument is either based on or implies a theory of human behaviour; and practically most psychometric instruments are western in origin (Retief, 1987).

Cross-cultural researchers are now following a holistic approach - that is - to establish the existence of universals. This would however not be the answer as the systems of meaning of any two cultures are bound to differ to a greater or lesser extend. One must remember that even if a certain ability (ie the ability to socialise effectively) is thought to be an universal

phenomenon, the content in terms of which it is expressed culturally, is often not the same as that of the culture in which the theory postulating the structure of the certain ability originated (Retief, 1987).

In South Africa, the usual social skill model, as discussed by Gahagan (1984), refers to the hierarchy of sub-skills (behavioural, emotional and cognitive components) that need to be developed so to become socially skilled. Interviewers will generally seek people who are closely socialised to this model, as they themselves have been selected and molded according to this model. From the foregoing discussion it should however be apparent that when psychometric tests are developed from a Western/Eurocentric theory, and utilised within a country where many different people from a variety of cultures are present, fair comparability of scores would not be possible, in the absence of construct equivalence. Just because a latent variable in a measurement model is assigned a particular label "social skills" for example, does not mean that the hypothetical construct is correctly named, or even similarly understood by various cultures (Kline, 1998).

3.4.2.2. Construct equivalence

A construct may not be similarly defined in all cultural groups (van de Vijver & Leung, 1997). Being a good son or daughter, for example, has somewhat different connotations and involves somewhat different behaviours in a Chinese and American context (Ho, in van de Vijver & Leung, 1997). When an instrument measures different constructs in two cultures (ie when "bananas and pears are compared"), no comparison can be made. Also when there is only partial overlap in meaning to the constructs across the cultures being studied, no comparison can be made (van de Vijver & Leung, 1997).

Construct equivalence, thus implies that the same construct is measured across all cultural groups studied, regardless of whether or not the measurement of the construct is based on identical instruments across all cultures. It implies the universal (ie culture-independent) validity of the underlying psychological construct and, is terminology frequently used in cross-cultural psychology (Triandis & Marin, 1983). The first step in our study would thus be to establish whether the cultural groups in our study, have the same meaning for the construct "social skills", and if so, it would enable us to make valid comparisons between the cultures studied.

Equivalence of measures (or lack of bias) is a prerequisite for valid comparisons across cultural populations (van de Vijver & Leung, 1997). Therefore bias, and its counterpart, equivalence, are essential concepts in cross-cultural research.

Van der Flier and Drenth (in Taylor & Radford, 1986) note that the main issue in the analysis of test score comparability is whether the same construct or dimension is being measured across different groups. This means that the researcher or test user must establish whether inter-group differences on a test reflect real differences in the construct measured or to what extend these differences are artifacts of the testing situation or of other factors pertaining to the test (van de Vijver & Leung, 1997). The aim of cross-cultural studies is both to explore and to explain cross-cultural differenes (van de Vijver & Leung, 1997).

Whether constructed by the researcher or not, indicators of some construct should be as free as possible from the biasing effects of measurement error. In other words, indicators should be both reliable and valid. Of the two types of measurement error, random and systematic, reliability concerns random error. In contrast, the concept of validity includes both random and systematic measurement error (Kline, 1998).

The data obtained with the PIB/SpEEx Socialisation Index can be subjected to exploratory or confirmatory factor analysis in order to examine construct equivalence (Van de Vijver & Leung in Kline, 1998). Confirmatory factor analysis allows to test the equality of factor structures even in the presence of partly dissimilar stimuli across groups (Byrne, Shavelson & Muthen, in van de Vijver & Tanzer, 1997).

Constructs are thus equivalent for different cultural groups when the test reliabilities, item discrimination values and factor structures are similar for these groups. Constructs that are equivalent for different cultural groups indicate the absence of construct bias in an instrument (Schaap, 2003).

Almagor and Ben Porarath (in Joiner & Marquina, 1997) noted three objectives in the cross-cultural study of psychological and personality variables, namely: (1) to develop tools for use in different cultures, (2) to evaluate the cross-cultural stability of theoretical concepts and (3) if cross-cultural stability is established, to conduct cross-cultural comparisons along relevant dimensions. This study will achieve these objectives.

The purpose of this study was to determine the construct equivalence of the PIB/SpEEx Socialisation Index for entry-level job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa.

3.5.   Conclusion

From the above discussion, one can thus state that reliability is concerned with the ability of a measure to be consistent, while validity refers to the extent to which scores accurately define a construct. Three kinds of validity has been described where we established that content validity focused on the content of the test items and their relation to the intended domain of the test. Construct validity focused more on the abstract construct the test actually measured, regardless of test item content or other factors (Meyer, 1994), while related validity referred to the degree of correlation between the measure and the criterion. Various types of bias have been described with the focus on construct bias. It is important to obtain non-bias items, so to ensure a greater opportunity for equivalence in scores. The absence of bias (ie equivalence) should be demonstrated instead of simply assumed, as non-bias is essential for equivalence. Unbiased, equivalent tests are thus of great importance to ensure valid results within cross-cultural research.

CHAPTER 4 THE POTENTIAL INDEX BATTERY(PIB/SpEEx) AS MEASURING INSTRUMENT

4.1. Introduction

Two pre-requisites for psychometric testing have developed during the last decade in South Africa. Firstly, the current labour legislation of South Africa requires the employer to assess workers or prospective workers on the basis of job-related competencies (Erasmus & Schaap, 2003). After the employer/ tester has established the job-related competencies, then only can he/she determine what assessment tools would be most suitable to measure the applicable/relevant competencies (Erasmus & Schaap, 2003). The underlying view is that the person responsible for the assessment should not choose the assessment criteria to be included. Competencies of the particular job should determine the criteria to be included in the assessment. Secondly, in a multi-cultural society the need has arise to not only report the reliability and validity of tests, but to also determine whether the test is non-bias and whether construct equivalence can be proofed (Taylor & Radford, 1986).

Based on these pre-requisites, Dr Erasmus and Dr Minnaar developed the Potential Index Batteries (PIB) in 1993 (Erasmus & Schaap, 2003). These batteries were developed in the South African context and operate from seventy one (71) source competencies (Schaap, 1993 and 1999). These competencies were established from 1993-1995 by means of an extensive research project that involved various different workplaces and working conditions. The PIB/SpEEx function on the basis of situation-specific standardisation as well as a situation-specific determination of validity and reliability (Erasmus & Schaap, 2003).

Erasmus (in Erasmus & Schaap, 2003) described the PIB/SpEEx as: "… an instrument for the screening of the potential of illiterate, semi-literate, literate and academically advanced persons. It is culture fair, computerised, flexible and comprehensive".

## 4.2.	The Potential Index Battery (PIB)/SpEEx

### 4.2.1.	History and development of the PIB/SpEEx

Basic research and development of the PIB/SpEEx date back to 1964 (Erasmus & Schaap, 2003). Applied research started in 1991 when the original comprehensive structured interviewing for potential and Potential Index Batteries (CSIP/PIB) were first released. The JP Expert/PIB SpEEx system was test run over the past decade in more than three hundred workplaces - mostly comprising of large corporate environments (Erasmus & Schaap, 2003).

Since 1995 extensive validity and reliability studies were done on the PIB/SpEEx. Some deficiencies were identified and some strengths became known (Erasmus & Schaap, 2003). Based on these results the new PIB/SpEEx was developed. A preliminary analysis of the reliability of the PIB/SpEEx was done by Pieter Schaap. Samples of as large as 36 802 were analysed and reliability coefficients for all the indexes of the PIB ranged between 0,61 and 0,92 (Erasmus & Schaap, 2003).

### 4.2.2.	Purpose of the PIB/SpEEx

The JPI Expert entails the systematisation of the two-way flow of communication between an interviewer/evaluator and a respondent/candidate in the process of screening for potential/capacity (Erasmus & Schaap, 2003). Erasmus (in Erasmus & Schaap, 2003). stated that the aim of the Potential Index Batteries and Situation-specific Evaluation Expert scales (PIB/SpEEx) is to provide a comprehensive assessment package suitable for the assessment of human potential (within the workplace).

### 4.2.3.	Description of PIB/SpEEx

The PIB/SpEEx can be utilised on both sexes as well as on all cultural groups (Erasmus & Schaap, 2003). The test is available in both English and Afrikaans (Erasmus & Schaap, 2003). The PIB/SpEEx consists of various indexes, that are scored on a seven-point scale. The PIB/SpEEx was developed for the utilisation on South African respondents of sixteen years and older, which have a standard six (Grade eight) or higher qualification (Erasmus & Schaap,

2003). The developers claim that the indexes are fair to everyone regardless of race, gender or culture (Erasmus, in Erasmus & Schaap, 2003).

4.2.4.　Nature of the PIB/SpEEx

A number of different psychometric indexes were developed, to measure potential in areas such as:

- General Knowledge
- Creativity
- Reading skills
- Interpersonal relations
- Typing ability
- Problem solving
- Social styles etc.

The PIB/SpEEx allows users the freedom to choose the composition of the battery by selecting indexes suitable for the organisation and the specific purpose. Erasmus and Minnaar (in Erasmus & Schaap, 2003) stated that an evaluation of the total human being takes place, within the framework of the PIB/SpEEx, as individuals can be assessed on cognitive, emotional and social level.

2.4.5.　Scales of the PIB/SpEEx

The PIB/SpEEx comprises three kinds of scales, namely cognitive, behaviouraland visual scales. All scales are numbered from 100 to 3300, for computer purposes (Erasmus & Schaap, 2003).

- **Cognitive scales**

The following are all cognitive scales:

- All the scales and subscales from 100 to 1000
- All the scales and subscales from 2500 to 3300
- Scale 1600 (Reading comprehension)
- Scale 1700 (Listening potential)

It is very important to adhere to the imposed time-limits when assessing the cognitive scales.

- **The Behavioural Scales**

All the remaining scales in the system (ie scales 1100 to 1500 and scales 1800 to 3300) assess behavioural potential, thus the emotional and/or social constructs of human potential.

- **The Visual Scales**

Scales 100 to 800 of the PIB/SpEEx and scale 2500 to 2600 are all visual. Scales 100 to 800 of the PIB/SpEEx and 2500 to 2600 are also cognitive scales, which indicates that these scales assess the so-called intellectual part of potential. These ten scales are "language free" as they comprise visual items (Erasmus & Schaap, 2003). These scales could thus be administered in any language.

4.2.6. Administration of the PIB/SpEEx Assessments

Respondents can either be assessed directly on the computer, or the PIB/SpEEx Scales can be duplicated from the printed masters to be answered on a paper-and-pencil basis. Separate answering sheets are used, which can also be printed from the computer package system (Erasmus & Schaap, 2003).

It is however important to establish whether the computer literacy of the respondents is at such a level that their assessment directly on the computer can be justified and does not constitute unfair labour practice (Erasmus & Schaap, 2003).

Once the assessments have been completed, the answers are entered into the computer from the answer sheets. Scoring and evaluation takes place by means of a computer programme. The results can then be printed out in the format of a comprehensive report.

4.2.7. Reliability of the PIB/SpEEx

Reliability refers to the consistency of test results of the same individuals of different times (Anastasi, 1997). Reliability coefficients, as determined by various research studies, indicated that the PIB/SpEEx have a relatively good reliability (Schaap, in Erasmus & Schaap, 2003). The

reliability coefficients varies between Rtt=0,61 and Rtt=0,93 (Schaap in Erasmus & Schaap, 2003).

4.2.8.   Validity of the PIB/SpEEx

Validity refers to the degree to which an instrument measures what it is suppose to measure (Schaap, in Erasmus, 1997; Guinon, 1965; Smith & Robertson, 1986).

- **Construct validity**

Construct validity studies was done on the PIB/SpEEx during 1996, on a sample of 412 individuals. Intercorrelations between the 16PF, the High Level Figure Classification Test (HVFI) and the PIB/SpEEx delivered statistically significant results. The correlation of the PIB/SpEEx, HVFI and the 16PF was significant (Schaap, in Erasmus, 1997). Schaap (in Erasmus & Schaap, 2003) stated that further studies regarding the construct validity of the PIB/SpEEx needs to be done.

- **Predictive validity**

Schaap (in Erasmus & Schaap, 2003) and Kriel (in Erasmus & Schaap, 2003) conducted studies to determine the predictive validity of the PIB/SpEEx. For the purposes of this study, we will however only discuss the results of Dr Schaap's study.

Within this study, performance appraisal and percentage salary increase were used separately as criterion measures. With multiple regression-analysis on the PIB/SpEEx, 16PF and the HVFI the researchers wanted to determine the variables that had the best predictive validity.

The results indicated that when Index 4 - Calculations (PIB/SpEEx 301 & 203 equivalence), Index 11 - Clerical (PIB/SpEEx equivalence 600) and Index 16,5 - Compliance (PIB/SpEEx 1504 equivalence) of the PIB/SpEEx, were used as performance appraisal criterium, together with Factor B (Intelligence), Q1 (Extroversion) and the MD-score of the 16PF, a predictive validity coefficient of 0,37 was delivered (Schaap in Erasmus & Schaap, 2003).

Index 5 - Mental alertness (PIB/SpEEx 400 equivalence). Index 11 - Clerical (PIB/SpEEx equivalence 600), Index 16.1 - Contest (PIB/SpEEx equivalence 1502) and Index 16.2 - Negotiate (PIB/SpEEx equivalence 1503) of the PIB/SpEEx, as well as Factor Q1 (Extroversion),

Factor Q3 (anxiety) and the MD-score of the 16PF resulted in a predictive validity coefficient of 0,35 (Schaap in Erasmus & Schaap, 2003).

The results of this study indicated that four of the PIB/SpEEx -Indexes that was used within this study, showed predictive validity (Schaap in Erasmus & Schaap, 2003).

## 4.3.	The PIB/SpEEx 1200 (Socialisation Index)

### 4.3.1.	Description of the PIB/SpEEx 1200

The PIB/SpEEx 1200 is all about a person's interpersonal (social) relations and is therefore classified as a social scale. Within the previous versions of the PIB/SpEEx, the Socialisation Index (PIB/SpEEx1200) was classified as Index 9 (Interpersonal relations).

Socialisation, in terms of the PIB/SpEEx can comprehensively be defined as the capacity to interact with people in a way that reflects ease to mix; a desire to be with others, a keen interest in what others do, think or contemplate; a need to assist others and to be assisted by others emotionally or otherwise; to provide a shoulder to others to lean upon and to have a shoulder for oneself to lean upon at times when comfort is required. In summary, to be a person among other people and through other people (Erasmus & Schaap, 2003).

Briefly defined, socialisation, in terms of the PIB/SpEEx, refer to the potential or capacity to mix freely with people; to feel comfortable among people and to be accepted by people (Erasmus & Schaap, 2003).

This scale consists of fourty (40) items. The Socialisation Index consists of two subscales the sociability subscale and the a-sociability subscale. There are no "right" or "wrong" answers to this scale. The answers are provided on a continuum that range from one (low) to seven (high). The candidate need to indicate to which extent each of the statements applies to his/her own behaviour, attitude or belief (Erasmus & Schaap, 2003).

The PIB/SpEEX Socialisation Index is a self-assessment questionnaire. One thus need to take into consideration that the responses are based on the respondent's perception, which are vulnerable to personal biases and distortions. Individuals sometimes do manipulate their

reactions to this type of questions to create a more favourable, but less true impression of themselves, so to make a "good impression" (Erasmus, in Erasmus & Scaap, 2003). The PIB/SpEEx system do however compensate for reasonable manipulation (Erasmus, in Erasmus & Scaap, 2003).

It is very important that all the questions to this Index are answered. If candidates are not finished with this scale within the recommended fifteen minutes, an additional two or three minutes may be provided, so to ensure that all candidates answer each and every statement within this scale. The time limits within the behavioural scales serve an extremely important purpose of forcing the respondents not to think too much about their answers (Erasmus & Schaap, 2003).

4.3.2.   Reliability and Validity of the PIB/SpEEx 1200

In a study done by Schaap (in Erasmus, 1997) on the reliability and validity measures of the PIB/SpEEx in a financial institution, it seemed that the various scales in general had respectable reliability coefficients, on the indices used for this study. The PIB/SpEEx 1200 had a reliability coefficient of 0,84, which is acceptable.

A reliability coefficient of 0,82 (N=2 978) was calculated for Index 9 (Interpersonal Relations) in the assessment of the academic potential of prospective students (Kriel, in Erasmus & schaap, 2003).

A reliability coefficient of 0,407 (p=0.000) was obtained when scores on Index 9 (Interpersonal Relations) were correlated with scores on Index 21 (Assertiveness). A high score on Index 9 (Interpersonal Relations) usually indicates well-developed interpersonal and leadership skills. Such a person can be expected to be assertive (Kriel in Erasmus & Schaap, 2003)

Kriel (in Erasmus & Schaap, 2003) found that the performance of first year Library and Information Technology students on Index 9 (Interpersonal Relations) correlated statistically significantly (R= 0,5842 (p<0.05)) with their performance on the Survey of Study Habits and Attitudes (SSHA). A person with well-developed interpersonal skills accepts authority readily. The SSHA evaluated the student's acceptance of teachers/lectures that may explain the

correlation between the performance of the students on Index 9 (Interpersonal Relations) and the SSHA.

Within the same study it was found that the scores obtained by Journalism students on Index 9 (Interpersonal Relations) and Index 10 (Self-Image) correlated statistically significantly. R=0,7085 (p<0.01). These results support the traditional hypotheses that self-acceptance lead to the acceptance of others. The well-known phrase of "I'm OK; You're OK" is applicable in this situation (Kriel in Erasmus & Schaap, 2003).

It is clear from the above stated results that the situation-specific reliability coefficients of the PIB/SpEEx Socialisation Index 1200, fall within the acceptable range set for psychometric testing.

## 4.4.	Conclusion

The PIB/SpEEx is a culture-fair, competency-based psychometric test, that function on the basis of situation specific standardisation. The PIB/SpEEx consists of three kinds of scales that evaluates individuals on cognitive-, behavioural- and visual level. Each scale consists of various indexes that measure that particular scale. The PIB/SpEEx allows users the freedom to choose the composition of the battery by selecting indexes suitable for the organisation and the specific purpose. The PIB/SpEEx shows acceptable reliability coefficients and validity. Previous research on the PIB/SpEEx1200 (Socialisation Index) has indicated good reliability coefficients and correlation with other psychometric instruments.

CHAPTER 5:   METHOD OF INVESTIGATION

5.1.   INTRODUCTION

Research refers to the collection, classification, analysis and evaluation of data, that was obtained from experiments and various other data-gathering techniques (Steyn, Smit & Du Toit, 1984; Ferguson, 1976). The focus of this chapter is on the research method used within this empirical study that will enable us to obtain the aim of this study. Aspects which are covered are the purpose of this study, the sample used, the steps followed in the analysis, as well as the research strategy. The two stages of cross-cultural research - that is the Pre-analysis and the analysis stage will be discussed.

5.2.   The purpose of this study

The purpose of this study was to determine the construct equivalence of the PIB/SpEEx Socialisation Index for entry-level job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa.

We would thus like to establish whether the construct Socialisation, has the same meaning, definition and interpretation for the four cultures within this study. This is important to determine, for if one wants to compare the scores that the individuals obtained on completion of the PIB/SpEEx 1200, one need to be sure, first of all, that the same construct is being measured within all four cultures. This will ensure valid, reliable and fair comparison of scores across the cultures.

The Research method is going to aid us in obtaining the aim of this study.

5.3.   The Sample

The population of this study consisted of 13 192 entry-level job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa. These applicants complete the English reading comprehension, English spelling, English vocabulary and Mental alertness test of the PIB/SpEEx battery. The Mental alertness test is an english version of a measure of verbal reasoning ability and an index of general intellectual ability. The respondents' total score

for all five tests were then calculated and placed in rank order, from high to low. The respondents who had the highest total score were selected for this study. A total of 14,7% of the highest scoring respondents was included in the final sample. A convenience sample of 1 946 respondents was drawn for the analysis of the English version of the PIB/SpEEx Socialisation Index. The sample can thus be considered relatively homogeneous in terms of english literacy skills and verbal reasoning abilities. All the data were gathered with the informed consent of the respondents and under the supervision of a registered psychologist. All information was dealt with in a confidential manner.

The sample consisted of 849 blacks; 840 asians; 115 colourds and 140 white respondents.

A detailed discussion of the sample is provided in chapter 6.

5.4. The Measuring Instrument

The PIB/SpEEx Socialisation Index has been standardised for the various cultural groups in South Africa. The latest version of the PIB/SpEEx Socialisation Index consists of 40 items, each rated on a seven point scale, with one (1) indicating a low score, and seven (7) indicating a high score. The Socialisation Index is divided into two subscales: the sociability subscale and the a-sociability subscale. The reliability coefficients reported for the Socialisation Index are eighty percent (0,80) and higher.

5.5. The Analysis of Cross Cultural Data

The analytical procedure that was followed during this study will be outlined. A theoretical overview of the two stages (pre-analysis stage and the analysis stage) of cross-cultural research will firstly be provided. The discussion will continue with an explanation on how the theory was applied to the research method that was used within this study. A step by step outline of the research method will be provided, within the application sections of this chapter.

5.5.1.   The Preliminary Analysis Stage

5.5.1.1.   Introduction

The analysis of cross-cultural data often consists of two stages, namely the preliminary analysis and the analyses (van de Vijver & Leung, 1997). During the preliminary analysis the psychometric adequacy of an instrument is tested. The reliability and item statistics (ie item-total correlations, item means and variances) will be determined during this stage. The occurrence of item bias, must be tested, and if detected, the source of this bias should be eliminated (van de Vijver & Leung, 1997).

5.5.1.2.   Theoretical overview of Item Bias detection

An item is an unbiased measure of a theoretical construct (van de Vijver & Leung, 1997). The definition of bias does not specify that the averages should be identical, but only that these averages should be identical across cultural groups for persons who are adequately dominant (van de Vijver & Leung, 1997). Item bias can be detected by analysis of variance, the mantel-haenszel statistic, and the item-response theory. Item bias statistics are valuable tools in detecting poor item translation etc. Item bias statistics should be routinely reported in cross-cultural research studies (van de Vijver & Leung 1997). If a vast amount of the items tested are found to be biased, the validity of the instrument is questioned, and the instrument should not be used for cross-cultural comparison. The source of item bias must thus be identified and eliminated (van de Vijver & Leung 1997). It is therefor necessary to perform item analyses.

An examination of the psychometric characteristics of instruments is an important first step in the analysis of cross-cultural data, as this analysis explores the quality of the data (van de Vijver & Leung, 1997).

5.5.1.3.   Application of theory on the research method used within this study

The construct equivalence of the PIB/SpEEx Socialisation Index for black, asian and white South Africans will be evaluated by computing coefficients for internal consistency (alpha) and by conducting item and factor analyses respectively. The SPSS (SPSS Inc, 1996) and EQS (Bentler, 1995) programme will be used to perform the required analyses.

Item analysis will be performed in respect of each cultural group to determine the characteristics of the items that are included in the constructs of the PIB/SpEEx Socialisation Index. Descriptive statistics will initially be examined on the 40-item version of the PIB/SpEEx Socialisation Index including means and standard deviations, followed by Cronbach's alpha internal reliabilities. The statistical significance of differences between Cronbach coefficients alphas will be determined by using Feldt's test statistic. It is important to keep in mind that, the significant value of Feldt's test statistic is sample-sensitive and thus increases with sample size. Item-total correlations provide an indication of the discrimination value of an item. A discrimination value of below 0,20 is generally not considered acceptable (Anastasi & Urbina, 1997; DeVellis, in Schaap, 2003).

The second stage of data analysis addresses the main issues of this study: the exploration of research questions or the testing of hypotheses.

5.5.2.   The Analysis Stage

5.5.2.1.   Introduction

The following statistical techniques are available to address construct equivalence: Exploratory factor analysis (EFA) and target rotation, structural equation modeling, multidimensional scaling and cluster analysis (van de Vijver & Leung, 1997; Kline, 1998). As exploratory factor analysis (EFA) and confirmatory factor analyses (CFA) will be used for the purposes of this study, an in-depth discussion will be provided on both these factor analytic methods, as well as on the structural equation model (SEM).

5.5.2.2.   Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) is primarily a data-driven technique for discovering what underlying structure the sample data possess (Pedhazur & Schmelkin, in Crowley & Fan, 1997). EFA is applied when one wants to explore the data, so to establish what kind of characteristics, interesting features and relations may exist. No hypothesised model is imposed on the data, and all variables load on all factors (Crowley & Fan, 1997). EFA is useful for generating structure and empirically testable hypotheses (Gorsuch, 1983). EFA is used to generate hypotheses, while CFA is used to test these hypotheses.

According to Kline (1998) EFA has these core features:

- All of the observed variables in EFA are allowed to correlate with every factor. The researcher has little direct influence on the correspondence between indicators and factors.

- A EFA solution (eg two factors) usually requires rotation to make the factors more interpretable, as rotation changes the correlations between the factors and the indicators so the pattern of values is more distinct.

Factor analytic methods generally attempts to determine which set of observed (measured) variables sharing common variance-covariance characteristics define constructs (Gorsuch, 1983). In practice, one collects data on variables and uses factor-analytic techniques to either confirm that a set of variables define a construct (factor), or to explore how the variables relate to factors (Schumacker & Lamax, 1996).

5.5.2.2.1.   Application of theory on the research method used within this study

The Socialisation index of the PIB/SpEEx will be factor analysed in each sub-sample by using principle axis factoring (PAF). To further explore the factor structure of the socialisation index, we will use the following estimation criteria to verify the number of significant factors with regard to each of the cultural groups: Kaiser's criterion (1961) to retain factors with unrotated eigenvalues greater than one, and a scree test (Catell, 1966).

5.5.2.3.   Structural Equation Model (SEM)

Confirmatory factor analyses (CFA) is a measurement model used under the structural equation model (SEM) (Crowley & Fan, 1997). Hence, a brief explanation of the SEM model and how CFA fits within this model will follow. After constructing the model, the parameters of all the path coefficients need to be established - thus model specification (Crowley & Fan, 1997). Our discussion will continue on model fit/testing.

When using SEM techniques, one often use diagrams to illustrate the hypotheses and to summarise the results of the analysis (Crowley & Fan, 1997). For a descriptive explanation of SEM refer to Crowley and Fan, 1997 as well as Schumacker and Lamax, 1996. Typical applications of SEM involve (1) the development of a prior model, representing a hypothesised pattern of relations among a set of manifest variables (MVs) and latent variables (LVs), (2) the

fitting of the prior model to sample data, (3) the evaluation of the solution in terms of its parameter estimates and goodness of fit; and, very often, (4) the modification/use of the model so as to improve its parsimony and/or its fit to the data (Crowley & Fan, 1997). This last step has been termed a specification search (Leamer; Long in MacCullum, 1986). The aim of a specification search is to arrive at a model that correctly represents the network of relations among the measured variables (MV) and the latent variables (LV) in the population (MacCullum, 1986; Kline 1998).

SEM's flexibility in formulating and adjusting models is an important asset for cross-cultural research (van de Vijver & Leung, 1997). The measurement model in SEM describes the relations between measured variables and latent constructs, and this relationship is used to determine construct validation in instrument development (MacCullum, 1986; Kline, 1998; van de Vijver & Leung, 1997).

5.5.2.3.1.   Confirmatory Factor Analysis (CFA)

As previously stated, confirmatory factor analysis (CFA) is a measurement model used under SEM (Crowley & Fan, 1997). CFA and path analysis can be subsumed under SEM. In practice, the difference between path analysis, CFA, and a full structural equation model can be briefly summarised as follows: Path analysis examines the casual links among observed variables, while CFA examines causal links between observed variables and latent constructs (factors); and a full structural equation model examines the casual links both between observed variables and latent constructs, and among latent constructs themselves (Crowley & Fan, 1997). CFA is the primary use of SEM when testing construct validation (Crowley & Fan, 1997).

CFA is a procedure that requires the researcher to stipulate a theoretical model that will explain the co-variances between observable and latent variables in advance (de Bruin & Bernard-Phera, 2002). CFA is mainly driven by substantive theories and expectations (Bollen; Joreskog & Sorbom; Pedhazur & Schmelkin, in Crowley & Fan, 1997). CFA starts with a theoretically plausible model that is assumed to describe or explain the empirical data (de Bruin & Bernard-Phera, 2002). CFA is used to test specific hypotheses regarding which variables correlate with which constructs (Long, in Schumacker & Lamax, 1996). The relationship between the observed variables and the latent variables are described by factor loadings. The factor loadings provide us with information about the extent to which a given observed variable is able to measure the

latent variable. They serve as a validity coefficient (Schumacker & Lamax, 1996). Variables are limited to only "load" on one, or a few of the factors. Measurement error is defined as that portion of an observed variable that is measuring something other than what the latent variable is hypothesised to measure (Crowley & Fan, 1997).

The purpose of using CFA is to test the hypotheses that the proposed theoretical model fits the empirical data. CFA is thus an extension of EFA and is not meant to replace EFA (van de Vijver & Leung, 1997).

5.5.2.3.2.   *Model Specification*

This step refers to the initial theoretical model the researcher formulates. The model should be hypothesized on the basis of a review of the research literature, or postulated on the basis of a theory (Schumacker & Lamax, 1996).

Once the structural equation model has been constructed, the population parameters of all the path coefficients in the model need to be established from the sample data (van de Vijver & Leung, 1997; Kline, 1998). There are three ways to estimate these coefficients: free, fixed or constrained (Schumacker & Lamax, 1996). A free parameter is a parameter that is unknown and thus needs to be determined. A fixed parameter is fixed to a specified value, generally either 0 or 1. A constrained parameter is a parameter that is unknown, but is constrained to equal one or more other parameters (Schumacker & Lamax, 1996). Once the model and all its path coefficients are specified, the sample data are used to test the fit of the model to the data. The reconstructed covariance matrix is compared with the original sample covariance matrix to see how different the two matrices are. If the difference is small, it is said that the model fits the data well; if the difference is large, the model will likely be rejected as the data fits the model poorly (Crowley & Fan, 1997).

5.5.2.3.3.   *Model testing/fit*

With model testing one, wants to interpret the model fit or compare fit indices for alternative or nested models (Crowley & Fan, 1997). These fit indices indicate whether the data fit the theoretical model. Preliminary single group (CFA) will be conducted to determine how well the data fits the measurement model. MacCallum and Byrne, Shavelson and Muthen (in Schaap,

2003) stated the importance to determine the model fit for each group separately before multiple-group comparisons are made. When a model fits poorly in a single group analysis, the changes are good that the model will not fit as part of the larger multi-sample analysis (Bentler, 1995).

- **Chi-square Test**.

There is no universally accepted criterion to indicate how well the model fits the data. This leaves much room for subjective opinions (Crowley & Fan, 1997). The statistical significance test for CFA is the chi-square test (de Bruin & Bernard-Phera, 2002). The null hypotheses in SEM is that the model fits the data. In SEM, the null hypotheses is thus not rejected. However, as is well known, chi-square significance testing is heavily influenced by sample size, and SEM usually requires relatively large sample sizes for the results to be valid (Crowley & Fan, 1997). Sample sizes of about 200 are recommended as the minimum for small to medium-sized models (Boomsma in Guppy, Edwards, Brough, Peters-Bean, Sale and Short, 2004). Anderson and Gerbing (in Guppy et al, 2004) recommended a minimum size of 150. In fitting the model to the data, the power to reject the null hypothesis increases as the sample size increases (Van de Vijver & Leung, 1997; Kline, 1998). Because of the power of the chi-square test with large samples, the chi-square test may indicate a model as having a poor fit with the data, even when the reconstructed covariance matrix differs minimally from the original sample covariance matrix, and the model makes strong substantive sense (de Bruin & Bernard-Phera, 2002). Due to the dissatisfaction with the chi-square test, other indices for assessing model fit are necessary (Van de Vijver & Leung, 1997; Crowley & Fan, 1997; Kline, 1998).

- **The Fit Indices**

The fit indices that will be used within this study are: the Comparative Fit Index (CFI), the BentlerBonett's Non-normed Fit Index (NNFI), the Bollen Non-normed Fit Index (IFI), the Root Mean Squared Error of Approximation (RMSEA) and the Model Chi-square. It is generally recommended that information from three sources should be synthesised to make reasonable conclusions about the model fit: (1) Chi-square test results, (2) fit indices (CFI, NNFI, IFI, RMSEA) and (3) fitted covariance matrix residuals (the difference between original sample covariance matrix and the reconstructed covariance matrix) (van de Vijver & Leung, 1997; Crowley & Fan, 1997).

CFA in cross-cultural research thus often amounts to a set of tests of the goodness of fit of increasingly more or increasingly less restrictive models (Crowley & Fan, 1997; Schumacker & Lamax, 1996; van de Vijver & Leung, 1997). Model fit determines the degree to which the SEM fits the sample data (Schumacker & Lamax, 1996). In the first approach, one start with a hypothesis of equal number of factors across groups, followed by a test of the hypothesis of equal factor loadings. If this model shows an adequate fit, equality of factor co-variances (correlations) can be added as another constraint, while a final step evaluates the fit of a model stipulating equality of factor variances (van de Vijver & Leung, 1997). Earlier models will need to be nested in subsequent models. The fit of hierarchically nested models can be tested with the difference in goodness of fit between the more and the less restrictive of the two models (van de Vijver & Leung, 1997).

Many of the goodness-of-fit (GOF) criteria have been formulated to range in value from 0 (no fit) to 1 (perfect fit) (Schumacker & Lamax, 1996). Some researchers have suggested that a SEM with a GOF value of 0,90 or higher is acceptable (Baldwin; Bentler & Bonet in Schumacker & Lamax, 1996). Bentler and Bonnet (in Schumacker & Lamax, 1996) stipulated that fit indices that approach 0,90 represent an acceptable fit while values of 0,90 or higher are generally seen as indicative of a good fit. Other authors, however, suggest that a criterion of 0,95 maybe more fitting (Hu & Bentler in Guppy, Edwards, Brough, Peters-Bean, Sale and Short, 2004). Values of approximately 0,05 or less indicate a close fit for the RMSEA (de Bruin & Bernard-Phera, 2002; Kline, 1998).

The relationship between the original and reproduced correlation matrices can be tested for significance (Specht in Schumacker & Lamax, 1996). This is accomplished by calculating the chi-square statistic. A significant chi-square value relative to the degrees of freedom indicates that the observed and estimated matrices differ (Schumacker & Lamax, 1996). Statistical significance indicates the probability that this difference is due to sampling variation. A non-significant chi-square value indicates that the two matrices are not statistically different (de Bruin & Bernard-Phera, 2002). The researcher is interested in obtaining a non-significant chi-square value with associated degrees of freedom (Schumacker & Lamax, 1996).

5.5.2.3.4.   Application of theory on the research method used within this study

The principle factor procedure is generally used to extract factors from a correlation matrix (Gorsuch, 1983). The principal axis factoring method extracts the maximum amount of variance that can possibly be extracted by a given set of factors (Gorsuch, 1983). Within this study the principal axis factoring (PAF) extraction method and the varimax rotation with Kaisers criterion was used to perform the first order factor analysis. Varimax aims to maximise the sum of variances of squared loadings in the columns of the factor matrix (Kline, 1994). The items with a high loading on a specific factor were added together to formulate a sub-value. A second order factor analysis was then performed on the sub-values, by using the principal axis factoring (PAF) extraction method and the oblique rotation (Direct Oblimin). Kaiser's criterion (1961) was used to retain factors with unrotated eigenvalues greater than one. A scree-plot (Catell, 1966) was used to verify the number of significant factors with regard to each of the four cultural groups.

Preliminary single group confirmatory factor analysis will thus be conducted to establish how good the data fit the model in respect of each of the cultural groups. The Comparative Fit Index (CFI), the BentlerBonett's Non-normed Fit Index (NNFI), the Bollen Non-normed Fit Index (IFI), the Root Mean Squared Error of Approximation (RMSEA), the Jöreskog index (chi-square /df) and the Model Chi-square, will be used as model fit indices, for both single group- and multiple group factor analysis.

When a model fit for the separate cultural groups have been established (single group confirmatory factor analysis), a multi-group analysis of factorial invariance will be conducted. A set of hierarchically nested models that successively increase the number of equality constraints will be used to test the equivalence of constructs with respect to the black, asian, white and coloured groups.

In multi-group confirmatory factor analysis when parameters are constrained they are forced to be equal across groups and are therefore considered invariant, stable or equivalent across groups (Kline, 1998; Schumacker & Lomax, 1996). The constraints will be imposed on the sequence proposed by Vandenberg and Self (in Schaap, 2003), starting with equality of number of factors, followed by the equality of factor variances and factor covariances and concluding with equality of factor loadings. The change in the chi-square with each constraint dictated provides an indication of the extent to which the constraints could be considered reasonable for

the groups. A statistically non-significant change in will indicate an equal factor variance for the black, asian and white and coloured groups.

5.6   Conclusion

Within this chapter an outline of the research method used during this study was provided. An explanation of EFA and CFA was provided. It was evident that single-group CFA, need to take place before conducting multiple-group CFA. It was established that the chi-square is sample sensitive and that other indices for assessing model fit would be necessary. An outline of these fit indices was provided. Following the research method outlined within this chapter, will enable us to determine the construct equivalence of the PIB/SpEEx Socialisation Index.

RESULTS

Will be discussed within chapter 6

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CHAPTER 6   **ARTICLE**

THE CONSTRUCT EQUIVALENCE OF THE PIB/SPEEX SOCIALISATION INDEX FOR JOB APPLICANTS FROM DIVERSE CULTURAL BACKGROUNDS

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ABSTRACT

The aim of this study was to determine the construct equivalence of the PIB/SpEEx Socialisation Index for entry-level job applicants from diverse cultural backgrounds in the public safety and security sector of South Africa. Construct equivalence is important, because it ensures valid comparisons of test scores across the cultural groups being studied. Exploratory- and confirmatory factor analytic techniques were used to determine the intercultural equivalence of the sociability and the A-sociability constructs underlying the PIB/SpEEx Socialisation Index. The results revealed that the constructs of this index are equivalent for the black, asian, white and coloured groups.

OPSOMMING

Die doel van hierdie studie was om die konstrukgelykwaardigheid van die PIB/SpEEx-sosialiseringsindeks vir diverse groepe nuwelinge in die openbare veiligheidsektor te bepaal. Konstrukgelykwaardigheid is belangrik, omdat dit verseker dat. die toets uitslae van die verskillende groepe op 'n geldige wyse vergelyk kan word. Verkennende- asook Bevestigdefaktoranalise tegnieke is gebruik om die interkulturele gelykwaardigheid van die sosiale en a-sosiale konstrukte onderliggend aan die PIB/SpEEx Sosialiserings Indeks te bepaal. Die resultate het aangetoon dat die konstrukte van die PIB/SpEEx Sosialiserings Indeks gelykwaardig is vir swart, asiatiese, blanke en kleurlinggroepe.

During the industrial age, individual achievement and superb technical skills were prerequisites for employees to perform effectively (Lanser, 2000). This resulted in organisations investing a great deal of time and money in the development of their employees' job skills and job knowledge. The 21st century, however is, characterised by its team-oriented structure (Dilenshneider, 1996; Tarricone & Luca, 2002). A team-oriented business environment demands much more from employees than the traditional combination of individual achievement, technical skills and job knowledge, as emphasised during the industrial age.

Employees now also need to develop their social skills in order to interact effectively with fellow team members and customers (Baron & Marman, 2000; Gill & Butler, 1993; O'Brien, 1999). Research has highlighted good social skills as one of the vital ingredients for effective functioning teams (Baron & Markman, 2000; Connolly, 2002; Ferris, Witt & Hochwarter, 2001; Tarricone & Luca, 2002). The globalised team culture of business today places a premium on effective social skills, especially skills used in negotiation, with the emphasis on, conflict management and the acquisition and sharing of information (Zaccaro, Gilbert, Thor & Mumford, in Mumford, Zaccaro, Harding, Jacobs & Fleishman, 2000). Preliminary support for this notion came from Akers and Porter (2003) who suggested that the development of good interpersonal skills is tantamount to success in one's life and career.

Defining social skill

The emotional intelligent competency framework has four dimensions, namely self-awareness, self-management, social awareness and social skill (Goleman, 2000; Lanser; 2000). Social skill can thus be viewed as one of the cornerstones of emotional intelligence (Akers & Porter, 2003; Goleman, 1999; Miller, 1999).

Garavan (1997) and Sergin (2001) noted that social skill refers to the reception and interpretation of perceptual cues, making appropriate responses both verbally and nonverbally, and the opportunity to receive feedback and take corrective action. Social skill thus refers to a person who is able to manage himself or herself, and relationships well in various social settings (Connolly, 2002; Goleman, 1999; Lanser, 2000; Sergin, 2001).

Social skill as a multidimensional construct

The ability to function successfully with others, requires mastery of relatively complex social skill (Anonymous, 2001; Eisler & Frederikson, 1980; Gahagan, 1984; Ramsey, 1997; Tarricone &

Luca, 2002). Gahagan (1984) states that there is a hierarchy of subsocial skills, which, if performed adequately, will empower one to interact effectively in any situation. The subskills of social skill can be divided into cognitive, behavioural and emotional components (Gahagan, 1984). This can be demonstrated by the following example. When playing tennis, the position of the feet, the upper-body posture, the grip of the tennisracquet, the follow-through swing of the arms, etc, are all essential skills that need to be acquired for one to become a skilled tennisplayer. Similarly, in social interaction, the facial expression, tone of voice, the accurate perception of others' motives, traits, and intentions, as well as the correct discernment of one's own (Beagrie, 2004), as well as others' emotions during conversation are all skills that need to be developed and acquired in order to be socially skilled in any situation (Baron & Markman, 2000; Ferris, Wiit & Hochwarter, 2001; Sergin, 2001).

Effective social skills as a competitive advantage
According to Bruton and Smith's employee summary (Schafer, 1996), interpersonal skills top the list of the abilities needed by workers Teamwork, management of intercultural working teams, entrepreneurship, teleconferencing and mobile technology are "buzzwords" for any employee working in today's output-driven working environment (Anonymous, 2001; Baron & Markman, 2000; Kokt, 2003; Miller, 1999; Tarricone & Luca, 2002). Failing to adjust to these working conditions can result in the downfall among any business. The next paragraph discuss how effective social skills can serve as a competitive advantage in leadership, teamwork, the industrial industry, problem solving, and so forth.

Interacting with others competently and effectively, building relationships, coaching, mentoring, influencing and developing individuals and teams are all components that emerged as vital elements of effective leadership, and these all require sound social skills (Anonymous, 2001; Lanser, 2000; Mumford et al, 2000). Good social skills thus enable leaders to empower, motivate and mentor their followers successfully, because they are able to read, adjust and function effectively in any social setting.

Chua (2002) found a positive correlation between the level of social interaction and the quality of knowledge created in a study when he examined the influence of social interaction on the process of knowledge creation. Higher social skills will lead to better communication and thus more information sharing (Baron & Markman, 2000).

Information technologists' hard skills help them to perform their jobs well, but their social skills enable them to cope in crisis situations (O'Brien, 1999), minimise their stress levels, and develop more amicable relationships (Sergin, 2001; Anonymous, 2001; Baron & Markman, 2000).

The above discussion indicates that social skills have both a direct and indirect impact on business success (Tarricone & Luca, 2002). Effective social skills result in better team functioning, conflict management, leadership, negotiation etc (Lanser, 2000; Miller, 1999; Sergin, 2001; Tarricone & Luca, 2002). Green (2000) goes as far as stating that social skills training is an investment in any organisation's human capital.

Social norms, social roles and culture

Research conducted in a variety of settings (Radley, in Miell & Dallos, 1996) has provided evidence that different cultures' definition of effective social skill do differ. Rogers-Adkinson (1997) noted that, what is regarded as respectful and outstanding social skills in one culture may be seen as disrespectful and poor social skills in another, because social behaviour is influenced by cultural background (Eisler & Fredericson, 1980; Gahagan, 1984; Radley, in Miell & Dallos, 1996).

Social interaction at any level, displays an orderly and patterned quality which suggests the presence of prescribed norms and roles (Eisler & Fredericson, 1980; Gahagan, 1984). Another important consideration is the influence of prescribed cultural norms and roles on individual behaviour, because this may explain the social behaviour of the individual (Moghaddam, Taylor & Wright, 1993) - hence the need to know the context of the social norms and roles. Understanding the cultural context, enables one to explain the ways in which individuals may interact in a formal work setting (Moghaddam, et al, 1993).

In some cultures, subordinates may only speak when they are spoken to (Delgado & Rogers-Adkinson, 1997). In this scenario an employee who does not start a conversation with his or her boss, does not indicate a lack of social skill, but rather an accepted role played out by an individual placed in a subordinate position. Role perception - that is, an individual's view of how he or she is suppose to act in a given situation - influences ones behaviour in social interaction (Radley, in Robbins, 1998).

Of significance here is the realisation that the norms and roles in terms of effective social behaviour may differ from culture to culture, as illustrated in the above-mentioned examples. When assessing social skills, it is therefore necessary to note the cultural influence that group norms have on individuals' social behaviour.

Social skills assessment

Psychometry has influenced the lives of thousands of South Africans (Sehlapelo & Terre Blanche, 1996), because psychological tests are used for selection, placement, promotion, transfers, career decisions, training and development (Kemp, 1999; Shaw & Human, 1989; Taylor & Radford, 1986; van der Merwe, 1999). The psychometric tests used in the field of human resources must be reliable, valid, nonbiased and culturally fair (Bedell, van Eeden, & van Staden, 1999; van der Merwe, 1999).

In the past in South Africa it was not mandatory to show that the selection procedures and methods are valid and nondiscriminatory (Shaw & Human, 1989). Nowadays, however, the importance of the validation of any instrument to be used for assessment purposes is accentuated by recent and ongoing developments in South African labour legislation, and especially the implications of the Employment Equity Act (Eckstein, 1998) and the Labour Relations Act (Taylor & Radford, 1986). The Employment Equity Act prohibits psychometric testing on an individual unless the test has been validated and can be used fairly and in unbiased fashion for all persons from all culture groups (Bedell et al, 1999). Psychometric testing that discriminates against any individual or sub-group, could result in an unfair labour practice, according to the Labour Relations Act of South Africa (Taylor & Radford, 1986).

From the previous discussion it is evident that cultures communicate differently. It would seem that it is not the definition of effective social skills per se, that differs from culture to culture, but rather the way in which cultures communicate; the way in which cultures convey a message - that is, their overt social behaviour. A critical area of investigation is whether we have accommodated these cultural differences in our assessment tools, as Barker (2002) Bedell et al, (1999) Human (1989) and van der Merwe (1999) have noted, that the majority of psychometric tests and training programmes have been designed for the middle-class white South-African.

An awareness of the social behaviour displayed by various cultural groups (Eisler & Frederiksen, 1980) is therefore necessary when developing psychometric instruments. When assessing

social behaviour, the tester, as well as the psychometric instrument itself, must incorporate the influence of culture on the individual. This will enable the tester to determine when a given behaviour is in fact a cultural difference rather than a deficit (Eisler & Frederiksen, 1980). When assessing eye contact, for example, it is necessary for the tester to take into consideration the fact that cultures have different perspectives on how and when eye contact should be made during conversation.

In general, studies support the view that South African tests are reliable and valid for the groups for which they were developed and standardised unconditionally (Bedell et al, 1999). This implies that a comparison of the scores of individuals in these groups may be justified. However, the fact that cross-cultural validity has not been determined for a number of tests implies that cross-group comparison of scores could yield information that is discriminatory if used unconditionally (Bedell et al, 1999). Van der Merwe (1999) and Kemp (1999) state that although culture-free tests are not possible, a definite need for such tests have been expressed. This has placed the spotlight on validity methodology, but more so on the equivalence of tests.

Bias and equivalence

The aim of cross-cultural studies is both to explore and to explain cross-cultural differences (van de Vijver & Leung, 1997). Van der Flier and Drenth (in Taylor & Radford, 1986) note that the main issue in the analysis of test score comparability is whether the same construct or dimension is being measured across different groups. This means that the researcher or test user must establish whether intergroup differences on a test reflect real differences in the construct being measured, or to what extent these differences are artifacts of the testing situation, or if there are other factors related to the test (Van der Flier & Drenth, in Taylor & Radford, 1986).

Bias and equivalence play an essential role in cross-cultural comparisons (van de Vijver & Tanzer, 1997). From a theoretical point of view, the two concepts are opposites. Scores are equivalent when they are unbiased. Equivalence is often associated with the measurement level at which the scores obtained in different cultural groups can be compared, whereas bias indicates the appearance of factors that may influence the validity of cross-cultural comparisons (van de Vijver & Leung, 1997). It is therefore necessary to determine whether bias is present, and if it is, to eliminate it.

Bias

According to Verster (in Taylor & Radford, 1986), a test is biased when scores are differentially, but systematically influenced by sources that are irrelevant to the intended domain of generalisation. Taylor and Radford (1986) point out that sources of bias may lie within test items, in the test as a whole, in subjects, with the tester, or in the testing context. Three kinds of bias can be distinguished, namely construct bias, method bias and item bias (van de Vijver & Tanzer, 1997). Although bias can never be completely eliminated, steps can be implemented to minimise the effects of bias associated with known or potential sources. A detailed list of the sources of bias is provided in Van de Vijver and Leung (1997).

Equivalence

While bias exists when scores are influenced by sources irrelevant to the construct for assessment, equivalence refers to the measurement level at which scores can be compared across cultures (van de Vijver & Tanzer, 1997). Three levels of equivalence are possible, namely construct/structural equivalence, measurement/unit equivalence and full scale equivalence (van de Vijver & Leung, 1997). For the purpose of this article, the focus will be on construct equivalence, because the researcher wants to establish whether the same construct is measured across the cultures studied in the research.

Construct equivalence

A construct may not be defined in the same way in all cultural groups (van de Vijver & Leung, 1997). Being a good leader, for example, involves different behaviours and ideas in a Chinese and an American context (Walker & Walker, 1998). When an instrument measures different constructs in two cultures (ie, when "bananas" and "pears" are compared), no comparison can be made. Also, when there is only partial overlap in meaning to the constructs across the cultures being studied, no comparison can be made (van de Vijver & Leung, 1997).

Construct equivalence thus implies that the same construct is measured across all the cultural groups being studied, regardless of whether or not measurement of the construct is based on identical instruments across all cultures (van de Vijver & Tanzer, 1997). It implies the universal (ie, culture-independent) validity of the psychological construct. The first step in this study is thus to establish whether the cultural groups involved, have the same meaning for the construct "social skills", and if they do, only then, would it be possible to make valid comparisons between the cultures studied.

Equivalence of measures (or lack of bias) is thus a prerequisite for valid comparisons across cultural populations. Constructs are equivalent for different cultural groups when the test reliabilities, item discrimination values and factor structures are similar for the groups being studied (Reynolds, in Schaap & Basson 2003).

Almagor and Ben Porarath (in Joiner & Marquina, 1997) note three objectives in the cross-cultural study of psychological and personality variables, namely (1) to develop tools for use in different cultures; (2) to evaluate the cross-cultural stability of theoretical concepts; and (3) if cross-cultural stability is established, to conduct cross-cultural comparisons along relevant dimensions. This study will achieve these objectives. The purpose of this study is to determine the construct equivalence of the PIB/SpEEx Socialisation Index for entry-level job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa.

The Potential Index Battery

Two prerequisites for psychometric testing have been developed in the last decade in South Africa. Firstly, the current labour legislation of South Africa requires the employer to assess workers or prospective workers on the basis of job-related competencies (Erasmus, in Erasmus & Schaap, 2003). Secondly, in a multicultural society, a need has arisen to not only report the reliability and validity of tests, but also to determine whether the test is nonbiased and whether construct equivalence can be proved (Taylor & Radford, 1986).

Based on these prerequisites, Dr Erasmus and Dr Minnaar developed the Potential Index Batteries (PIB) in 1993 (Erasmus, in Erasmus & Schaap, 2003). Erasmus (in Erasmus & Schaap, 2003) states that the aim of the Potential Index Batteries and Situation-specific Evaluation Expert Scales (PIB/SpEEx) is to provide a comprehensive assessment package suitable for the assessment of human potential (in the workplace). The PIB/SpEEx consists of various indexes that are scored on a seven-point scale. The PIB/SpEEx was developed for the utilisation on South African respondents of sixteen years and older, with a standard six (Grade eight) or higher qualification (Erasmus, in Erasmus & Schaap, 2003).

The PIB/SpEEx 1200 (Socialisation Index) measures an individual's interpersonal (social) relations. Socialisation, in terms of the PIB/SpEEx, can comprehensively be defined as the capacity to interact with people in a way that reflects ease in mixing; a desire to be with others, a

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keen interest in what others do, think or contemplate; a need to assist others and to be assisted by others emotionally or otherwise; to provide a shoulder for others to lean upon and to have a shoulder for oneself to lean upon at times when comfort is required - in short, to be a person among other people and through other people (Erasmus, in Erasmus & Schaap, 2003).

RESEARCH DESIGN

The method followed in this study is discussed in terms of the sample, the measuring instrument and the analytical procedure used.

Sample

The population of this study consisted of 13 192 entry-level job applicants from diverse cultural backgrounds in the public safety and security sector in South Africa. These applicants hadcompleted the English reading comprehension, English spelling, English vocabularly and Mental Alertness test of the PIB/SpeeX battery. The Mental Alertness test measured the verbal reasoning ability of the applicants, and provided an index of their general intellectual ability. The respondents' total score for all five tests was calculated and placed in rank order, from high to low. The respondents who had the highest total score were selected for this study. A total of 14,7% of the highest scoring respondents was included in the final sample. A convenience sample of 1 946 respondents was drawn for the analysis of the English version of the PIB/SpEEx Socialisation Index. The sample can thus be regarded as relatively homogeneous in terms of English literacy skills and verbal reasoning abilities. All the data were gathered with the informed consent of the respondents and under the supervision of a registered psychologist. All information was dealt with in a confidential manner.

The biographical information is set out in Table 1.

The sample consisted of 849 blacks, 840 asians, 115 coloureds and 140 white respondents. The majority of the respondents were male (83,6%), while the female respondents represented 16,3% of the sample. Of the respondents, 47,7% indicated English as their first language, while 3,7% indicated that their home language was Afrikaans. The African language, of which Sepedi, Sesotho, Tswana and Venda were predominately represented, represented 36,3% of the sample. The remaining 11,8% of the respondents did not indicate their first language.

Various provinces in South Africa were represented in this study. Most of the respondents (48,9%) were from the KwaZulu-Natal area, while 16,7% indicated that they were from the Cape Province. Other areas that were represented in this study were Gauteng (15,2%), the Northen Province (2,4%) and the North West Province (2,8%). A total of 14,1% of the respondents did not indicate the area in which they resided.

The majority of respondents (65,1%) indicated that they had matriculated, while 31,6% had obtained a diploma. A few (2,6%) of the respondents had a degree, while only 0,6% of them did not indicate their highest qualification. The average age of the respondents was 24,04, ranging from eighteen (18) and thirty seven (37) years of age.

(Position Table 1 here)

Measuring Instrument

The PIB/SpEEx Socialisation Index has been standardised for the various cultural groups in South Africa. The latest version of the PIB/SpEEx Socialisation Index consists of 40 items. There are no "right" or "wrong" answers to this scale. The answers are provided on a continuum ranging from one (1) indicating a low score, to seven (7), indicating a high score. A candidate needs to indicate to what extent each of the statements applies to his/her behaviour, attitude or belief. The Socialisation Index is divided into two subscales, namely the sociability sub-scale and the a-Sociability subscale.

The sociability subscale refers to individuals who generally have a need for social contact and enjoy interacting with others. Individuals with a high score on the sociability subscale tend to be self-confident, outgoing, socially bold, friendly, assertive and socially confident.

A-sociability refers to individuals who tend to shy away from social interaction. Individuals who score high on this subscale also tend to be reserved, nonassertive and controlled. They will allow others to be the centre of attention, rarely initiate conversation with strangers and may find it difficult to express themselves in a social situation.

The PIB/SpEEX Socialisation Index is a self-assessment questionnaire. One thus needs to take into consideration the fact that the responses are based on the respondents' perceptions, which are vulnerable to personal biases and distortions. Individuals sometimes manipulate their

reactions to this type of question to create a more favourable, but less true impression of themselves, in an effort to make a "good impression" (Erasmus, in Erasmus & Scaap, 2003). The PIB/SpEEx Socialisation Index, however, compensates for reasonable manipulation (Erasmus, in Erasmus & Scaap, 2003).

In a study by Schaap (in Erasmus, 1997) on the reliability and validity measures of the PIB/SpEEx in a financial institution, the PIB/SpEEx 1200 (Socialisation Index) had a reliability coefficient of 0,84, which is acceptable. A reliability coefficient of 0,82 was calculated for the PIB/SpEEx 1200 (Socialisation Index) in the assessment of the academic potential of prospective students (Kriel, in Erasmus & Schaap, 2003). The reliability coefficients reported for the PIB/SpEEx Socialisation Index are eighty percent (0,80) and higher (Schaap, in Erasmus & Schaap, 2003).

It is clear from the above results that the situation-specific reliability coefficients of the PIB/SpEEx 1200 (Socialisation Index), fall within the acceptable range set for psychometric testing.

Analytical procedure

The construct equivalence of the PIB/SpEEx Socialisation Index for black, asian, white and coloured South Africans was evaluated by determining the coefficients' internal consistency, as well as by conducting item and factor analysis. The SPSS (SPSS Inc, 1996) and the EQS (Bentler, 1995) programs were utilised for these analyses.

The analysis of cross-cultural data often consists of two stages, namely the preliminary analysis- and the analysis stage (van de Vijver & Leung, 1997). During preliminary analysis, the psychometric adequacy of an instrument is tested. Descriptive statistics were examined on the 40-item version of the PIB/SpEEX Socialisation Index, including the item means, standard deviation, item-total correlation and Cronbach's alpha reliabilities.

An item analysis was performed in terms of each cultural group. This was done to determine the characteristics of the items included in the constructs of the PIS/SpEEx Socialisation Index. Item-total correlation provides information on the discrimination value of a specific item. A discrimination value of above 0,20 is generally acceptable (Anastasi & Urbina, 1997; DeVillis, 1991). In terms of cross-cultural studies, it is important to first determine the discrimination value

and item reliability coefficients of each item in respect of each cultural group. If the items do not meet the minimum requirements in terms of the individuals' cultural groups, their addition to the constructs being measured in a cross-cultural context will be questionable.

Bias and equivalence play an essential role in cross-cultural comparisons (Portinga, in van de Vijver & Leung, 1997). From a theoretical point of view, the two concepts are opposites, because scores are equivalent when they are unbiased. Equivalence is more often associated with the measurement level at which scores obtained in different cultural groups can be compared, whereas bias indicates the appearance of factors that can hamper the validity of cross-cultural comparisons (van de Vijver & Leung, 1997). It is therefore necessary to determine whether bias is present, and if it is, to eliminate it.

The identification of dissimilar reliability coefficients and item bias should be investigated and eliminated, because this may bring into question the validity of the instrument for cross-cultural comparison. The statistical significance of differences between the Cronbach coefficient alphas was determined by using Feldt's test statistic (Charter & Feldt, 1996). The significant value of Feldt's test statistic is sample-sensitive and increases with sample size. Although a small difference in the reliability coefficient for large independent samples might prove to be statistically significant, the difference could be so small that it has little practical significance (Schaap & Basson, 2003).

Factor analysis is generally used to simplify correlation matrices, as well as to study the equivalence of the psychological structures (Kline, 1994). For the purposes of this study, both exploratory and confirmatory factor analytical methods were used.

Exploratory factor analysis (EFA) is primarily a data-driven technique for discovering what underlying structure the sample data possess (Bollen; Joreskog & Sorbom; Pedhazur & Schmelkin, in Crowley & Fan, 1997). EFA is applied when one wants to explore the data, so to establish what kind of characteristics, interesting features and relations may exist. No hypothesised model is dictated to the data, and all variables load on all factors. EFA is useful for generating structure and empirically testable hypotheses (Gorsuch, in Crowley & Fan, 1997). EFA is used to generate hypotheses, while Confirmatory Factor Analysis (CFA) can test these hypotheses.

Confirmatory factor analysis (CFA) is a measurement model used in the structural equation model (SEM), and is the primary use of SEM when testing construct validation (Crowley & Fan, 1997; Schumacker & Lomax, 1996). CFA is a technique that requires the researcher to specify a theoretical hypothetical model that is assumed to describe or explain the empirical data (de Bruin & Bernard-Phera, 2002).

CFA is mainly driven by substantive theories and expectations (Bollen; Joreskog & Sorbom; Pedhazur & Schmelkin, in Crowley & Fan, 1997). CFA is usually used to determine the structure of an assessment tool in two ways: firstly, to test whether individual items fit on a subscale, and secondly, to test whether subscales in or between measurement instrument/s assess the proposed latent construct (Crowley & Fan, 1997). The correlation between the observed variables and the latent variables is described by factor loadings (de Bruin & Bernard-Phera, 2002). The factor loadings provide us with information about the extent to which a given observed variable is able to measure the latent variable. They serve as a validity coefficient (Schumacker & Lamax, 1996). Variables are limited to only "load" on one, or a few of the factors. Measurement error is defined as that portion of an observed variable that measures something other than that which the latent variable is hypothesised to measure (Crowley & Fan, 1997). The purpose of using CFA is to test the hypotheses that the proposed theoretical model fits the empirical data. CFA is thus an extension of EFA and is not meant to replace it (van de Vijver & Leung, 1997).

The principle factor procedure is generally used to extract factors from a correlation matrix (Gorsuch, 1983). The principal axis factoring method extracts the maximum amount of variance that can possibly be extracted by a given set of factors (Gorsuch, 1983). In this study, the principal axis factoring (PAF) extraction method and the Varimax rotation with Kaiser's criterion were used to perform the first-order factor analysis. The aim of Varimax is to maximise the sum of variances of squared loadings in the columns of the factor matrix (Kline, 1994). The items with a high loading on a specific factor were added together to formulate a subvalue. A second-order factor analysis was then performed on the subvalues, by using the principal axis factoring (PAF) extraction method and the oblique rotation (Direct Oblimin). Kaiser's criterion (1961) was used to retain factors with unrotated eigenvalues greater than one. Scree plots (Catell, 1966) were used to verify the number of significant factors with regard to each of the four cultural groups.

The SEM has become a useful method in social and behavioural sciences for specifying, estimating and testing hypothesised interrelationships between a set of substantively meaningful variables (Schumacker & Lomax, 1996). The SEM expresses the relationships between several variables. In this study we want to determine the correlation between the two latent variables (socialisation and a-socialisation), as well as the effect (factoral loadings) of the items/parcels (observable variables) on the relevant construct. SEM models was generated for each of the four cultural groups being studied, as well as for the total group. CFA helps the researcher to estimate the factor pattern coefficients that link the observed variables and the latent variables (Crowley & Fan, 1997).

Preliminary single group confirmatory factor analysis was conducted to test the extent to which the data fitted the measurement model in respect of each of the cultural groups. MacCallum (1986) and Byrne, Shavelson and Muthen (1989) pointed out the necessity for determining the model fit for each of the groups separately before multiple-group comparisons are made. If a model does not fit well in a one-group analysis, it is likely that it will not fit as part of a larger multisample analysis (Bentler, 1995). SEM requires a large sample size and the large sample contributes to the power of the chi-square test, making it easy to reject the null hypothesis (Kline, 1994). As the sample size increases (generally above 200), the chi-square test has a tendency to indicate a significant probability level (Schumacker & Lomax, 1996). A significant chi-square test indicates that the data do not fit the model (de Bruin & Bernard-Phera, 2002; Schumacker & Lomax, 1996). Due to the inadequacy of the chi-square test, other indices for assessing model fit have been developed. The fit indices that were used are the BentlerBonnett Non-normed Fit Index (NNFI), the Comparative Fit Index (CFI), the Bollen Non-normed Fit Index (IFI), the Root Mean Squared Error of Approximation (RMSEA) and the Model Chi-square. The Jöreskog index (chi-square /df) was also used to evaluate the goodness-of-fit of the model. For a statistical test to be reliable, a minimum sample of 100 (N=100) is suggested for a simple model. For more complex models, a sample of 500 is recommended (Kline, 1994).

The final measurement model was then cross-validated using multiple-group confirmatory factor analysis across the four different cultural groups. This enabled the researcher to evaluate the fit between the postulated model and the observed data. An evaluation of the number of factors, factor variances, factor covariances and factor loadings for multiple groups was conducted using the multiple-group confirmatory factor analysis. A set of hierarchically nested models that successively increases the number of equality constraints was used to test the equivalence of

constructs with respect to the black, asian, white and coloured groups. The constraints were compelled in the sequence proposed by Vandenberg and Self (1993) starting with equality in the number of factors, followed by the equality of factor variances and factor covariances, and ending with equality of factor loadings. The chi-square difference test was calculated to establish whether there was a significant difference between the constrained model two and the unconstrained model one. A nonsignificant change in the chi-square value relative to the degree of freedom indicates that the observed and estimated matrices are not statistically different (Gorsuch, 1983). The chi-square, CFI, NNFI, IFI and RMSEA statistics were used as overall goodness-of-fit indices for the nested models.

RESULTS

The results of the item analysis of the sociability subscale for the different cultural groups are presented in Table 2. A discrimination value of below 0,20 is generally unacceptable (Anastasi & Urbina, 1997; DeVillis, 1991). In terms of the sociability subscale, all the items appeared to have acceptable discrimination values and item reliabilities. The sociability subscale's alpha coefficients of the black, asian, white and coloured groups were 0,87, 0,89, 0,91 and 0,89 respectively. Feldt's statistic indicated that the reliability coefficient of the black group differed significantly at the 5% probability level from the asian and white groups. When a test is to be done at the 5% level, the 97,5 percentile F distribution table is used (Charter & Feldt, 1996). The difference between the reliability coefficients of the white group and the coloured and asian groups, as well as the difference between the reliability coefficients of the coloured and the asian and black groups are all statistically nonsignificant at the 5% probability level. The statistical difference in the reliability coefficients of the black and white, as well as between the black and asian groups, indicated a difference in the response pattern with regard to these groups.

The results of the item analysis for the a-sociability subscale are provided in Table 3. Item 24 seemed to have a discrimination value of below 0,20 in respect of the asian, white and coloured groups. Item 31 had an item-total correlation of below 0,20 for the black, white and coloured groups. The a-sociability subscale's alpha coefficients of the black, asian, white and coloured groups were 0,78, 0,82, 0,81 and 0,84 respectively. The reliability coefficient of the black group differed significantly ($p \leq 0,05$) from the reliability coefficients of the asian and coloured groups. The reliability coefficient of the white group differed nonsignificantly ($p \leq 0,05$) from the reliability coefficients of the coloured, asian and black groups. A nonsignificant difference ($p \leq 0,05$) in terms of the reliability coefficient between the coloured and asian group was calculated.

The results of the principal axis factor analysis performed on the PIB/SpEEx Socialisation Index indicated that the sample for the total group was adequate, according to the Kaiser-Meyer-Olkin (MSA) measure of sample adequacy (Kim & Mueller, 1978) and Barlett's significance test (Gorsuch, 1983). The MSA value was 0,71 and can thus be considered acceptable.

(Position Table 2 here)

(Position Table 3 here)

A first-order factor analysis was performed using the Principal axis factoring method and a Varimax Rotation. The items of the PIB/SpEEx Socialisation Index were intercorrelated, and the eigenvalues of the intercorrelation matrix calculated. Nine of the eigenvalues were greater than unity. Accordingly nine factors were extracted and rotated to a simple structure by means of a Varimax rotation.

The eigenvalues of the unreduced intercorrelation matrix are provided in Table 4. Table 4 shows that two eigenvalues were greater than one. This indicates two significant factors (Kaiser, 1961). The results set out in Table 4 indicated that the first two significant factors contributed 48,85% of the total variance for the group as a whole.

(Position table 4 here)

A Scree-test was also performed, because most factor analysts agree that Cattell's scree-test is probable the best method to select the correct number of factors (Kline, 1994). Linn (in Gorsuch, 1983) concluded that the scree-test is more accurate when the communalities are higher and when the ratio of variables to factors is higher. The factor analysis resulted in the extraction of a total of nine factors for the total group. In the scree-plot (Fig 1) it can be seen that two factors possessed eigenvalues greater than one. A change in the slope could also be observed in the scree-plot between root two and root three. A principal factor analysis was performed and the two factors selected by the scree-test were rotated. Based on the results of the scree-test and Kaiser's criterion it can be concluded that two significant factors emerged in this study for the group as a whole.

(Position Figure 1 here)

Two factors were thus extracted and rotated to a simple structure by means of a direct oblimin rotation. The rotated factor matrix is provided in Table 5. Subvalues were formed by adding together the items that loaded high on a specific factor. An outline of the items that were grouped together to form a subvalue is presented in Table 5. The principal axis factoring method and the oblimin rotation were thus used to perform a second-order factor analysis on these subvalues.

(Position Table 5 here)

From Table 5 it is clear that parcels 1, 4, 5, 7 and 9 load high on factor 1, while parcels 2, 3, 6 and 8 load high on factor 2. Factor loadings are high when they are greater than 0,6 and moderately high if they are between 0,3 and 0,6 (Kline, 1994). From Table 5 it can be seen that all the loadings were greater than 0,30 and are thus acceptable.

Factor 1 can be identified as the sociability construct, while factor 2 can be identified as the a-sociability construct. From Table 5 it is also evident that there is no correlation between factors 1 and 2.

Item parcels were formulated to control for artifacts in item groupings that have no psychological significance because of the effect of differential item skewness (Comrey & Lee, 1992; Gorsuch, 1997). Gorsuch and Yagel (Gorsuch 1997) suggested the grouping of at least three items together to form aggregates/parcels, to account for the problem of skewness and mean differences. Bagozzi and Heatherton (1994) also suggested the calculation of item aggregates to obtain more accurate estimates of model fit indices. To ensure stability of the data, the PIB/SpEEx Socialisation Index was divided into ten aggregates. Each aggregate/item parcel consisted of five items. An outline of the item aggregates of the PIB/SpEEx Socialisation Index is provided in Table 6.

(Position Table 6 here)

From Table 7 it can be seen that the coefficient of skewness ranged from -0,917 to 0,477. Field (2000) proposed that a skewness statistic between -1,0 and +1,0 would be regarded as acceptable. In Table 7 it can be seen that the aggregates of both the sociability and the a-

sociability subscales are well within the acceptable range. According to Field (2000), the kurtosis should be between -2,0 and +2,0 Table 7 indicates that all the item parcels fall within this range.

(Position Table 7 here)

The structural equation model (SEM) for the two structures underlying the PIB/SpEEx Socialisation Index for the black, asian, white, coloured and the total group are provided in Figures 2, 3, 4, 5 and 6 respectively. In Figures 2, 3, 4, 5 and 6, the boxes on the left represent the latent variables (item parcels) hypothesised to load on the latent variable, sociability. The boxes on the right represent the item parcels hypothesised to have an effect on the a-sociability latent variable. Factor analysis, like the SEM, is a large sample analytic technique that requires sample sizes of about 200 as the minimum for small to medium-sized models (Boomsma, 1983). Floyd and Widaman (1995) have suggested five to ten participants per estimated parameter. However, generally, the larger the sample the more stable the parameter estimates will be. Large sample size increases the power of the chi-square test, and consequently, minor discrepancies between sample data and the theoretical model will tend to be declared statistically significant (Crowley & Fan, 1997).

(Position Figure 2, 3, 4, 5 and 6 here)

The fit indices for the black, asian, white, coloured and the total group are provided in Table 8. With regard to the black group (Table 8 and Figure 2), the CFI value was 0,923, the NNFI value was 0,910 and the IFI value 0,932. These values all indicate that the data fit the model, because values above 0,90 are indicative of a good model fit (Bentler & Bonnett, 1980; Kline 1994). The RMSEA value was 0,068 which indicated a reasonable fit. According to Byrne (1998), the RMSEA is one of the most informative criteria in covariance structure modelling. The RMSEA takes into account the error of approximation in the population and asks the question: "How well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available?" (Byrne, 1998). De Bruin and Bernard-Phera (2002) as well as Kline (1994) regard RMSEA values of below 0,05 as indicative of the fact that the data fit the model well, whereas a value between 0,05 and 0,08 indicates a reasonable fit.

(Position Table 8 here)

The chi-square measure for the black group was highly significant [chi-square (34)=163,628;p≤0,01]. This value indicated a poor model fit. Because of the large sample size, it is not surprising that the chi-square statistic is significant (Crowley & Fan, 1997; Kline, 1994). Due to the dissatisfaction with the chi-square test, other indices (CFI, IFI, NNFI) for assessing model fit need to be considered (Crowley & Fan, 1997; van de Vijver & Leung, 1997). Jöreskog (1979) also suggested the use of the ratio of chi-square to its degree of freedom as a guide to model comparisons during model fitting. Jöreskog (1979) did not indicate any significant value for the size of the index in a good model, but in several of the examples, the dividing line seemed to be at a chi-square /df ratio of about two (Long, 1983). Hayduk (1987) suggested an index as high as five as an indicator of a good model fit. According to Kelloway (1998), ratios between 2 and 5 are regarded as indicative of a good model fit. The chi-square/df ratio for the black group was 4,79. Based on the results of the fit indices, the chi-square/df and the RMSEA value, one can conclude that the two-factor model fits the data reasonably well.

With regard to the asian group (Table 8 & Figure 3), the CFI value was 0,932, the NNFI value 0,910 and the IFI value 0,932. The RMSEA value was 0,077. The fit indices and the RMSEA value fall within the acceptable ranges, which indicated that the data fit the model. The chi-square was highly significant [chi-square (34)=200,591;p≤0,01], and indicates that the data fit the model poorly. One needs to take into consideration that the significant value may be significant because of the large sample size (N=840). The chi-square/df ratio of 5,90 is just outside the acceptable range, and thus also indicates a poor model fit. Overall, however, one can conclude that the two-factor model fits the data reasonable well, because the indicators were extremely close to or within the limits of acceptable model fit.

With respect to the white group (Table 8 & Figure 4), the CFI value was 0,895, the NNFI value 0,865 and the IFI value 0,900. The RMSEA value was 0,099. The fit indices (except for the IFI value) as well as the RMSEA value are all outside the acceptable range and therefore indicate a poor model fit. The chi-square was significant [chi-square (34)=80,716;p≤0,01]. The chi-square/df ratio of 2,37 was within the acceptable range, indicating a good model fit. Overall, one may conclude that the two-factor model fitted the data reasonably well, because most of the indicators were extremely close to or within the limits of an acceptable model fit.

As far as the coloured group (Table 8 & figure 5), was concerned the CFI value was 0,936, the NNFI value 0,915 and the IFI value 0,938. These values all indicate that the data fits the model

well. The RMSEA value of 0,075 was within the acceptable range for good model fit. The chi-square was just outside the nonsignificant value [chi-square (34)=55,853;p≤0,01]. The chi-square/df ratio of 1,64 is just outside the acceptable range. Overall, one may conclude that the two-factor model fitted the data well, since most of the indicators were very close to or within the limits of an acceptable model fit.

Regarding the total group (Table 8 & Figure 6), the CFI value was 0,932, the NNFI value was 0,910, the IFI value 0,932 and the RMSEA 0,074. These values are all well within the acceptable range which indicates a good model fit. The chi-square was highly significant at $[X^2(34)=210,618;p≤0,01]$, which indicates that the data fit the model poorly. The chi-square/df ratio of 6,19 is just outside the acceptable range, which indicates a poor model fit. Overall, one may conclude that the two-factor model fitted the data well, since most indicators were extremely close to or within the limits of an acceptable model fit.

The single group confirmatory factor analysis fit indices were similar for the groups included in this study and indicated the equivalence of the constructs for these groups.

(Position Table 9 here)

The final measurement model was then cross-validated using multiple-group factor analysis across the different samples of data. The results of the multiple-group confirmatory group analysis are provided in Table 9. In multiple-group confirmatory factor analysis, when parameters are constrained they are forced to be equal across groups and are therefore considered invariant, stable or equivalent across the groups (Schumacker & Lomax, 1996). The statistically nonsignificant change in the chi-square values of the test for equality of factor variances [Δchi-square (6)=14,263; p>0,01], indicated that the factor variances could be considered equal for the black, asian, white and coloured groups. The CFI, NNFI, IFI fit indices all had values greater than 0,9, which indicates a good model fit. The value of the RMSEA was 0,038 which also indicates a good fit, because values of 0,05 or less indicate a close fit for the RMSEA (de Bruin & Bernard-Phera, 2002; Schumacker & Lomax, 1996). The change in the chi-square value of the test for the equality of covariances matrices was statistically significant [Δchi-square (3)=28,527; p≤0,01], which indicated that the factor covariances were not equal for the black, asian, white and coloured groups. since the chi-square is sensitive to sample size it is advisable to also consider the values of the fit indices, before drawing a final conclusion about

the model fit. Bentler and Bonnet (1980), de Bruin and Bernard-Phera (2002) as well as Schumacker and Lomax (1996) suggest that fit indices that are ≥0,90 are generally seen as being indicative of an acceptable fit. The CFI, NNFI and the IFI fit index all produced values greater than 0,9 for the equal factor covariances, and would therefore indicate an acceptable model fit. A statistically nonsignificant change in the chi-square [Δchi-square (24)=31,919; p>0,01] was obtained for the equal factor loadings matrices. All the fit indices, as well as the RMSEA value for the factor loadings matrices were greater than the acceptable standards, which indicates a good model fit.

It can be concluded from the results of the exploratory and confirmatory factor analysis that the two-factor solution for the PIB/SpEEx Socialisation Index had a reasonable to extremely good fit for the four groups included in this study.

DISCUSSION

The item statistics for the PIB/SpEEx Socialisation scale can be considered acceptable for the black, asian, white and coloured groups. However, it is important to note of item 24's and item 31's low discriminant value in terms of the nonsociability subscale for the asian, white and coloured groups as well as the black, white and coloured groups respectively. The inclusion of these items within the self-report questionnaire should be reconsidered, because they had a low discriminant value for more than one of the cultural groups. The majority of the items, however, meet the minimum requirements in terms of their relationship with the scales of the PIB/SpEEx Socialisation Index for the black, asian, white and coloured groups.

The differences between the reliability coefficient of the white group and the asian and coloured groups, as well as the reliability coefficient of the coloured and the asian and black groups were all statistically nonsignificant, which may indicate that the sociability construct is equivalent for these groups. The statistical difference in the reliability coefficient of the black and white groups, as well as between the black and asian groups, provide some indication that the sociability construct may not be equivalent for these groups.

In terms of the a-sociability subscale, the reliability coefficient of the black group differed significantly from the reliability coefficient of the asian and coloured groups. This may indicate that the a-sociability construct may not be equivalent for these groups. A statistically non-significant difference in terms of the reliability coefficient between the white and the coloured,

asian and black groups, as well as between the coloured and asian groups may indicate that the a-sociability construct is equivalent for these groups. One should, however, consider the fact that differences that exist in scale reliabilities between groups are preliminary and not conclusive for construct equivalence. Factor analysis was required to provide more conclusive evidence. Except for the a-sociability subscale of the black group, all the scale reliabilities were well within the range of the acceptable standard.

The exploratory factor analysis indicated that two significant factors emerged in this study for the group as a whole. A clear distinction was made between the sociability and the a-sociability constructs. The results also indicated that there was no correlation between these constructs.

The single group confirmatory factor analysis fit indices were very similar for the black, asian, white and coloured groups. This indicated an equivalence of the constructs being measured for these groups. The statistically significant value of the chi-square for the black, white and asian groups could be a result of the large sample sizes. This view could be supported by the fact that the fit indices as well as the chi-square /df ratio value of the black, asian, white and coloured groups were all well within, or extremely close to the acceptable range.

The multiple-factor analysis resulted in a nonsignificant change in the chi-square value for the equality in variances as well as for the equality of factor loadings for the black, asian, white and coloured groups. The statisticaly significant change in the chi-square for the equality of factor co-variances need to be taken into consideration. The correlation between the sociability and the a-sociability factors for the black and asian groups respectively, was extremely low at -0,38 (Fig. 2) and -0,20 (Fig. 3). This could indicate that the black and the asian cultures have different interpretations of sociability and a-sociability, when compared with the sociability and a-sociability definitions of the PIB/SpEEx Socialisation Index. Further investigation into the interpretation of sociability and a-sociability in black and asian cultures, however, would be necessary to verify this hypothesis. The statistically significant change in the chi-square could also be ascribed to the large sample size of the black and asian groups. The fit indices as well as the RMSEA values, however, were all well within the acceptable range for the equal factor covariance. The observed variation in factor covariance for the black, asian, white and coloured groups could be considered small and of less importance for the construct equivalence of the PIB/SpEEx Socialisation Index.

Overall, it can be concluded that the constructs of the PIB/SpEEx Socialisation Index appear to be equivalent for the black, asian, white and coloured groups. The results of this study indicate that the English version of the PIB/SpEEx Socialisation Index is a valid and culturally nonbiased measure of the socialisation construct for entry-level job applicants in the public safety and security sector in South Africa. For the above conclusion to be valid, the respondents' linguistic abilities in English and their conceptual reasoning abilities should be of a sufficiently high level and relatively homogenous for black, asian, white and coloured groups. Cognitive and English linguistic ability measures should thus be utilised as initial screening devices before the PIB/SpEEx Socialisation Index is used.

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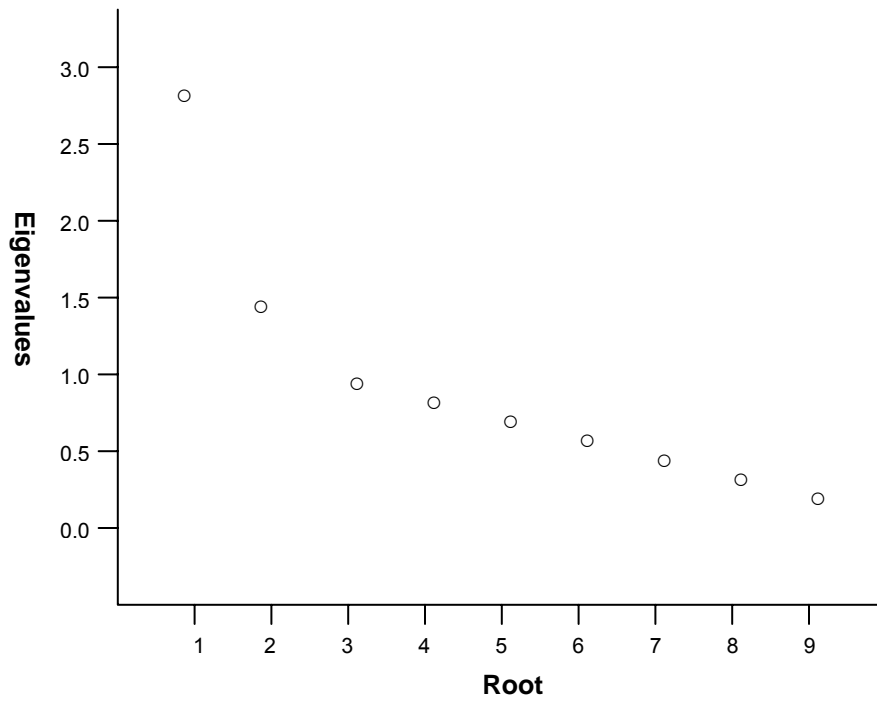
Figure 1: Scree-plot (Total Group)
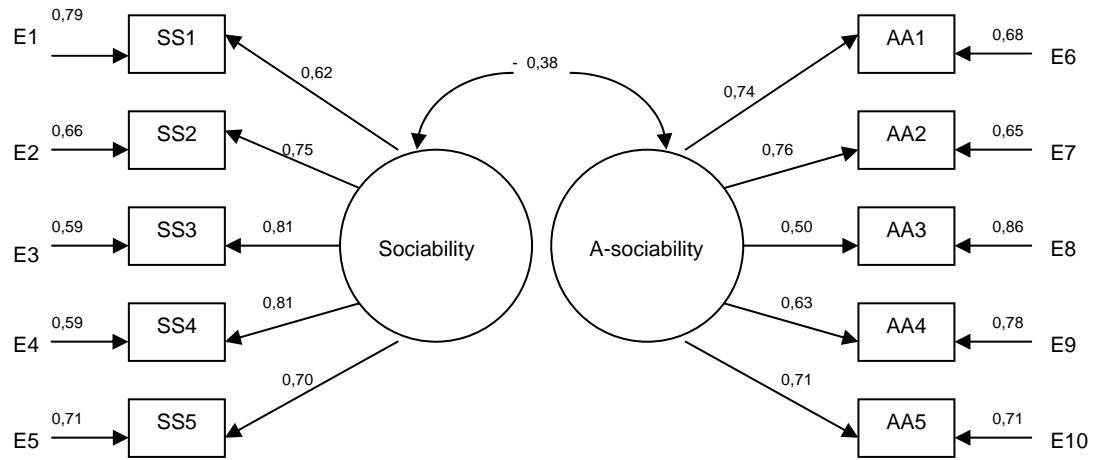
Figure 2: Standardised estimated parameters of the PIB/SpEEx Socialisation Index for the Black group
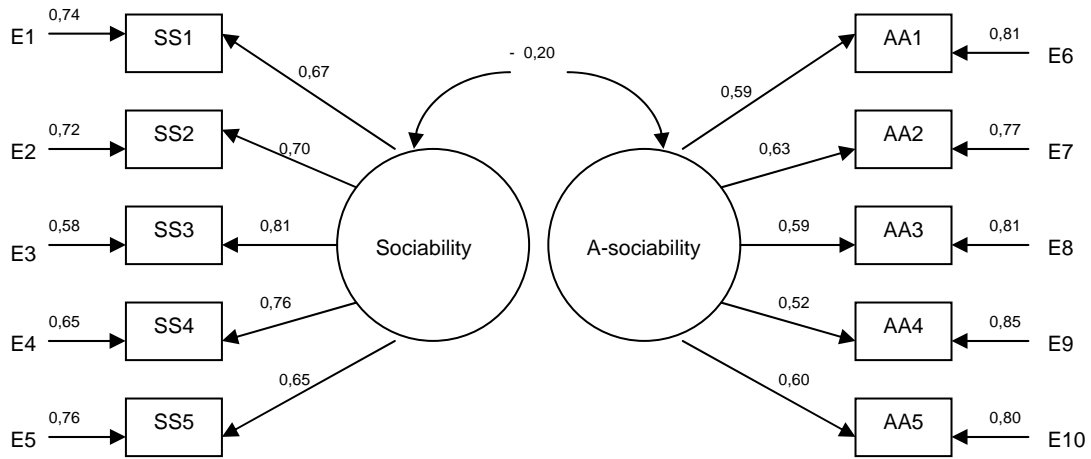
Figure 3: Standardised estimated parameters of the PIB/SpEEx Socialisation Index for the Asian group
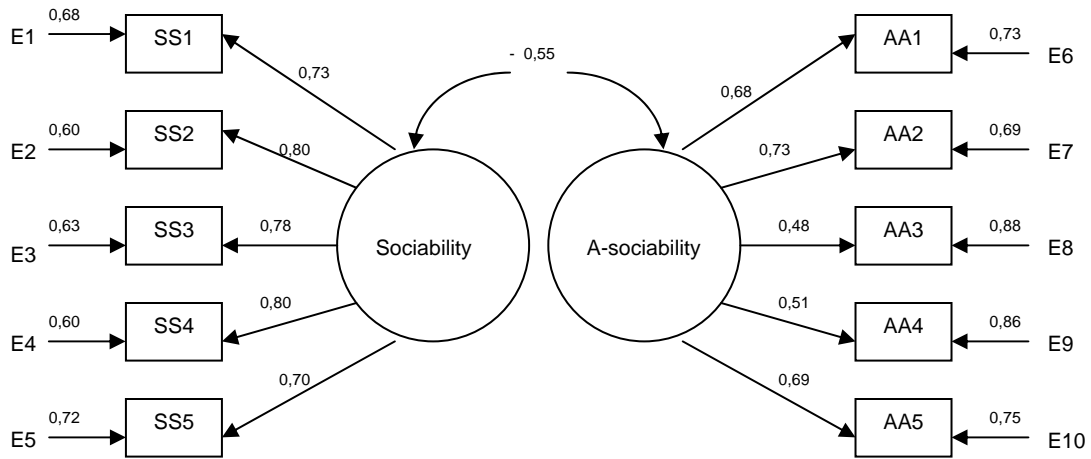
Figure 4: Standardised estimated parameters of the PIB/SpEEx Socialisation Index for the White group
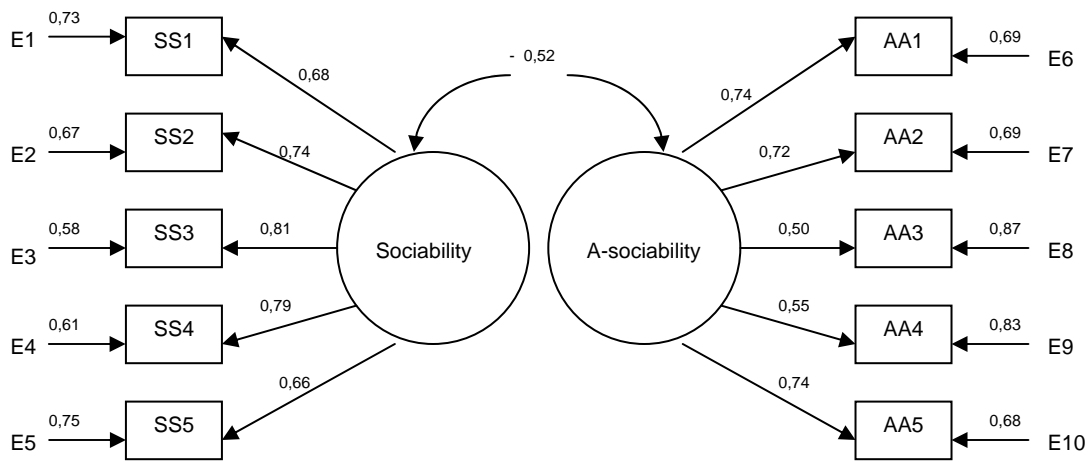
Figure 5: Standardised estimated parameters of the PIB/SpEEx Socialisation Index for the Coloured group
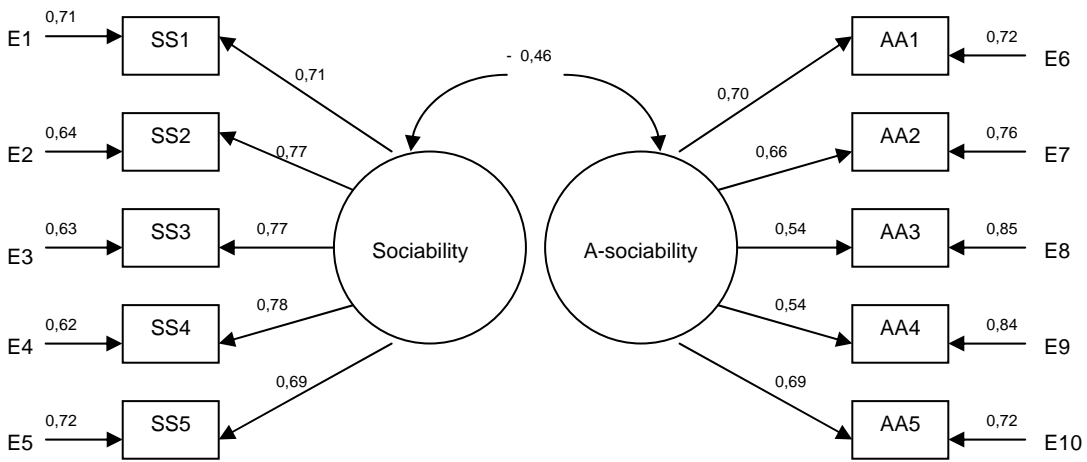
Figure 6: Standardised estimated parameters of the PIB/SpEEx Socialisation Index for the Total group

TABLE 1

BIOGRAPHICAL INFORMATION OF THE RESPONDENTS

	Frequency	Percent	Valid %	Cumulative %
Gender:				
Male	1626	83.6	83.7	83.7
Female	317	16.3	16.3	100
Total	1943	99.9	100	
Unknown	3	0.2		
Total	1946	100		
Cultural Group:				
Black	849	43.6	43.7	43.7
White	140	7.2	7.2	50.9
Asian	840	43.2	43.2	94.1
Coloured	115	5.9	5.9	100
Total	1944	99.9	100	
Unknown	2	0.1		
Total	1946	100		
Language:				
English	928	7.7	54.1	54.1
Afrikaans	72	3.7	4.2	58.3
Ndebele	12	0.6	0.7	59.0
Fangalo	1	0.1	0.1	59.1
Portugues	1	0.1	0.1	59.2
Sepedi	100	5.1	5.8	65.0
Sesotho	99	5.1	5.8	70.8
SeSwati	6	0.3	0.3	71.1
Tsonga	52	2.7	3.0	74.1
Tswana	88	4.5	5.1	79.2
Venda	70	36.0	4.1	83.3
Xhosa	35	1.8	2.0	85.3
Zulu	241	12.4	14.0	99.3
Other	11	0.6	0.6	100
Total	1716	88.3	100	
Unknown	230	11.8		
Total	1946	100		
Qualifications:				
Matric	1267	65.1	65.5	65.5
Diploma	614	31.6	31.7	97.2
Degree	53	2.7	2.7	100
Total	1934	99.4	100	
Unknown	12	0.6		
Total	1946	100		
Province:				
Cape	325	16.7	19.4	19.4
Gauteng	295	15.2	17.6	37.0
KZN	952	48.9	56.9	93.9
Northen Province	46	2.4	2.8	96.7
North West Province	54	2.8	3.2	100
Total	1672	85.9	100	
Unknown	274	14.1		
Total	1946	100		

TABLE 2

ITEM ANALYSIS OF THE SOCIABILITY SUB-SCALE IN RESPECT OF THE DIFFERENT CULTURAL GROUPS

	Black (n=849)			Asian (n=840)			White (n=140)			Coloured (n=115)		
	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted
S11	0.326	0.547	0.862	0.512	0.569	0.869	0.494	0.634	0.898	0.554	0.727	0.877
S12	0.549	0.710	0.857	0.537	0.498	0.870	0.521	0.660	0.897	0.609	0.686	0.876
S13	0.421	0.758	0.858	0.433	0.675	0.872	0.542	0.908	0.897	0.599	1.090	0.875
S14	0.444	0.682	0.857	0.368	0.514	0.874	0.421	0.558	0.900	0.388	0.557	0.882
S15	0.596	0.737	0.852	0.653	0.741	0.865	0.623	0.770	0.895	0.599	0.740	0.876
S17	0.528	0.679	0.854	0.582	0.584	0.868	0.646	0.756	0.895	0.479	0.566	0.879
S18	0.525	0.703	0.854	0.590	0.631	0.867	0.632	0.734	0.895	0.598	0.692	0.876
S19	0.512	0.753	0.854	0.547	0.712	0.868	0.593	0.675	0.896	0.535	0.740	0.877
S20	0.518	0.717	0.854	0.586	0.628	0.867	0.631	0.792	0.895	0.539	0.665	0.877
S22	0.439	0.612	0.857	0.517	0.641	0.869	0.454	0.595	0.899	0.569	0.814	0.876
S26	0.437	0.676	0.857	0.466	0.600	0.871	0.576	0.737	0.896	0.494	0.722	0.879
S28	0.432	0.658	0.857	0.403	0.488	0.873	0.410	0.537	0.900	0.446	0.595	0.880
S34	0.532	0.829	0.853	0.510	0.676	0.869	0.670	1.005	0.893	0.562	0.822	0.876
S38	0.391	0.713	0.860	0.477	0.817	0.871	0.541	0.899	0.897	0.507	0.934	0.879
S4	0.364	0.597	0.860	0.387	0.507	0.873	0.424	0.613	0.900	0.299	0.425	0.885
S40	0.318	0.545	0.862	0.334	0.552	0.877	0.382	0.647	0.902	0.422	0.673	0.881
S5	0.544	0.890	0.853	0.505	0.729	0.869	0.584	0.903	0.896	0.413	0.650	0.881
S6	0.431	0.655	0.857	0.416	0.597	0.873	0.509	0.860	0.898	0.334	0.561	0.885
S8	0.535	0.776	0.854	0.567	0.594	0.868	0.619	0.802	0.895	0.554	0.590	0.878
S9	0.470	0.807	0.856	0.464	0.717	0.871	0.541	0.920	0.897	0.562	0.980	0.876

Scale reliability: Black group: 0.869	Asian group: 0.886	White group: 0.906	Coloured group: 0.890

Item-total correlation: * < 0,20

TABLE 3

ITEM ANALYSIS OF THE A-SOCIABILITY SUB-SCALE IN RESPECT OF THE DIFFERENT CULTURAL GROUPS

	Black (n=849)			Asian (n=840)			White (n=140)			Coloured (n=115)		
	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted	Corrected Item Total Correlation	Item reliability	Alpha if item deleted
A1	0.399	0.456	0.756	0.418	0.444	0.807	0.400	0.414	0.792	0.525	0.592	0.820
A10	0.353	0.478	0.758	0.447	0.529	0.805	0.348	0.466	0.793	0.560	0.666	0.818
A16	0.332	0.608	0.759	0.452	0.727	0.803	0.457	0.699	0.787	0.340	0.559	0.827
A2	0.329	0.595	0.759	0.437	0.683	0.804	0.426	0.648	0.789	0.490	0.782	0.819
A21	0.371	0.563	0.756	0.406	0.678	0.806	0.426	0.674	0.789	0.429	0.459	0.822
A23	0.271	0.479	0.763	0.393	0.628	0.807	0.240	0.394	0.800	0.533	0.808	0.817
A24	0.213	0.384	0.768	*0.193	0.349	0.820	*0.056	0.100	0.814	*0.044	0.822	0.844
A25	0.299	0.491	0.761	0.327	0.513	0.811	0.490	0.831	0.784	0.220	0.290	0.831
A27	0.402	0.626	0.754	0.412	0.576	0.806	0.333	0.466	0.794	0.438	0.619	0.822
A29	0.281	0.432	0.762	0.349	0.457	0.809	0.349	0.449	0.793	0.595	0.749	0.816
A3	0.352	0.630	0.757	0.420	0.676	0.805	0.471	0.710	0786	0.383	0.585	0.824
A30	0.241	0.365	0.764	0.301	0.413	0.811	0.200	0.291	0802	0.566	0.796	0.816
A31	*0.147	0.263	0.772	0.236	0.379	0.816	*0.192	0.308	0.803	*0.179	0.318	0.836
A32	0.371	0.638	0.756	0.344	0.518	0.809	0.976	0.564	0.792	0.435	0.726	0.822
33	0.442	0.648	0.752	0.435	0.622	0.805	0.434	0.599	0.789	0.424	0.611	0.823
A35	0.431	0.574	0.753	0.469	0.574	0.804	0.486	0.646	0.786	0.470	0.570	0.821
A36	0.239	0.426	0.766	0.387	0.524	0.807	0.362	0.540	0.793	0.320	0.505	0.828
A37	0.354	0.638	0.757	0.482	0.697	0.802	0.510	0.762	0.784	0.520	0.779	0.818
A39	0.444	0.685	0.751	0.441	0.626	0.804	0.435	0.624	0.788	0.596	0.923	0.814
A7	0.446	0.719	0.750	0.437	0.642	0.804	0.448	0.658	0.788	0.316	0.516	0.828
	Scale reliability: Black group: 0.777			Asian group: 0.822			White group: 0.807			Coloured group: 0.843		

Item-total correlation: * < 0,20

TABLE 4

EIGENVALUES OF INTERCORRELATION MATRIX

	Eigenvalue		
Root	**Total**	**% of Variance**	**Cumulative %**
1	2,837	31,53	31,53
2	1,559	17,33	48,86
3	0,978	10,87	59,73
4	0,872	9,69	69,42
5	0,804	8,93	78,35
6	0,693	7,70	86,05
7	0,574	6,38	92,43
8	0,400	4,45	96,88
9	0,282	3,14	100

TABLE 5

ROTATED FACTOR MATRIX

	Factor	
	1	**2**
Parcel		
Parcel 1 (item23-29,33-35,37-40)	0,971	-0,043
Parcel 2 (item 3,4,11,14,17,19,20)	-0,228	0,489
Parcel 3 (item 1,2,5-10,15,16,18)	-0,206	0,840
Parcel 4 (item 30,32)	0,528	-0,268
Parcel 5 (item 36)	0,357	0,022
Parcel 6 (item 13,31)	0,103	0,303
Parcel 7 (item 21,22)	0,566	-0,023
Parcel 8 (item 12)	0,038	0,405
Parcel 9 (item 24)	0,479	0,110

Intercorrelations of Factors

Variables	**Factor 1**	**Factor 2**
Factor 1	1,000	-0,148
Factor 2	-0,148	1,000

Extraction Method: Principal Axis Factoring
Rotation Method: Oblimin with Kaiser Normalization

TABLE 6

ITEM AGGREGATES OF THE PIB/SPEEX SOCIALISATION INDEX

Sociability (20 items)					Non-Sociability (20 items)				
SS1	S4	S5	S6	S8	AA1	A1	A2	A3	A7
SS2	S9	S11	S12	S13	AA2	A10	A16	A21	A23
SS3	S14	S15	S17	S18	AA3	A24	A25	A27	A29
SS4	S19	S20	S22	S26	AA4	A30	A31	A32	A33
SS5	S28	S34	S38	S40	AA5	A35	A36	A37	A39

TABLE 7

DESCRIPTIVE STATISTICS

	Mean	Standard deviation	Coefficient of Skewness	Coefficient of kurtosis
SS1	5.503	1.064	-0.917	0.924
SS2	5.205	1.043	-0.524	0.081
SS3	5.420	0.948	-0.687	0.755
SS4	5.346	1.021	-0.604	0.413
SS5	4.915	1.161	-0.393	-0.219
AA1	3.018	1.070	0.236	-0.436
AA2	2.882	0.993	0.392	0.333
AA3	2.658	0.963	0.477	0.212
AA4	3.066	0.948	0.099	-0.210
AA5	2.589	1.047	0.415	-0.394

TABLE 8

FIT INDICES IN RESPECT OF THE DIFFERENT CULTURAL GROUPS

Main Groups	Black (n=849)	Asian (n=840)	White (n=140)	Coloured (n=115)	Total (n=1946)
Chi-square	163,628	200,591	80,716	55,853	210,618
(df)	(34)	(34)	(34)	(34)	(34)
CFI	0,932	0,932	0,898	0,936	0,932
NNFI	0,910	0,910	0,865	0,915	0,910
IFI	0,932	0,932	0,900	0,938	0,932
RMSEA	0,068	0,077	0,099	0,075	0,074

TABLE 9

RESULTS OF THE MULTIPLE-GROUP ANALYSIS

Model	X²	Df	ΔX²	Δdf	CFI	NNFI	IFI	RMSEA
Null model	5392.440	180						
Nested models								
Equal factor model	502.612	136	N/A	N/A	0.930	0.907	0.930	0.038
Equal factor variances	516.875	142	14.263	6	0.928	0.909	0.929	0.037
Equal factor covariances	545.402	145	28.527**	3	0.923	0.905	0.924	0.038
Equal factor loadings	577.321	169	31.919	24	0.922	0.917	0.922	0.036

Statistical significance: **=p≤0,01