

**THE CROSS-CULTURAL APPLICATION OF THE SOCIAL
AXIOMS SURVEY IN THE SOUTH AFRICAN POLICE
SERVICE**

A Barnard, Hons BA

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COMMENTS

The reader should keep the following in mind:

- The editorial style as well as the references referred to in this mini-dissertation follow the format prescribed by the Publication Manual (4th edition) of the American Psychological Association (APA). This practice is in line with the policy of the Programme in Industrial Psychology of the North-West University, Potchefstroom Campus, to use the APA style in all scientific documents.
- The mini-dissertation is submitted in the form of a research article.

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ABSTRACT

Title: The cross-cultural application of the Social Axioms Survey in the South African Police Service.

Key terms: Social beliefs, generalised beliefs, social axioms, cross-cultural assessment, equivalence, police, language.

Beliefs are social in nature, and are widely shared within social groups, such as cultures. Shared beliefs reflect how people construct their social world and how they seek meaning and understanding of social realities, and they are context specific. General beliefs are context-free and related to a wide spectrum of social behaviours across diverse contexts, actors, targets and periods. These general beliefs function like axioms in mathematics, thus they are basic premises that people endorse and on which they rely to guide their actions. A better understanding of beliefs can therefore be a useful instrument in managing a diverse workforce, such as the workforce found in South Africa.

The objectives of this study were to investigate the replicability of the Social Axioms Survey (SAS) in the South African Police Service (SAPS), to examine the construct equivalence and item bias, and to assess the reliability. A cross-sectional survey design was used. The study population consisted of applicants ($N=1535$) who applied for jobs in the SAPS. The SAS instrument was administered. Descriptive statistics, exploratory and confirmatory factor analyses, scale and item level analysis and estimation of reliability were used to analyse the results.

An exploratory factor analysis utilising target rotation applied on all 60 items of the SAS revealed four interpretable factors (Factor 1 = Social Cynicism; Factor 2 = Reward for Application; Factor 4 = Fate Control; and Factor 5 = Spirituality/Religiosity) congruent with the model of Leung et al. (2002). The third factor, namely Social Complexity did not replicate. Values of Tucker's phi higher than 0,90 were found for seven culture groups (Zulu, Sotho, Tswana, Swati, Tsonga, Venda and Pedi). This provided a strong indication of the structural equivalence. Analyses of variance showed that item bias was not a major disturbance. Cronbach's alpha reported lower levels of reliability.

Recommendations for future research were made.

OPSOMMING

Titel: Die kruiskulturele gebruik van die Sosiale Aksioma-opname in die Suid-Afrikaanse Polisiediens.

Sleutel terme: Sosiale mening, veralgemeende menings, sosiale aksioma, kruiskulturele taksering, ekwivalensie, polisie, taal.

Menings is sosiaal van aard en word ruim gedeel in sosiale groepe, soos kultuurgroepe. Gedeelde menings reflekteer hoe mense hul sosiale wêreld konstrueer en betekenis soek vir sosiale realiteite, en dit is kontekstspesifiek. Veralgemeende menings is vry van enige konteks en hou verband met 'n wye spektrum van sosiale gedrag oor verskeie kontekste, akteurs, teikens en periodes. Hierdie veralgemeende menings funksioneer soos aksioma in wiskunde, en dit vorm dus die basis wat mense se gedrag rig. Meer kennis van dié menings kan daarom as 'n waardevolle instrument dien vir die bestuur van 'n diverse werkerskorps, soos wat gevind word in Suid-Afrika.

Die doel van hierdie studie was om die repliseerbaarheid van die vyffaktorstruktuur van die Sosiale Aksioma-opname (SAO) in die Suid-Afrikaanse Polisiediens (SAPD) te ondersoek en om die konstrukekwivalensie, itemsydigheid en betroubaarheid te bepaal. 'n Dwarssnee-opname-ontwerp is gebruik. Die studiepopulasie het bestaan uit aansoekers ($N=1535$) wat aansoek gedoen het vir poste in die SAPD. Die SAO is as meetinstrument gebruik. Beskrywende statistiek, verkennende en bevestigende faktoranalise, skaal- en itemvlakanalise en skatting van betroubaarheid is gebruik om die resultate te ontleed.

Toepassing van 'n verkennende faktoranalise met teikenrotasie op al 60 items van die SAO het vier interpreteerbare items opgelewer (Faktor 1 = Sosiale Sinisme; Faktor 2 = Vergoeding vir Toepassing; Faktor 4 = Noodlotbeheersing; Faktor 5 = Geestelikheid/Godsdiensdigheid) ooreenstemmend met die model van Leung et al. (2002). Die derde faktor, naamlik Sosiale Kompleksiteit, het nie gerepliseer nie. Tucker se π -waardes groter as 0,90 is gevind vir sewe kultuurgroepe (Zulu, Sotho, Tswana, Swati, Tsonga, Venda en Pedi). Dit het 'n goeie aanduiding gegee van die onderliggende strukturele ekwivalensie. 'n Variansie-analise het

getoon dat itemsydigheid nie 'n wesenlike steuring is nie. Cronbach se alfa het laer vlakke van betroubaarheid gerapporteer.

Aanbevelings vir toekomstige navorsing is aan die hand gedoen.

CHAPTER 1

INTRODUCTION

This mini-dissertation focuses on the cross-cultural application of the Social Axioms Survey in the South African Police Service (SAPS).

This chapter contains the problem statement and a discussion of the research objectives, in which the general objective and specific objectives are set out. The research method and the division of chapters are explained.

1.1 PROBLEM STATEMENT

South Africa has 11 official language groups and as many cultures, making the South African context unique. This creates an environment that is clearly differentiated in terms of culture, race, ethnical grouping, values and attitudes (Nel et al., 2001). With reference to these diverse cultures in South Africa, Mbigi (1993) explains that diverse values and attitudes may be the cause of conflict and stress between different culture groups. Values and attitudes may therefore be the reason for bad relations between different culture groups. With intercultural contact increasing radically with globalisation in the past few years, research attempts to comprehensively describe cross-cultural dynamics. These studies therefore aim to determine the similarities and differences in certain psychological constructs across different cultures (Van de Vijver & Leung, 2001).

Cross-cultural research does not only refer to studies across different nations. It also refers to studies in one country or even one community, because culture differences are experienced within that specific country or community (Scholtz, 2004). The value system, attitude and interaction of groups in these multicultural communities can differ (Brislin 1994; Triandis, 1994), resulting in cultural diversity.

Researchers have extensively examined the concept of culture through values (Singelis, Hubbard, Her, & An, 2003). Culture has traditionally been defined in terms of values (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004), and the attempts of social scientists to incorporate culturally distinctive values into measurements have resulted in the mapping of

the value universe (Bond, Leung, Au, Tong, Reimel de Carrasquel, et al., 2004; Leung & Bond, 2004). This made it possible to make comparisons between the value profiles of representative persons who had been socialised into different cultures (Leung & Bond, 2004). Research also provided substantial evidence that the theory of basic human values applies across a wide range of cultures (Schwartz et al., 2001).

According to Leung et al. (2002) and Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004), value dimensions have predominantly been the construct used to guide cross-cultural research, which ensured valuable progress (e.g., Hofstede, 1980; Schwartz, 1992). However, attempts to predict behaviour based on an individual's value priorities have often yielded unsatisfactory results (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). Despite this predictive weakness, values are regularly deployed to account for cross-cultural differences in behaviour (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). Values may therefore help in understanding a culture, but they often have less to do with the actual concrete, everyday behaviours (Kurman & Ronen-Eilon, 2004). The values perspective has therefore been influential in defining ways that researchers compare cultures and explain differences in social behaviour.

However, we need additional dimensions by means of which we can identify cultures and understand cultural variations (Singelis et al., 2003). Because the structure of a value is fairly similar to that of a belief, certain researchers have actually regarded a value as an evaluative belief (Leung & Bond, 2004; Leung et al., 2002). Kurman and Ronen-Eilon (2004) argue that values describe endorsed endpoints (such as basic rights are important), but not how these endpoints should be achieved. The linkages among constructs that are orientated toward how to achieve these specific endpoints (for instance that mutual respect helps maintain basic human rights) are considered to be social beliefs.

People need assumptions of how their social worlds function. These assumptions, often expressed as beliefs, are known as implicit or lay theories. Although researchers have identified structures underlying lay beliefs in domains that interest them, no attempt has been made to search for and develop a context-free structure of lay beliefs. In addition, beliefs are social in nature, and hence are widely shared (e.g., patriotism, security, siege, etc.) within social groups (Chen, Bond, & Cheung, 2006), such as cultures. Shared beliefs reflect how people construct their social world, seek meaning and understanding of social realities, and

are context specific. Beliefs are key components of attitudes. Furthermore, beliefs have been extensively used as individual differences variables (Chen et al., 2006) to explain and predict social behaviour. In this tradition, belief scales have been developed and their usefulness demonstrated by significant relationships with a variety of variables.

Individual beliefs about human nature have shown to relate to various interpersonal behaviours. While belief items are found in many scales in the individual differences literature, they are often mixed together with items that tap values or behaviours. This merging creates theoretical ambiguity and imprecision in model development (Leung & Bond, 2004). According to Leung and Bond (1989), analysis at the individual level (e.g., Schwartz, 1992), should not be confused with those at the cultural level (e.g., Hofstede, 1980). Hence, scales that are based entirely on beliefs are rare (Leung & Bond, 2004).

Beliefs, unlike values, vary in specificity (Leung et al., 2002) in that some beliefs are classified as general and may be viewed as generalised expectancies (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004; Kurman & Ronen-Eilon, 2004; Leung et al., 2002). These general beliefs function like axioms in mathematics, implying that these beliefs are basic premises that people endorse and on which they rely to guide their actions (Leung & Bond, 2004; Leung et al., 2002). Therefore, the label *social axiom* is used, as these beliefs are axiomatic in that they are often assumed to be true as a result of personal experience and socialisation (Leung & Bond, 2004; Singelis et al., 2003). Social axioms have thus been proposed as an additional framework to complement the values perspective (Singelis et al., 2003).

Bem (1970) has defined a belief as a perceived relationship that exists between two things or between something and a characteristic of it. Bar-Tal (1990, p. 14) has defined a belief as “[a] proposition to which a person attributes at least a minimal degree of confidence. A proposition, as a statement about an object(s) or relations between objects/or attributes, can be of any content.” Based on these definitions and various other definitions of beliefs, social axioms have been defined as “generalized beliefs about oneself, the social and physical environment, or the spiritual world, and are in the form of an assertion about the relationship between two entities or concepts” (Leung et al., 2002, p. 289).

A social axiom proposes a basic premise in the form of an assertion in which a relationship between two entities or concepts is formed (Singelis et al., 2003). The relationship between them can be through a correlation or it can be causal (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004; Leung & Bond, 2004; Leung et al., 2002). The belief statement, “Hard work leads to reward”, for example, asserts that a causal relationship exists between “hard work” (labour) and “reward” (positive outcomes for the labourer). It is therefore a general statement, as there are many forms of “hard work”, just as there are many forms of “reward”. Furthermore, it is not an attitude or value, as the respondent is neither assessing the desirability of “hard work”, nor that of “reward”. Hence, beliefs are different from values, in the sense that the evaluative component of a value is general, while it is specific for a belief (Leung & Bond, 2004). If the desirability pole of an evaluative belief becomes specific, it turns into a social axiom (Leung & Bond, 2004; Leung et al., 2002). Axioms are therefore truth statements for the actor, as they do not assess desired goals (Leung & Bond, 2004).

Social axioms are a newly added construct in the scientific assemblage, and even though research on social axioms is just beginning, it should justify its existence by improving our scientific reach. Social axioms, or people’s beliefs about how the world functions, provide a different type of general orientation that may add to the predictive power of values (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). It also involves more than values, as it contributes to our understanding of social functioning by capturing important features of a culture that are different from those reflected by values. Social axioms have four functions: they promote important social goals, help people defend their self-esteem, express values, and help people understand the world (Kurman & Ronen-Eilon, 2004; Leung et al., 2002). The importance of these functions in a multi-cultural South African context, for example, are supported by Mbigi (1993), who argues that harmony can only be created when mutual values are experienced or accepted by the different groups.

According to Leung and Bond (2004), social axioms function like other individual differences constructs, with their own nomological networks linking them to constructs such as values, and combining with these other psychological constructs to generate behaviour. Kurman and Ronen-Eilon (2004) therefore argue that social axioms are axiomatic beliefs that can guide behaviour in certain situations.

Social axioms add predictive power over and above that provided by values, and therefore seem to offer a valuable new way for researchers to examine and explore various topics within the boundaries of social psychology. It can be asserted that values and social beliefs are two different domains of discourse, as the correlations found between these two constructs were relatively low or even absent. Hence, values are perceived as tapping self-aware motivational systems, while social axioms tap conceptions of the social context within which an actor must navigate his/her behaviour in negotiating outcomes from the world (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004).

Based on qualitative research and Western literature on beliefs, Leung et al. (2002) have identified a set of pan-cultural social axioms, and accordingly developed the Social Axiom Survey (SAS) to identify universal dimensions of culturally related social beliefs (Singelis et al., 2003) consisting of a five-factor structure (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004) of general beliefs (i.e., social axioms). These five factors or social axioms are labelled as *social cynicism*, *reward for application*, *social complexity*, *fate control* and *spirituality* (later re-labelled *religiosity* by Leung & Bond, 2004).

The SAS is a pure measure of beliefs, and by measuring only beliefs, the SAS can be distinguished from other measures, and may provide information on the relative contributions of beliefs and values to behaviours (Singelis et al., 2003). The SAS is also the first systematic effort at developing a scale that is based entirely on belief statements (Leung et al., 2002). Because one of the functions of social axioms is to guide behaviour, the SAS may even be helpful in understanding and predicting cultural differences in social behaviour such as interpersonal communication and goal setting, for example Singelis et al. (2003).

Unlike Hofstede's (1980) work on values, which focuses on the cultural level (not the individual level), but similar to Schwartz's (1992) analysis of value types within cultural groups, the SAS (Leung et al., 2002) is pitched at the individual level, and examines whether a stable factor structure of beliefs can be identified among individuals in different cultural groups. By following a functionalist approach similar to that of Schwartz's (1992) search for a universal structure of values, Leung and Bond (2004) propose that social axioms, like values, are instrumental for individuals in coping with a set of universal problems of survival and functioning. Social axioms are therefore an individual cognitive form of organisation, guidance and regulation that would facilitate adaptation to cultural environments

characterised by certain reinforcement conditions. The structure underlying these axioms should also be identifiable in different cultural groups with diverse backgrounds. The commonality of the basic problems that all human beings face should therefore lead to the emergence of a pan-cultural structure of social axioms. Thus social axioms, or general beliefs about the world, will most likely relate to social behaviours across contexts, actors, targets and time (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004).

A global research programme designed to evaluate the universality and meaning of this structure has applied the 60-item Social Axiom Survey developed by Leung et al. (2002) in a round-the-world survey (see <http://www.personal.cityu.edu.hk/~mgalau/satest.htm>). The goal of this project on social axioms is to identify and itemise factors across a wide range of cultures. Data collected in 40 participating national/cultural groups (Leung & Bong, 2004) provided strong support for the generality of this five-factor structure. South Africa was not one of the 40 participating national/cultural groups, but with its diverse cultural groups and eleven official languages it almost seems logical to apply and test the universality of the 60-item Social Axiom Survey in a South African context.

Kurman and Ronen-Eilon (2004) show that social axioms are a useful tool to characterise and understand cultures. Hence, findings support the capability of social axioms to describe basic, unique characteristics of a culture. However, more data is needed to verify the suggested universality of the existing Social Axiom Survey (Kurman & Ronen-Eilon, 2004). Application of the SAS in a multi-cultural South African context can therefore assist with data to test the universality and equivalence of the Social Axiom Survey.

Subsequent research conducted by Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004) was designed to reveal the culture level factor structure of social axioms and its correlates across 41 nations. Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004) collected individual measures of belief taken from persons in 41 nations (including South Africa), and treated the data at the cultural level in their analysis (the South African data, however, was excluded in the factor analysis). Leung and Bond (2004) point out that one must keep in mind that individual-level and cultural-level analysis have no logical relationship with each other (e.g., Leung, 1989). Subsequent results and interpretations have therefore reference to nations, and not individuals. As a result, their aim was to discover the dimensions of social axioms that are identifiable at the cultural-level and to compare these

culture-level dimensions of social axioms with culture level dimensions of values in order to evaluate their degree of overlap. Each nation obtained an average score per item, and these 60-item averages were then factor analysed. Although South Africa was one of the participating 41 nations, its data was not included in the factor analysis (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004).

Theories that aspire to be universal must be tested in numerous culturally diverse samples (Schwartz & Bilsky, 1990), irrespective of the fact that logistics prevent anyone from studying all cultures, which is required for a decisive conclusion of universality (Schwartz, 1992; Schwartz & Bilsky, 1990). A pan-cultural factor analysis therefore includes all the subjects measured, ignoring their culture of origin. Furthermore, to build a truly universal theory that takes into account the influence of culture one must be able to link observed cultural differences to specific dimensions of culture that are hypothesised to have produced the differences (Leung & Bond, 1989). Cross-cultural research also involves various steps that can generate random and systematic errors, for example, procedures followed in administering of questionnaires (Van de Vijver & Leung, 1997b) which jeopardise any real chance to identify a congruence structure, even if it does exist (Leung & Bond, 2004). In order to deal with comparability, the concepts of equivalence and bias have been developed (Van de Vijver & Leung, 2001).

According to Van de Vijver and Leung (2001), equivalence refers to the effects of bias on the comparability of constructs and test scores across cultural groups. Equivalence can also be described as the “lack of bias” as it is usually regarded from a measurement-level perspective (Van de Vijver & Tanzer, 1997). Three types of equivalence are distinguished, namely structural (construct) equivalence, measurement equivalence and scalar (full-scale) equivalence (Van de Vijver & Leung, 1997b). Van de Vijver and Leung (1997b) argue that in order to compare the factorial structure of two groups, a level of equivalence needs to be established. Item bias (or differential item functioning), on the other hand, refers to anomalies at item level. The assumption is that an item is unbiased if persons from different cultures with an equal standing on the theoretical construct underlying the instrument have the same expected score on the item (Van de Vijver & Leung, 1997b).

The investigation of the construct equivalence and item bias of beliefs as measured by the Social Axioms Survey (SAS) will assist in the identification of a stable factor structure of

beliefs as well as items that show anomalies. Social axioms therefore provide an alternative perspective for investigating cultural similarities and differences, which are difficult to explain by values (Leung & Bond, 2004).

South Africa has 11 official language groups and as many cultures; yet Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004), in their factor analysis of 41 nations, did not include any South African SAS data. This situation brings many questions to mind, such as:

- How will the SAS function in a multicultural context such as in the SAPS?
- Would the five-factor structure of the SAS be replicated in the SAPS?
- Will the SAS show construct equivalence across different culture groups in the SAPS?
- Are the items of the SAS biased?
- What is the reliability of the SAS in the SAPS?

1.2 RESEARCH OBJECTIVES

The research objectives are divided into general objectives and specific objectives.

1.2.1 General objectives

The general objective of this study is to investigate how the Social Axioms Survey (SAS) functions in a multicultural context such as South Africa.

1.2.2 Specific objectives

The specific objectives of this study are as follows:

- To investigate the replicability of the five-factor structure of the Social Axioms Survey (SAS) as proposed by Leung et al. (2002) in the SAPS.
- To assess the construct equivalence of the SAS across different culture groups in the SAPS.
- To investigate the item bias of the items of the SAS.
- To assess the reliability of the SAS in the SAPS.

1.3 RESEARCH METHOD

The research method involves a literature review and an empirical study. The results obtained will be presented in the form of a research article.

1.3.1 Literature review

The literature review focused on generalised beliefs, social axioms and their application in cross-cultural settings.

1.3.2 Research design

To reach the desired research objectives, a cross-sectional survey design (thus, research that takes a “slice of time” and compares subjects on one or more variables simultaneously) was used (Rosnow & Rosenthal, 1999). A sample drawn from a population at a specific time and the information collected in this manner were used to describe the population at that time (Graziano & Raulin, 2004). Graziano and Raulin (2004) describe this design as being suited to the descriptive and predictive functions associated with correlational research.

1.3.3 Participants

The study population consisted of police applicants ($N = 1\ 535$) who were recruited for the basic training programme for the SAPS. The sample included mainly black groups (98%), along with three other groups (white, coloured and Asian). However, the three smaller groups were excluded due to small sample sizes. In terms of gender, 70% ($n = 1\ 136$) were men and 22% ($n = 336$) were women (63 missing values). The Black group consisted of the following seven cultural groups: Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$) (2 missing values). The Xhosa and the Ndebele groups were excluded due to small sample sizes. The mean age of the sample group was 26 years ($SD = 3,18$). The entry-level qualification for the police is grade 12, and for 95% of the sample group this was their highest qualification, while 3,7% had a degree, diploma or a postgraduate qualification.

1.3.4 Measuring instrument

The Social Axioms Survey (SAS), which was developed by Leung et al. (2002) to investigate if certain cultural beliefs were universal, was utilised in this study. The *Survey on Social Beliefs Questionnaire* consists of 60 social axiom statements (Leung et al., 2002). The SAS required respondents to rate on a five-point Likert scale the degree to which they believe each of the 60-items to be true, ranging from 1 (*strongly disbelieve*), to 5 (*strongly believe*). Five social axiom factors were included: social cynicism (18 items), social complexity (12 items), reward for application (14 items), religiosity (eight items), and fate control (eight items). The variances which accounted for these five factors are 8,89%, 7,94%, 5,22%, 4,09% and 3,28% respectively (Leung, et al., 2002). Internal consistencies (Cronbach coefficient alphas) reported by Bond, Leung, Au, Tong, and Chemonges-Nielson (2004) varied from 0,79 to 0,37 for social cynicism, 0,67 to 0,33 for social complexity, 0,72 to 0,33 for reward for application, 0,78 to 0,49 for religiosity, and 0,59 to 0,31 for fate control.

1.3.5 Data analysis

The statistical analysis was carried out with the help of the Comprehensive Exploratory Factor Analysis-program (CEFA) of Brown, Cudeck, Tateneni, and Mels (1998). For structural equivalence, item bias and the reliability, the Statistica Version 7.1 programme was used (<http://www.statsoft.com>) (Statistica, 2005).

The *first step* entailed the cleaning of the data set by replacing missing values with the mean value of the total group for a particular item. Variables that had more than 20% missing data were rejected from the final data file. The *second step* in data analysis utilised exploratory factor analysis with varimax (normalised) rotation. In this step an indication of the number of factors that could be abstracted is obtained by utilising the eigenvalues greater than 1 criterion as well as the scree plot. In the *third step*, target rotation was employed. A target matrix was specified and an oblique rotation was performed so as to minimise the sum of squares of differences of rotated elements and corresponding specified target elements.

In the *fourth* and *fifth* steps, construct bias and item bias were addressed in two series of analyses. The first involved scale-level analyses and examined the similarity of the factors underlying the SAS, whereas the second addressed bias at item level of the SAS instrument.

A scale-level analysis (construct bias) was conducted. A two-step procedure was used to examine construct bias, which is based on exploratory factor analysis. In the first step the covariance matrices of all the cultural groups were combined (weighted by sample size) in order to create a single, pooled data matrix (cf. Muthén, 1991, 1994). Factors derived from this pooled covariance matrix define the global solution, with which the factors obtained in the separate cultural groups were compared (after target rotation to the pooled solution). The agreement was evaluated by means of a factor congruence coefficient, Tucker's phi (Chan, Ho, Leung, Cha, & Yung, 1999; Van de Vijver & Leung, 1997a, 1997b). Values above 0,90 are taken to point to essential agreement and values above 0,95 to very high agreement. High agreement implies that the factor loadings of the lower and higher level are equal up to a multiplying constant. (The latter is needed to accommodate possible differences in the eigenvalues of factors for the language groups). Item bias analysis was undertaken by utilising the analysis of variance of the SAS items. The item score was the dependent variable, while culture and score levels were the independent variables. A significant main effect of the culture group was taken to point to uniform bias, and a significant interaction of score level and culture interaction pointed to non-uniform bias. In the *final step* of the analysis the reliability scores of the SAS factors for the different language groups were estimated.

1.4 RESEARCH PROCEDURE

The SAS was administered. Ethical aspects of the research were discussed with the participants. The test battery was administered on one occasion at the Police College in Pretoria. The group consisted of police applicants who had been recruited for the basic training programme of the SAPS.

1.5 DIVISION OF CHAPTERS

The chapters are presented as follows in the mini-dissertation:

Chapter 1: Introduction

Chapter 2: Research article

Chapter 3: Conclusions, limitations and recommendations.

1.6 CHAPTER SUMMARY

This chapter discussed the problem statement and research objectives. The measuring instruments and research method used when doing the research were explained. A brief overview of the chapters followed.

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THE CROSS-CULTURAL APPLICATION OF THE SOCIAL AXIOMS SURVEY IN THE SOUTH AFRICAN POLICE SERVICE

ABSTRACT

The objectives of this study were to investigate the replicability, construct equivalence, item bias and reliability of the Social Axioms Survey (SAS) in the South African Police Service (SAPS). A cross-sectional survey design was used. The participants consisted of applicants who had applied for jobs in the SAPS ($N = 1535$). The SAS was administered. An exploratory factor analysis utilising target rotation applied on all 60 items of the SAS revealed four interpretable factors (Social Cynicism, Reward for Application, Fate Control, and Spirituality/Religiosity) congruent with the model of Leung et al. (2002), but the third factor, Social Complexity, did not replicate. Values of Tucker's phi higher than 0,90 were found for seven language groups (Zulu, Sotho, Tswana, Swati, Tsonga, Venda and Pedi). Analyses of variance found that item bias were not a major disturbance. Cronbach's alpha reported lower levels of reliability.

OPSOMMING

Die doel van hierdie studie was om die repliseerbaarheid, konstruekwivalensie, itemsydigheid en betroubaarheid van die Sosiale Aksiome-opname (SAO) te bereken in die Suid-Afrikaanse Polisie Diens (SAPD). 'n Dwarsnee-opname-ontwerp is gebruik. Die studiepopulasie het bestaan uit aansoekers wat aansoek gedoen het vir poste in die SAPD ($N = 1535$). Die SAO is as meetinstrument gebruik. Toepassing van 'n verkennende faktoranalise met teikenrotasie op al 60 items van die SAO het vier interpreteerbare faktore onthul (Faktor 1 = Sosiale Sinisme; Faktor 2 = Vergoeding vir Toepassing; Faktor 4 = Noodlot Beheersing; Faktor 5 = Geestelikheid/Godsdienstigheid), in ooreenstemming met die model van Leung et al. (2002). Die derde faktor, Sosiale Kompleksiteit, het nie gerepliseer nie. Tucker se pi-waardes groter as 0,90 is gevind vir sewe kultuurgroepe (Zulu, Sotho, Tswana, Swati, Tsonga, Venda en Pedi). 'n Variansie-analise het getoon dat itemsydigheid nie 'n wesentlike steuring is nie. Cronbach se alfa het lae vlakke van betroubaarheid gerapporteer.

Researchers have extensively examined the concept of culture through values (Singelis, Hubbard, Her, & An, 2003). Culture has traditionally been defined in terms of values (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004), and the attempts of social scientists to incorporate culturally distinctive values into measurements have resulted in the mapping of the value universe (Bond, Leung, Au, Tong, et al., 2004; Leung & Bond, 2004). This enabled comparisons to be made in the value profile of representative persons socialised into different cultures (Leung & Bond, 2004). Research also provided substantial evidence that the theory of basic human values applies across a wide range of cultures (Schwartz, 2001). Rokeach (1973) went as far as arguing that the value concept may be able to unify the apparently diverse interests of all the sciences concerned with human behaviour.

Considering the South African situation, Mbigi (1993) stipulates that diverse values and attitudes may be the cause of conflict and stress between different culture groups. The value system, attitude and interaction of groups in these multicultural communities can (and do) differ (Brislin 1994; Triandis, 1994), resulting in cultural diversity.

The values theory has the following main elements: values are beliefs; values are a motivational construct; values transcend specific actions and situations; values guide the selection or evaluation of actions, policies, people and events; and values are ordered by importance relative to one another (Schwartz, 1992, 1994b; Schwartz & Bilsky, 1990). The values perspective has also been influential in defining ways in which researchers compare cultures and explain differences in social behaviour (e.g., Kluckhohn & Strodtbeck, 1961; Rokeach, 1973; Lonner & Malpass, 1994; Schwartz, 1994).

According to Leung et al. (2002) and Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004), value dimensions have predominantly been the construct used to guide cross-cultural research, which ensured valuable progress (e.g., Hofstede, 1980; Schwartz, 1992). For example, by using theoretical considerations and the measures they suggested, Schwartz (1992) discovered a pan-cultural typology of values, at the individual level, by following a functionalist approach. However, attempts to predict behaviour based on an individual's value priorities have often yielded unsatisfactory results. Despite this predictive weakness values are regularly deployed to account for cross-cultural differences in behaviour (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). Values may therefore help to understand a

culture, but they often have less to do with actual concrete, everyday behaviours (Kurman & Ronen-Eilon, 2004).

As a result, there is a need for additional dimensions by means of which we can identify cultures and understand cultural variations (Singelis et al., 2003). Because the structure of a value is fairly similar to that of a belief, and values assume the form of “*A* is good/desirable/important” (thus, *A* is a value and its importance is determined by the importance or desirability that people attach to it), certain researchers have actually regarded a value as an evaluative belief (Leung & Bond, 2004; Leung et al., 2002).

Lonner and Malpass (1994) have argued that values are general beliefs about desirable or undesirable ways of behaving and about desirable or undesirable goals or end states. In this regard Kurman and Ronen-Eilon (2004) argue that values describe endorsed endpoints (implying that basic rights are important), but not how these endpoints should be achieved. The linkages among constructs that are orientated toward how to achieve these specific endpoints (thus, mutual respect helps maintain basic human rights) are considered to be social beliefs.

Beliefs are key concepts in the social sciences such as psychology, anthropology, and political science, and Bar-Tal (2000) has given a historical review of the study of shared beliefs, tracing it back as far as the roots of Wundt and Durkheim. Probably the most familiar work in this tradition, inspired by the work of Durkheim on collective representation, is that of the social representations theory initiated by Moscovici more than 50 years ago (Leung & Bond, 2004). The social representations theory, however, has been highly criticised for its vagueness, and especially for its poor construction of its concepts (e.g., Jahoda, 1988; Markus & Plaut, 2001). In addition, lay beliefs have been studied in many domains for more than three decades, and the root of this work is often traced back to Heider’s (1958) simplistic analysis of actions (Leung & Bond, 2004). Kelly (1963) added the notion of the personal construct, which people use to perceive and interpret events and to take a course of action, Furnham (1988) provides an overview of lay theories, and many more exciting findings of structures underlying lay beliefs in domains that have interested researchers have been documented, but no attempt has been made to search for a basic structure of beliefs that is domain general (Leung & Bond, 2004). Independent but related to the study of lay theories, the processes underlying the formation and change of beliefs were developed. Festinger’s

(1957) work on cognitive dissonance pioneered the research on process models of beliefs. Beliefs studied in this tradition have been domain specific, and once again not intended to discover a general structure of beliefs (Leung & Bond, 2004). Review of the major research on beliefs has therefore made it clear that the concept belief is a prominent construct in psychology and also that significant discoveries have been made about the content of beliefs in different domains and their underlying psychological processes. One cannot help to observe, however, that findings in these diverse areas are typically tied to a particular context, and referring back to the work on beliefs in social representations and lay theories, it is evident that a theoretical scheme for organising beliefs into a coherent structure is needed (Leung & Bond, 2004).

Beliefs

People need assumptions of how their social worlds function. These assumptions, often expressed as beliefs, are known as implicit or lay theories. Although researchers have identified structures underlying lay beliefs in domains that interest them, no attempt has been made to search for and develop a context-free structure of lay beliefs. In addition, beliefs are social in nature, and are therefore widely shared (e.g., patriotism, security, and siege) within social groups (Chen, Bond, & Cheung, 2006), such as cultures. Shared beliefs reflect how people construct their social world and seek meaning and understanding of social realities, and they are context specific (Leung & Bond, 2004).

Given that beliefs are key components of attitudes, process models of beliefs have appeared along with the process models of attitudes. Subsequently, the most well known research on psychological processes underlying beliefs is probably that of exploring the self-fulfilling prophecy. However, beliefs studied in this tradition tend to be textured and domain specific, and as a result the discovery of a context-free structure to beliefs has not been a goal of this research (Leung & Bond, 2004). Furthermore, beliefs have been extensively used as individual differences variables (Chen, Bond, & Cheung, 2006) to explain and predict social behaviour. In this tradition, belief scales have been developed and their usefulness demonstrated by significant relationships with a variety of variables (Leung & Bond, 2004).

Individual beliefs about human nature have shown to relate to various interpersonal behaviours. While belief items are found in many scales in the individual differences

literature, they are often mixed together with items that tap values or behaviours. This merging creates theoretical ambiguity and imprecision in model development (Leung & Bond, 2004). According to Leung and Bond (1989), analysis at the individual level (e.g., Schwartz, 1992), however, should not be confused with those at the cultural level (e.g., Hofstede, 1980). Hence scales that are based entirely on beliefs are rare (Leung & Bond, 2004).

Social axioms

Beliefs, unlike values, vary in specificity (Leung et al., 2002), and some beliefs are classified as general and may be viewed as generalised expectancies (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004; Kurman & Ronen-Eilon, 2004; Leung et al., 2002), while other beliefs are anchored in a context, defined by actors involved and tied to a particular setting in a given time period. Specific beliefs, on the other hand, are only applicable to a narrow range of situations and actors. In contrast, general beliefs are pitched at a high level of abstraction, are context-free and are related to a wide spectrum of social behaviours across diverse contexts, actors, targets and time periods. These general beliefs function like axioms in mathematics, in the sense that these beliefs are basic premises that people endorse and rely on to guide their actions (Leung & Bond, 2004; Leung et al., 2002). Hence the label *social axiom* is used, as these beliefs are axiomatic in that they are often assumed to be true as a result of personal experience and socialisation (Leung & Bond, 2004; Singelis et al., 2003), but not as a result of scientific validation (Leung et al., 2002). Social axioms have therefore been proposed as an additional framework to complement the values perspective (Singelis et al., 2003).

Bem (1970) defines a belief as a perceived relationship that exists between two things or between something and a characteristic of it. Bar-Tal (1990, p. 14) has defined a belief as “[a] proposition to which a person attributes at least a minimal degree of confidence. A proposition, as a statement about an object(s) or relations between objects/or attributes, can be of any content.” Based on these definitions and various other definitions of beliefs, social axioms have been defined as “generalized beliefs about oneself, the social and physical environment, or the spiritual world, and are in the form of an assertion about the relationship between two entities or concepts” (Leung et al., 2002, p. 289).

The definition of social axioms implies the structure of *A* is related to *B*, where *A* and *B* can be any entities (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004; Leung & Bond, 2004; Leung et al., 2002). A social axiom proposes a basic premise in the form of an assertion in which a relationship between two entities or concepts is formed (Singelis et al., 2003). The relationship between them may be through a correlation or it may be causal (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004; Leung & Bond, 2004; Leung et al., 2002). The belief statement, “Hard work leads to reward”, for example, asserts that a causal relationship exists between “hard work” (labour) and “reward” (positive outcomes for the labour). It is therefore a general statement, as there are many forms of “hard work”, just as there are many forms of “reward”. Furthermore, it is not an attitude or value, as the respondent is neither assessing the desirability of “hard work”, nor that of “reward”. Hence, beliefs are different from values, in the sense that the evaluative component of a value is general, while it is specific for a belief (Leung & Bond, 2004). If the desirability pole of an evaluative belief becomes specific, it turns into a social axiom (Leung & Bond, 2004; Leung et al., 2002). Axioms are therefore truth statements for the actor, as they do not assess desired goals (Leung & Bond, 2004).

Social axioms are a newly added construct in the scientific assemblage, and even though research on social axioms is just beginning, it should justify its existence by improving our scientific reach. Social axioms, or people’s beliefs about how the world functions, provide a different type of general orientation that may add to the predictive power of values (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). It also involves more than values, as it contributes to our understanding of social functioning by capturing important features of a culture that are different from those reflected by values. Social axioms have four functions: they promote important social goals, help people defend their self-esteem, express values, and help people understand the world (Kurman & Ronen-Eilon, 2004; Leung et al., 2002).

According to Leung and Bond (2004), social axioms function like other individual differences constructs, with their own nomological networks linking them to constructs such as values, and combining with these other psychological constructs to generate behaviour. Kurman and Ronen-Eilon (2004) therefore argue that social axioms are axiomatic beliefs that can guide behaviour in certain situations.

Social axioms add predictive power over and above that provided by values, and therefore seem to offer a valuable new way for researchers to examine and explore various topics within the boundaries of social psychology. It can be asserted that values and social beliefs are two different domains of discourse, as the correlations found between these two constructs were relatively low or even absent. Hence values are perceived as tapping self-aware motivational systems, while social axioms tapped conceptions of the social context within which an actor must navigate his/her behaviour in negotiating outcomes from the world (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004).

Based on qualitative research conducted in Hong Kong and Venezuela, as well as Western literature on beliefs, Leung et al. (2002) have identified a set of pan-cultural social axioms, and accordingly developed the Social Axiom Survey (SAS) to identify universal dimensions of culturally related social beliefs (Singelis et al., 2003) consisting of a five-factor/dimensional structure (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004) of general beliefs (i.e., social axioms). This study was also replicated in the U.S.A., Japan, and Germany, indicating that they may be cultural general (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004). These five factors or social axiom dimensions are labelled as *social cynicism*, *reward for application*, *social complexity*, *fate control* and *spirituality* (later re-labelled *religiosity* by Leung & Bond, 2004). *Social cynicism* represents a negative assessment of human nature and social events (“Powerful people tend to exploit others”). *Social complexity* refers to the view that there are multiple solutions to social issues, and that the outcome of events is uncertain (“One’s behaviours may be contrary to one’s true feelings”). *Reward for application* refers to the position that the investment of human resources will lead to positive outcomes (“One will succeed if one really tries”). *Fate control* refers to the general belief that social events are influenced by impersonal, external forces (“Individual characteristics, such as appearance and birthday, affect one’s fate”). *Religiosity* refers to the view that spiritual forces influence the human world and that religious institutions exert a positive effect on social outcomes (“Belief in a religion helps one understand the meaning of life”) (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004).

Unlike Hofstede’s (1980) work on values, which focused on the cultural level (not the individual level), but similar to Schwartz’s (1992) analysis of value types within cultural groups, the social axiom surveys of Leung et al. (2002) are pitched at the individual level and examine whether a stable factor structure of beliefs can be identified among individuals in

different cultural groups. By following the same functionalist approach as Schwartz's (1992) logic for a universal structure of values, then, Leung and Bond (2004) propose that social axioms, like values, are instrumental for individuals in coping with a set of universal problems of survival and functioning. Social axioms are therefore an individual cognitive form of organisation, guidance, and regulation that would facilitate adaptation to cultural environments characterised by certain reinforcement conditions. The structure underlying these axioms should also be identifiable in different cultural groups with diverse backgrounds. The commonality of the basic problems that all human beings face should therefore lead to the emergence of a pan-cultural structure of social axioms. Thus, social axioms, or general beliefs about the world, will most likely relate to social behaviours across contexts, actors, targets and time (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004).

A global research programme designed to evaluate the universality and meaning of this structure has applied the 60-item Social Axiom Survey developed by Leung et al. (2002) in a round-the-world survey. The goal of this project on social axioms is to identify and itemise factors across a wide range of cultures. Data collected in 40 participating national/cultural groups (Leung & Bong, 2004) provided strong support for the generality of this five-factor structure. South Africa was not one of the 40 participating national/cultural groups. Social axioms therefore provide an alternative perspective for investigating cultural similarities and differences, which are difficult to explain by values (Leung & Bond, 2004).

The SAS is a pure measure of beliefs, and by measuring only beliefs, the SAS is distinguished from other measures, and may provide information on the relative contributions of beliefs and values to behaviours (Singelis et al., 2003). The SAS is also the first systematic effort at developing a scale that is based entirely on belief statements (Leung et al., 2002). Because one of the functions of social axioms is to guide behaviour, the SAS may also be helpful to understand and predict cultural differences in social behaviour such as interpersonal communication and goal setting, for example (Singelis et al., 2003).

Kurman and Ronen-Eilon (2004) show that social axioms are a useful tool to characterise and understand cultures. Hence, findings support the capability of social axioms to describe basic, unique characteristics of a culture. However, more data is needed to verify the suggested universality of the existing Social Axiom Survey (Kurman & Ronen-Eilon, 2004). The long-term objective of Bond, Leung, Au, Tong, and Chemonges-Nielson (2004) is therefore to

develop a framework based on social axioms and values for understanding the factors responsible for generating cultural similarities and differences in the social behaviour of individuals.

Theories that aspire to be universal must be tested in numerous culturally diverse samples (Schwartz & Bilsky, 1990), irrespective of the fact that logistics prevent anyone from studying all cultures, which is required for a decisive conclusion of universality (Schwartz, 1992; Schwartz & Bilsky, 1990). A pan-cultural factor analysis therefore includes all the subjects measured, ignoring their culture of origin. Furthermore, to build a truly universal theory that takes into account the influence of culture one must be able to link observed cultural differences to specific dimensions of culture that are hypothesised to have produced the differences (Leung & Bond, 1989). Cross-cultural research also involves various steps that can generate random and systematic errors, for example, procedures followed in the administering of questionnaires (Van de Vijver & Leung, 1997b) which jeopardise any real chance to identify a congruence structure, even if it does exist (Leung & Bond, 2004).

Within-culture and cross-cultural studies are also being reviewed to support the meanings of these axioms. Consequently, the research programme is designed to identify the psychological construct of general beliefs or social axioms. It is also designed to establish pan-cultural dimensions of what people hold to be true by employing a Social Axiom Survey that incorporates the psychological literature on beliefs (Leung & Bond, 2004).

Subsequent research conducted by Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004) was designed to reveal the culture level factor structure of social axioms and its correlates across 41 nations (including South Africa). Each nation obtained an average score per item, and these 60-item averages were then factor analysed. Although South Africa was one of the participating 41 nations, its data (Caucasian) were not included in the factor analysis (Bond, Leung, Au, Tong, Reimel de Carrasquel et al., 2004).

Bond, Leung, Au, Tong, Reimel de Carrasquel et al. (2004) have collected individual measures of belief taken from persons in 41 (including South Africa) nations, but they treated the data at the culture level in their analysis. Leung and Bond (2004) point out that one must keep in mind that individual-level and cultural-level analyses have no logical relationship with each other (e.g., Leung, 1989). Subsequent results and interpretations have therefore

reference to nations, and not individuals. As a result, their aim was to discover the dimensions of social axioms that are identifiable at the cultural-level and to compare these culture-level dimensions of social axioms with culture level dimensions of values in order to evaluate their degree of overlap.

The Social Axioms Survey (SAS) instrument (English Version 60 items) developed by Leung et al. (2002) to determine if certain cultural beliefs were universal, was utilised in this study. The *Survey on Social Beliefs Questionnaire* consisted of 60 social axiom statements (Leung et al., 2002, Table 1). The SAS required respondents to rate on a five-point Likert scale the degree to which they believe each of the 60-items to be true, ranging from 1 (strongly disbelieve) to 5 (strongly believe). Five social axiom factors were included: social cynicism (18 items), social complexity (12 items), reward for application (14 items), religiosity (eight items), and fate control (eight items).

Bias and equivalence

Bias can be defined as the occurrence of score differences between groups when there are no differences on the actual underlying property. It is also a generic term used for nuisance factors in cross-cultural score comparisons (Cook, Schmidt, & Brown, 1999; Van de Vijver & Leung, 1997b; Van de Vijver & Poortinga, 1997; Van de Vijver & Tanzer, 1998). If bias occurs, test score equivalence is severely challenged. The aim of bias analysis is thus to provide evidence of equivalence (Van de Vijver & Leung, 1997b).

Three types of bias can be distinguished, namely construct bias, method bias, and item bias. Construct bias occurs when the construct being assessed by a measure is not the same across groups, and the measure developed for one group, for example, does not cover all the aspects of the construct for the other group. Insufficient sampling, for instance, can lead to construct bias. Method bias contain methodological aspects confounding the comparison and constituting the true reason for differences between groups, inclusive of sample bias, instrument bias (related to instrument characteristics such as item format), and administration bias. Sources of method bias include difference in educational levels across groups, differential response styles, differential familiarity with the stimuli used, response procedures that have differential familiarity across groups, and communication problems between examinee and examiner (Van de Vijver & Lueng, 1997b; Van de Vijver & Poortinga, 1997).

Item bias refers to nuisance factors at an item level. According to Van de Vijver and Lueng (1997b), the issue of item bias is a measurement problem, and biased items can jeopardise the validity of comparisons across groups if it is not handled properly.

Equivalence is important in psychological tests administered in a multicultural society, and even more so for the unique and culture-rich South Africa. Bias, simply stated, is scores that differ with regard to the indicators of a particular construct and which do not correspond with differences in the underlying trait or ability (Van de Vijver & Tanzer, 1997). Equivalence can also be explained as the measurement level at which scores obtained for different cultures can be compared.

Construct equivalence is the most frequently studied type of equivalence, and indicate the extent to which the same construct is measured across all groups studied. When an instrument measures different constructs in different race groups, hence when inequivalence exists, no comparison can be made. The same construct is measured in the case of construct equivalence (also labelled structural equivalence) (Van de Vijver & Leung, 1997b).

The objectives of this study were to investigate the replicability, construct equivalence, item bias and reliability of the Social Axioms Survey (SAS) in the South African Police Service (SAPS).

METHOD

Research design

A cross-sectional survey design (research that takes a “slice of time” and compares subjects on one or more variables simultaneously) was used (Rosnow & Rosenthal, 1999), by means of which a sample is drawn from a population at one time to obtain the desired research objectives (Graziano & Raulin, 2004). Information collected was used to describe the population at that time. According to Graziano and Raulin (2004) this design is suited to the descriptive and predictive functions associated with correlational research.

Participants

The study population consisted of police applicants ($N = 1\,535$) who were recruited for the basic training programme for the South African Police Services (SAPS). Applicants were tested in groups of 300 during September 2004. The sample included mainly of black groups (98%), along with three other groups (white, coloured and Asian). However, the three smaller groups were excluded due to small sample sizes. In terms of gender, 70% ($n = 1\,136$) were men and 22% ($n = 336$) were women (63 missing values). The Black group consisted of the following cultural groups: Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$) (2 missing values). The Xhosa and the Ndebele groups were excluded due to small sample sizes. The mean age of the sample group was 26 years ($SD = 3,18$). The entry-level qualification for the police is grade 12, and for 95% of the sample group this was their highest qualification, while 3,7% had a degree, diploma or a postgraduate qualification.

Measuring instrument

The Social Axioms Survey (SAS) instrument developed by Leung et al. (2002) was used in this study to determine if certain cultural beliefs were universal. The *Survey on Social Beliefs Questionnaire* consists of 60 social axiom statements (Leung et al., 2002). The SAS requires respondents to rate on a five-point Likert scale the degree to which they believe each of the 60-items to be true, ranging from 1 (*strongly disbelieve*) to 5 (*strongly believe*). Five social axiom factors are included: social cynicism (18 items), social complexity (12 items), reward for application (14 items), religiosity (eight items), and fate control (eight items). The variances which account for these five factors are 8,89%, 7,94%, 5,22%, 4,09% and 3,28% respectively (Leung, et al., 2002). Internal consistencies (Cronbach coefficient alphas) reported by Bond, Leung, Au, Tong, and Chemonges-Nielson (2004) varied from 0,79 to 0,37 for social cynicism, 0,67 to 0,33 for social complexity, 0,72 to 0,33 for reward for application, 0,78 to 0,49 for religiosity, and 0,59 to 0,31 for fate control.

Procedure

A standardised procedure was followed, and the SAS was part of a test battery that was administered by personnel of the Psychological Services of the SAPS. The test session lasted

for three hours and also included a break of 15 minutes. Computer-readable answer sheets were utilised for all the tests.

Data analysis

The statistical analysis was carried out with the help of the Comprehensive Exploratory Factor Analysis-program (CEFA) of Brown, Cudeck, Tateneni and Mels (1998). For the structural equivalence, item bias and the reliability, the Statistica Version 7.1 programme was used (<http://www.statsoft.com>) (Statistica, 2005).

The *first step* entailed the cleaning of the data set by replacing missing values with the mean value of the total group for a particular item. Variables that had more than 20% missing data were rejected from the final data file. The *second step* in data analysis utilised exploratory factor analysis with varimax (normalised) rotation. In this step an indication of the number of factors that could be abstracted is obtained by utilising the eigenvalues greater than 1 criterion as well as the scree plot. In the *third step*, target rotation was employed. A target matrix was specified and an oblique rotation was performed so as to minimise the sum of squares of differences of rotated elements and corresponding specified target elements.

In the *fourth step*, construct bias was addressed in two series of analyses. The first involved scale-level analyses and examined the similarity of the factors underlying the SAS, whereas the second addressed bias at item level of the SAS instrument. A scale-level analysis (construct bias) was conducted. A two-step procedure was used to examine construct bias, which is based on exploratory factor analysis. In the first step the covariance matrices of all the cultural groups were combined (weighted by sample size) in order to create a single, pooled data matrix (cf. Muthén, 1991, 1994). Factors derived from this pooled covariance matrix define the global solution, with which the factors obtained in the separate cultural groups were compared (after target rotation to the pooled solution). The agreement was evaluated by means of a factor congruence coefficient, Tucker's phi (Chan, Ho, Leung, Cha, & Yung, 1999; Van de Vijver & Leung, 1997a, 1997b). Values above 0,90 are taken to point to essential agreement and values above 0,95 to very high agreement. High agreement implies that the factor loadings of the lower and higher level are equal up to a multiplying constant. (The latter is needed to accommodate possible differences in the eigenvalues of factors for the language groups).

In the *fifth* step item bias was addressed. Item bias analysis was undertaken by utilising the analysis of variance of the SAS items. The item score was the dependent variable, while culture and score levels were the independent variables. A significant main effect of the culture group was taken to point to uniform bias, and a significant interaction of score level and culture interaction pointed to non-uniform bias. In the *final step* of the analysis the reliability scores of the SAS factors for the different language groups were estimated.

RESULTS

Exploratory factor analysis utilising a varimax rotation was carried out on the cleaned data set, which included seven of the language groups. Eighteen factors with eigenvalues higher than one were extracted. These eighteen factors explained 47% of the total variance. However, the scree plot showed that five factors (which explained 23,28%) of the total variance could be extracted (Factor 1 = 5,28; Factor 2 = 3,60; Factor 3 = 2,10; Factor 4 = 1,66; and Factor 5 = 1,52), as shown in Figure 1.

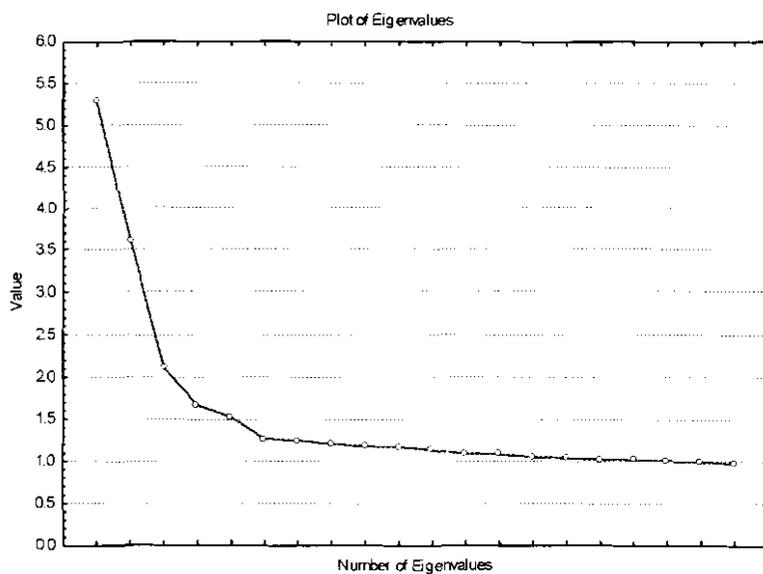


Figure 1. Scree plot of the SAS factors

Based on these results, an exploratory factor analysis (a five-factor solution) with target rotation was carried out. This procedure assessed the extent to which the factor structure fit the theoretical structure of Leung et al. (2002). Table 1 reports the target rotation results.

Table 1

Exploratory Factor Analysis with Target Rotation on the 60 SAS Items

SAS Items	Factor 1: Social Cynicism	Factor 2: Reward for Application	Factor 3: Social Complexity	Factor 4: Fate Control	Factor 5: Spirituality/ Religiosity
1. Religious faith contributes to good mental health.	-0.07	0.05	-0.02	0.04	0.50
2. Caution helps avoid mistakes.	-0.05	0.20	0.17	0.02	0.12
3. Good luck follows if one survives a disaster.	0.09	0.04	0.04	0.31	0.03
4. Human behaviour changes with the social context.	0.03	0.10	0.21	0.14	0.07
5. Religion makes people escape from reality.	0.22	-0.01	-0.01	0.14	-0.23
6. People may have opposite behaviour on different occasions.	0.03	0.23	0.19	0.03	-0.04
7. One's appearance does not reflect one's character.	0.09	0.18	0.10	-0.10	-0.03
8. Fate determines one's successes and failures.	-0.01	0.06	0.24	0.25	0.01
9. Religious people are more likely to maintain moral standards.	-0.05	0.01	0.08	0.06	0.46
10. Ghosts or spirits are people's fantasy.	0.10	-0.07	0.13	0.13	-0.03
11. Individual effort makes little difference in the outcome.	0.10	0.14	-0.16	0.19	-0.02
12. There is a supreme being controlling the universe.	-0.01	-0.02	0.13	0.13	0.23
13. One who does not know how to plan his or her future will eventually fail.	0.04	0.25	-0.02	0.06	0.13
14. There are phenomena in the world that cannot be explained by science.	0.05	0.08	0.31	-0.11	0.01
15. Knowledge is necessary for success.	0.03	0.45	0.07	-0.05	0.12
16. Young people are impulsive and unreliable.	0.40	0.05	-0.06	0.03	-0.04
17. It is rare to see a happy ending in real life.	0.31	0.17	-0.18	0.14	-0.09
18. Mutual tolerance can lead to satisfactory human relationships.	-0.04	0.05	0.42	0.11	0.09
19. Individual characteristics, such as appearance and birthday, affect one's fate.	0.14	-0.02	0.02	0.31	-0.06
20. Females need a better appearance than males.	0.37	0.13	-0.16	0.06	0.03
21. Adversity can be overcome by effort.	-0.03	0.13	0.24	0.061	0.11
22. Every problem has a solution.	-0.03	0.45	0.08	0.06	-0.02
23. One has to deal with matters according to the specific circumstances.	-0.03	0.45	0.26	0.06	-0.02
24. Competition brings about progress.	0.05	0.22	0.17	0.08	0.01
25. There is usually only one way to solve a problem.	0.17	-0.04	-0.15	0.20	-0.01
26. Most disasters can be predicted.	0.04	-0.06	-0.02	0.42	0.04
27. To deal with things in a flexible way leads to success.	-0.08	0.24	0.11	0.23	0.12
28. Old people are usually stubborn and biased.	0.39	0.03	-0.06	0.05	-0.09
29. A person's talents are inborn.	0.14	0.13	0.05	0.07	0.03
30. Good deeds will be rewarded, and bad deeds will be punished.	0.07	0.20	0.09	-0.03	0.21
31. One's behaviours may be contrary to his or her true feelings.	0.04	0.16	0.15	0.13	0.05
32. There are certain ways to help us improve our luck and avoid unlucky things.	-0.02	0.12	-0.00	0.34	0.10

Analysis of the exploratory factor analysis utilising target rotation applied on all 60 items of the SAS revealed four interpretable factors (Factor 1 = Social Cynicism; Factor 2 = Reward for Application; Factor 4 = Fate Control; and Factor 5 = Spirituality/Religiosity), congruent with the model of Leung et al. (2002). The third factor, Social Complexity, did not replicate. Item 18 had a loading of 0,42 but according to Leung et al. (2002) belongs to Factor 2 (Reward for Application) and not to Factor 3 (Social Complexity), as seen in Table 1. The

33.	One will succeed if one really tries.	0.01	0,51	0.05	-0,04	0.06
34.	Failure is the beginning of success.	0.11	0.03	0.20	0.03	0.05
35.	Humility is dishonesty.	0.19	0.00	0.06	0.18	-0,09
36.	To experience various life styles is a way to enjoy life.	0.11	0.14	-0.01	0.28	0.00
37.	Religious beliefs lead to unscientific thinking.	0.24	-0,08	0.20	0.16	-0,15
38.	Social justice can be maintained if everyone cares about politics.	0.15	-0,06	-0,04	0.26	0.10
39.	Current losses are not necessarily bad for one's long-term future.	0.06	-0,01	0.11	0.10	0.05
40.	To plan for possible mistakes will result in fewer obstacles, and will make things easier.	0.09	-0,03	0.28	0.19	0.03
41.	Power and status make people arrogant.	-0.02	0.10	0.10	-0,13	0.03
42.	All things in the universe have been determined.	0.12	0.02	0.00	0.09	0,28
43.	Powerful people tend to exploit others.	0.06	0.17	0.17	-0,25	0,03
44.	People will stop working hard after they secure a comfortable life.	0.45	0.00	-0.01	-0,09	0,05
45.	The various social institutions in society are biased towards the rich.	0.40	-0,11	0.02	0.01	0.12
46.	Beliefs in a religion helps one understand the meaning of life.	0.05	0.11	-0,09	-0,05	0,62
47.	It is easier to succeed if one knows how to take short-cuts.	0.19	-0,08	-0,13	0,31	0,02
48.	Kind-hearted people are easily bullied.	0.34	-0,07	0.19	-0,07	0,05
49.	Old people are a burden on society.	0.30	-0,02	-0,28	0.21	-0,05
50.	The just will eventually defeat the wicked.	0.14	-0,12	0.26	0.01	0.19
51.	A modest person can make a good impression on people.	0.09	-0,06	0.12	0.13	0,23
52.	Beliefs in a religion make people good citizens.	0.09	0.05	-0,14	0.04	0,56
53.	People deeply in love are usually blind.	0.41	-0,07	0.12	-0,03	-0,02
54.	Kind-hearted people usually suffer losses.	0.50	-0,05	0.143	-0,10	-0,06
55.	To care about social affairs only brings trouble for yourself.	0.47	-0,02	-0,13	-0,01	-0,11
56.	There are many ways for people to predict what will happen in the future.	0.07	-0,05	-0,04	0,42	0,07
57.	Hard working people will achieve more in the end.	0.07	0,48	-0,05	-0,04	0,08
58.	Significant achievements require one to show no concern for the means needed for that achievement.	0.20	-0,10	-0,23	0.18	0,01
59.	Harsh laws can make people obey.	0.26	0.03	-0,01	0.06	0,01
60.	Most people hope to be repaid after they help others.	0.41	0.05	-0,02	-0,10	-0,02

same applies for item 23, which belongs to Factor 3 (Social Complexity) and item 47, which belongs to Factor 1 (Social Cynicism) (Leung et al., 2002).

A confirmatory factor analysis, using items with loadings higher than 0,30 as a target, was subsequently carried out. The results are reported in Table 2. Social Cynicism reported 14 items, Reward for Application reported 4 items, Fate Control reported 5 items, and Spirituality/Religiosity reported 4 items that had loadings higher than 0,30.

Table 2

Confirmatory Factor Analysis on the SAS Items (Loadings > 0,30)

SAS Items	Factor 1: Social Cynicism	Factor 2: Reward for Application	Factor 4: Fate Control	Factor 5: Spirituality/ Religiosity
Religious faith contributes to good mental health.	-0.02	0.03	0.07	0,49
Good luck follows if one survives a disaster.	0.04	0.06	0.29	0.08
Religious people are more likely to maintain moral standards.	0.02	0.03	0.02	0,46
Knowledge is necessary for success.	0.03	0,47	-0.04	0.10
Young people are impulsive and unreliable.	0.29	0.03	0.19	-0.04
It is rare to see a happy ending in real life.	0.16	0.10	0.29	-0.11
Individual characteristics, such as appearance and birthday, affect one's fate.	0.06	-0.02	0,33	-0.01
Females need a better appearance than males.	0.22	0.09	0.27	-0.03
Every problem has a solution.	-0.07	0,52	0.04	-0,06
Most disasters can be predicted.	-0.07	-0.04	0,47	0.07
Old people are stubborn and biased.	0.29	0.00	0.19	-0,12
There are certain ways to help us improve our luck and avoid unlucky things.	-0.08	0.13	0,35	0.13
One will succeed if one really tries.	-0.00	0,56	-0.02	-0.00
Power and status make people arrogant.	0,53	-0.00	-0.07	0.06
Powerful people tend to exploit others.	0,59	0.09	-0.18	0.08
People will stop working hard after they secure a comfortable life.	0,40	0.01	0.05	0.00
The various social institutions in society are biased towards the rich.	0,37	-0.06	0.09	0.08
Beliefs in a religion helps one understand the meaning of life.	0.09	0.09	0.01	0,60
Kind-hearted people are easily bullied.	0,39	-0.02	-0.05	0.08
Old people are a heavy burden on society.	0.12	-0.06	0.38	-0,11
Beliefs in a religion make people good citizens.	0.10	0.02	0.11	0,53
People deeply in love are usually blind.	0,40	-0.01	0.03	0.00
Kind-hearted people usually suffer losses.	0,51	-0.03	-0.02	-0.02
To care about societal affairs only brings trouble for yourself.	0,35	-0.05	0.18	-0.15
There are many ways for people to predict what will happen in the future.	-0.06	-0.05	0,52	0.10
Hard working people will achieve more in the end.	0.03	0,49	0.02	0.04
Most people hope to be repaid after they help others.	0,35	0.04	0.04	-0.06

Table 3 shows the extent of agreement between the factors of the SAS derived from the pooled data and the factors in the seven culture groups. Values of Tucker's phi higher than 0,90 were found for all the culture groups. This provided a strong indication of the structural

equivalence of the four factors underlying the performance of all the different groups distinguished.

Table 3

Values of Tucker's Phi of the Factors of the SAS Factor Analysis for Seven Language Groups

Scale	Zulu	Sotho	Tswana	Swati	Tsonga	Venda	Pedi
Factor 1: Social Cynicism	0,98	0,98	0,99	0,97	0,98	0,98	0,99
Factor 2: Reward for Application	0,98	0,99	0,98	0,99	0,99	0,98	0,99
Factor 4: Fate Control	0,98	0,99	0,99	0,98	0,99	0,99	0,99
Factor 5: Spirituality/Religiosity	0,99	0,99	0,99	0,99	0,99	0,99	0,99

In analyses of variance of the item scores of the SAS (four factors) it was found that a few items showed a significant main effect of culture (uniform bias) or interaction of culture and score level (non-uniform bias). Out of the 27 items, 10 items turned out to be biased (37%), which is a relatively small proportion. It can thus be concluded that item bias is not a major disturbance in the SAS in these language groups. The results are reported in Table 4.

Table 4

Items with small ($\leq 0,01$) Effect Size Bias and Significance of SAS Four Factors for the Different Language Groups

Scales	Uniform bias	Non-uniform bias
<i>Social Cynicism</i>		
Item 16	0,002	0,009
Item 17	0,000	0,010*
Item 20	0,023*	0,011*
Item 28	0,017*	0,013*
Item 41	0,002	0,012*
Item 43	0,010*	0,007
Item 44	0,006	0,007
Item 45	0,008	0,009
Item 48	0,003	0,013*
Item 49	0,007	0,007
Item 53	0,008	0,005
Item 54	0,002	0,006
Item 55	0,004	0,005
Item 60	0,004	0,014*
<i>Reward Application</i>		
Item 15	0,011*	0,019*
Item 22	0,010*	0,011*
Item 33	0,004	0,009
Item 57	0,003	0,010*
<i>Fate Control</i>		
Item 3	0,001	0,003
Item 19	0,010*	0,005
Item 26	0,006	0,005
Item 32	0,002	0,008
Item 56	0,003	0,006
<i>Spirituality</i>		
Item 1	0,003	0,009
Item 9	0,002	0,010*
Item 46	0,000	0,004
Item 52	0,000	0,003

Values of Cronbach's Alpha of the Scales, based on the Four Factors of the SAS, in the seven language groups are reported in Table 5.

Table 5

Values of Cronbach's Alpha of the Scales, Based on the Four Factors of the SAS, in the Seven Language Groups

Scale	Zulu	Sotho	Tswana	Swati	Tsonga	Venda	Pedi
Factor 1: Social Cynicism	0,72	0,66	0,73	0,69	0,73	0,72	0,73
Factor 2: Reward for Application	0,69	0,57	0,53	0,77	0,57	0,57	0,59
Factor 4: Fate Control	0,48	0,53	0,54	0,54	0,49	0,53	0,50
Factor 5: Spirituality/ Religiosity	0,56	0,69	0,57	0,56	0,59	0,66	0,61

Cronbach's alpha shows high levels of reliability with values that ranges from 0 to 1. However, it is generally agreed that 0,70 is deemed a lower level of acceptability, and it may even decrease to 0,60 in exploratory research. Cronbach's alpha has a positive relationship to the number of items in the scale, implying that an increased number of items will increase the reliability value (Hair, Andersom, Tatham, & Black, 1998). Factor 1 (Social Cynicism) had 14 items and values bigger than 0,60 were found for all seven of the language groups. Factor 2 (Reward for Application) had four items and values bigger than 0,60 were found for only the Zulu and Swati language groups. Factor 4 (Fate Control) had five items, but no values bigger than 0,60 were found for any of the seven language groups. Factor 5 (Spirituality/Religiosity) had 4 items and values bigger than 0,60 were found for the Sotho, Venda and Pedi language groups. Subsequent alphas were determined for the four factors utilising the whole group/study population ($N = 1\ 535$). An acceptable alpha coefficient of 0,74 was found for Factor 1 (Social Cynicism). Neither of the remaining factors had an alpha of more than 0,60. An alpha of 0,57 was found for Factor 2 (Reward for Application), 0,52 for Factor 4 (Fate Control), and 0,38 for Factor 5 (Spirituality/Religiosity).

DISCUSSION

The objectives of this study were to investigate the replicability of the five-factor structure of the SAS in the SAPS, to examine the construct equivalence and item bias for different culture

groups, and to assess the reliability. An exploratory factor analysis utilising target rotation applied to all 60 items of the SAS revealed four interpretable factors (Social Cynicism, Reward for Application, Fate Control, and Spirituality/Religiosity), in correspondence with the model of Leung et al. (2002). The third factor, Social Complexity, did not replicate. Values of Tucker's phi higher than 0,90 were found for seven language groups (Zulu, Sotho, Tswana, Swati, Tsonga, Venda and Pedi), and analyses of variance found that item bias was not a major disturbance in the SAS. Lower levels of reliability were found for Cronbach's alpha.

The general objective was to investigate the construct equivalence of the SAS. An exploratory factor analysis (five-factor solution) utilising a target rotation was carried out on the 60 items of the SAS. This procedure assessed to what extent the factor structure fit the theoretical structure of Leung et al. (2002). Following from this, the first specific objective was to investigate the replicability of the five-factor structure of the SAS as proposed by Leung et al. (2002) in the South African Police Service. The exploratory factor analysis, however, revealed only four interpretable factors (Factor 1 = Social Cynicism; Factor 2 = Reward for Application; Factor 4 = Fate Control; and Factor 5 = Spirituality/Religiosity), congruent with the model of Leung et al. (2002). The third factor, Social Complexity, did not replicate. This also addressed the second specific objective, namely to assess the construct equivalence of the SAS across different culture groups in the South African Police Service.

The third specific objective was to investigate the item bias of the items of the SAS. Values of Tucker's phi higher than 0,90 were found for seven culture groups (Zulu, Sesotho, Setswana, Swati, Tsonga, Venda and Sepedi). This provided a strong indication of the structural equivalence of the four factors underlying the performance of all the different groups. Analyses of variance of the item scores of the SAS (four factors) found that bias was not a major disturbance in the SAS in these language groups.

The last specific objective was to assess the reliability of the SAS. Acceptable alpha values that ranged from 0,66 to 0,73 were found for Factor 1 (Social Cynicism) for all seven language groups. Only the Zulu and Swati language groups of Factor 2 (Reward for Application) were found to have acceptable alpha values of 0,69 and 0,77 respectively. Only the Sotho, Venda and Pedi language groups of Factor 5 (Spirituality/Religiosity) were found to have acceptable alpha values of 0,69, 0,66 and 0,61 respectively. No values bigger than

0,60 were found for any of the seven language groups of Factor 4 (Fate Control). Subsequent alphas were determined for the four factors utilising the whole group/study population ($N = 1535$). An acceptable alpha value of 0,74 was found for Factor 1 (Social Cynicism). No alpha values bigger than 0,60 were found for any of the remaining factors. An alpha value of 0,57 was found for Factor 2 (Reward for Application); 0,52 for Factor 4 (Fate Control); and 0,38 for Factor 5 (Spirituality/Religiosity).

The number of items in each factor could be the reason why such low levels of reliability were reported. For example, Factor 1 (Social Cynicism) had 14 items and alpha values that ranged from 0,66 to 0,73 were found for all seven of the language groups. However, Factor 2 (Reward for Application) had only four items, and this could be the reason why alpha values of 0,69 and 0,77 were only found for the Zulu and Swati language groups. The same applies to Factor 4 (Fate Control) with only five items and Factor 5 (Spirituality/Religiosity) with only four items. According to Hair et al. (1998) Cronbach's alpha has a positive relationship to the number of items in the scale, which implies that increasing the number of items will increase the reliability value. The number of items could therefore be the reason for the low alphas found for Factor 2 (Reward for Application), Factor 4 (Fate Control) and Factor 5 (Spirituality/Religiosity).

Inspection of the factor loadings revealed that the items 18, 23 and 47 were problematic. These items loaded on different factors. Item 18 loaded on Factor 3 (Social Complexity) but belonged to Factor 2 (Reward for Application), item 23 loaded on Factor 2 (Reward for Application) but belonged to Factor 3 (Social Complexity), and item 47 loaded on Factor 4 (Fate Control) but belonged to Factor 1 (Social Cynicism) (Leung et al., 2002).

Beliefs have been extensively used as individual differences variables (Chen, Bond, & Cheung, 2006) to explain and predict social behaviour. People's beliefs about how the world functions (social axioms) provide a different type of general orientation (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004) and contribute to our understanding of social functioning, by capturing important features of a culture. The importance of this in a multi-cultural South African context, for example, are supported by Mbigi (1993), who argues that harmony can only be created when mutual values are experienced or accepted by the different groups. The cause of the problematic nature of these items can thus be explained by the possibility that different cultures add different meanings to these items, such as item 18

("Mutual tolerance can lead to satisfactory human relationships"), item 23 ("One has to deal with matters according to specific circumstances"), and item 47 ("It is easier to succeed if one knows how to take short-cuts"). According to Census 2001 (Statistics South Africa, 2003), South Africa has 11 official language groups. Because English was not the first language for the majority (99,4%) of the sample group, it is possible that these items were misunderstood. Researchers have shown that most imported tests are not ideally suitable for use in a multicultural society (such as South Africa) and that items in a questionnaire can be interpreted or understood differently by different cultures (Abrahams, 1996, 2002; Abrahams & Mauer, 1999a, 1999b; Meiring, 2000; Spence, 1982; Tact 1999; Taylor & Boeyens, 1991). In addition, the English language used in tests is often too difficult to understand, even if English is the home language (Abrahams & Mauer, 1999a, 1999b; Taylor, 2000; Wallis & Brit, 2003).

Secondly, when comparing the sample sizes, the seven African language groups were relatively small, namely Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$). These relatively small samples of Pedi, Sotho, Tswana, Swati, Tsonga, Venda, and Zulu are not representative of all people speaking these languages in South Africa. Furthermore, factor analysis has limitations when applied to small samples, even though the ratio of items to participants was not very unfavourable.

According to Schwartz (1994c) and Triandis (1994), diversity is portrayed through different values and attitudes in different cultural groups. Just like individuals differ in their value priorities, different cultures also have different values and value priorities. Individuals therefore find themselves within a social environment inside a specific culture, with their own norms, language, systems and values (Smith & Bond 1993; Triandis, 1994). Research has shown that nations, countries and other social categories tend to display distinct value profiles or patterns (Roe & Ester, 1999). Following Hofstede (1980), Kluckhohn and Strodtbeck (1961), Rokeach (1973), and Schwartz (1999) argued that cultural dimensions of values reflect the basic issues or problems that societies must face in order to regulate human activities. Williams (1970) added the view that cultural values represent the implicit or explicit shared abstract ideas about what is good, right and desirable in a society. These cultural values are the base for the specific norms that tell people what is appropriate, or not appropriate, in various situations. Because cultural value priorities are shared, role

incumbents in social institutions can draw on them to select socially appropriate behaviour and to justify their behaviour choices to others (Schwartz, 1999).

This study had various limitations. Firstly, the sample sizes of the seven language groups (Pedi, Sotho, Tswana, Swati, Tsonga, Venda, and Zulu) were relatively small. Although the scores were standardised, the smaller sample size could have influenced the results. Second, only 0,6% of the participants spoke English as their home language. This could have contributed to misunderstanding of items and incorrect interpretations when the questionnaires were completed. Thirdly, the participants in this study were relatively young and mostly unemployed, which could affect the generalisation of findings.

RECOMMENDATIONS

Despite the limitations of this study, the present findings indicate that, with further research regarding the psychometric properties of the instrument, the SAS can be used effectively to measure beliefs/social axioms in a South African context.

Research in South Africa needs to focus on the prevalence of beliefs/social axioms among the different languages and culture groups. To effectively use this instrument, and in order to enhance the application of the SAS in a multicultural and diverse South African context, it is proposed that the SAS be translated into various African languages such as, for example, the seven language groups in this study. As translation issues do not form part of the particular focus of this study, I will only make some brief comments. According to Van de Vijver and Leung (1997b), the direct translation of an instrument/test is often regarded as the best option, as it is the easiest and the least cumbersome, and it also best preserves the possibility of a high level of equivalence across tests. An even better option is the adaptation of the instrument/test, thus to translate items with the aim of enhancing their appropriateness within the particular cultural context (Van de Vijver & Leung, 1997b). This could possibly address the problem experienced with the exploratory factor analysis, where the third factor, namely Social Complexity, did not replicate. It could most likely also address the problematic item loadings, as found in items 18, 23 and 47.

To address the problems experienced with reliability, it is suggested that bigger samples be used, even though the sample sizes of the seven African language groups were not substantially small, namely Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$). According to Hair et al. (1998), the relationships among alpha, sample size, effect size, and power are quite complicated, and one must be aware that sample size can impact on the statistical test by either making it insensitive (at small sample sizes) or overly sensitive (at very large sample sizes).

It is also suggested that additional research be conducted to determine the validity and reliability of the instrument for other South African samples. Samples from different life and work settings might provide confidence that study findings would be consistent across other similar samples. It is lastly recommended that the samples in future studies include members from the Afrikaans and English-speaking group, in order to compare the different language groups more effectively. Future research can then compare the African sample group with European and other Western samples.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter comprises conclusions regarding the literature review and the empirical study according to the specific objectives. The limitations of the research are discussed, followed by recommendations for the research problem in the organisation. Lastly, suggestions are made for future research.

3.1 CONCLUSIONS

General beliefs function like axioms in mathematics, thus basic premises that people endorse and rely on to guide their actions (Leung & Bond, 2004; Leung et al., 2002). Therefore the label *social axiom* is used, as these beliefs are axiomatic in that they are often assumed to be true as a result of personal experience and socialisation (Leung & Bond, 2004; Singelis et al., 2003). Social axioms have been proposed as an additional framework to complement the values perspective (Singelis et al., 2003), and have been defined as “generalized beliefs about oneself, the social and physical environment, or the spiritual world, and are in the form of an assertion about the relationship between two entities or concepts” (Leung et al., 2002, p. 289). Social axioms have four functions: they promote important social goals, help people defend their self esteem, express values, and help people understand the world (Kurman & Ronen-Eilon, 2004; Leung et al., 2002). The SAS is a pure measure of beliefs, and by measuring only beliefs, the SAS can be distinguished from other measures, and may provide information on the relative contributions of beliefs and values to behaviours (Singelis et al., 2003). The SAS is also the first systematic effort at developing a scale that is based entirely on belief statements (Leung et al., 2002).

The first specific objective of this study was to investigate the replicability of the five-factor structure of the SAS as proposed by Leung et al. (2002) in the South African Police Service. An exploratory factor analysis (five-factor solution) utilising a target rotation was carried out on the 60 items of the SAS. This procedure assessed the extent to which the factor structure fit the theoretical structure of Leung et al. (2002). The exploratory factor analysis, however, revealed only four interpretable factors (Factor 1 = Social Cynicism; Factor 2 = Reward for Application; Factor 4 = Fate Control; and Factor 5 = Spirituality/Religiosity), congruent with

the model of Leung et al. (2002). The third factor, Social Complexity, did not replicate. A possible reason for this is the fact that English was not the first language for the majority of the sample, and it is therefore possible that items belonging to this construct (Social Complexity) were misunderstood. The second specific objective was to assess the construct equivalence of the SAS across different language groups (Zulu, Sotho, Tswana, Swati, Tsonga, Venda and Pedi) in the South African Police Service. Because the third factor, Social Complexity, did not replicate, it seems that the SAS do not have complete construct equivalence across different culture groups. With reference to the first two specific objectives, researchers have shown that most imported tests are not ideally suitable for use in a multicultural society (such as South Africa) and that items in a questionnaire can be interpreted or understood differently by different cultures (Abrahams, 1996, 2002; Abrahams & Mauer, 1999a, 1999b; Meiring, 2000; Spence, 1982; Tact 1999; Taylor & Boeyens, 1991). In addition, the English language used in tests is often too difficult to understand, even if English is the home language (Abrahams & Mauer, 1999a, 1999b; Taylor, 2000; Wallis & Brit, 2003). Hence, to effectively use this instrument and to enhance its application in a multicultural and diverse South African context, the SAS will have to be translated into various African languages. In addition, the sample sizes of the seven African language groups were relatively small, namely Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$). Factor analysis has limitations when applied to small samples, even though the ratio of items to participants was not very unfavourable.

The third specific objective was to investigate the item bias of the items of the SAS. Values of Tucker's phi higher than 0,90 were found for seven culture groups (Zulu, Sotho, Tswana, Swati, Tsonga, Venda and Pedi). This provided a strong indication of the structural equivalence of the four factors underlying the performance of all the different groups. Analyses of variance of the item scores of the SAS (four factors) found that bias was not a major disturbance in the SAS in these language groups.

The fourth specific objective was to assess the reliability of the SAS. According to Hair, Anderson, Tatham and Black (1998) values between 0,60 and 0,70 are deemed lower levels of acceptability for Cronbach's alpha. Acceptable alpha values that ranged between 0,66 and 0,73 were found for all seven language groups of Factor 1 (Social Cynicism). Only the Zulu and Swati language groups of Factor 2 (Reward for Application) were found to have

acceptable alpha values of 0,69 and 0,77 respectively. No alpha values larger than 0,60 were found for Factor 4 (Fate Control). Only the Sotho, Venda and Pedi language groups of Factor 5 (Spirituality/Religiosity) were found to have acceptable alpha values of 0,69, 0,66, and 0,61 respectively. Subsequent alphas were determined for the four factors utilising the whole group/study population ($N = 1\ 535$). An acceptable alpha value of 0,74 was found for Factor 1 (Social Cynicism). Lastly, alphas of 0,57 for Factor 2 (Reward for Application), 0,52 for Factor 4 (Fate Control) and 0,38 for Factor 5 (Spirituality/Religiosity) were found.

According to Hair et al. (1998) Cronbach's alpha has a positive relationship to the number of items in the scale, implying that increasing the number of items will increase the reliability value. This could be the reason why such low levels of reliability were reported for Factor 2 (Reward for Application), Factor 4 (Fate Control), and Factor 5 (Spirituality/Religiosity), as they had only four, five and four items respectively. However, tests are sometimes limited in their reliability because they contain items that are poorly worded (Murphy & Davidshofer, 2001). This seems to be a likely possibility when inspecting items 18 ("Mutual tolerance can lead to satisfactory human relationships"), 23 ("One has to deal with matters according to the specific circumstances") and 47 ("It is easier to succeed if one knows how to take short cuts"), which were problematic. These items loaded on different factors. Item 18 loaded on Factor 3 (Social Complexity) but belonged to Factor 2 (Reward for Application), item 23 loaded on Factor 2 (Reward for Application) but belonged to Factor 3 (Social Complexity), and item 47 loaded on Factor 4 (Fate Control) but belonged to Factor 1 (Social Cynicism) (Leung et al., 2002). It is also possible to compute the reliability of a test, given the average inter-item correlation and the number of items on the test. Examination of the inter-item correlations can also help to create an understanding of why some items fail to discriminate between those who do well on the test and those who do poorly (Murphy & Davidshofer, 2001). However, Factor 4 (Fate Control) was also found to be relatively problematic for the Japan and United States groups (Leung et al., 2002). Leung et al. (2002) point out that it is too early to tell whether fate control is culture-specific and the remaining factors cultural-general. In conclusion, it can be indicated that Leung et al. (2002) have taken a lenient approach in their inclusion of items and in their emphasis on factor similarity rather than factor congruence because they believed that as they include more studies from other cultures, the weaker items and factors will be forced out, even with the use of such lenient criteria.

3.2 LIMITATIONS

One of the primary objectives of Leung et al. (2002) was to explore whether a common set of beliefs can serve as a basis for understanding individuals in all cultures and understanding cross-cultural differences in behaviour. People in every culture have to deal with similar problems for effective functioning. This commonality should lead to the emergence of similar types of social axioms across individuals from diverse cultural backgrounds. However, the fact that these social axioms are recognisable by individuals of diverse cultural origins does not mean that they endorse them to the same extent (Leung et al., 2002).

The first limitation in this study was that only 0,6% of the participants spoke English as their home or first language. English as a first or second language is a compulsory requirement for enlistment in the SAPS. English can also be regarded as the “dominant” language in the SAPS work place. However, according to Valdez and Figueroa (1994), bilingual individuals can differ vastly in the mastery of their two (or more) languages in different domains and for different functions, and as a result cannot generally be grouped into one homogeneous group. It is also considered that language is of a complex nature in societies where one language is the dominant language (Valdez & Figueroa, 1994). This could have contributed to misunderstanding of items and incorrect interpretations when the questionnaires were completed, thereby influencing the way the respondents answered the questionnaires. Although 95% of the sample group had a grade 12 school qualification, and 3,7% had a degree, diploma or a postgraduate qualification, this cannot be expected to automatically mean that candidates have a good English proficiency. Furthermore, the English language used in tests can sometimes be too difficult to understand, even in cases where English is the home or first language (Abrahams & Mauer, 1999a, 1999b; Taylor, 2000; Wallis & Brit, 2003).

Secondly, the participants in this study were relatively young and mostly unemployed, which could affect the generalisation of findings.

Thirdly, the sample sizes of the seven language groups were relatively small, namely Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$). Although the scores were standardised, the smaller sample size could have influenced the results. According to Hair et al. (1998) the relationships

among alpha, sample size, effect size, and power are quite complicated, and one must be aware that sample size can impact on the statistical test by either making it insensitive (at small sample sizes) or overly sensitive (at very large sample sizes).

Another limiting factor could be the fact that Factor 2 (Reward for Application), Factor 4 (Fate Control), and Factor 5 (Spirituality/Religiosity) had only four, five and four items respectively. According to Hair et al. (1998) Cronbach's alpha has a positive relationship to the number of items in the scale, i.e. increasing the number of items will increase the reliability value.

Finally, with reference to limiting factors, the test session lasted for three hours, and even though there was a scheduled break of 15 minutes included in the session, fatigue could have caused participants to lose concentration, resulting in random errors being made when the questionnaires were completed.

3.3 RECOMMENDATIONS

To solve the problem of construct equivalence of the SAS and replicability of the five-factor structure as proposed by Leung et al. (2002) in the South African context, it is proposed that the SAS be translated into various African languages for future research. As translation issues do not form part of the particular focus of this study, I will only make a few brief comments. Firstly, before translation takes place, the translatability of the instrument needs to be considered (Brislin, 1980, 1986; Brislin, Lonner, & Thorndike, 1973). If the translation of the text, for example, will result in the loss of salient characteristics, the instrument will not be considered as translatable. These characteristics include denotations, connotations, or language-specific meanings derived from particular grammatical structures and idioms (Van de Vijver and Leung, 1997). Werner and Campbell (1970) have proposed cultural decentring as an alternative procedure for instrument translation. In cultural decentring, words and concepts in the original instrument that are difficult to translate, or are specific to the culture of origin, are removed from the instrument retrospectively. This application is, however, dependent on the availability of a multi-lingual, multi-cultural team who are experts in the field of interest (Van de Vijver & Lueng, 1997).

In future research the problem of construct equivalence of the SAS and replicability of the five-factor structure as proposed by Leung et al. (2002) in the South African context, can possibly be solved by adding culturally specific beliefs to the core set of belief items that are being tested in a round-the-world survey of social axioms (see <http://www.personal.cityu.edu.hk/~mgalau/satest.htm>). Leung et al. (2002) even encouraged collaborators to add culturally specific beliefs to the core set of belief items that are being tested in every culture, allowing collaborators to determine if distinctive dimensions of belief are operative in their cultural contexts.

Because items that are poorly worded can sometimes limit the reliability of a test (Murphy & Davidshofer, 2001), it is proposed all 60 items of the SAS be perused to ensure proper wording, and not just the problematic items (for instance 18, 23 and 47) identified in this study. This could solve the problem experienced with the non-replicability of Factor 3 (Social Complexity). In addition it is proposed that the average inter-item correlation be computed. Examination of the inter-item correlations can also help to create an understanding of why some items fail to discriminate between those who do well on the test and those who do poorly (Murphy & Davidshofer, 2001).

To further address the problems experienced with reliability, it is proposed that larger samples be used, even though the sample sizes of the seven African language groups were not substantially small, namely Pedi ($n = 461$), Sotho ($n = 196$), Tswana ($n = 206$), Swati ($n = 147$), Tsonga ($n = 233$), Venda ($n = 159$), and Zulu ($n = 131$). According to Hair et al. (1998) the relationships among alpha, sample size, effect size, and power are quite complicated, and one must be aware that sample size can impact on the statistical test by either making it insensitive (at small sample sizes) or overly sensitive (at very large sample sizes). The reliability problems could also in future research be addressed through increasing the number of items in each factor (with special reference to factors 2, 4 and 5). According to Hair et al. (1998) Cronbach's alpha has a positive relationship to the number of items in the scale, implying that increasing the number of items will increase the reliability value.

It is suggested that additional research be conducted to determine the validity and reliability of the instrument for other South African samples. Samples from different life and work settings might provide confidence that study findings would be consistent across other similar samples. It is also recommended that the samples in future studies include members from the

Afrikaans and English-speaking group, in order to compare the different language groups more effectively. Furthermore, future research can also compare the African sample group with European and other Western samples.

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