The manifestation of the emotion lexicon of the Afrikaans-speaking group in South Africa.

Feelings are not substances to be discovered
in our blood but social practices organised
by stories that we both enact and tell.
Michelle Rosaldo

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REMARKS

- The reader must note that the publication and reference style of this mini-dissertation is in accordance with the instructions for publication (5th ed.) of the American Psychological Association (APA). This is in accordance with the policy of the Programme in Industrial Psychology at the North-West University to use the APA style in all scientific documents.

- This mini-dissertation is submitted in the form of three chapters (3), namely (1) an introductory chapter, (2) a research article and (3) a concluding chapter. Each chapter has its own reference list.

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SUMMARY

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KEYWORDS: Emotion, emotion lexicon, emotional intelligence, componential theory, prototypicality, dimensionality, emotion structure, culture

Emotions have a strong impact on information processing which affects longer-term cognitions and behaviours. It also does not only play an important role in general social interaction, but it also impacts in very important ways on work behaviour. In the multicultural work environment of South Africa, the question comes to mind whether the expression of emotions is the same for all cultures, or whether it is culture specific. This research article forms part of a national South-African project to identify the cognitive emotion structure of all 11 official language groups in South Africa. This project is the first of its kind. Firstly it is the first study that will investigate the cognitive emotion structure, and secondly it is the first study that distinguishes (in this regard) between the different culture groups on the basis of the 11 official languages. This research article will investigate specifically the cognitive emotion structure of the Afrikaans-speaking group in South Africa.

The objective of this study was to identify which words are used to describe emotions in the Afrikaans-speaking group, to which extent these words are representative of the Afrikaans culture, and the dimensionality and emotion structure for the Afrikaans-speaking group in South Africa.

A survey design with convenience sampling was used to achieve the research objectives in a series of **four sub-studies**. The sample groups consisted mostly of students, as well as some older adults, all affiliated with a tertiary educational institution. The fourth sub-study was the application of the European developed GRID instrument to compare the results with that of the third sub-study which yielded the emotion structure of the Afrikaans-speaking group from a "bottom-up" approach.

The **first sub-study** was the free-listing task to identify the emotion terms used in the Afrikaans language, whilst the **second sub-study** was the prototypicality rating task (N = 23). Here the identified emotion terms were rated according to their prototypicality to the Afrikaans language. In the **third sub-study**, these terms were then rated based on Similarity ratings (N = 121). Multidimensional scaling was then done to determine the dimensionality and cognitive emotion structure of the Afrikaans-speaking group.

The free-listing task (N = 199) yielded: to be sad ("hartseer"), to be angry ("kwaad"), love ("liefde"), to be happy ("gelukkig"), hate ("haat"), to be excited ("opgewonde"), and to feel depressed ("depressief"), as the top six most frequently listed words. Furthermore, the emotion terms ranked as the ten most prototypical words (N = 23) were rage ("woede"), fear ("vrees"), to be angry ("kwaad"), hate ("haat"), sadness ("hartseer"), anxiety ("angs"), to be happy ("gelukkig"), joy ("vreugde"), ecstasy ("ekstase"), and jealousy ("jaloesie"). The list continues with several other emotion words which were ranked as equally prototypical to the Afrikaans lexicon. For the Similarity ratings (N = 121) the three dimensions that emerged were: Evaluation (pleasantness), where pleasant emotions are opposed to unpleasant emotions; the second dimension was arousal (activation), with anger and fear being opposed to sadness; and the third dimension was power (potency), with anger as opposed to fear and sadness.

The **fourth sub-study** was the application of the GRID instrument (a European developed instrument) (N = 121) which yielded the same dimensional structure as the Similarity rating task. Although the order of the second and third dimensions differed, the dimensions were the same. For the third sub-study, the Similarity rating task, the three dimensions that emerged were: pleasantness, arousal and potency. And for the GRID results it was pleasantness, potency and arousal.

The conclusion was reached that although the order of the dimensions differed slightly it was important that the same emotional structure emerged from both the methods: the Similarity rating and the GRID instrument. If this information is to be used to develop measuring instruments, it is important to take into account all three of the dimensions that emerged from this study.

OPSOMMING

Emosies het 'n groot impak op informasieprosessering en sodoende het dit dan 'n langer-termyn effek op kognisies en gedrag. Dit speel nie net 'n belangrike rol in algemene sosiale interaksie nie, dit het ook 'n impak op werksgedrag. In die multi-kulturele werksomgewing van Suid-Afrika kom die vraag na vore of die uitdrukking van emosies dieselfde is vir al die kulture, en of dit kultuurspesifiek is. Daar kan dus gesê word dat emosies nie net 'n invloed het op sosiale gedrag nie, maar ook op werksgedrag. Hierdie navorsingsartikel vorm deel van 'n nasionale projek in Suid-Afrika om die kognitiewe emosiestruktuur van die 11 amptelike taalgroepe te identifiseer. Hierdie projek is eerste van sy soort. Eerstens is dit die eerste studie wat die kognitiewe emosiestruktuur gaan ondersoek, en tweedens is dit die eerste studie wat onderskei tussen die verskillende kultuurgroepe in Suid-Afrika op grond van die 11 nasionale taalgroepe. Hierdie navorsingsartikel het spesifiek die kognitiewe emosiestruktuur van die Afrikaanssprekende groep van Suid-Afrika ondersoek.

Die doelstellings van die artikel was om die emosiewoorde wat gebruik word in die Afrikaanse groep te identifiseer en te bepaal tot watter mate hierdie woorde verteenwoordigend is van die Afrikaanse taalgroep, asook wat die dimensionaliteit van hierdie emosiestruktuur is.

'n Vraelys, ontwerp met gerieflikheidspopulasiegroepe, is gebruik om die doelstellings deur middel van **vier sub-studies** te bereik. Die populasiegroepe het hoofsaaklik uit studente bestaan, maar ook ouer volwassenes ingesluit wat almal geafilieerd is met 'n tersiêre instelling. Die vierde sub-studie was die toepassing van die GRID instrument vir vergelykende doeleindes met die resultate van die derde sub-studie, wat die emosiestruktuur van die Afrikaanssprekende groep geïdentifiseer het.

Die **eerste sub-studie** was die vrye-lys-vraelys waar die kandidate soveel emosieterme moes neerskryf as waaraan hul kon dink binne tien minute. Die **tweede sub-studie** was die prototipering van die geïdenitfiseerde emosieterme. Hier is die emosieterme beoordeel op grond van hoe tipies dit van die Afrikaanse taal is. Daarna is die **derde sub-studie**, die "ooreenstemmings"-beoordeling gedoen. Multidimensionele skaling (N = 121) is toe gedoen op

hierdie resultate om die dimensionaliteit en die kognitiewe struktuur van die Afrikaanssprekende groep te bepaal.

In die vrye-lys-studie (N = 199) is die volgende top ses emosiewoorde die meeste genoem: hartseer ("to be sad"), kwaad ("to be angry"), liefde ("love"), gelukkig ("to be happy"), haat ("hate"), opgewonde ("to be excited"), en depressief ("to feel depressed"). Die volgende tien emosiewoorde is geïdentifiseer as die mees prototipiese Afrikaanse emosiewoorde (N = 23): woede ("rage"), vrees ("fear"), kwaad ("to be angry"), haat ("hate"), hartseer ("sadness"), angs ("anxiety"), gelukkig ("to be happy"), vreugde ("joy"), ekstase ("ecstasy"), en jaloesie ("jealousy"). Hierdie lys is nog heelwat langer met ander emosieterme wat beoordeel is as ewe prototipies met betrekking tot die Afrikaanse emosieleksikon. By die "ooreenstemmings"-beoordeling (N = 121) het drie dimensies na vore gekom: Evaluasie (aangenaamheid), waar aangename woorde teenoor onaangename emosies staan, die tweede dimensie was opwekking (aktivering), waar woede en vrees teenoor hartseer gestaan het, en die derde dimensie was mag (krag), waar woede teenoor vrees en hartseer gestaan het.

Die **vierde sub-studie** was die toepassing van die GRID-instrument ('n Europees ontwikkelde instrument) (N = 121) wat dieselfde emosiestruktuur as die "ooreenstemmings"-beoordeling opgelewer het. Alhoewel die volgorde van die tweede en derde dimensies verskil het, het dieselfde drie dimensies by beide metodes na vore gekom. Vir die "ooreenstemmings"-beoordeling was die drie dimensies: aangenaamheid, opwekking en mag. By die GRID-instrument was die drie dimensies: aangenaamheid, mag en opwekking.

Daar was tot die gevolgtrekking gekom dat alhoewel die volgorde verskil, dieselfde dimensies by beide die "ooreenstemming"-beoordeling en die GRID-instrument geïdentifiseer is. Indien hierdie informfasie gebruik word om 'n meetinstrument te ontwikkel, moet al drie die dimensies wat geïdentifiseer is in ag geneem word.

Declaration by the language editor

Hereby I, J M Myburgh, trading as "Words by Mariaan" declare that I edited the research article:

The manifestation of the emotion lexicon of the Afrikaans-speaking group in South Africa, written by Ena Du Toit

Editing was done with regard to grammar, spelling and basic style. No changes were made to content, composition or lay-out.

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CHAPTER 1

TITLE: The manifestation of the emotion lexicon of the Afrikaans-speaking group in South Africa.

KEYWORDS: Emotion, emotion lexicon, emotional intelligence, componential theory, prototypicality, dimensionality, emotion structure, culture

1.1 PROBLEM STATEMENT

1.1.1 Overview of the problem

Ethnic minorities contribute to a significant part of the workforce population in South Africa. Because of the political history of South Africa, this country is an example of a country that is undergoing rapid socio-economic and political transformation. Since becoming a democratic country, government has been taking a proactive role in improving the diversity in companies (Human, 2005).

The history of psychological measurement in South Africa prior to becoming a democratic country in 1994 was marked by unfair and biased testing. This was mainly because adaptations of overseas measures were used, or measures were developed and standardised for white people only (Foxcroft, 1997).

Nzimande (1995) states that after becoming a democratic country, South Africa became a society concerned with addressing and correcting the injustices of the past. This also applies to testing and assessment in South Africa. The focus now falls on development of new measures, taking the national, racial, and gender oppression context into consideration.

South Africa has been a democratic country for the past thirteen years and although huge improvements on the diversity management front have been made, there is still room for improvement. A lot of controversy still exists between the different cultures in this "rainbow nation" country (Kotzè, 1993). Previously, and to some extent today, the different culture groups

in South Africa were or are still known as 'Blacks,' 'Whites,' 'Indians' and 'Coloureds,' and according to Kotzè (1993) these terms are products of previous political decisions and not "products of nature" (p. xi). Kotzè maintains that most of the diversity obstacles in the workplace can be ascribed to the lack of knowledge of the different separate culture groups. Learning to understand and appreciate the perceptual style of the different cultures, one might learn to comprehend more about the way other cultures perceive humanity. This understanding might lead to the bridging of barriers that still exist between cultures (Kotzè; Meiring, 2007).

One strategy to gain a better understanding of other cultures is the better understanding of emotion manifestations amongst the different cultures. Emotion is a complex experience and people use a variety of terms, gestures, and attitudes to express it. Because of the vastness of emotional phenomena, it is basically impossible to give a full description of all the emotions that one can experience. However emotional vocabulary is reduced and thus it allows for people with the same cultural background to share their emotional experiences (Gonzalez, Barrull, Pons, & Marteles, 1998; Shaver, Schwartz, Kirson, & O'Conner, 1987).

Although the words people use to categorise emotions are often similar, it appears not to be equivalent across all language groups (Athanasiadou & Tabaknowska, 1998; Russell, 1991). According to Russell, people tend to categorise the things in their world. People that speak different languages tend to divide things mostly in a similar way. If this is the case then different cultures differ in the way they encode and respond to emotions.

When approaching emotional research from a cultural point of departure, the question arises whether emotions are universal or culture specific (relativistic). There have been numerous debates in the literature regarding this. Following are the views of some researchers.

According to research certain aspects of emotion that are universal across cultures include: action readiness; specific emotional responses; and emotion regulation such as response inhibition and expression control. Event types are coded differently by different cultures, which lead to differences in appraisal of the given events. The emotions aroused by events differ from each other, based on the centrality or importance of that event to a culture. Experiencing,

expressing and regulating different emotions based on what is socially allowable or desirable under certain situational circumstances is known as social regulation.

However, according to Scherer (1986) previous researchers have found that there are different cultural norms for the expression and displaying of emotions (e.g. social regulation). Social regulation, also known as 'display rules', can be described as the control of experiencing emotion, as well as the control of the accompanying reaction patterns (Scherer). These 'display rules' often differs between cultures. Thus there are definitely some aspects with regards to emotions that are culture specific. This research study will attempt to identify the emotion structure of the Afrikaans-speaking group, in order to use it in further studies investigating the correlation with the other cultural groups in South Africa.

Emotions do not only play an important role in general social interaction, but it also impacts in very important ways on work behaviours. Aspects such as withdrawal/engagement, motivation, pro- and anti-social behaviour, career decisions, teamwork, relationships and cognitive processes such as leadership, management style, et cetera, are all influenced or based on emotions (Briner, 1999).

Although there is great interest in emotions with regard to work and organisational aspects, there is a lack of published theory or even practical assessment tools for emotions at work (Briner, 1999). It rather seems that with regard to emotions at work, a lot of attention was given mainly to two aspects, namely stress and satisfaction. Thus, in order to develop sound theories or to develop and implement intervention strategies in organisations, it is important to conduct comprehensive research on emotions in the workplace (Briner).

Emotion knowledge plays an important part in social interaction as it involves the interpreting of emotions, both in oneself and in others (Shaver et al., 1987). This is certainly not only true for general social interaction, but for organisational behaviour as well (Lord, Klimoski, & Kanfer, 2002). In the workplace activities or skills such as skill building, creativity, effective social relations, organisational commitment, collective orientations, and pro-social behaviours, are examples of organisational processes where emotions play an important role (Lord et al.).

Robbins, Odendaal, & Roodt (2004) add to this by stating that in the organisation emotions come to play in important organisational behaviours such as motivation and leadership.

Motivation can be seen as the interaction between individual differences in emotional predisposition, organisational events, and social interaction which causes emotional reactions that forms a person's goals and influences one's determination when one is faced with obstacles. It is important to measure such individual differences with regard to prediction of training outcomes and performance in jobs, especially jobs that require autonomous functioning (Lord et al., 2002).

According to Goleman, Boyatzis, and Mckee (2002), good leaders' success is based not on what they do, but how they do it. It is important for leaders to understand their own as well as other people's emotions effectively, as well as how to deal with and utilise these emotions. This is necessary because leaders have to manage and drive collective emotions in a positive and productive direction.

The ability to understand one's own as well as others' emotions and how to deal with and utilise these emotions is known as emotional intelligence. According to Lord et al. (2002) this includes the ability to consciously experience, express, understand and act appropriately according to one's emotions. Thus emotional intelligence can be seen as an interrelated process by which people become aware of their own feelings and how they regulate it (Lord et al.). Robbins et al. (2004) summarised emotional intelligence as referring to a person's ability to effectively cope with environmental demands and pressures through certain non-cognitive skills, capabilities, and competencies. Robbins et al. further distinguishes between five dimensions underlying emotional intelligence, namely self-awareness, self-management, self-motivation, empathy and social skills. Emotions play a significant role as a key social skill in the organisation, therefore the measuring of emotional intelligence is very important (Mayer, Caruso, & Salovey, 1999).

Emotional intelligence is a very crucial characteristic to look for when selecting new personnel, or when developing or promoting current employees. The important role that emotional intelligence plays in organisations has led researchers to develop tests for its measurement. The

purpose of these measurements is to provide predictive validity for job performance with regards to interpersonal and managerial aspects (Bar-On, Goleman, Mayer, & Salovey as cited in Lord et al., 2002).

Measurement of emotions are usually based on the participant's perception of his/her experience of emotions in general, which in turn is based on positive or negative affect and/or on a scale of intensity for each of these dimensions, e.g. the Positive and Negative Affect Schedule (PANAS) (Gonzalez et al., 1998; Voogd et al., in press). Referring to the above discussion the conclusion can be drawn that for the purposes of evaluating employees in the workplace, the measurement of emotions per se is not sufficient. Rather, a measurement of emotional intelligence would better suffice because such a measure evaluates the whole interrelated process of expressing and acting according to one's emotions.

In a multicultural context one cannot help but wonder if the behaviours perceived to reflect emotional intelligence are the same for all cultures (Hughes, 2000), or even for 'general' culture groups such as "Whites," "Blacks," or "Coloureds". Hughes asks the question that if this is true, does this then imply that emotional intelligence assessments assess in fact that which reflects the broad value sets of a particular culture.

The problem with measurements of emotional intelligence currently used in South African organisations (e.g. the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and the Bar-On Emotional Quotient Inventory (Bar-On EQi)) is that these measurements do have South African norms, but these norm groups distinguishes between "Whites," "Blacks," or "Coloureds" (e.g. Gallant, 2005a; Gallant, 2005b).

In South Africa cross-cultural achievement and intelligence testing which is biased or unfair can be seen as discrimination in the workplace according to the Employment Equity Act, No 55 of 1998 (Government Gazette, 1998) and is thus against the law:

> Psychometric testing and other similar assessments of an employee are prohibited unless the tests being used –

(a) have been scientifically shown to be valid and reliable

(b) can be applied to employees; and

(c) are not biased against any employee or group.

As shown above, the Employment Equity Act, No 55 of 1998 (Government Gazette, 1998), has clear regulations about the prohibition of discrimination in the workplace. These regulations specifically state that measuring instruments or tests must be reliable, valid, fair, and may not be biased against any employee or group. Furthermore, using invalid or biased measuring instruments forms a major issue in cross-cultural achievement and intelligence testing according to Scherer et al., (2005). Therefore, the need arose to develop a culture-sensitive measuring instrument for the measurement of emotions in South Africa.

There have been quite a number of research projects done on emotional intelligence (e.g. Gallant, 2005a; Gallant, 2005b). This project, with regard to the emotion structure of the different culture groups in South Africa, is the first of its kind. Firstly it is the first study that will investigate the cognitive emotion structure, and secondly it is the first study that distinguishes (in this regard) between the different culture groups on the basis of the 11 official languages groups. This implies that this project does not just distinguish between "Whites", "Blacks" and "Coloureds" in general. For example the Bar-On EQi, as well as the MSCEIT does have South African norms which only distinguishes between "Whites", "Blacks" and "Coloureds" (Gallant, 2005a; Gallant, 2005b).

Consequently the findings of this study might be used to develop "truly" cultural fair emotions tests/assessments to use as a benchmark for further research on already existing emotional intelligence test e.g. the Bar-On EQi, as well as the MSCEIT. The most important application might be to develop relevant, culture-specific intervention strategies.

The first step to develop a culture-sensitive measuring instrument for the measurement of emotions would thus be to investigate the emotion lexicon of the different cultures.

In conclusion, emotions are very dynamic in nature. It is an ongoing process between emotions, behaviour and cognitions. As Briner (1999) states:

> Emotion occurs in the context of a personal narrative – our history, present, and anticipated future. For example, in order to understand the significance of someone becoming angry at work, knowing about the proximal event that triggered the angry response is certainly important, but what may be much more relevant is the history of that person and their (sic) situation, how the event came to have meaning, what the person does as a consequence of being angry, and how what they do then impacts on future emotions, cognitions and behaviours. (p. 337)

There has never been an investigation of the differences or similarities of the emotional domain in each of the cultural groups (with regard to the 11 official language groups) in South Africa. This implies that there is not a culture specific measuring instrument (which distinguishes not only between Whites, Blacks and Coloureds, but between the different language groups within those groups) for the emotion domain, which leaves a big gap in the psychometric industry in South Africa. This research article forms part of a larger national project researching the differences or similarities between the different cultures in South Africa. The objective of this research article is to investigate the emotion lexicon of one South African culture - the Afrikaans-speaking group, in order to identify culture-specific information in the emotional domain for further comparative studies in the future.

Summary

Because of the political history of South Africa, there are certain realities such as the unique multiple cultures in the South African work context that need to be addressed. When beginning to comprehend different cultures, the understanding of their social norms regarding their emotion manifestations is important. This is a sound point of departure because emotion knowledge plays a significant role in social interaction as it involves the interpreting of emotions, both in oneself and in others (Shaver et al., 1987). This is also true in the workplace because skills such as skill-building, creativity, effective social relations, organisational commitment, collective orientations, and pro-social behaviours, are examples of organisational processes where emotions feature prominently (Lord et al., 2002).

Another useful skill to possess, not only for successful social interaction, but also in the work context, is emotional intelligence. Emotional intelligence is the ability to understand one's own as well as other people's emotions. How to deal with these emotions is known as emotional intelligence.

Emotional intelligence plays an important role in organisations and thus researchers have developed measuring instruments to measure emotional intelligence as to provide predictive validity for job performance with regard to interpersonal and managerial aspects. However these instruments are not culturally specific for the South African cultures.

In South Africa cross-cultural achievement and intelligence testing which are biased or unfair can be seen as discrimination in the workplace according to the Employment Equity Act, No 55 of 1998 (Government Gazette, 1998) and is thus against the law.

The problem statement concluded with stating that there has never been an investigation of the differences or similarities of the emotional domain in each of the cultural groups (with regards to the 11 official language groups) in South Africa. This research article forms part of a larger national project researching the differences or similarities between the different cultures in South Africa. The objective of this research article is to investigate the emotion lexicon of one South African culture - the Afrikaans-speaking group, in order to identify culture-specific information in the emotional domain for further comparative studies in the future.

Research questions

The following research questions can be formulated based on the above-mentioned description of the research problem and literature review:

- What are emotion and culture, and the relevance thereof to the working environment?
- Which emotion words are used to describe emotions in the Afrikaans-speaking group?
- To which extent are these words representative of the emotion words of the Afrikaans language group in South Africa?

- What is the dimensionality and emotion structure for the Afrikaans-speaking group in South Africa?
- What are the reliabilities of the measurement battery and dimensions of the emotion structure?

1.2 RESEARCH OBJECTIVES

The research objectives are divided into general and specific objectives.

1.2.1 General objective

The general objective of this research is to study the manifestation of the emotion lexicon of the Afrikaans-speaking group in South Africa. This will be done in order to identify the emotion lexicon and to identify the meaning structure of emotions of the Afrikaans-speaking group in South Africa.

1.2.2 Specific objectives

The specific objectives of this research are:

- To conceptualise emotion and culture and the relevance thereof to the working environment, according to a literature study.
- To ascertain what the relevant and representative emotion words in the Afrikaans-speaking group are.
- To investigate to which extent these words are representative of the emotion words of the Afrikaans language group based on prototypicality.
- To determine what the dimensionality and emotion structure for the Afrikaans-speaking group in South Africa is.
- To determine the reliabilities of the measuring battery and dimensions of the emotion structure.

1.3 RESEARCH DESIGN

This research study can be classified as descriptive and explorative. According to Mouton and

Marais (1992) the aims of exploratory and descriptive research designs are to:

- gain new insight into a phenomenon,
- undertake a preliminary investigation prior to conducting a more structured study of the phenomenon,
- clarify the central concepts and constructs of the phenomenon,
- determine priorities for future research,
- and to develop a new hypothesis about an existing phenomenon.

With reference to this research, an exploratory study is relevant since it serves as an exploration of a relatively unknown research area (Mouton & Marais, 1992). In this study the exploratory method is chosen in order to gain new insight, to discover new ideas and increase the knowledge of the emotion lexicon of the Afrikaans-speaking group in South Africa.

1.4 RESEARCH METHOD

This research method consists of a short literature review and an empirical study. The results obtained will be presented in a research article.

1.4.1 Literature review

A complete review regarding research on emotion, emotion lexicon and the prototypicality thereof, and the cultural context of emotion is done.

1.4.2 Empirical study

The empirical study consists of the research design, participants, procedure and the data analysis in order to achieve the research objectives.

1.4.2.1 Participants

The study population of sub-study one, the free-listing task, consists of a convenience sample of university students (N = 199) from a tertiary educational institution. All the participants are Afrikaans-speaking.

The study population of sub-study two, prototypicality rating, consists of a convenience sample of Afrikaans-speaking participants (N = 30). Due to the small sample size, the prerequisite for this questionnaire is that all the participants should have at least a three year and higher tertiary education, and a thorough knowledge and understanding of emotions as well as the Afrikaans language domain.

The study population of sub-study three, similarity sorting, consists of a convenience sample of Afrikaans-speaking participants (N = 121). A small incentive (a complementary movie ticket) will be offered for the top 12 respondents with the highest total correlation in relation to the other respondents. Furthermore the population of the forth sub-study, the GRID, also consists of a convenience sample of Afrikaans-speaking people (N = 121).

1.4.2.2 Procedure

The project has two parts consisting of four sub-studies.

Both Part 1 and Part 2 will yield the meaning structure of emotion terms of the Afrikaans-speaking group in South Africa. It is expected that both these meaning structures will be the same. In Part 1 a 'bottom up' approach is followed, because this part of the investigation starts right at the bottom by first identifying what the emotion terms are that are used in the Afrikaans language. This information is then used for further investigation in sub-study 2, continuing until at the end of sub-study 3, the meaning structure is identified.

In Part 2 a 'top down' approach is followed, because here the GRID instrument, developed in Geneva, is used - based on 24 predetermined emotions, to identify the meaning structure of the Afrikaans language group in South Africa. An outline of the procedure is given below:

<u>Part 1: The meaning structure of the Afrikaans-speaking group from a 'bottom up' approach</u>

This part will be done in three sub-studies:

Sub-study 1: Free-listing task

A sample size of 199 participants is asked to write down as many emotion words as they can think of during ten minutes. The frequency of each emotion word will be computed and emotion words that have been reported with a frequency of at least 5% will be retrieved for further study. After translation, convergence in frequency of each emotion term is investigated across the emotion lexicon of the Afrikaans-speaking group.

Sub-study 2: Prototypicality rating

To assure comparability, all emotion words generated in Part 1 are translated into English and the full list is then back-translated into Afrikaans. Moreover, the full list is extended with emotion words from emotion lists from Western and cross-cultural research (Fontaine, Poortinga, Setiadi, & Suprapti, 2002; Shaver et al., 1987). Thus a long list is generated that is translation-equivalent in Afrikaans. Three versions, in which the words are randomized to counteract the fatigue factor, are each rated by a group of language experts, based on the prototypicality of each emotion word to the Afrikaans language. Based on this information a limited set of emotion words is selected that are relevant and representative of the emotion lexicon of the Afrikaans-speaking group.

Sub-study 3: Similarity rating

The aim is to identify the meaning similarity between emotion terms. This is done by pairing all 80 emotion terms that are retained after the prototypicality ratings with each other. They are then divided into eight groups of 395 pairs per group or version. All pairs are then judged for similarity in meaning on a scale going from completely opposite in meaning up to identical in meaning. In total 120 participants will each judge the pair-wise similarity of 396 pairs of emotion words. The similarity of each pair is judged by 15 participants. Across the 15 participants the average similarity is computed for each pair of emotion terms. A cluster analysis is computed for the similarity matrix. For scientific interest, multidimensional scaling is also applied. The expectation is that a three- to four-dimensional structure will be recovered in each cultural group.

Part 2: The meaning structure of the Afrikaans-speaking group from a 'top down' approach

This part will consist of one sub-study:

Sub-study 4: The Geneva GRID

Participants rated four emotions chosen from a set of 24 in terms of 144 features. Using a 9-point scale (ranging from "extremely unlikely (1) to "extremely likely (9)"), participants are asked to rate the likelihood that each of the 144 emotion features could be inferred when a person from their cultural group uses the emotion term to describe an emotional experience.

1.4.2.3 Data analysis

Part 1: The meaning structure of the Afrikaans-speaking group from a 'bottom up' approach

Sub-study 1: Free-listing task: The data consists of a number of different emotion words reported by the participants.

Analyses: Analysis will be done by computing the frequency with which each of the emotion words were reported. This will be computed using a macro in the Microsoft Excel program. All the words that are reported by at least 5% of the participants are retained.

Sub-study 2: Prototypicality rating: The data consists of the ratings of prototypicality for the concept of emotion by a number (approximately 30) of participants.

Analyses: Again the Cronbach's alpha is computed, removing participants with a very idiosyncratic understanding (less than 0,40 participant-total correlations) and then averaging the scores across all remaining participants. The 80 emotion words which are most prototypical are retained. This will include the 24 GRID terms, whether or not they were among the top 80 most prototypical words.

Sub-study 3: Similarity rating: Data: Pair-wise similarity ratings between emotion terms, e.g. joy and happiness (120 participants are needed, with each participant rating 395 pairs of emotion terms.)

Analyses: The first step in the analysis includes calculating the reliability coefficients of the ratings of the different participants who completed the eight different versions of the similarity questionnaires. Based only on individuals who had an item-total correlation above 0,30, the average similarity rating for each pair of emotion terms is computed. The second step includes a

Classical Multidimensional Scaling (CMDS) procedure which typically results in systematic ordering of emotion words around specific dimensions. Multidimensional Scaling allows for the representation of emotion words as points in a space, with the distance between two points representing dissimilarly in sorting (Borg & Groenen, 1997; Davison, 1983; Kruskal & Wish 1978). These analyses are carried out with PROXSCAL of SPSS.

Part 2: The meaning structure of the Afrikaans-speaking group from a 'top down' approach

Sub-study 4: The Geneva GRID: Data: Participants (N = 121) rate groups of four emotion terms on 144 emotion features per group.

Analysis: The reliability of the pattern per emotion word on 144 emotion features will be computed: The Cronbach's alpha is computed, with the 144 emotion features as the observations and all the participants that rated the emotion words as the variables. Thus the inter-rater reliability which evaluates the reliability across the participants will be computed. Participants with a total word correlation of lower than 0,20 are removed because they are considered to have a very idiosyncratic understanding of the word. A GRID will then be computed of 24 emotion words by 144 emotion features, by averaging the scores across all participants that are retained after step 1. Principal Component Analysis (PCA) will then be performed on the GRID of 24 by 144 to compute the reliabilities and factor structure. (PCA is a form of exploratory factor analysis.)

This data analysis of Part 2 will provide the dimensional emotion meaning structure of the Afrikaans-speaking group of South Africa in terms of multidimensional scaling. It is expected that this structure will be the same as the meaning structure generated by Part 1.

1.5 CHAPTER DIVISION

Chapter 1: Problem statement and Literature review

Chapter 2: Article: The manifestation of the emotion lexicon of the Afrikaans-speaking group in South Africa.

Chapter 3: Conclusions, limitations and recommendations

1.6 CHAPTER SUMMARY

The chapter started with the problem statement and the political and situational background of the culture differences, as well as the statutory assessment requirements, was given. The impact and significance of emotions and emotional intelligence was also discussed. Furthermore the research questions were identified and the procedure, as well as the measuring instruments, was discussed. The next chapter, Chapter 2, will give a more in-depth literature study about the role of emotions, emotional intelligence, emotions and culture, and the relevance of emotions to the workplace. The research procedures, methods, participants and the results will then be discussed.

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CHAPTER 2

RESEARCH ARTICLE

THE MANIFESTATION OF THE EMOTION LEXICON OF THE AFRIKAANS-SPEAKING GROUP IN SOUTH AFRICA

ABSTRACT

The objectives of this study was to explore the free-listing, prototypicality and similarity of the emotion concepts of the Afrikaans-speaking group. These results were then compared to the results yielded by the GRID instrument also administered to the Afrikaans-speaking group. A survey design was used to achieve these research objectives through a procedure that was divided into two main parts and four sub-studies. Part one consisted of sub-studies one to three. Free-listing questionnaires, Prototypicality rating questionnaires, as well as Similarity rating questionnaires were used. For Part two, sub-study four, the GRID instrument was used. The participants of al the sub-studies (free-listing, $N = 199$; prototypicality rating, $N = 23$; similarity rating, $N = 121$; and GRID, $N = 121$) were affiliated with a tertiary educational institution, both students as well as academic and administrative personnel partook in this study. The Similarity rating task yielded a three dimensional structure with the first dimension being evaluation, the second dimension being activation and the third dimension being potency. The GRID instrument yielded the same three dimensions although there was a slight difference in the order of the dimensions. The first dimension yielded by the GRID instrument was evaluation, the second dimension was potency, and the third dimension was activation.The conclusion was reached that although the order of the dimensions differed slightly it was important that the same emotional structure emerged from both the methods: the Similarity rating and the GRID instrument. If this information is to be used to develop measuring instruments, it is important to take into account all three of the dimensions that emerged from this study.

OPSOMMING

Die doelstellings van hierdie studie was om die vrye-lys, prototipiese-emosie-terme, asook die soortgelykheid van die emosie-konsepte van die Afrikaanssprekende groep te ondersoek. Hierdie resulte is daarna vergelyk met die resultate van die GRID meetinstrument wat ook op die Afrikaanssprekende groep toegepas is. 'n Vraelys-ontwerp is gebruik om die doelstellings te

bereik. Dit is gedoen deur middel van prosedure wat uit twee hoofdele bestaan het met vier onderafdelings. Deel een het bestaan uit sub-studie een tot drie. Die Vrye-lys, Prototiperingsvraelyste, en die Vergelykingsvraelyste is gebruik. Vir deel twee, sub-studie vier, is GRID meetinstrument gebruik. Die kandidate van hierdie studie (vrye-lys oefening, $N = 199$, prototipiese oefening, $N = 23$, die vergelykingsvraelys-studie, $N = 121$, en die GRID oefening, $N = 121$) is almal geaffilieerd aan 'n tersiêre instelling. Studente, sowel as akademies en administratiewe personeel, het deelgeneem. Die Vergelykingsstudie het drie dimensies opgelewer; die eerste dimensie was evaluasie, die tweede dimensie aktivering, en die derde dimensie mag. Die GRID meetinstrument het dieselfde drie dimensies na vore laat kom, alhoewel daar 'n verskil was in die volgorde van die dimensies. Die eerste dimensie van die GRID meetinstrument was evaluasie, die twee dimensie mag en die derde dimensie aktivering. Daar was tot die gevolgtrekking gekom dat alhoewel die volgorde verskil, dieselfde dimensies by beide die "ooreenstemming"-beoordeling en die GRID-instrument geïdentifiseer is. Indien hierdie informfasie gebruik word om 'n meetinstrument te ontwikkel, moet al drie die dimensies wat geïdentifiseer is in ag geneem word.

Through everyday life, one comes into contact with innumerable aspects such as other people, certain events, environmental factors, as well as intrinsic aspects within oneself that elicits emotions. Emotions are such an integral part of humans that it forms the basis for all social transactions and as such is a key social skill (Mayer, Caruso, & Salovey, 1999). Being aware of and regulating one's emotions can bring one closer, or alienate one from others. This is true for all domains and walks of life – from social interaction with a pet, the cashier in the grocery store, right through to the work context.

Experiencing, expressing and regulating different emotions separate not only individuals, but also cultures from one another. As Goleman (1995) as well as Schwarz and Clore (1996) states, humans are guided by their emotions. According to Salovey, Kokkonen, Lopes, and Mayer (2004), emotions can influence one in a direct way such as the triggering of behaviour or in an indirect way through mediating mechanisms like motivation or cognition. The function of emotions can be said to be adaptive, purposeful, and helpful: "It is the emotional system that focuses attention, organizes memory, helps us to interpret social situations, and motivates relevant behaviour." (Salovey et al., p. 321.)

Experiencing, expressing and regulating different emotions, based on what is socially allowable or desirable under certain situational circumstances, is known as social regulation. Social regulation, also known as 'display rules', can be described as the control of experiencing emotion, as well as the control of the accompanying reaction patterns (Scherer, 1986). According to Weiss (2002) events at work have real emotional impact on employees. This is because at the workplace all of one's basic processes, which include emotional processes, play out daily.

According to Briner (1999), emotions have a strong impact on information processing which effect longer-term cognitions and behaviours. Thus emotions do impact in very important ways, not only on social behaviours but also on work behaviours. Table 1 presents a summary of the specific behaviours and cognitions linked to work.

Table 1

Examples of organisational behaviours and cognitions likely to be influenced by emotion

General Category	*Specific Behaviours and Cognitions*
Withdrawal/engagement	Intention to quit, absence, turnover, affective and continuance commitment
Motivation	Focusing of attention, initiating action, sustaining action, anticipation of rewards, avoiding negative emotions (avoidance motivation), self-efficacy, counter-productive behaviours
Pro- and anti-social behaviour	Organisational citizenship behaviours, extra-role behaviours, aggression, harassment, criticism, misbehaviour
Careers	Career transitions, career decisions, psychological contract, learning and personal development
Teamwork	Team climate, interpersonal relations, coordination, communication
Relationships	Charismatic leadership, manager-subordinate relationships, leadership effectiveness, co-worker relations, relational systems
Cognitive processes	Decision-making, social judgements, attention

(Briner, 1999).

Although there is much interest in emotions with regards to work and organisational aspects, there is not much published theory or even practical assessment tools for emotions at work (Briner, 1999).

It seems that with regards to emotions at work, much attention was given mainly to two aspects, namely stress and satisfaction (Briner, 1999). Briner explains that focussing only on stress and satisfaction are very limiting. This is because these concepts are used for a very general description of feeling "good" or "bad". These general, non-specific emotional states are not predictive of specific behaviours (Briner). Furthermore, it has proved to link insufficiently to important and organisational outcomes e.g. absence, performance, turnover and health (e.g. Briner & Reynolds, in press; Ganster & Schaubroeck, 1991; Harrison & Martocchio, 1998; Jex, 1998; Johns, 1997 in Briner).

The conclusion can be drawn that in order to develop sound theories, or to develop and implement intervention strategies in organisations, it is important for comprehensive research to be done on emotions in the workplace. A logical starting point will be right from the bottom as this research study will do, in order to identify the emotion structure of the Afrikaans-speaking group.

Emotions

Based on the question on what an emotion is, where an emotion begins and when it stops, Russel (2003) came to the conclusion that there are not any formal criteria of what an emotion constitutes or does not constitute of. The confusion surrounding defining emotion (e.g. Russel & Feldman Barrett, 1999; Scherer, 2005) is demonstrated by questions such as:

- Are emotions conceptualised as behaviourally (actions and actions tendencies) based, cognitive configurations, drives, impulse reactions, attitudes, instincts, sensations or feelings?
- Is it socially or biologically derived? (Russel, 2003).

Russel and Feldman Barrett (1999) stated that emotions' boundaries are so fuzzy that it seems as if everything might be an emotion. As such they found that emotions are too broad a spectrum of events to be classified as a single scientific category.

Emotion is a complex concept which entails many facets such as cognitive, biological and behavioural events, motivational processes, and subjective experiences (Russell, 1991; Scherer, Ellsworth, Poortinga, Dasen, Fontaine, & Breugelmans, 2005). When trying to define emotion, one might find that although much research has been done on the topic, different individuals have different answers to the definition of emotion (Scherer, 2005). However, Scherer defined emotion as "an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism" (Scherer, 1987, 2001 as cited in Scherer, 2005, p. 697). Therefore emotion is a complex process based on intertwined interaction of different components after the evaluation of an internal or external stimulus.

Table 2 shows how different emotion components, subsystems and functions are interrelated (Scherer, 2005). According to Scherer (2004) the underlying components function independently most of the time. During an emotional episode, driven by appraisal, these components are coordinated and synchronized with each other to result in a specific emotion.

Table 2

Relationships between organismic subsystems and the functions and components of emotion

Emotion function	**Organismic subsystem and major substrata**	**Emotion component**
Evaluation of objects and events	Information processing (CNS)	Cognitive component (appraisal)
System regulation	Support (CNS, NES, ANS)	Neurophysiological component (bodily symptoms)
Preparation and direction of action	Executive (CNS)	Motivational component (action tendencies)
Communication of reaction and behavioural intention	Action (SNS)	Motor expression component (facial and vocal expression)
Monitoring of internal state and organism-environment interaction	Monitor (CNS)	Subjective feeling component (emotional experience)

Note: CNS = central nervous system; NES = neuro-indocrine system; ANS = autonomic nervous system; SNS = somatic nervous system (Scherer, 2005, p. 698).

Researchers found that to study the concept of emotion it is imperative to investigate a set of six components, namely: (1) appraisal of events, (2) psycho-physiological changes (bodily sensations), (3) motor expressions (face, voice, and gestures), (4) action tendencies, (5) subjective experiences, and (6) emotion regulation (Ellsworth & Scherer, 2003; Elster, 2004; Fontaine, Scherer, Roesch, & Ellsworth, 2007; Scherer, 2005).

There are not only similarities but also important differences in the categorization of emotion words between different languages (e.g. Russel, 1991; Wierzbicka, 1999). Thus to get a true "picture" of the concept of the emotion lexicon of a specific language - or cultural group, all six of the above-mentioned emotion components need to be investigated (e.g. Scherer, 2005; Fontaine, Poortinga, Setiadi, & Markam, 2002). This research study followed this approach and all six of the components were taken into account in terms of the assessment used.

A comprehensive emotion model

The Componential emotion theory is a comprehensive emotion theory which implies that it focuses on dynamic multi-componential processes that are triggered by specific situational antecedents. This implies that emotion should be investigated with regards to situational circumstances as well as the synchronised activity it causes in each of the components of emotion, e.g. the appraisal component, the action tendency component, the subjective feelings component, the expression component, and the regulation component (Fontaine et al., 2002).

According to Frijda (1993a), appraisal is the clue to why conditions trigger different emotions, as well as what distinguishes one emotion from another. The process of appraisal is described by Frijda as follows: A specific event causes a specific emotion for an individual under those specific conditions. Thus the role of appraisal is to link emotional responses to external circumstances and internal goals and beliefs (Smith & Lazarus, 1993).

Appraisal does not only account for arousal, but also for other emotion components, such as valence, action readiness, and physiological arousal (Frijda, Kuipers, & ter Schure, 1989). Furthermore, Frijda (1993b) found that appraisal patterns systematically project on to emotion categories; and that there is a strong correlation between certain patterns of appraisal and certain emotion labels.

Mesquita and Ellsworth (2001) describes appraisal theories as a model that explains differences through similarities. "They suggest how emotions that seem extremely unfamiliar, once explained, may become comprehensible to people from a different culture." (Mesquita & Ellsworth, p. 233.) It is said that if different cultures appraise a situation similarly, they will

experience the same emotions. If they experience different emotions it is due to the fact that they appraised the situation differently (e.g. Ellsworth, 1994a; Scherer, 1997b in Mesquita & Ellsworth, 2001). The link between appraisal patterns and emotions is universal - the *if-then* eventuality. Mesquita and Ellsworth (2001) gives the following examples: If people attribute a negative event to bad luck or fate, they would feel sad or depressed; if it is attributed to the actions of another person, they would feel angry; if they blame themselves the consequent emotion would be guilt. It should be noted that emotions in different cultures can be perceived to be similar only to the extent to which they are characterised by similar patterns of appraisals. Also, similarity on some dimensions does not rule out differences on other dimensions of appraisal (Mesquita & Ellsworth).

Furthermore, emotions may also be admired or despised by different cultures; in other words, some emotions may be seen as particularly worthy or unworthy. This means that although cultures might share the same emotions, there may be considerable difference in the relative emphasis placed on them. When envisioning the emotional universe as a multidimensional space, some regions may be densely occupied in some cultures while the same regions may be nearly empty in other cultures (Mesquita & Ellsworth, 2001).

In this research study multidimensional scaling will be used to produce such a multidimensional space of the Afrikaans-speaking group to identify the differences and/or similarities between the Afrikaans-speaking group and the other cultural groups in South Africa. Thus the different (or maybe even the same) emphasis placed on emotions between the different culture groups in South Africa will be identified through the emerging emotional structure.

Some qualities of the emotional experience may be cultural-specific and therefore unfamiliar to other cultures. Other emotional experiences may be similar to different cultures and thus better understood. According to Mesquita and Ellsworth (2001) there is a major challenge to develop and test hypotheses about which aspects of emotion are universal and which are culturally specific. This is the main goal of this research paper which, as mentioned earlier, forms part of a larger national project in South Africa to research the emotion structure of the different culture groups pertaining to the 11 official language groups in South Africa.

The componential theory integrates various emotion theories in Western emotion psychology. However, this model is not only relevant to Western emotion research, but is also essential for cross-cultural emotion research. Because it is mainly a general framework and not a highly precise theory, it forms a sound point of departure (Fontaine et al., 2002).

One way to study emotion within a componential emotion framework is to study it from a prototypical perspective. Fehr and Russel (1984) maintain that the concept of emotion can be better understood from this perspective rather than a classical perspective. This is because "the concept of emotion is a matter of degree rather than all-or-none and that no sharp boundaries separate members from non-members" (p. 464).

Prototypicality refers to the most basic level of categorization of emotion words as used by ordinary people (Shaver, Schwartz, Kirson, & O'Connor, 1987). It refers to the ranking of emotion words according to goodness of example, how easy it comes to mind, or how likely it is labelled as an emotion (Fehr & Russel, 1984). As Russel and Feldman Barrett (1999) stated, prototypicality, with regards to emotion words, refers to what people will consider as most likely the clearest cases of emotion.

Prototypical emotional episodes can be organized in different ways to form different taxonomic structures (Russel & Felman Barrett, 1999). Two such structures that will be used for this study is 1) the dimensional structure, including a circumplex model; and 2) the hierarchical structure.

The structure of emotion, with regards to its description and assessment, is an essential first step in the scientific investigation of the emotion domain. Emotions consists of a heterogeneous class of events, to such an extent that a single structure of description and assessment cannot do justice to the definition of emotion if one does not differentiate between the types of events that constitutes an emotion (Russel & Feldman Barrett, 1999).

Russel and Feldman Barrett (1999) explained that different types of the same emotion (e.g. different types of fear – fear associated with a snake differs from fear associated with a scary movie) have different amounts of pleasure and activation. Thus prototypical emotional episodes

vary in degree along certain dimensions, e.g. evaluation, potency, activity (e.g. the EPA model of Osgood (1969)) (Russel & Feldman Barrett, 1999; Osgood, 1969 as cited in Scherer, Dan & Flykt, 2006).

Furthermore, emotion categories tend to yield a circular pattern, rather than to cluster at the axes. This is known as circumplex model (Russel, 1987; Russel & Feldman Barrett, 1999; Yik, Russel, Oceja & Dols, 2000). The circumplex model is a circular dimensional structure representative of the conceptual, mental structure derived from factor analysis (Larson & Diener, 1992). Figure 1 present an example of a circumplex model. The circle shows where several prototypical emotional episodes typically fall.

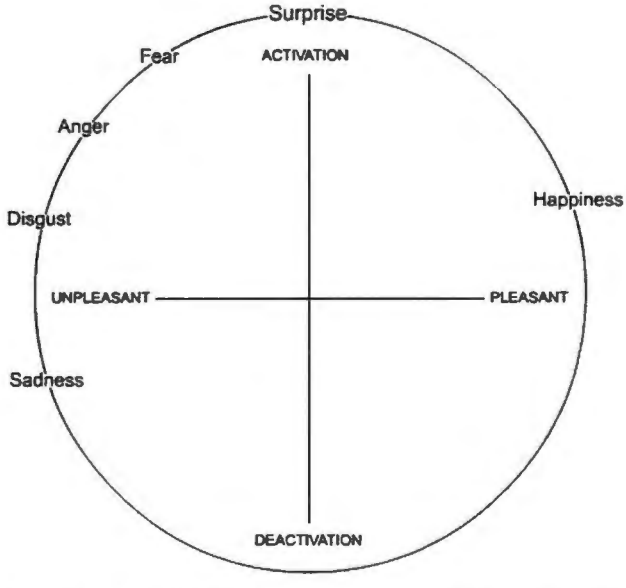

Figure 1. The circle where several prototypical emotional episodes typically fall. Adapted from Russel and Feldman Barrett (1999).

The prototypicality of emotion words needs to be established in a specific cultural context if one is to understand emotions represented in everyday life within that culture better (Church, Katigbak, Reyes, & Jensen, 1998). This is because emotion concepts refer to cultural evaluations and representations of the emotion process which include the emotional event, the experience, and the cultural expected behaviours. Labelling emotions can be seen to be similar to that of event coding. This is because emotions are labelled based on culturally shared concepts and meanings (Mesquita & Frijda, 1992).

When approaching emotional research from a cultural point of departure, the question arises whether emotions are universal or culture specific (relativistic). A number of researchers have produced a list of basic emotions believed to be universally found in almost all cultures (Scherer et al., 2005). For example, according to Plutchik (1994) fear and anger appears on every list with sadness or synonyms thereof appearing on all but two lists.

According to research some aspects of emotion that are universal across cultures include: action readiness, specific emotional responses, and emotion regulation such as response inhibition and expression control. Although responses may differ, there are certain universal issues or events that cause emotional concern across different cultures; such as loss or death of a loved one, rejection, rivalry or conflict et cetera. (Mesquita & Frijda, 1992; Mesquita, Frijda, & Scherer, 1997).

According to Russel (1991), people tend to categorize the things in their world. People that speak different languages tend to divide things mostly in a similar way. There are however some differences between different cultures. If this is the case, then different cultures differ in the way they encode and respond to emotions (Athanasiadou & Tabakowska, 1998; Russel).

Event types are coded differently by different cultures, which lead to differences in appraisal of the given events. The emotions aroused by events differ from each other, based on the centrality or importance of that event to a culture. By consequence, this implies that differences in event types may lead to differences in emotional behaviour. Cultural emotion behaviour differs from each other (apart from universal behaviour tendencies) based on culture-specific models and expectations regarding appropriate behaviour for specific situations or circumstances (Mesquita & Frijda, 1992; Mesquita et al., 1997).

According to Scherer (1986) previous researchers have found that there are different cultural norms for the expression and displaying of emotions, i.e. the social regulation thereof. This implies that there are differences in the 'rules' of how different cultures regulate, display, and express emotions. In the multi-cultural work context of South Africa, one can thus assume that it is very important to be aware of and understand these differences.

However, social regulation is not confined to 'public' manifestations or emotional experience, expression and regulation which are visible and audible to others (Scherer, 1986). Social regulation is also a private 'affair' or an internal process. Scherer further points out that there are a number of internalised norms for the appropriateness of experiencing and expressing certain emotions in specific situations - including physiological arousal as well as subjective feelings. There are major differences, not only in what different individuals perceive as what is culturally appropriate, but also differences in the self-concept. This implies the notions or norms of a person of what is acceptable to the ideal self in specific situations (Scherer).

Emotion regulation is one of the aspects where cultures generally differ the most. Mesquita and Frijda (1992) came to the conclusion that emotional regulation is the most recognised aspect of variation between cultures. Different cultures attach different values to events and thus the norms for seeking or avoiding emotional events and/or what is seen as socially desirable also differs (Mesquita et al., 1997).

Furthermore, cognitive aspects, such as belief changes, may cause differences between cultures with regards to emotional tendencies. This is because a person's emotions are influenced or impacted by his/her beliefs. For example, a culture that is aggressively orientated may perceive the world based on agency, and will thus experience more anger. The contrary is also true for a culture which is not aggressively orientated; it does not perceive the world based on agency, and so experiences less anger (Mesquita & Frijda, 1992; Mesquita et al., 1997).

Russel (1991) concludes that different cultures categorize emotions differently. Not only do the boundaries of domains (emotion lexicon, facial expression et cetera.) differ, but also the categorization within the domains differs. This implies that emotions, as well as the events they relate to, are culturally based.

In a multicultural context one cannot help but wonder if the behaviours perceived to reflect emotional intelligence is the same for all cultures. Hofstede's (1981) research (Hughes, 2000) revealed that for example open-mindedness to change is a cultural variant. He states that some

societies with high levels of uncertainty avoidance have the tendency to be more anxious, 'emotional' and aggressive. If one relates this to today's view and what is currently assessed by emotional intelligence assessments, someone from this culture might typically come out as having low levels of emotional intelligence. Hughes (2000) asks the question that if Hofstede's finding is true, does this then imply that emotional intelligence assessments assess in fact that which reflects the broad value sets of a particular culture?

According to Mayer et al. (1999, p. 267) emotional intelligence "is involved in the capacity to perceive emotions, assimilate emotion related feelings, understand the information of those emotions, and manage them." Mayer et al. (1999, p. 267) conceptualised emotional intelligence as "an ability to recognize the meanings of emotions and their relationships, and to reason and problem-solve on the basis of them". Robbins, Odendaal, and Roodt (2004) distinguish between five dimensions underlying emotional intelligence, namely self-awareness, self-management, self-motivation, empathy and social skills. These are all skills that play an important role in the work context.

Futhermore, Goleman and his colleagues (Goleman, Boyatzis, & Mckee, 2002) organised emotional and social competencies into four clusters: Self-awareness, Self-management, Social awareness, and Social skills, as it manifests in the work place. To summarise, emotional intelligence is regarded as an awareness and understanding of emotion which relates to thinking and action (Goleman, 1998).

There are numerous aspects with regards to the working context that are influenced by emotional intelligence. Following is a discussion on the most prominent aspects:

Emotional intelligence can have a positive effect on the handling of occupational stress (Nikolaou & Tsaousis, 2002). This happens because stress is mainly conceived as an emotional reaction to environmental stimuli (Selye, 1956). As a result emotional intelligence can serve as a framework for learning how to cope with stress and other strong emotions (Nikolaou & Tsaousis, 2002).

Nikolaou and Tsaousis (2002) found that there is a significant relationship between emotional intelligence and organisational commitment. They ascribed this to the fact that employees with high emotional intelligence feel more valued and less distressed, which might increase their feelings of loyalty and commitment to their organisation. This is significant because organisational commitment plays an important role in retention with the organisation according to Tett and Meyer (1993).

Furthermore, Diggins (2004) suggested that emotional intelligence features prominently in effective performance, as well as better handling of organisational change. The ability to grow and develop is linked to how well a person is able to adapt and survive. Emotional intelligence is an important key factor according to Studd (1998). Diggins (2004) proposes that the inclusion of emotional intelligence in training programs may better aspects such as co-operation and motivation, which will result in increased productivity and profits. Mayer, Goleman, Barrett, and Gutstein (2004) stated that emotional intelligence is the mysterious blend of psychological abilities which managers need to manage the mood of their organisations.

In their research study, Sulliman and Al-Shaikh (2007) confirmed that there is a positive relationship between high levels of emotional intelligence and lower levels of conflict, as well as higher levels of readiness to create and innovate. They stress the importance for managers to understand that the outcomes of employees' work are likely to be influenced by their emotional intelligence, which also affects their interaction with their colleagues and managers.

To summarise, the aspects of the work context which are influenced by emotional intelligence include: employee commitment, teamwork, development of talent, innovation, quality of service, customer loyalty, stress, performance, and coping with change (Diggins, 2004; Nikolaou & Tsaousis, 2002; Sulliman and Al-Shaikh 2007; Zeidner, Matthews & Roberts, 2004). It also influences career success, stronger personal relationships, more effective leadership and better health (Cooper, 1997, in Zeidner et al., 2004). Emotional intelligence is thus an important factor which must be considered for the recruitment and development of employees (Nikolaou & Tsaousis, 2002).

According to the British Association for Counselling and Psychotherapy (Hughes & Kinder, 2007), workplace counsellors are expected to have an understanding of organisational cultures and workplace factors that might impact on an employee's work, amongst other things. Cultural and language barriers can make effective counselling difficult, whilst culture-specific emotional competence measures might aid the counselling process in that it helps the counsellor to identify a clients strengths and weaknesses, as well as serving as a feedback tool on the client's improvement (Ciarrochi & Scott, 2006).

From the above discussion it can be concluded that descriptive emotion terms, as well as the accompanying behaviour, may differ between cultures. There are differences between cultures with regards to social regulation, experience, and expression of emotion. Keeping this in mind, together with the important role that emotional intelligence plays in the organisation as pointed out in earlier (e.g. the ability to effectively cope with environmental demands and pressures through certain non-cognitive skills, capabilities, and competencies (Robbins et al., 2004), one cannot deny the importance of investigating the differences between the unique South-African cultures that are all represented in the South-African work context.

South Africa has 11 official languages and many different cultures. Determining the emotion lexicon with regards to prototypes across the different language groups becomes essential in order to gain adequate knowledge regarding the cross-cultural differences and similarities (Church et al., 1999; Kitayama & Markus, 1991; Kitayama, Markus, & Kurokawa, 2000; Mesquita et al., 1997; Shipper, Kincaid, Rotondo, & Hoffman, 2003).

South Africa is a multicultural country with a very culturally diverse workforce on all levels. As such, adequate cultural emotion knowledge is essential in order to develop a measuring instrument which can be applied in the South African work context without any reservations regarding bias. As this article forms part of a bigger national project in South Africa, exploring the emotion lexicon within the Afrikaans-speaking group will contribute significantly toward creating a culture-sensitive measuring instrument free from bias, intervention strategies, or even as a benchmark for further research on existing emotional intelligence measurements (e.g. the

Bar-On Emotional Quotient Inventory (Bar-On EQi) and the Mayer-Salovey-Caruso Emotional Intelligence Scale (MSCET)) in the South African context.

Measuring battery

Part One:

Sub-study one: the free-listing task

The free-listing task is the first step in this study. Participants are asked to write down as many Afrikaans emotion words as they can think of during ten minutes. Terms mentioned at least five times across all the participants are accepted and translated into English. The data is cleaned by eliminating redundancy – meaning that all but one set of words formed from the same root (e.g. hate and hatred) is removed.

The prototypicality rating task

After the free-listing data was computed and cleaned, the final list of emotion words was expanded with other comprehensive emotion term lists found in the literature, as well as the 24 emotion terms used in the GRID measuring instrument (Fontaine, Roesch & Ellsworth, 2007; Shaver et al., 1987) This was done in order to produce a comprehensive list to account for basically all emotion terms which might have been left out during the free-listing task. The 24 GRID terms were chosen because of their successful use in several other cross-cultural emotion research studies (Scherer, Wranik, Sangsue, Tran, & Scherer, 2004) This resulted in a comprehensive list of 197 emotion words which was translated into Afrikaans. This list was rated according to each emotion term's prototypicality to the Afrikaans language on a scale of 1 to 9. The list of words was randomized and so three versions were used in order to account for the fatigue factor.

The similarity ranking task

The cognitive structure of the Afrikaans-speaking group was investigated by means of a similarity rating. This was done in order to identify the cognitive representation of differences and similarity between various emotion terms (Shaver et al., 1987).

The 80 most prototypical emotion words generated in the prototypicality rating task, including the 24 GRID terms, were paired up in a systematic way, yielding 3160 pairs of emotion terms. For feasibility reasons these pairs were randomly divided into groups of 395 pairs. Each group was rated by 15 persons. The pairs were then rated on an 8-point scale, where 0 = completely similar in meaning (synonyms) to 7 = completely opposite in meaning (antonyms).

Part Two:

The GRID

The short version of the GRID that was used in this study consists of 24 emotion terms and 144 emotion characteristics. The 24 emotion terms were chosen based on their prototypicality and use in everyday language. The 144 emotion characteristics represent activities in all six of the major components of emotion (Fontaine et al., 2007).

Regarding the 24 emotion terms, 12 emotion words which are often found in emotion research, namely anger, contempt, disgust, fear, guilt, interest, joy, pleasure, pride, sadness, shame, and surprise, are firstly included. Secondly, eight terms that were reported in large scale research in Switzerland, namely anxiety, compassion, contentment, despair, disappointment, happiness, irritation, and stress, were included. Thirdly, the four typical interpersonal emotion terms: being hurt, hate, jealousy, and love, which have been reported in free-listing tasks and prototypicality rating tasks, were also added (Fontaine, Scherer, Roesch, & Ellsworth, 2007). The 144 emotion characteristics include components such as appraisals, subjective experiences, action tendencies, expressions, bodily changes, and regulation processes (Scherer et al., 2005). This 144 features include 31 features referring to appraisals, 18 features which refer to bodily experiences, 22 features referring to subjective feelings, nine features that refer to facial expression, 12 features referring to vocal expression, five features referring to gestural expression, 40 features that refer to action tendencies, three features about regulation and lastly, three features representing other qualities such as frequency and social acceptance (Fontaine et al., 2007).

Method and Results

Introduction

The aim of this research article is to investigate the meaning structure of emotion terms of the Afrikaans-speaking group in South Africa. In order to map the meaning structure of emotion terms, this research was conducted in two parts consisting of a total of four sub-studies. Part one consists of three sub-studies, namely a free-listing task; a prototypicality rating task; and a similarity rating task. The end result of Part one will be to identify the emotion structure of the Afrikaans-speaking group, through an exploratory, empirical, and "bottom-up" approach. Part two consists of the fourth sub-study, where the GRID measuring instrument was applied to yield also the emotion structure of the Afrikaans-speaking group, through a scientifically based and "top-down" approach. If Part one and Part two yields the same structure, it will provide a very good and scientifically strong indication of the meaning structure of emotion terms of the Afrikaans-speaking group in South Africa.

Part One

Sub-study one: Free-listing task

In order to investigate the manifestation of the emotion lexicon within the Afrikaans-speaking group in South Africa, it is necessary to determine the terms that are regarded as emotion terms within this group.

Method

A qualitative approach was used. Participants were asked to write down as many emotion words as they could think of in their mother tongue within a timeframe of ten minutes.

Procedure

The data were cleaned by dropping the terms that were not emotion words. The criteria for this was if a word represented only one aspect of emotion (e.g. crying refers to expression of emotion) it is not considered to be an emotion word. After cleaning of the data, only words that were mentioned at least 5% and more, were retained.

Participants

The study population for sub-study one, the free-listing task, consisted of a convenience sample of university students from a tertiary educational institution, whose first language is Afrikaans. Table 3 presents the characteristics of the participants.

Table 3

Characteristics of the Free-listing questionnaire Participants ($N = 199$)

Item	Category	Frequency	Percentage (%)
Ethnicity	Coloured	8	4%
	White	191	96%
Gender	Male	83	42%
	Female	116	58%
Age	18-27	195	98%
	28-37	4	2%
Province	Eastern Cape	1	1%
	Free State	10	5%
	Gauteng	23	12%
	KwaZulu-Natal	4	2%
	Limpopo	6	3%
	Mpumalanga	7	4%
	Northern Cape	1	1%
	North-West	147	74%
Language	Afrikaans	199	100%
Highest Qualification	Grade 12 with university exemption	199	100%

All the participants were Afrikaans-speaking. A small group (4%) were of Coloured ethnicity and the larger group (96%) were of White ethnicity. About three quarters (74%) of the overall group was from the North-West province. Table 2 shows that a total of 42% of the participants was male and 58% was female. All of the participants were under-graduate students of which 98% were in the 18 to 27 age group. The participants participated on a voluntary basis.

Measuring instrument

The purpose of this study was to identify the relevant and representative emotion words of the Afrikaans-speaking group. For this purpose free-listing questionnaires were used. Participants were asked to write down as many Afrikaans emotion words as they could think of during a ten-minute timeframe.

Statistical Analysis

Terms mentioned at least five times across all the participants are accepted and translated into English. The data is cleaned by eliminating redundancy – meaning that all but one set of words formed from the same root (e.g. hate and hatred) is removed. This was done by making use of the Microsoft Excel program.

Results

Table 4 presents the list of Afrikaans words that were generated, as well as the English translated terms, ordered according to the emotion words most mentioned to least mentioned.

Table 4

Afrikaans emotion words

Afrikaans words	English translations	Frequency
Hartseer	Sad	172
Kwaad	Angry	144
Liefde	Love	135
Gelukkig	Happy	118
Haat	Hate	109
Opgewonde	Excited	91
Depressief	Depressed	74
Blydskap	Happiness	68
Vriendelik	Friendly	65
Woede	Anger	62
Irritasie	Irritation	61
Teleurgesteld	Disappointed	51
Verlief	In love	51

Bang	Scared	49
Frustrasie	Frustration	47
Moedeloos	Despondent	43
Ongelukkig	Unhappy	43
Aggressie	Aggression	42
Bly	Glad	42
Jaloesie	Jealousy	41
Vrolik	Merry	36
Vrees	Fear	34
Tevredenheid	Contentment	33
Stres	Stress	31
Angs	Anxiety	29
Terneergedruk	Gloomy	26
Gerus	Peaceful	26
Angstig	Anxious	24
Verward	Confused	24
Afgerem	Tired	23
Verlange	Longing	22
Ongeduldig	Impatient	21
Ontsteld	Upset	21
Geluk	Bliss	20
Vreugde	Joy	20
Liefdevol	Loving	20
Eensaam	Lonely	18
Verveeld	Bored	14
Senuweeagtig	Nervous	14
Trots	Proud	14
Bedruk	Down	13
Passievol	Passionate	13
Geduldig	Patient	13
Verrassing	Surprise	13
Bekommer	Worried	13
Deurmekaar	Dazed	12
Ontevrede	Dissatisfied	12
Pyn	Pain	12
Skaam	Shy	12
Dankbaarheid	Thankfulness	12

Alleen	Alone	10
Ekstaties	Ecstatic	10
Bedroef	Grieving	10
Gemotiveerd	Motivated	10
Rustig	Peaceful	10
Emosioneel	Emotional	8
Hoop	Hope	8
Mislik	Miserable	8
Nostalgie	Nostalgia	8
Woedend	Outraged	8
Kalm	Calm	7
Verleë	Embarrassed	7
Opgewondenheid	Excitement	7
Rigtingloos	Lost	7
Positief	Positive	7
Simpatie	Sympathy	7
Onsekerheid	Uncertainty	7
Benoud	Anguished	6
Opgewek	Cheerful	6
Entoesiame	Enthusiasm	6
Negatief	Negative	6
Sarkasme	Sarcasm	6
Selfversekerd	Self-confident	6
Skok	Shock	6
Suinig	Stingy	6

The top six emotions that were mentioned the most were: to be sad ("hartseer"), to be angry ("kwaad"), love ("liefde"), to be happy ("gelukkig"), hate ("haat"), to be excited ("opgewonde"), and to feel depressed ("depressief"). The six emotions that were at the bottom of the list based on how many times they were mentioned were: enthusiasm ("entoesiasme"), to be/feel negative ("negatief"), sarcasm ("sarkasties"), to feel self-confident ("selfversekerd"), shock ("skok"), and stingy ("suinig").

Sub-study two: Prototypicality rating

After determining the terms which might be regarded as emotion terms, it is necessary to establish to what extent these terms represent the emotion domain of the Afrikaans-speaking group in South Africa.

Method

To ensure that there were no representative emotion words left out during the free-listing task, the list generated from the free-listing task was expanded with other comprehensive emotion term lists found in the literature, as well as the 24 emotion terms used in the GRID measuring instrument (Shaver et al., 1987; Fontaine et al., 2007) This resulted in a comprehensive list of 197 emotion words in Afrikaans.

Procedure

The words in the list were rated on a five-point scale, with regards to how prototypical that emotion word is to the Afrikaans language. The scale points were 0 = definitely not an example of an emotion word, 1 = poor example of an emotion word, 2 = a reasonable example of an emotion word, 3 = good example of an emotion word, and 4 = an excellent example of an emotion word. The average scores among the participants were computed and the top 80 words (all with a prototypcality rating of above two), including the 24 terms used in the GRID instrument, were retained for further study in sub-study three.

Participants

The study population of sub-study two, the prototypicality ratings, consisted of a convenience sample of persons who had at least a three year tertiary degree/diploma and who were affiliated with a tertiary educational institution. Table 5 presents some of the characteristics of the participants.

Table 5

Characteristics of Prototypicality Participants ($N = 23$)

Item	Category	Frequency	Percentage (%)
Ethnicity	White	23	100%
Gender	Male	10	43%
	Female	13	57%
Age	18-27	10	43%
	28-37	5	22%
	38-47	4	17%
	48 +	4	17%
Province	North-West	23	100%
Language	Afrikaans	23	100%
Highest Qualification	3 year diploma/degree	7	30%
	Post graduate	16	70%

All the participants were Afrikaans-speaking, of White ethnicity and from the North-West province. Table 5 shows that 43% of the participants was male and 57% was female. With regards to age, 43% falls under the 18 to 37 age group, 22% under the 28 to 37 age group, and 17% under both the 38 to 47 and the 48 and older age group. A further total of 70% of the participants are post graduates, while 30% have a three year diploma or degree. Due to the small sample size, the prerequisite for this questionnaire was that all the participants should have at least a three year and higher tertiary education, and a good knowledge and understanding of emotions as well as the Afrikaans language domain. The participants participated on a voluntary basis.

Measuring instrument

After the free-listing data was computed and cleaned, and the final list of emotion words was expanded with other comprehensive emotion term lists found in the literature, as well as the 24 emotion terms used in the GRID measuring instrument (Shaver et al., 1987; Fontaine et al., 2007) This was done in order to produce a comprehensive list to account for basically all emotion terms which might have been left out during the free-listing task. The 24 GRID terms were chosen because of its successful use in several other cross cultural emotion research studies

(Scherer et al., 2004) This resulted in a comprehensive list of 197 emotion words which were translated into Afrikaans. This list was rated according to each emotion term's prototypicality to the Afrikaans language on a scale of 1 to 9. The list of words was randomized and so three versions were used in order to account for the fatigue factor.

Statistical analysis

Making use of the SPSS program, the Cronbach's alpha values were computed for each of the emotion terms. The participants with a score of less than 0,20 on the combined score of the three versions of the questionnaire were removed. Eighty emotion words, those with the highest prototypicality ratings as well as the 24 GRID instrument terms (regardless of their protoypicality ratings) were retained.

Results

Table 6 presents the list of the top 80 most prototypical Afrikaans emotion words, as well as the English translations, and the average scores of the prototypicality rating of each term. This list was extended with the 24 terms used in the GRID instrument to yield 80 terms which were used for the similarity ranking task. A Cronbach's alpha of 0,99 for the prototypicality data was obtained.

Table 6

Table of the list of the most prototypical Afrikaans emotion words, excluding the 24 terms of the GRID instrument

	Afrikaans words	English translation	Prototypicality rating
1	Woede	Rage	4
2	Vrees	Fear	3
3	Kwaad	Angry	3
4	Haat	Hate	3
5	Hartseer	Sadness	3
6	Angs	Anxiety	3
7	Gelukkig	Happy	3
8	Vreugde	Joy	3

9	Ekstase	Ecstasy	3
10	Jaloesie	Jealousy	3
11	Opgewondenheid	Excitement	3
12	Verliefdheid	Being in love	3
13	Wanhoop	Despair	3
14	Bang	Scared	3
15	Blydskap	Gladness	3
16	Emosioneel	Being emotional	3
17	Verlange	Longing	3
18	Paniek	Panic	3
19	Smart	Woe	3
20	Bedruk	Being down	3
21	Berou	Regret	3
22	Bewoë	Touched	3
23	Liefde	Love	3
24	Verras	Surprise	3
25	Angstigheid	Anxiousness	3
26	Mismoedigheid	Glumness	3
27	Moedeloos	Crestfallen	3
28	Skok	Shock	3
29	Terneergedruktheid	Dejection	3
30	Afsku	Disgust	3
31	Aggressie	Aggression	3
32	Eensaamheid	Loneliness	3
33	Heimwee	Homesickness	3
34	Swaarmoedigheid	Gloominess	3
35	Uitgelatenheid	Exhilaration	3
36	Vrolikheid	Merriness	3
37	Blymoedigheid	Cheerfulness	3
38	Droefgeestigheid	Melancholy	3
39	Medelye	Compassion	3
40	Nostalgie	Nostalgia	3
41	Verdriet	Sorrow	3
42	Genot	Enjoyment	3
43	Liefdevol	Loving	3
44	Ontsteltenis	Dismay	3
45	Teerheid	Tenderness	3

46	Teleurstelling	Disappointment	3
47	Frustrasie	Frustration	3
48	Verbitterdheid	Bitterness	3
49	Walging	Revulsion	3
50	Bekommernis	Worry	3
51	Simpatie	Sympathy	3
52	Trots	Pride	3
53	Uitbundigheid	Elation	3
54	Verbasing	Astonishment	3
55	Benoudheid	Anguish	3
56	Misnoë	Displeasure	3
57	Omgee	Care	3
58	Ongelukkigheid	Unhappiness	3
59	Passie	Passion	3
60	Toorn	Wrath	3
61	Verwardheid	Confusion	3
62	Aangetrokkenheid	Attraction	3
63	Dankbaarheid	Thankfulness	3
64	Geluk	Happiness	3
65	Hoop	Hope	3
66	Sielsangs	Agony	3
67	Verontwaardiging	Indignant	3
68	Verward	Dazed	3
69	Juig	Exalt	3
70	Entoesiasme	Enthusiasm	2
71	Bewondering	Admiration	2
72	Histerie	Hysteria	2
73	Onrustigheid	Uneasiness	2
74	Senuweeagtigheid	Nervousness	2
75	Verergdheid	Aggravation	2
76	Iesegrimmig	Surly	2
77	Magteloosheid	Impotence	2
78	Meegevoer	Enthralled	2
78	Optimisme	Optimism	2
79	Aangedaan	Moved	2
80	Bewondering	Admiration	2

The emotion terms ranked as the ten most prototypical words were "woede" (rage), "vrees" (fear), "kwaad" (angry), "haat" (hate), "hartseer" (sadness), "angs" (anxiety), "gelukkig" (happy), "vreugde" (joy), "ekstase" (ecstasy), and "jaloesie" (jealousy).

And the ten least prototypical words from the list generated in the free-listing task (sub-study one) were: "vriendskap" (friendship), "onbeholpenheid" (awkwardness), "sondigheid" (sinfulness), "suinigheid" (stinginess), "eerlikheid" (honesty), "onderwerping" (submission), "bewerig" (shaky), "onafhanklikheid" (independence), "bewe" (shiver), and "stilte" (quietness).

For further analysis in sub-study three, the similarity rating task, a list of 80 terms was compiled consisting of the 24 GRID instrument terms and the other most prototypical Afrikaans words. Only nine of the 24 terms used in the GRID instrument was not ranked under the most prototypical Afrikaans emotion terms. On the prototypicality list the bottom nine words had to make way for nine of the 24 terms of the GRID instrument which was not ranked under the top 80 Afrikaans emotion terms. These emotion terms ranked as the nine least prototypical words from the list of the top 80 terms were hysteria ("histerie"), uneasiness ("onrustigheid"), nervousness ("senuweeagtigheid"), aggrevation ("verergdheid"), surly ("iesegrimmig"), crestfallen ("magteloos"), ethralled ("meegevoer"), optimism ("optimisme"), moved ("aangedaan"), and admiration ("bewondering").

The nine terms of the GRID that replaced these terms were: interest ("belangstelling"), irritation ("irritasie"), contempt ("minagting"), pleasure ("plesier"), being hurt ("seergemaak"), shame ("skaamte"), guilt ("skuld"), stress ("stres"), and "tevredenheid" (contentment).

Sub-study three: Similarity rating

The meaning structure of emotions was investigated by means of similarity ratings of the emotion terms that were determined to be the most prototypical.

Method

The 80 most prototypical emotion words generated in the prototypicality rating task, including the 24 GRID terms, were paired up in a systematic way, yielding 3160 pairs of emotion terms. The pairs were then rated on an 8-point scale, where 0 = completely similar in meaning (synonyms) to 7 = completely opposite in meaning (antonyms).

Procedure

The 80 most prototypical emotion words generated in the prototypicality rating task were paired up in a systematic way, yielding 3160 pairs of emotion terms. For feasibility reasons these pairs were randomly divided into groups of 395 pairs, and each group was rated by 15 persons. Participants were then asked to rate the pairs on an 8-point scale, ranging from 0 = completely similar in meaning (synonyms), 1 = very similar in meaning, 2 = moderately similar in meaning, 3 = slightly similar in meaning, 4 = slightly opposite in meaning, 5 = moderately opposite in meaning, 6 = very opposite in meaning, to 7 = completely opposite in meaning (antonyms).

Participants

The study population of sub-study three, similarity ratings, consisted of a convenience sample of Afrikaans-speaking students, as well as adults, affiliated with a tertiary educational institution. Table 7 presents some of the characteristics of the participants.

Table 7

Characteristics of the Similarity rating Participants ($N = 121$)

Item	Category	Frequency	Percentage (%)
Ethnicity	Coloured	5	4%
	White	116	96%
Gender	Male	30	25%
	Female	91	75%
Age	18-27	42	39%
	28-37	27	25%
	38-47	13	12%
	48 +	27	25%

Province	Free State	2	2%
	Gauteng	4	3%
	KwaZulu-Natal	1	1%
	Northern Cape	1	1%
	North-West	113	93%
Language	Afrikaans	121	100%
Highest Qualification	1-2 year diploma	6	5%
	3 year diploma/degree	39	33%
	Post graduate	57	48%

All the participants were Afrikaans-speaking. A small group (4%) were of Coloured ethnicity and the larger group (96%) were of White ethnicity. Overall, the participants were mostly (93%) from the North-West province. Table 7 shows that a total of 25% of the participants was male and 75% was female. A total of 39% fall under the 18 to 37 age group, 25% under both the 28 to 37 and the 48 and older age group, while 12% falls under the 39 to 47 age group. A further total of 48% of the participants are post graduates, while 38% have either a 2 year diploma or a 3 year diploma/degree.

Measuring instrument

The 80 most prototypical emotion words generated in the prototypicality rating task, including the 24 GRID terms, were paired up in a systematic way, yielding 3160 pairs of emotion terms. For feasibility reasons these pairs were randomly divided into groups of 395 pairs, and each group was rated by 15 persons. The pairs were then rated on an 8-point scale, where 0 = completely similar in meaning (synonyms) to 7 = completely opposite in meaning (antonyms).

Statistical analysis

The first step in the analysis included calculating the reliability coefficients of the different participants who completed the eight different versions of the similarity questionnaires. Based only on individuals who had an item total correlation above 0,30, the average similarity rating for each pair of emotion terms was computed. The second step included a Classical Multidimensional Scaling (CMDS) procedure which typically results in systematic ordering of emotion words around specific dimensions. Multidimensional Scaling allows for the

representation of emotion words as points in a space, with the distance between two points representing dissimilarly in sorting (Borg & Groenen, 1997; Davison, 1983; Kruskal & Wish 1978). These analyses were carried out with PROXSCAL of SPSS. By means of an interactive procedure, PROXSCAL computes the coordinates in such a way that there are minimal deviations between the (optimally transformed) dissimilarities (= the ordinal information in the data) and the distances in the geometrical representation (= distances generated by the MDS).

Results

The reliabilities on all of the eight versions of the similarity questionnaire of the Afrikaans group are reported in Table 8.

Table 8

Reliability table of the results of the eight versions of the Similarity Rating Questionnaires

Similarity Questionnaire	Reliabilities of respondents with all item correlations, including item correlations of less than 0,30	Similarity Questionnaire	Reliabilities of respondents with item correlations, excluding item correlations of less than 0,30
Similarity Questionnaire 1 (N = 15)	0,94	Similarity Questionnaire 1 (N = 15)	0,94
Similarity Questionnaire 2 (N = 16)	0,92	Similarity Questionnaire 2 (N = 13)	0,93
Similarity Questionnaire 3 (N = 15)	0,93	Similarity Questionnaire 3 (N = 14)	0,94
Similarity Questionnaire 4 (N = 15)	0,91	Similarity Questionnaire 4 (N = 11)	0,92

Similarity Questionnaire 5 (N = 15)	0,95	Similarity Questionnaire 5 (N = 15)	0,95
Similarity Questionnaire 6 (N = 15)	0,92	Similarity Questionnaire 6 (N = 12)	0,94
Similarity Questionnaire 7 (N = 15)	0,93	Similarity Questionnaire 7 (N = 14)	0,94
Similarity Questionnaire 8 (N = 15)	0,94	Similarity Questionnaire 8 (N = 13)	0,94

Table 8 indicates that all the versions of the similarity questionnaire obtained acceptable Cronbach alpha coefficients. This can be said because all the alpha coefficients were higher than the guideline of 0,70 (Field, 2005). This implies that the scores on the similarity questionnaires are normally distributed. It appears that all versions of the similarity questionnaires have acceptable levels of internal consistency. However, candidates with item-correlations lower than 0,30 were removed. In version one and version five, all candidates obtained scores higher than 0,30. However in version two, three candidates were removed, in version three, one candidate was removed, in version four, four candidates were removed, in version six, three candidates were removed, in version seven, one candidate was removed, and in version eight, two candidates were removed.

Table 9

Coordinates of the Afrikaans emotion terms on the three dimensions of the Similarity rating

	Afrikaans	**English**	**Dimension**		
			1	**2**	**3**
1	Aangetrokkenheid	Attraction	0,63	-0,42	-0,13

2	Afsku	Disgust	-0,49	0,45	0,39
3	Aggressie	Aggression	-0,28	0,64	0,19
4	Angs	Anxiety	-0,47	0,12	-0,49
5	Angstigheid	Anxiousness	-0,39	0,19	-0,42
6	Bang	Scared	-0,40	0,03	-0,54
7	Bedruk	Being down	-0,52	-0,22	-0,10
8	Bekommernis	Worry	-0,32	-0,30	-0,43
9	Belangstelling	Interest	0,60	-0,38	0,11
10	Benoudheid	Anguish	-0,40	-0,08	-0,54
11	Berou	Regret	-0,43	-0,55	0,13
12	Bewoë	Touched	-0,24	-0,52	0,15
13	Bewondering	Admiration	0,70	-0,28	0,14
14	Blydskap	Gladness	0,76	0,17	-0,09
15	Blymoedigheid	Cheerfulness	0,73	0,06	-0,17
16	Dankbaarheid	Thankfulness	0,72	-0,12	0,28
17	Droefgeestigheid	Melancholy	-0,49	-0,41	0,02
18	Eensaamheid	Loneliness	-0,33	-0,60	-0,15
19	Ekstase	Ecstasy	0,72	0,24	-0,13
20	Ellendig	Distressed	-0,60	-0,20	0,08
21	Emosioneel	Being emotional	0,03	-0,10	-0,07
22	Entoesiasme	Enthusiasm	0,66	0,27	0,01
23	Frustrasie	Frustration	-0,53	0,34	-0,06
24	Geluk	Happiness	0,78	0,06	0,02
25	Genot	Enjoyment	0,76	0,11	-0,22
26	Haat	Hate	-0,48	0,37	0,42
27	Hartseer	Sadness	-0,39	-0,36	0,16
28	Heimwee	Homesickness	-0,08	-0,66	-0,00
29	Hoogmoed	Pride	0,62	0,33	0,37
30	Hoop	Hope	0,66	-0,08	0,31
31	Irritasie	Irritation	-0,49	0,54	-0,01
32	Jaloesie	Jealousy	-0,14	0,27	0,65
33	Juig	Exalt	0,75	0,23	0,01
34	Kwaad	Angry	-0,47	0,35	0,22
35	Liefde	Love	0,66	-0,22	-0,01
36	Liefdevol	Loving	0,68	-0,26	-0,08
37	Medelye	Compassion	0,03	-0,64	0,35
38	Minagting	Contempt	-0,27	0,56	0,54

39	Mismoedigheid	Glumness	-0,59	-0,22	-0,10
40	Misnoë	Displeasure	-0,47	-0,03	0,38
41	Moedeloos	Crestfallen	-0,65	-0,22	-0,11
42	Nostalgie	Nostalgia	0,25	-0,58	0,14
43	Omgee	Care	0,53	-0,45	0,08
44	Ongelukkigheid	Unhappiness	-0,54	-0,13	0,16
45	Ontsteltenis	Dismay	-0,49	0,12	0,04
46	Opgewondenheid	Excitement	0,68	0,22	-0,14
47	Optimisme	Optimism	0,68	0,16	0,36
48	Paniek	Panic	-0,38	0,26	-0,55
49	Passie	Passionate	0,58	0,05	0,18
50	Plesier	Pleasure	0,78	0,10	-0,08
51	Seergemaak	Being hurt	-0,45	-0,12	0,33
52	Simpatie	Sympathy	0,09	-0,68	0,40
53	Skaamte	Shame	-0,08	0,01	-0,77
54	Skok	Shock	-0,27	0,41	-0,32
55	Skuldig	Guilt	-0,40	0,43	-0,40
56	Smart	Woe	-0,48	-0,36	0,19
57	Stres	Stress	-0,48	0,11	-0,40
58	Swaarmoedigheid	Gloominess	-0,54	-0,24	-0,03
59	Teerheid	Tenderness	0,27	-0,5	0,28
60	Teleurstelling	Disappointment	-0,64	-0,04	0,18
61	Terneergedruktheid	Dejection	-0,52	-0,28	-0,10
62	Tevredenheid	Contentment	0,77	-0,02	-0,13
63	Toorn	Wrath	-0,31	0,23	0,62
4	Uitbundigheid	Elation	0,68	0,32	-0,13
65	Uitgelatenheid	Exhilaration	0,62	0,38	0,01
66	Verbasing	Astonishment	0,21	0,57	-0,37
67	Verbitterdheid	Bitterness	-0,51	0,15	0,36
68	Verdriet	Sorrow	-0,51	-0,35	0,14
69	Verergdheid	Aggravation	-0,34	0,60	0,24
70	Verlange	Longing	-0,02	-0,64	-0,16
71	Verliefdheid	Being in love	0,66	-0,20	-0,28
72	Verontwaardiging	Indignant	-0,33	0,32	0,37
73	Verrassing	Surprise	0,49	0,38	-0,40
74	Verwardheid	Confusion	-0,23	0,04	-0,57
75	Vrees	Fear	-0,45	0,11	-0,50

76	Vreugde	Joy	0,78	0,11	-0,05
77	Vrolikheid	Merriness	0,8	0,17	0,01
78	Walging	Revulsion	-0,42	0,54	0,36
79	Wanhoop	Despair	-0,62	-0,15	-0,28
80	Woede	Rage	-0,45	0,48	0,14

Note: Dimension 1: Evaluation (pleasantness), where pleasant emotions are opposed to unpleasant emotions. Dimension 2: Arousal (activation), with anger and fear being opposed to sadness. Dimension 3: Power (potency), with anger as opposed to fear and sadness.

Inspection of Table 9 indicates that a three factorial solution, unlike the GRID which has four factors, was extracted. The first dimension is evaluation, where emotion terms are being evaluated as pleasant or unpleasant. The second dimension is arousal, where emotions are evaluated based on the passivity or activity it elicits in one. Here anger and fear terms were opposed to sadness. The third dimension identified is the power dimension where emotions are interpreted as strong versus weak emotions. With regards to potency, anger was opposed to fear and sadness.

Part two

Sub-study four: Application of the GRID instrument

Method

The GRID instrument, which is a European developed instrument, was administered for comparative reasons. The same dimensions were expected to be identified as were obtained through the Similarity rating.

Procedure

The GRID was administered using the paper and pencil method. Each participant was given four emotions randomly chosen from the set of 24 and asked to rate each in terms of the 144 emotion features. Using a 9-point scale ranging from 1 = extremely unlikely to 9 = extremely likely, they rated how likely it would be to experience each of the 144 emotion features when a person from the Afrikaans-speaking group uses the emotion term to describe an emotional experience.

Participants

The study population for sub-study four, the GRID, consisted of a convenience sample of university students from a tertiary educational institution, whose first language is Afrikaans. Table 10 presents some of the characteristics of the participants.

Table 10

Characteristics of the GRID instrument Participants ($N = 121$)

Item	Category	Frequency	Percentage (%)
Ethnicity	Black	1	0,8%
	Coloured	4	3,3%
	White	116	95,9%
Gender	Male	44	36,4%
	Female	77	63,6%
Age	18-27	121	100%
Province	Free State	7	5,8%
	Gauteng	13	10,7%
	KwaZulu-Natal	3	2,5%
	Limpopo	3	2,5%
	Mpumalanga	5	4,1%
	Northern Cape	2	0,8%
	North-West	84	69,4%
Language	Afrikaans	121	100%
Highest Qualification	Grade 12 with university exemption	63	52,1%
	One/two year diploma	4	3,3%
	Three/four year diploma or degree	20	16,5%
	Post graduate	34	28,1%

All the participants were Afrikaans-speaking. A small group (4%) were of Coloured ethnicity and the larger group (95,9%) were of White ethnicity. The largest part of the overall group (84%) was from the North-West province. Table 10 shows that 44% of the participants was male and 77% was female. All of the participants were in the age group of 18 – 27 years, of which 52% were pre-graduate and 28,1% were postgraduate. The participants participated on a voluntary basis.

Measuring instrument

An Afrikaans translated version of the GRID instrument was administered. As mentioned earlier in this chapter, the GRID is a European developed instrument which measures 24 emotion terms across 144 features and was administered using the paper and pencil method. The 24 emotion terms were chosen mainly based on research findings and prototypicality of certain emotion terms across some cultures, and the 144 emotion characteristics represent activities in all of the six major components of emotion (Fontaine et al., 2007).

Statistical Analysis

Making use of the SPSS program, Principal Component Analysis (PCA) was done to compute the reliabilities and the factor structure. PCA is a form of exploratory factor analysis.

Results

The inter-rater reliabilities for the GRID instrument are reported in Table 11.

Table 11

Inter-rater reliability table of the results of the GRID instrument

Emotion term	Cronbach's alpha with all respondents	Number of respondents	Cronbach's alpha with respondents with item-total correlations of at least 0,20	Number of respondents with item-total correlations of at least 0,20
Minagting (contempt)	0,58	18	0,67	14
Walging (disgust)	0,84	18	0,86	15
Woede (anger)	0,84	22	0,91	20
Irritasie (irritation)	0,87	17	0,89	15
Haat (hate)	0,88	21	0,90	19
Jaloesie (jealousy)	0,89	25	0,89	24
Vrees (fear)	0,88	18	0,92	14
Angs (anxiety)	0,89	18	0,89	17
Stres (stress)	0,90	22	0,93	17
Verrassing (surprise)	0,75	17	0,81	13

Wanhoop (dispair)	0,91	21	0,91	20
Belangstelling (interest)	0,92	25	0,93	23
Hoogmoed (pride)	0,74	18	0,80	13
Vreugde (joy)	0,91	18	0,93	16
Plesier (pleasure)	0,91	22	0,94	18
Liefde (love)	0,84	17	0,88	14
Geluk (happiness)	0,94	21	0,95	19
Tevredenheid (contentment)	0,94	25	0,94	23
Medelye (compassion)	0,71	18	0,80	13
Teleurstelling (dissapointment)	0,84	18	0,87	15
Skuld (guilt)	0,87	22	0,90	18
Skaamte (shame)	0,81	17	0,87	12
Seergemaak (being hurt)	0,91	21	0,93	19
Hartseer (sadness)	0,93	25	0,93	23

Participants with an item correlation of less than 0,20 were dropped to improve the reliability. This caused the lowest reliability of 0,58 to go up to 0,67. Next a scree plot was computed which indicated that four factors should be extracted. However, the forth factor was not interpretable and so it was decided to extract only three factors.

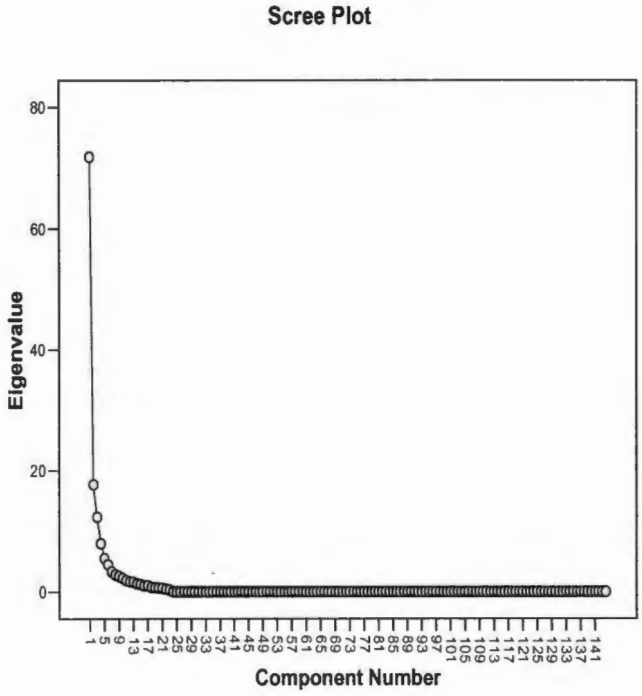

Figure 2. Scatter plot of the GRID instrument components

Table 12 presents a Principal Component Analysis table that indicates which of the 144 features loads on which component (dimension). The interpretation of the three components (dimensions) is based on their relationship with the 144 emotion features and on the coordinates of the 24 emotion terms on these components (dimensions) (see Table 13).

Table 12

Component loadings of the 144 items of the GRID instrument

	Feature	**Components (Dimensions)**		
		1	**2**	**3**
	Features on the thee components	**Pleasant vs Unpleasant (Evaluation) Valence**	**Weakness vs Dominance (Potency)**	**Activation (High vs Low arousal)**
1	wanted to be tender, sweet, and kind	**-0,96**	-0,01	0,03
2	wanted to oppose	**0,95**	0,25	0,02

3	wanted to break contact with others	**0,95**	0,12	-0,08
4	wanted to do damage, hit, or say something that hurts	**0,95**	0,00	0,02
5	wanted to be near or close to people or things	**-0,94**	0,14	0,22
6	consequences positive for person	**-0,92**	-0,32	0,08
7	to what extent is it socially accepted	**-0,92**	0,02	0,21
8	felt calm	**-0,91**	-0,28	-0,07
9	wanted to destroy whatever was close	**0,91**	0,15	0,14
10	wanted to sing and dance	**-0,91**	-0,35	0,11
11	withdrew from people or things	**0,91**	0,22	-0,12
12	in itself pleasant for the person	**-0,90**	-0,32	0,09
13	frowned	**0,90**	0,10	-0,08
14	wanted to get totally absorbed in the situation	**-0,90**	-0,22	0,06
15	felt good	**-0,90**	-0,40	0,05
16	felt positive	**-0,90**	-0,40	0,06
17	smiled	**-0,90**	-0,36	0,01
18	felt at ease	**-0,89**	-0,41	-0,01
19	wanted to keep or push things away	**0,89**	0,41	0,02
20	consequences able to live with	**-0,88**	-0,04	0,06
21	wanted to prevent or stop sensory contact	**0,88**	0,34	-0,03
22	muscles relaxing (whole body)	**-0,88**	-0,26	-0,16
23	wanted to comply to someone else's wishes	**-0,86**	0,21	0,08
24	wanted the ongoing situation to last or be repeated	**-0,86**	-0,43	0,10
25	pressed lips together	**0,85**	0,19	0,22
26	felt negative	**0,84**	0,46	-0,02
27	incongruent with own standards and ideals	**0,83**	0,41	0,09
28	important and relevant for person's goals	**-0,83**	-0,24	0,25
29	important and relevant for goals of somebody else	**-0,82**	-0,06	0,13

30	felt powerful	**-0,82**	-0,49	0,03
31	felt inhibited or blocked	**0,81**	0,52	0,13
32	consequences negative for person	**0,81**	0,40	0,13
33	wanted to withdraw into her-/himself	**0,81**	0,54	-0,09
34	felt energetic	**-0,80**	-0,50	0,23
35	wanted to take care of another person or cause	**-0,80**	0,10	0,04
36	felt bad	**0,80**	0,53	-0,04
37	familiar	**-0,80**	-0,34	-0,10
38	violated laws or socially accepted norms	**0,80**	0,31	-0,06
39	caused by a supernatural power	**-0,79**	0,25	0,37
40	wanted to undo what was happening	**0,78**	0,51	0,03
41	in itself unpleasant for the person	**0,78**	0,45	0,06
42	felt out of control	**0,78**	0,39	0,34
43	wanted to flee	**0,78**	0,58	0,06
44	felt powerless	**0,76**	0,59	0,02
45	consequences positive for somebody else	**-0,76**	-0,46	0,05
46	treated unjustly	**0,76**	0,42	0,14
47	in itself pleasant for somebody else	**-0,76**	-0,18	0,13
48	wanted to run away in whatever direction	**0,76**	0,59	0,10
49	felt restless	**0,76**	0,48	0,26
50	felt the urge to stop what he or she was doing	**0,75**	0,50	0,16
51	felt in control	**-0,75**	-0,56	-0,03
52	moved toward people or things	**-0,75**	0,08	0,54
53	wanted to disappear or hide from others	**0,75**	0,60	-0,09
54	wanted to submit to the situation as it is	**-0,73**	-0,11	0,12
55	felt exhausted	**0,72**	0,60	0,09
56	breathing slowing down	**-0,72**	0,06	-0,24
57	muscles tensing (whole body)	**0,69**	0,43	0,49
58	felt weak	**0,69**	0,68	-0,11
59	wanted to show off	**-0,68**	-0,65	0,02

60	felt strong	**-0,67**	-0,66	0,16
61	consequences predictable	**-0,67**	-0,36	0,08
62	felt an urge to be attentive to what is going on	**-0,67**	0,21	0,23
63	lacked the motivation to pay attention to what was going on	**0,66**	0,31	0,00
64	wanted to do nothing	**0,66**	0,26	-0,26
65	moved against people or things	**0,66**	0,21	0,23
66	inconsistent with expectations	**0,65**	0,09	0,13
67	enough resources to avoid or modify consequences	**-0,65**	-0,37	0,02
68	felt tired	**0,64**	0,62	-0,09
69	produced a short utterance	**0,64**	0,61	-0,26
70	fell silent	**0,63**	0,62	-0,28
71	will be changed in a lasting way	**-0,62**	0,33	0,20
72	Sweat	**0,62**	0,37	0,53
73	wanted to go on with what he or she was doing	**-0,60**	-0,47	0,13
74	consequences negative for somebody else	**0,60**	0,34	-0,09
75	hid the emotion from others by smiling	**0,58**	0,51	-0,30
76	confirmed expectations	**-0,58**	-0,20	-0,05
77	in itself unpleasant for somebody else	**0,56**	0,26	-0,02
78	centre of attention	**-0,55**	-0,46	0,22
79	perspired, or had moist hands	**0,53**	0,47	0,53
80	did not show any changes in face	**0,52**	-0,27	-0,47
81	felt an urge to be active, to do something, anything	**-0,52**	-0,02	0,39
82	wanted to tackle the situation	**0,45**	-0,24	0,36
83	did not show any changes in vocal expression	**0,44**	-0,11	-0,44
84	Blushed	**-0,43**	0,08	0,00
85	felt warm	**-0,41**	-0,41	0,30

86	wanted to be in control of the situation	**0,39**	-0,27	0,24
87	had the jaw drop	**-0,30**	0,16	0,29
88	caused by somebody else's behaviour	**0,27**	0,04	0,23
89	caused by the person's own behaviour	**-0,11**	-0,08	0,01
90	wanted someone to be there to provide help or support	0,30	**0,88**	0,11
91	a lump in throat	0,04	**0,86**	0,12
92	closed her or his eyes	0,22	**0,83**	0,14
93	decreased the volume of voice	0,19	**0,82**	-0,38
94	showed tears	0,20	**0,81**	0,23
95	had a trembling voice	0,44	**0,80**	0,26
96	tried to control the intensity of the emotional feeling	0,11	**0,77**	0,15
97	felt dominant	-0,52	**-0,74**	0,17
98	felt cold	0,48	**0,74**	0,02
99	felt submissive	0,49	**0,74**	-0,06
100	got pale	0,51	**0,73**	0,27
101	felt weak limbs	0,31	**0,73**	0,40
102	wanted to be hurt as little as possible	0,56	**0,72**	-0,02
103	wanted to be seen, to be in the centre of attention	-0,61	**-0,70**	0,10
104	had stomach troubles	0,62	**0,69**	0,18
105	in danger	0,48	**0,69**	0,31
106	felt nervous	0,54	**0,68**	0,19
107	wanted to take initiative her/himself	-0,33	**-0,68**	0,13
108	irrevocable loss	0,58	**0,67**	0,11
109	showed the emotion to other less than s/he felt it	0,12	**0,67**	0,08
110	had an assertive voice	0,13	**-0,67**	0,50
111	wanted to be in command of others	0,48	**-0,66**	0,08
112	produced a long utterance	-0,38	**-0,62**	0,59
113	had eyebrows go up	0,28	**-0,60**	0,33
114	lacked the motivation to do anything	0,58	**0,59**	0,18

115	was in an intense emotional state	0,41	**0,58**	0,37
116	wanted to hand over the initiative to someone else	-0,06	**0,58**	0,06
117	experienced the emotional state for a long time	0,27	**0,57**	0,03
118	produced speech disturbances	0,56	**0,56**	0,48
119	wanted to overcome an obstacle	0,29	**0,51**	0,35
120	had no bodily symptoms at all	-0,02	**-0,51**	-0,24
121	wanted to make up for what she or he had done	-0,21	**0,45**	-0,15
122	produced abrupt body movements	-0,08	0,01	**0,91**
123	spoke faster	-0,20	-0,16	**0,91**
124	opened her or his eyes widely	-0,30	-0,08	**0,84**
125	heartbeat getting faster	-0,03	0,27	**0,73**
126	breathing getting faster	0,35	0,22	**0,69**
127	increased the volume of voice	-0,02	-0,64	**0,68**
128	wanted to move	-0,42	-0,24	**0,68**
129	changed the melody of her or his speech	-0,02	-0,03	**0,67**
130	felt alert	0,18	0,17	**0,67**
131	felt shivers	0,16	0,60	**0,63**
132	Suddenly	-0,14	0,58	**0,63**
133	caused by chance	-0,54	0,25	**0,61**
134	wanted to act, whatever action it might be	0,31	0,06	**0,60**
135	required an immediate response	0,18	0,37	**0,58**
136	Unpredictable	-0,16	0,55	**0,58**
137	spoke slower	0,10	0,43	**-0,58**
138	did not show any changes in gestures	0,45	-0,27	**-0,52**
139	felt hot	0,45	0,19	**0,49**
140	heartbeat slowing down	-0,20	0,32	**-0,47**
141	showed the emotion to others more than s/he felt it	-0,21	-0,20	**0,45**
142	caused intentionally	-0,12	-0,09	**0,36**

143	how frequently experienced	-0,32	0,04	**0,35**
144	consequences avoidable or modifiable	-0,08	0,27	**0,27**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 14 iterations.

Close inspection of Table 12 indicates that features 57-59 as well as 67-69 loads on both dimension 1 and dimension 2. Furthermore, it should be noted that features 88, 89 and 144 has a value of less than 0,30 which indicates that it does not load significantly on any of the factors.

A further analysis was done to determine the factor-structure (components) of each factor. In other words, the coordinates of the 24 emotion terms on these factors (dimensions).

Table 13

Component loadings of the 24 GRID emotions

Emotion Terms	**Components**		
	1	**2**	**3**
	Pleasant vs Unpleasant (Evaluation) Valence	**Weakness vs Dominance (Power)**	**Arousal (High vs Low)**
Haat (Hate)	1,36	-0,87	1,06
Irritasie (Irritation)	1,20	-0,98	0,33
Jaloesie (Jealousy)	0,88	-1,03	-0,15
Woede (Anger)	1,11	-0,67	1,94
Minagting (Contempt)	0,68	-1,34	-1,63
Walging (Disgust)	0,81	-0,21	-0,53
Vrees (Fear)	0,24	1,30	1,22
Belangstelling (Interest)	-1,22	-0,62	0,64
Angs (Anxiety)	0,28	0,90	1,13
Stres (Stress)	0,62	1,11	1,29
Verrassing (Surprise)	-0,42	-0,32	0,81
Wanhoop (Despair)	0,46	1,07	-0,93
Vreugde (Joy)	-1,42	-0,43	0,70
Geluk (Happiness)	-1,64	-0,52	1,17
Liefde (Love)	-1,31	0,03	-0,71
Plesier (Pleasure)	-1,66	-0,51	0,38
Tevredenheid (Contentment)	-1,49	-0,65	-0,93

Trots (Pride)	0,58	-2,46	-1,29
Seergemaak (Being hurt)	0,50	1,17	-0,49
Medelye (Compassion)	-1,22	1,24	-1,03
Teleurstelling (Dissapointment)	0,49	0,69	-0,56
Skaam (Shame)	0,36	0,82	-0,75
Skuld (Guilt)	0,50	0,72	-0,97
Hartseer (Sadness)	0,28	1,25	-0,71

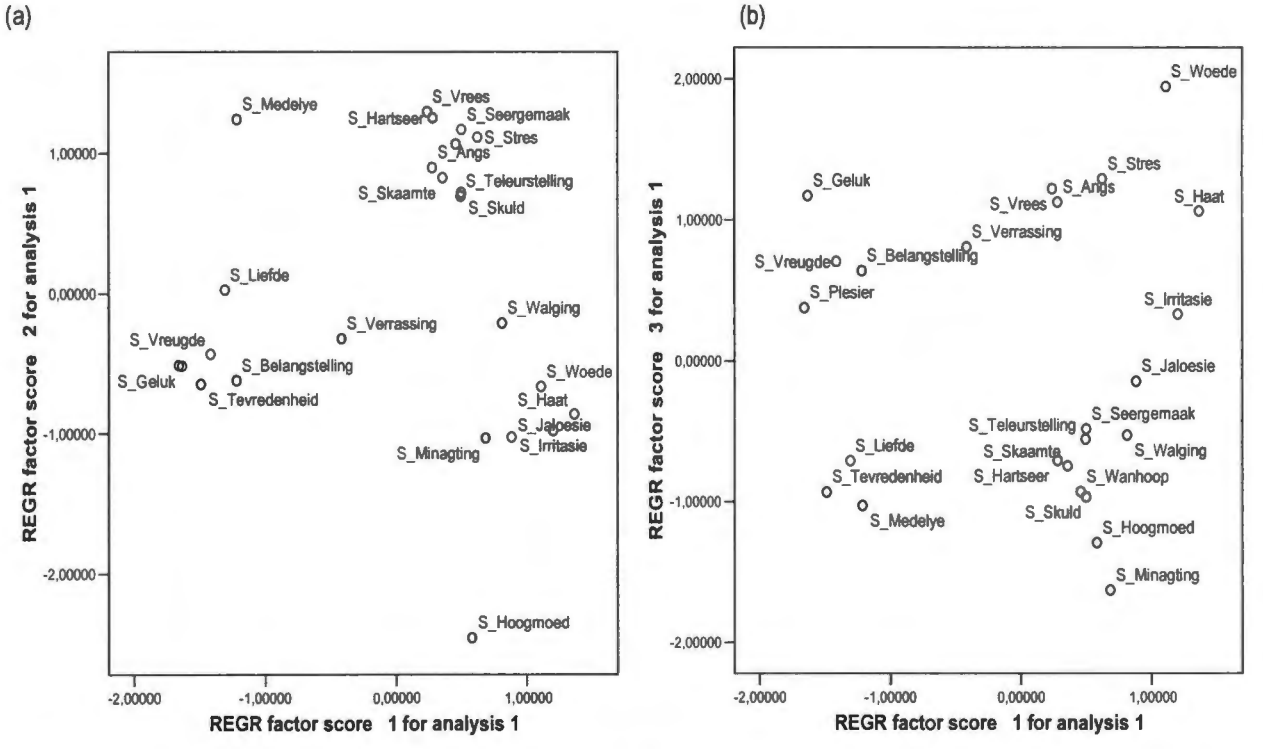

Figure 3. The three-dimensional scatter plots representing the 24 emotion terms of the GRID. Two diagrams show plots of coordinates for (a) Potency: weak vs. strong emotions (factor 2) x Evaluation: positive and negative emotions (factor 1); and (b) Activation: high vs. low arousal (factor 3) x Evaluation: positive and negative emotions (factor 1).

The first dimension that came forth is the evaluation dimension. This dimension evaluates the pleasantness or positivity versus the unpleasantness or negativity of an emotion. This dimension is characterized by intrinsic appraisals of pleasantness and goal conduciveness and action tendencies of approach versus avoidance (Fontaine et al., 2007). As can be seen in figure 3, emotions such as joy, happiness, love, contentment and interest are opposed to emotions such as anger, jealousy, irritation, hate and disgust. The second dimension which was identified is the potency dimension. This dimension is characterised by appraisals of control, how powerful or

weak a person feels when a particular emotion is experienced. This includes feelings of dominance or submission, the impulse to act or withdraw and changes in speech and parasymphatic symptoms (Fontaine et al., 2007). The third dimension that came forth is the activation dimension. According to Fontaine et al. (2007) this dimension is characterized by sympathetic arousal, e.g. rapid heartbeat and readiness for action. As can be seen in figure 3 (b), it opposes emotions such as anger, stress and happiness to contempt, pride, shame and compassion.

GENERAL DISCUSSION

The objective of this research article was to investigate which emotion words or concepts are typically used the emotion lexicon of the Afrikaans-speaking group, in order to identify culture-specific information in the emotional domain for further comparative studies in the future.

In order to investigate the cognitive emotion structure of the Afrikaans-speaking group it was necessary to make use of a "bottom up" approach. This entailed that the process first started by identifying the specific emotion terms used by the Afrikaans-speaking group. This was done by identifying the highest frequency terms as provided by the participants. The free-listing task provided many emotion terms which was further scaled down by using the prototype approach. According to Fehr and Russel (1984) and Shaver et al. (1987) this prototype approach is necessary to identify the emotions which are true representations of typical emotion terms specifically used by a culture group.

Words with the highest frequency listed by the participants in the free-listing task were for example sadness ("hartseer"), angry ("kwaad"), love ("liefde"), happiness ("geluk"), hate ("haat") and excitement ("opgewondenheid"). These terms, amongst quite a number of others, corresponded with the results of the prototypicality ratings.

The emotion terms ranked as the ten words most prototypical to the Afrikaans language were rage ("woede"), fear ("vrees"), angry ("kwaad"), hate ("haat"), sadness ("hartseer"), anxiety ("angs"), happy ("gelukkig"), joy ("vreugde"), ecstasy ("ekstase"), and jealousy ("jaloesie").

And the ten least prototypical words from the list generated in the free-listing task (sub-study one) were: friendship ("vriendskap") awkwardness ("onbeholpenheid"), sinfulness ("sondigheid"), stinginess ("suinigheid"), honesty ("eerlikheid"), submission ("onderwerping"), shakiness ("bewerigheid"), independence ("onafhanklikheid"), shiver ("bewe"), and quietness ("stilte").

These emotion terms (the top most frequently identified terms, as well as the most prototypical emotion terms) corresponds more or less with lists of basic emotions found in the literature, which is more or less happiness, anger, sadness, love, fear and hate (e.g. Bretherton & Beeghly, 1982; Ekman, 1984; Epstein, 1984; Izard, 1977). However, more recent research does not agree with the notion of basic emotions. It seems that Ekman's list of basic emotions changed as he further explored it in his research. What is meant by basic emotions is that these emotions are the building blocks, the fundamental units out of which other emotions are formed (Sabini & Silver, 2005; Solomon, 2002). Solomon (2002) states that emotion vocabulary is not random, because it captures something specific and essential of one's emotional experience. The words used to identify emotions should not be confused with the emotions themselves. This means that the emotions implicated by the basic or most prototypical emotion terms in one culture, might not be the same for another culture who use the same terms. There might be a fine distinction between the emotions which are referred to by similar emotion terms between different cultures. If this was not the case, and one could go on the assumption that there are specific basic emotions which are universal across all cultures, in which instance a study of this nature would not have been necessary.

Consequently it was found that identifying the cognitive structure of emotion terms across different culture groups would be useful to identify the differences (or even similarities) "in meaning" between the same emotion terms of different culture/language groups.

In comparison with these most prototypical Afrikaans emotion terms, Nicholls (2008) found the following five most prototypical words for the Sepedi-, Tshivenda- and Xitsonga-speaking groups in South Africa:

Table 14

The five most prototypical words of the Afrikaans-, Sepedi-, Tshivenda- and Xitsonga-speaking groups in South Africa

Afrikaans	**Sepedi**	**Tshivenda**	**Xitsonga**
Rage	Loneliness / emptiness / glumness	Wrath	Shock
Fear	Restlessness	Suspicion	Doubt
Anger	Unhappiness / displeasure	Sinfulness	Humiliation
Hate	Compassion / moved / pitifulness	Fondness	Shyness
Sadness	Tired	Insecurity	Exuberance

In order to identify the cognitive emotion structure of the Afrikaans-speaking group via the "bottom up" approach, the identified 80 most prototypical emotion terms were used for the similarity rating task. The results of the similarity rating task enabled the researcher to identify the cognitive emotion structure of the Afrikaans-speaking group.

The similarity rating task revealed three dimensions, namely, evaluation, activation, and potency. On the evaluation dimension emotion terms such as pleasure ("plesier"), joy ("vreugde"), contentment ("tevredenheid"), exalt ("juig"), love ("liefde"), loving ("liefdevol"), excitement ("opgewondenheid"), optimism ("optimisme"), attraction ("aangetrokkenheid") and so forth were opposed to emotion terms such as crestfallen ("moedeloos"), distressed ("ellendigheid"), glumness ("mismoedigheid"), unhappiness ("ongelukkigheid"), gloominess ("swaarmoedigheid"), frustration ("frustrasie"), bitterness ("verbitterdheid"), sorrow ("verdriet") et cetera.

On the second dimension, activation, emotion terms such as aggression ("aggressie"), compassion ("medelye"), aggravation ("verergdheid"), astonishment ("verbasing"), contempt ("minagting"), revulsion ("walging"), irritation ("irritasie") et cetera. were found on the one end of the spectrum and emotion terms such as sympathy ("simpatie"), despair ("wanhoop"), homesickness ("heimwee"), longing ("verlange"), loneliness ("eensaamheid"), nostalgia ("nostalgie"), regret ("berou"), touched ("bewoë") etc. on the other end of the spectrum.

On the third dimension, potency, words such as jealousy ("jalousie"), wrath ("toorn"), contempt ("minagting"), anguish ("benoudheid"), hate ("haat"), sympathy ("simpatie") were opposed to emotion terms such as shame ("skaamte"), panick ("paniek"), scared ("bang"), fear ("vrees"), anxiety ("angstigheid"), worry ("bekommernis"), guilt ("skuldig"), stress ("stres"), indignant ("verontwaardig") et cetera.

In comparison with these dimensions of the Afrikaans emotion terms, Nicholls (2008) found the following dimensions for the Sepedi-, Tshivenda- and Xitsonga-speaking groups in South Africa:

Table 15

The dimensions of the Afrikaans-, Sepedi-, Tshivenda- and Xitsonga-speaking groups in South Africa

Dimension	Afrikaans	Sepedi	Tshivenda	Xitsonga
1	Evaluation	Evaluation	Evaluation	Evaluation
2	Activation	Power		Power
3	Power	Unexpectedness	Power	Activation
4		Activation	Activation	Unpredictability

For the Afrikaans-speaking group only three dimensions emerged, as well as for the Tshivenda, because the second dimension of that group was representative of negative emotions, but couldn't be clearly interpreted (Nicholls, 2008). It is clear from these comparisons that there is a difference between the cognitive emotion structures of these culture groups.

Furthermore, for interest sake, the GRID instrument, which is a European measuring instrument used for the identification of the cognitive emotion structure, was translated into Afrikaans and administered. This process served as the "top down" approach to identify the cognitive emotion structure of the Afrikaans-speaking group.

At face value it looks as if the GRID produced the same results as the similarity rating task. The same three dimensions were identified in both instances. However, in the Similarity rating

exercise the second dimension was activation and the third dimension potency. With the GRID approach it was the other way around, with potency being the second dimension and activation the third dimension. Thus the order of importance according to the GRID is firstly the pleasant dimension, then the potency dimension, and thirdly the arousal dimension. In the Similarity rating the first dimension is also pleasantness, but secondly is the activation dimension and then thirdly the potency dimension.

This could be an accidental finding due to some of the emotion terms that differs on the arousal dimension; meaning that terms are differentiated based on arousal rather than on power. Or it could be that for the Afrikaans group, arousal is a bit more important than power. However, both the Similarity rating and the GRID results clearly points to three dimensions with clear convergence on the first dimension. The fact that the second dimension on the Similarity ranking is arousal might be that it is a methodological artefact due to the method. Which means that there could either be no real underlying meaning, or that it points to a higher salience of arousal in Afrikaans than in the three European languages from which the GRID instrument was developed. The data from this research study is not sufficient to answer this question.

Most importantly the same emotional structure emerged from both the methods: the Similarity rating and the GRID instrument. Therefore, if this information is to be used to develop measuring instruments, it is important to take into account all three of the dimensions that emerged from this study.

Fontaine et al. (2007) found in their study of the comparison between three European languages that more than two dimensions are necessary for the representation of the space of emotion. Although this research study yielded only three dimensions, instead of the expected four dimensions, it is still sufficient to be a true representation of the emotion structure of the Afrikaans group.

The fourth dimension that was expected based on Fontaine et al's (2007) study is unpredictability. However, this dimension has not emerged in most previous general studies and could account for the ambivalent status of the emotion term: surprise. In this study surprise came

out as fairly high in activation, but rather neutral with regards to pleasantness and potency. The explanation for this could be due the fact that it refers to a quality of the emotion experience which is based on appraisal of novelty and unexpectedness according to Fontaine et al.

In the study done by Fontaine et al. (2007), the GRID instrument was applied to three different European languages (English, French, and Dutch) which yielded the same emotional structure between these three different European languages. (See appendix A for the research article of Fontaine et al., 2007). Four dimensions were identified: the first dimension being pleasantness, the second being potency, the third being activation, and also a fourth dimension which is unpredictability.

Compared to this (based on face value) it appears that the GRID results of the Afrikaans-speaking group is the same with pleasantness, potency and arousal, being the first three dimensions that emerged, although the fourth dimension of unpredictability did not come forth. For a visual comparison between the European results and the results of the Afrikaans-speaking group see appendix B.

Furthermore, it should be noted that an unexpected result was that of the emotion term pride. According to the GRID results, pride was not evaluated as a very positive emotion with low arousal and weak, rather than strong potency. Upon close inspection it was discovered that when translated into Afrikaans, pride was wrongly translated to "hoogmoed" instead of "trots," meaning that pride was translated to feeling snobbish. According to the dictionary pride can be either translated to either "hoogmoed" or "trots", but the meaning of the two words differs significantly. The intention of the word pride used in the GRID instrument is that of feeling proud about an accomplishment, rather than feeling snobbish about something.

Although professional language translators were used in this study to translate the terms from English to Afrikaans and back again, human error is a possibility. Clearly this could be a major limitation and care should be taken to the intended meaning of the emotion terms when translated.

Another limitation to this study was that although the sample size was relatively big and culturally relevant emotion terms were gathered, some of the sub-studies only consisted of students, i.e. in the free-listing. In the other sub-studies there were differences in sample composition. According to Fontaine et al. (2007) there is a possibility that slight differences does exist between different age groups, even though the same overall emotion structure should be expected with representative samples from adults. Furthermore, the limitations of this study include that the results may not have been representative of all the Afrikaans-speaking people due to the fact that the sample was only representative of one province out of a possible nine provinces in South Africa.

RECOMMENDATIONS

The present findings suggest that a more diverse sample group from different industries and age groups across South Africa should also be included in future research.

It would be interesting and useful to compare the results of this study not only on face value, but also statistically with regards to the specific 24 emotion terms that was used in the GRID instrument with the same 24 emotion terms from the Similarity ratings. These results could then be compared to the other South African language groups in order to create a unique South African GRID instrument.

The GRID instrument should be extended with more items so that it could be directly compared with the Similarity results. Through the first part of this study, the "bottom up" approach, it is now clear what the other important emotion terms are for the Afrikaans-speaking group.

By utilising the results from this study, it could be used in future for the development of instruments to measure emotions which can be applied in the workplace, e.g. emotional competence and emotional wellbeing, which are culture-specific and adequate for the Afrikaans-speaking group. Furthermore, these results could also be applied to develop unique and culture specific interventions based on the emotion structure of the Afrikaans-speaking group.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter includes conclusions regarding the literature review and the empirical study according to the specific research questions. The limitations of the research are discussed and recommendations are made for future research.

3.1 CONCLUSIONS

The first objective was to conceptualise emotion and culture, and the relevance thereof to the working environment according to a literature study.

Emotions are such an integral part of humans that it forms the basis for all social transactions and as such is a key social skill (Mayer, Caruso, & Salovey, 1999). Experiencing, expressing and regulating different emotions are what separates not only individuals, but also cultures from one another. The function of emotions can be said to be adaptive, purposeful, and helpful: "It is the emotional system that focuses attention, organizes memory, helps us to interpret social situations, and motivates relevant behaviour." (Salovey, Kokkonen, Lopes, & Mayer, 2004, p. 321.)

Scherer (1987, 2001 as cited in Scherer, 2005, p. 697) defined emotion as "an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism." Thus it can be said that emotion is a complex process based on intertwined interaction of different components after the evaluation of an internal or external stimulus.

This implies that emotion should be investigated with regards to situational circumstances as well as the synchronised activity it causes in each of the components of emotion, e.g. the appraisal component, the action tendency component, the subjective feelings component, the

expression component, and the regulation component (Fontaine, Poortinga, Setiadi, & Markham, 2002).

It is said that if different cultures appraise a situation the same, they will experience the same emotions. And if they experience different emotions it is due to fact that they appraised the situation differently (e.g. Ellsworth, 1994a and Scherer, 1997b in Mesquita & Ellsworth, 2001).

Emotions may also be admired or despised by different cultures, in other words some emotions may be seen as particularly worthy or unworthy. This means that although cultures might share the same emotions, there may be considerable difference in the relative emphasis placed on them. When envisioning the emotional universe as a multidimensional space, some regions may be densely occupied in some cultures while the same regions may be nearly empty in other cultures (Mesquita & Ellsworth, 2001).

In the multicultural working environment this means that workplace counsellors have a responsibility to understand the cultural emotion differences of their clients. Workplace counsellors are expected to have an understanding of organisational cultures and workplace factors that might impact on an employee's work (Hughes & Kinder, 2007), amongst other things, such as withdrawal/engagement, motivation, pro- and anti-social behaviour, careers, teamwork, relationships, and cognitive processes (Briner, 1999). They must also understand the constructive handling of occupational stress, organisational commitment (Nikolaou & Tsaousis, 2002), effective performance and better handling of organisational change (Diggins, 2004; Studd, 1998), handling of conflict and higher levels of creativity and innovation (Sulliman & Al-Shaikh, 2007).

Cultural and language barriers can make effective counselling difficult, whilst cultural specific emotional competence measures might aid the counselling process in that it helps the counsellor to identify a client's strengths and weaknesses, as well as serving as a feedback tool on the client's improvement (Ciarrochi & Scott, 2006).

The second objective was to ascertain which emotion terms are used to describe emotions in the Afrikaans-speaking group.

According to Mayer et al. (1999) the proper expression of emotions are such an integral part of humans that it forms the basis for all social transactions and as such is a key social skill. Although the words people use to categorise emotions are often similar, it differs across language groups (Athansiadou & Takbaknowska, 1998; Russel, 1991). A sample population (N = 199) affiliated with a tertiary educational institution completed the free-listing questionnaires to list as many emotion terms in Afrikaans as they could think of within a ten minutes timespan.

A long list of 75 emotion terms (after a statistical clean-up) were identified. The six emotions that were mentioned the most were: to be sad ("hartseer"), to be angry ("kwaad"), love ("liefde"), to be happy ("gelukkig"), hate ("haat"), to be excited ("opgewonde"), and to feel depressed ("depressief"). The six emotions that were at the bottom of the list based on how many times they were mentioned were: enthusiasm ("entoesiasme"), to be/feel negative ("negatief"), sarcasm ("sarkasme"), to feel self-confident ("selfversekerd"), shock ("skok"), and stingy ("suinig"). These emotion terms correspond more or less with lists of basic emotions found in the literature (e.g. Bretherton & Beeghly, 1982; Ekman, 1984; Epstein, 1984; Izard, 1977).

The third objective was to investigate to which extent are these words representative of the emotion words of the Afrikaans language group.

The prototypicality of emotion words needs to be established in a specific cultural context if one is to understand emotions represented in everyday life better within that culture (Church, Katigbak, Reyes & Jensen, 1999). This is because emotion concepts refer to cultural evaluations and representations of the emotion process which include the emotional event, the experience and the culturally expected behaviours. Because emotions are labelled based on culturally shared concepts and meanings, labelling emotions can be seen to be similar to that of event-coding (Mesquita & Frijda, 1992).

After the free-listing data was computed and cleaned, the final list of emotion words was expanded with other comprehensive emotion term lists found in the literature, as well as the 24 emotion terms used in the GRID measuring instrument (Fontaine, Scherer, Roesch & Ellsworth, 2007; Shaver, Schwartz, Kirson, & O'Connor, 1987) This was done in order to produce a comprehensive list to account for basically all emotion terms which might have been left out during the free-listing task. This resulted in a comprehensive list of 197 emotion words which was translated into Afrikaans. The terms were rated based on each term's prototypicality to the Afrikaans language, by a convenience sample of persons who had at least a three year tertiary degree/diploma and who were affiliated with a tertiary educational institute.

The emotion terms ranked as the ten most prototypical words were rage ("woede"), fear ("vrees"), angry ("kwaad"), hate ("haat"), sadness ("hartseer"), anxiety ("angs"), happy ("gelukkig"), joy ("vreugde"), ecstasy ("ekstase"), and jealousy ("jaloesie").

The ten least prototypical words from the list generated in the free-listing task (sub-study one) were: friendship ("vriendskap"), awkwardness ("onbeholpenheid"), sinfulness ("sondigheid"), stinginess ("suinigheid"), honesty ("eerlikheid"), submission ("onderwerping"), shakiness ("bewerigheid"), independence ("onafhanklikheid"), shiver ("bewe"), and quietness ("stilte").

The fourth objective was to determine what the dimensionality and emotion structure for the Afrikaans-speaking group in South Africa is.

According to Russel (1991), structural analysis, factor analysis and multidimensional scaling of emotion terms, typically result in two or three dimensions. However, Fontaine et al. (2007) found in more recent research that "more than two dimensions are needed for a low-dimensional representation of the semantic space of emotion" (p. 1054), with the first dimension usually being pleasantness, the second potency and the third dimension arousal.

The similarity rating task revealed three dimensions, namely evaluation, activation, and potency. On the evaluation dimension emotion terms such as pleasure ("plesier"), joy ("vreugde"), contentment ("tevredenheid"), exalt ("juig"), love ("liefde"), and so forth was opposed to

emotion terms such as crestfallen ("moedeloos"), distressed ("ellendigheid"), glumness ("mismoedigheid"), unhappiness ("ongelukkigheid"), gloominess ("swaarmoedigheid"), et cetera.

On the second dimension, activation, emotion terms such as aggression ("aggressie"), compassion ("medelye"), aggravation ("verergdheid"), astonishment ("verbasing"), minagting ("contempt"), revulsion ("walging"), irritation et cetera. were found on the one end of the spectrum and emotion terms such as sympathy ("simpatie"), despair ("wanhoop"), homesickness ("heimwee"), longing ("verlange"), loneliness ("eensaamheid"), nostalgia ("nostalgie"), regret ("berou"), touched ("bewoë") et cetera. on the other end of the spectrum.

On the third dimension, potency, words such as jealousy ("jaloesie"), wrath ("toorn"), contempt ("minagting"), anguish ("benoudheid"), hate ("haat"), simpatie ("sympathy") were opposed to emotion terms such as shame ("skaamte"), panick ("paniek"), scared ("bang"), fear ("vrees"), anxiety ("angstigheid"), worry ("bekommernis"), guilt ("skuldig"), stress ("stress"), indigent ("verontwaardig") et cetera.

At face value it looks as if the GRID produced the same results as the similarity rating task. The same three dimensions were identified in both instances. However, in the Similarity rating exercise the second dimension was activation and the third dimension was potency. With the GRID approach it was the other way around, with potency being the second dimension and activation the third dimension. Thus the order of importance according to the GRID is firstly the pleasant dimension, then the potency dimension, and thirdly the arousal dimension.

It was stated that although the order of the dimensions differed slightly it was important that the same emotional structure emerged from both the methods: the Similarity rating and the GRID instrument. If this information is to be used to develop measuring instruments, it is important to take into account all three of the dimensions that emerged from this study.

The fifth and final objective was to investigate the reliabilities of the measuring battery and dimensions of the emotion structure.

For the prototypicality ratings, Cronbach's alphas were computed for each of the emotion terms. Participants who obtained a Cronbach's alpha score of less than 0,40 on the combined score were removed. These participants were seen as having some idiosyncratic understanding of the emotion words.

For the Similarity rating, reliability coefficients were computed for the eight different versions of the Similarity questionnaires. All eight versions of the Similarity questionnaire obtained acceptable Cronbach alpha coefficients, because all the alpha coefficients were higher than the guideline of 0,70 (Nunnally & Bernstein, 1994). This implies that the scores on the similarity questionnaires were normally distributed. It appeared that all versions of the similarity questionnaires have acceptable levels of internal consistency. Candidates with item-correlations lower than 0,30 were removed. As a result the lowest Cronbach alpha value was 0,92 for version four of the questionnaire, after four candidates had been removed. The highest Cronbach alpha value was 0,95 for version five of the questionnaire, and all of the candidates were retained because all of them obtained an item-correlation of at least 0,3.

For the reliability results of the GRID instrument participants with an item correlation of less than 0,20 were dropped in order to improve the reliability. This caused the lowest reliability of 0,58 to go up to 0,67. This lowest reliability score of 0,67 was obtained for the emotion term contempt ("minagting"). It should be noted that this is one of the emotion terms that was additionally added to extend the list for the prototypicality rating. This means that contempt was initially not identified by the sample population as a representative emotion word. However, for the rest of the GRID terms the Cronbach alpha coefficients were all above 0,8.

3.2 LIMITATIONS

This research study was not without limitations. The following limitations with regards to this study should be noted:

The results of this study may not be representative of the whole Afrikaans population of South Africa, as the population sample consisted mostly of students, as well as a few older adults, which were all affiliated with the same tertiary educational institute. This means that this population sample was also representative of only one of the nine provinces in South Africa. There might be differences between the Afrikaans-speaking people of the different provinces in South Africa.

Another limitation was that of the translation. It was noted that although professional language translators were used in this study to translate the terms from English to Afrikaans and back again, it is possible for mistakes to happen. This could be ascribed to the fact that the translators did not have intimate knowledge of the content and intent of the GRID questionnaire terms, as was clearly demonstrated with the incorrect translation of pride.

3.3 RECOMMENDATIONS

According to the literature there is much interest in emotions with regards to work and organisational aspects, although there is not sufficient published theory or even practical assessment tools for emotions at work (Briner, 1999). It seems that with regards to emotions at work, much attention was given mainly to two aspects, namely stress and satisfaction. In order to develop sound theories, or to develop and implement intervention strategies in organisations, it is important for comprehensive research on emotions in the workplace (Briner, 1999). By utilising the results from this study, it could be used in future for the development of instruments to measure emotions. These emotions can be applied in the workplace, e.g. emotional competence and emotional wellbeing, which are culturally specific and adequate for the Afrikaans-speaking group. Furthermore, these results could also be applied to develop unique and culture-specific interventions based on the emotion structure of the Afrikaans-speaking group.

Other recommendations for future research include that the GRID instrument should be customised by extending it with additional Afrikaans emotion terms to those identified through this research study. It would also be interesting if this study could be replicated for the Afrikaans-speaking groups of the other South African provinces.

The information obtained through this research study will serve as a sound reference with which to compare the other different culture groups in South Africa in order to identify the universalities as well as cultural differences with regards to the emotion domain. This will also serve as a solid basis from which to develop truly cultural specific emotion measuring instruments for the workplace as well as effective intervention strategies.

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Appendix A

Article: The world of emotions is not two-dimensional (Fontaine, Scherer, Roesch & Ellsworth, 2007)

Research Report

The World of Emotions Is Not Two-Dimensional

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ABSTRACT—*For more than half a century, emotion researchers have attempted to establish the dimensional space that most economically accounts for similarities and differences in emotional experience. Today, many researchers focus exclusively on two-dimensional models involving valence and arousal. Adopting a theoretically based approach, we show for three languages that four dimensions are needed to satisfactorily represent similarities and differences in the meaning of emotion words. In order of importance, these dimensions are evaluation-pleasantness, potency-control, activation-arousal, and unpredictability. They were identified on the basis of the applicability of 144 features representing the six components of emotions: (a) appraisals of events, (b) psychophysiological changes, (c) motor expressions, (d) action tendencies, (e) subjective experiences, and (f) emotion regulation.*

Reduction of complex data sets involving a large number of measures to a few meaningful underlying dimensions is common in many branches of science. For example, the perception of color is described by the dimensions of brightness, hue, and saturation. For more than half a century, emotion researchers have attempted to establish the underlying dimensional space that most economically accounts for the similarities and differences in emotional experience, and there has been considerable disagreement about the number and nature of the dimensions that provide an optimal framework for studying emotions. Most early research suggested at least three dimensions, commonly evaluation-pleasantness, potency-control, and activation-arousal (e.g., Osgood, May, & Miron, 1975). Although many recent researchers have focused exclusively on two-dimensional models, such as the valence-arousal model (e.g., Yik, Russell, & Feldman-Barrett, 1999), the search for the optimal low-dimensional representation of the emotion domain remains open.

Past work has primarily derived dimensions of emotion from the perceived similarity of emotion labels or facial expressions (e.g., Fontaine, Poortinga, Setiadi, & Suprapti, 2002; Schlosberg, 1952; Shaver, Schwartz, Kirson, & O'Conner, 1987), or from individual differences in verbal descriptions of emotional experiences (e.g., Yik et al., 1999), and the dimensions have often been derived in an atheoretical manner. In contrast, the work reported here started from the widely shared theoretical conceptualization of emotions as consisting of variably interrelated changes in activity across a set of six components: (a) appraisals of events, (b) psychophysiological changes (bodily sensations), (c) motor expressions (face, voice, gestures), (d) action tendencies, (e) subjective experiences (feelings), and (f) emotion regulation (Ellsworth & Scherer, 2003; Niedenthal, Krauth-Gruber, & Ric, 2006; Scherer, 2005). No previous studies have included all six of these components, and most have included only one or two. To obtain definitive evidence concerning the optimal low-dimensional space, we used a semantic-profile approach (Scherer, 2005), asking participants from three different Indo-European language groups (English, French, and Dutch) to evaluate 24 prototypical emotion terms on scales representing 144 features that represent activity in all six of the major components of emotion (Ellsworth & Scherer, 2003).

METHOD

Instrument

For this study, we used a new instrument originally constructed in English, the GRID instrument (Scherer, 2005). The GRID consists of a Web-based questionnaire composed of 24 emotion terms and 144 emotion features. The 24 terms are prototypical emotion terms commonly used in both emotion research and

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daily language. This representative set was chosen on the basis of frequent use in the emotion literature, consistent appearance in cross-cultural free-listing and prototypicality-rating tasks, and frequent mention in the self-reports from a large-scale Swiss household study of people's descriptions of an emotional situation they experienced the previous day (Scherer, Wranik, Sangsue, Tran, & Scherer, 2004). The 144 emotion features operationalize activity in each of the six emotion components (see Table 1). Thirty-one features refer to appraisals, 18 to bodily experiences, 9 to facial expression, 12 to vocal expression, 5 to gestural expression, 40 to action tendencies, 22 to subjective feelings, and 4 to regulation. An additional 3 features represent other qualities, such as frequency and social acceptance. The features were derived from a broad range of very diverse emotion theories and literature, such as the appraisal theory of Scherer (2001), the psychophysiological emotion literature (Stemmler, 2003), the action-tendency theory of Frijda (Frijda, Kuipers, & Terschure, 1989), the current-affect theory of Russell (Yik et al., 1999), and the expression-regulation theory of Ekman and Friesen (1969). The English GRID instrument was translated into French and Dutch by means of the translation/back-translation procedure.

Procedure

The GRID was administered in a controlled Web study (Reips, 2002) in which each participant was given 4 emotions randomly chosen from the set of 24 and asked to rate each in terms of the 144 emotion features. Using a 9-point scale ranging from *extremely unlikely* (1) to *extremely likely* (9), they rated the likelihood that each of the 144 emotion features can be inferred when a person from their cultural group uses the emotion term to describe an emotional experience. Each of the 144 emotion features was presented on a separate screen, and participants rated all 4 emotion terms for that feature before proceeding to the next feature.

Participants

In total, 198 Dutch-speaking students in Belgium (102 males, 96 females; average age = 20.88 years), 188 English-speaking students in the United Kingdom (74 males, 114 females; average age = 21.23 years), and 145 French-speaking students in Switzerland (37 males, 108 females; average age = 23.26) completed the GRID instrument in their own language.

RESULTS

To reduce the dimensionality of the emotion domain, we used principal component analysis (PCA), which finds the dimensions of greatest variance in the data set and represents each observation by its coordinates along each of these dimensions. PCAs were computed within and across the three languages, treating the 24 emotion terms as observations and the average scores on the 144 emotion features as variables.[1] A four-dimensional solution was selected on the basis of both the scree plots and the replicability of the configurations across the three languages (van de Vijver & Leung, 1997).[2] This solution accounted for 75.4% of the total variance. After varimax rotation, the first dimension (evaluation-pleasantness) accounted for 35.3% of the variance, the second dimension (potency-control) for 22.8%, the third dimension (activation-arousal) for 11.4%, and the last dimension (unpredictability) for 6.0%. This overall structure was replicated within each of the three language-culture samples.

The interpretation of the four dimensions is based on their relationships with the 144 emotion features and on the coordinates of the 24 emotion terms. Table 1 lists all 144 emotion features and their relationships to the four emotion dimensions (component loadings). Figure 1 represents the coordinates of the 24 emotion terms on these dimensions.[3] The first dimension can be interpreted as an evaluation-pleasantness dimension. Appraisals of intrinsic pleasantness and goal conduciveness, as well as action tendencies of approach versus avoidance or moving against, characterize this dimension. Pleasant emotions are opposed to unpleasant emotions on this dimension (see Fig. 1a). The second dimension is characterized by appraisals of control, leading to feelings of power or weakness; interpersonal dominance or submission, including impulses to act or refrain from action; changes in the rate and volume of speech; and parasympathetic symptoms. On this dimension, emotions such as pride, anger, and contempt are opposed to sadness, shame, and despair (see Fig. 1a). This dimension can therefore be interpreted in terms of potency-control. The third dimension is an activation-arousal dimension. It is mainly characterized by sympathetic arousal, such as rapid heartbeat and readiness for action. It opposes emotions such as stress, anger, and anxiety to disappointment, contentment, and compassion (see Fig. 1b). The last dimension is characterized by appraisals of novelty and unpredictability (and behaviors such as jaw dropping, eyebrow raising, and spontaneous exclamations), as compared with appraisals of expectedness or familiarity. Obviously, surprise is

[1]Because there are only 24 emotion terms in the analysis, the variation in the 144 emotion features could be perfectly represented by a solution with 24 components. Thus, the matrix is not positive definite (the rank is only 24, not 144). Factor analyses (exploratory or confirmatory) that assume underlying factors cannot be used with these data, as these techniques require a positive definite matrix. PCA, however, is adequate, as it is a pure reduction technique. It makes sense to see whether a matrix of rank 24 can be further reduced to an even smaller number of components without losing much information. Analyzing a matrix with more variables than observations is not uncommon in lexical personality research. In that area of research, as here, the replicability and the reliability of the components are considered most important. A more extensive account of the analytic procedures is available from the first author.

[2]First, a structure was identified across the three languages. Then, a language-specific structure was computed and orthogonally Procrustes-rotated toward the overall structure. For each of the three language groups and for each of the four dimensions, the Tucker's phi congruence coefficient exceeded .90.

[3]The profiles of the emotion words on the four emotion dimensions can be requested from the first author.

TABLE 1

The 144 Emotion Features, the Components of Emotion They Represent, and Their Correlations With the Four Dimensions After Varimax Rotation

Emotion feature	Emotion component[a]	Correlation			
		D1	D2	D3	D4
Incongruent with own standards and ideals	Appraisal	**.926**	.201	.113	.180
Pressed lips together	Face	**.919**	.038	.245	−.086
Wanted to destroy whatever was close	Action	**.914**	.024	.206	−.022
Frowned	Face	**.914**	−.010	.172	.091
In itself unpleasant for the person	Appraisal	**.911**	.321	.103	.103
Wanted to do damage, hit, or say something that hurts	Action	**.908**	−.090	.183	−.011
Wanted to oppose	Action	**.907**	−.131	.195	.053
Consequences negative for person	Appraisal	**.905**	.325	.113	.103
Treated unjustly	Appraisal	**.901**	.172	.091	.212
Felt negative	Feelings	**.886**	.425	.078	−.005
Wanted to break contact with others	Action	**.871**	.354	.105	−.047
Violated laws or socially accepted norms	Appraisal	**.858**	.157	.133	.169
Felt the urge to stop what he or she was doing	Action	**.844**	.457	.109	.142
Wanted to undo what was happening	Action	**.843**	.491	.075	.041
Wanted to prevent or stop sensory contact	Action	**.843**	.454	.074	.064
Felt bad	Feelings	**.835**	.515	.084	.013
Felt inhibited or blocked	Action	**.805**	.491	.186	.094
Wanted to keep or push things away	Action	**.801**	.516	.110	.088
In itself unpleasant for somebody else	Appraisal	**.799**	.294	.026	.149
Consequences negative for somebody else	Appraisal	**.781**	.292	.020	.030
Withdrew from people or things	Gesture	**.760**	.546	.037	.009
Irrevocable loss	Appraisal	**.748**	.450	.117	.137
Moved against people or things	Gesture	**.745**	−.263	.287	.016
Wanted to run away in whatever direction	Action	**.709**	.602	.213	.120
Felt out of control	Feelings	**.702**	.241	.513	.136
Felt powerless	Feelings	**.695**	.619	.079	.162
Wanted to be in control of the situation	Action	**.677**	−.166	.348	−.105
In danger	Appraisal	**.675**	.333	.331	.332
Muscles tensing (whole body)	Body	**.674**	−.052	.636	.177
Tried to control the intensity of the emotional feeling	Regulation	**.669**	.415	.170	−.091
Felt exhausted	Feelings	**.653**	.644	.068	−.029
Consequences avoidable or modifiable	Appraisal	**.641**	−.006	.070	−.338
Hid the emotion from others by smiling	Regulation	**.617**	.581	.123	−.111
Wanted to be in command of others	Action	**.593**	−.497	.229	−.172
Inconsistent with expectations	Appraisal	**.527**	.219	.198	.486
Frequency of experience in the cultural group	Other	**−.321**	−.213	.257	−.245
Caused by a supernatural power	Appraisal	**−.364**	.023	.101	.285
Felt an urge to be attentive to what was going on	Action	**−.475**	−.419	.216	.104
Confirmed expectations	Appraisal	**−.539**	−.405	−.130	−.443
Familiar event	Appraisal	**−.587**	−.349	−.061	−.516
Felt in control	Feelings	**−.684**	−.615	−.127	−.254
Event with consequences the person was able to live with	Appraisal	**−.701**	−.324	−.076	−.187
Important and relevant for goals of somebody else	Appraisal	**−.702**	−.316	−.044	−.100
Important and relevant for the person's goals	Appraisal	**−.724**	−.278	−.001	−.126
In itself pleasant for somebody else	Appraisal	**−.727**	−.451	−.015	−.014
Person was at the center of attention	Appraisal	**−.730**	−.053	.370	−.038
Wanted to take care of another person or cause	Action	**−.739**	−.040	−.091	−.205
Consequences positive for somebody else	Appraisal	**−.757**	−.443	−.058	−.067
Wanted to go on with what he or she was doing	Action	**−.767**	−.536	−.026	−.147
Felt calm	Feelings	**−.771**	−.172	−.529	−.172
Wanted to comply with someone else's wishes	Action	**−.812**	.037	−.084	−.135
Wanted to get totally absorbed in the situation	Action	**−.815**	−.493	.032	−.049
Social acceptability of the emotion	Other	**−.819**	−.193	−.058	.111
Muscles relaxing	Body	**−.827**	−.128	−.368	−.108

Table 1. (Contd.)

Emotion feature	Emotion component[a]	Correlation			
		D1	D2	D3	D4
Felt at ease	Feelings	**−.882**	−.414	−.121	−.082
Wanted to be near or close to people or things	Action	**−.883**	−.145	−.072	−.032
Felt positive	Feelings	**−.887**	−.436	−.034	−.021
Wanted the ongoing situation to last or be repeated	Action	**−.901**	−.392	−.060	−.025
Felt good	Feelings	**−.905**	−.394	−.048	−.011
Consequences positive for person	Appraisal	**−.906**	−.345	−.078	−.070
Smiled	Face	**−.916**	−.341	−.014	−.029
Wanted to be tender, sweet, and kind	Action	**−.916**	−.056	−.198	−.128
Wanted to sing and dance	Action	**−.918**	−.329	.011	.003
In itself pleasant for the person	Appraisal	**−.925**	−.334	−.049	−.017
Wanted to submit to the situation as it was	Action	**−.930**	−.097	−.126	−.020
Decreased the volume of voice	Voice	.076	**.855**	−.360	−.145
Wanted to hand over the initiative to someone else	Action	.024	**.832**	.095	.079
Felt weak limbs	Body	.105	**.832**	.298	.209
Fell silent	Voice	.368	**.831**	−.102	.004
Felt submissive	Feelings	.426	**.825**	.049	−.036
Felt weak	Feelings	.542	**.803**	.012	.076
Wanted to make up for what he or she had done	Action	.220	**.766**	−.083	−.205
Wanted to withdraw into him- or herself	Action	.596	**.765**	.006	−.042
Lacked the motivation to do anything	Action	.535	**.740**	−.218	−.029
Wanted to do nothing	Action	.315	**.737**	−.321	−.071
Wanted to disappear or hide from others	Action	.655	**.713**	.057	−.031
Wanted someone to be there to provide help or support	Action	.498	**.700**	.065	.134
Closed his or her eyes	Face	.092	**.696**	−.164	.040
Spoke slower	Voice	.068	**.683**	−.572	−.132
Wanted to flee	Action	.672	**.679**	.160	.091
Got pale	Body	.589	**.675**	.158	.307
Had a feeling of a lump in the throat	Body	.422	**.671**	.228	.052
Wanted to be hurt as little as possible	Action	.533	**.663**	.123	−.081
Felt cold	Body	.562	**.650**	−.166	.207
Felt tired	Feelings	.598	**.633**	−.052	−.158
Had a trembling voice	Voice	.564	**.632**	.364	.068
Showed tears	Face	.067	**.628**	.112	.020
Had stomach troubles	Body	.600	**.610**	.391	.046
Showed the emotion to others less than he or she felt it	Regulation	.321	**.600**	.103	−.144
Lacked the motivation to pay attention to what was going on	Action	.436	**.591**	−.219	−.095
Will be changed in a lasting way	Other	−.107	**.557**	−.087	−.360
Wanted to act, whatever action it might be	Action	.376	**−.529**	.487	.009
Wanted to move	Action	−.085	**−.581**	.535	−.013
Produced a long utterance	Voice	−.310	**−.599**	.121	−.072
Moved toward people or things	Gesture	−.583	**−.599**	.123	.078
Showed the emotion to others more than he or she felt it	Regulation	−.248	**−.601**	−.069	.330
Caused intentionally	Appraisal	−.205	**−.649**	−.089	−.169
Wanted to show off	Action	−.606	**−.650**	.109	−.107
Felt alert	Feelings	−.100	**−.664**	.473	.166
Felt an urge to be active, to do something, anything	Action	−.184	**−.699**	.407	−.109
Felt powerful	Feelings	−.574	**−.702**	.093	−.182
Felt energetic	Feelings	−.624	**−.707**	.269	.019
Wanted to be seen, to be in the center of attention	Action	−.571	**−.711**	.114	−.112
Felt strong	Feelings	−.589	**−.733**	.111	−.142
Increased the volume of voice	Voice	.079	**−.777**	.460	.218
Wanted to tackle the situation	Action	.034	**−.786**	.242	−.064
Wanted to take initiative him- or herself	Action	−.093	**−.796**	.191	−.126
Felt dominant	Feelings	−.374	**−.822**	.127	−.183
Had an assertive voice	Voice	−.060	**−.908**	.072	−.105
Felt heartbeat getting faster	Body	−.019	−.210	**.927**	.100

Table 1. (Contd.)

Emotion feature	Emotion component[a]	Correlation			
		D1	D2	D3	D4
Felt breathing getting faster	Body	.260	−.099	**.893**	.161
Felt hot	Body	.189	−.077	**.850**	−.088
Sweated	Body	.339	.231	**.843**	.017
Perspired, or had moist hands	Body	.372	.272	**.799**	.005
Spoke faster	Voice	−.055	−.576	**.717**	.107
Produced abrupt body movements	Gesture	.217	−.356	**.688**	.419
Felt restless	Feelings	.397	−.115	**.688**	.066
Was in an intense emotional state	Feelings	.164	.151	**.647**	−.043
Felt shivers	Body	−.048	.157	**.647**	.403
Blushed	Body	−.402	−.049	**.602**	−.212
Felt nervous	Feelings	.541	.381	**.593**	.013
Felt warm	Body	−.413	−.420	**.558**	−.264
Produced speech disturbances	Voice	.520	.461	**.557**	.182
Opened her or his eyes widely	Face	−.254	−.464	**.537**	.496
Required an immediate response	Appraisal	.187	−.005	**.528**	.486
Wanted to overcome an obstacle	Action	.226	−.355	**.509**	−.161
Changed the melody of his or her speech	Voice	−.190	−.287	**.388**	.192
Did not show any changes in face	Face	.008	.085	**−.519**	−.358
Did not show any changes in vocal expression	Voice	−.252	.053	**−.578**	−.357
Did not show any changes in gestures	Gesture	−.017	.288	**−.585**	−.361
Felt breathing slowing down	Body	−.496	.102	**−.701**	−.096
Felt heartbeat slowing down	Body	−.208	.369	**−.715**	.006
Had no bodily symptoms at all	Body	−.154	−.072	**−.779**	.006
Had the jaw drop	Face	−.014	.105	−.129	**.798**
Had eyebrows go up	Face	−.018	−.291	.136	**.723**
Unpredictable event	Appraisal	.120	.153	.348	**.680**
Produced a short utterance	Voice	.399	−.057	.151	**.608**
Event occurred suddenly	Appraisal	−.058	.083	.400	**.589**
Caused by chance	Appraisal	−.516	−.150	.136	**.521**
Caused by somebody else's behavior	Appraisal	.396	−.335	.106	**.416**
Caused by the person's own behavior	Appraisal	−.532	−.126	.069	**−.599**
Consequences predictable	Appraisal	−.320	−.385	−.210	**−.621**
Person had enough resources to avoid or modify consequences of the event	Appraisal	−.027	−.199	.043	**−.632**
Experienced the emotional state for a long time	Feelings	−.089	.224	−.061	**−.755**

Note. For each feature, the highest loading is in boldface. D1 = evaluation-pleasantness dimension, D2 = potency-control dimension, D3 = activation-arousal dimension, D4 = unpredictability dimension.
[a]Action = action tendency, Body = bodily experience, Face = facial expression, Feelings = subjective experience, Gesture = gestural expression, Voice = vocal expression.

distinguished from all other emotions on this dimension. However, meaningful differentiations emerge among these other emotions as well; for example, fear is distinguished from stress and disgust from contempt (see Fig. 1c).

DISCUSSION

The results of this cross-cultural study provide robust evidence that more than two dimensions are needed for a low-dimensional representation of the semantic space of emotion. It is important to note that there were no major differences among the three language-culture groups. As suggested half a century ago, the three most important dimensions are evaluation-pleasantness, potency-control, and activation-arousal, in that order of importance. A fourth dimension, unpredictability, seems necessary to allow a satisfactory differentiation of emotions reflecting an urgent reaction to a novel stimulus or an unfamiliar situation. Although unpredictability has not emerged in most previous general studies of the dimensions of emotion, uncertainty is an important dimension in many appraisal theories (cf. Ellsworth & Scherer, 2003), and unexpectedness in the form of interruption was central to Mandler's (1975) model. In fact, the emergence of this factor in our comprehensive approach may explain the ambivalent status surprise has always had in the emotion pantheon, as it often co-occurs with and is confused with other emotions. Our results suggest that the term *surprise* may in fact refer to a particular quality or dimension of emotional experience based on appraisal of novelty and unexpectedness.

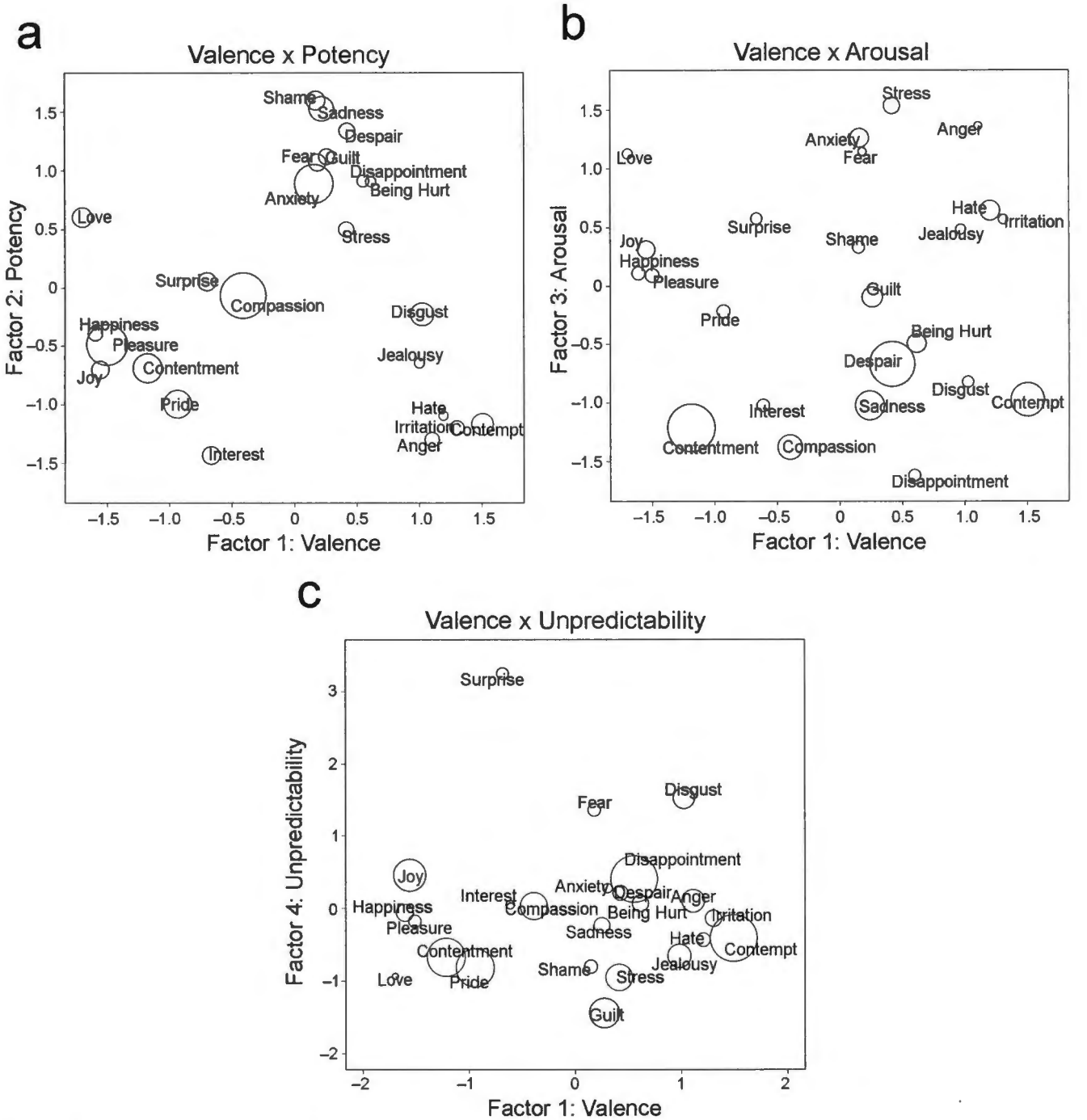

Fig. 1. The four-dimensional solution representing the 24 emotion terms. Midpoints of the circles represent the mean coordinates across the three languages. The diameter of each circle represents the mean euclidean distance among the coordinates for the three languages; the smaller the circle, the more similar the respective terms across the languages. The three panels show plots of coordinates for (a) Evaluation-Pleasantness × Potency-Control, (b) Evaluation-Pleasantness × Activation-Arousal, and (c) Evaluation-Pleasantness × Unpredictability.

The four-dimensional structure of emotion derived in the present research can be considered important because it is based not only on a representative sample of prototypical emotion labels, but also on a representative sample of features of emotional experience. This is the first study that has included all six of the major components of emotion identified by emotion researchers. The explanations as to why the same two or three emotion dimensions emerged in previous research were speculative. A major contribution of the present study is that it recovered the same three dimensions from a very precise analysis of the meaning of emotion terms, as rated on 144 specific criteria that most current emotion theorists explicitly assume are centrally relevant to the domain of emotions. Moreover, basing a dimensional analysis on comprehensive feature profiles for

different emotion terms allowed us to infer, for the first time, the features on which similarity judgments for emotion words and experiences are based and the subsets of those features that underlie specific dimensions (see Table 1). The complete profiles for the terms, with respect to both the 144 individual features and the four dimensions (not reported in this article), allow us to determine which features are essential for the meaning of a term and to compare terms across languages.

A limitation of the current study is that it included only student samples. Although the same overall emotion structure can be expected with representative adult samples—the students were asked not about their own experiences, but about the meaning of the emotion words in their culture—it is possible that slight differences exist between different age groups. For instance, in our student samples, *love* was scored high on arousal features. It is quite possible that the meaning of *love* is associated with less arousal in older age groups.

Moreover, because our research involved perceptions of the meanings of emotion words, it is obviously relevant to the meaning structure of the emotion domain in three *languages*. We cannot be sure that our findings represent the dimensions of emotional *experience*. Robinson and Clore (2002) have highlighted the distinction between current emotion, which is episodic, experiential, and contextual, and beliefs about emotion, which are semantic, conceptual, and decontextualized. Clearly, by design, our data on semantic profiles belong to the latter category. However, the fact that the same four dimensions emerged for all three language-culture groups suggests that the findings represent more than mere linguistic or cultural conventions. We are currently conducting research in a much larger sample of linguistic and cultural groups, including non-Western languages and cultures, and preliminary data confirm the patterns reported here. Although language is abstracted from human experience, it must correspond to human experience and represent important human concerns. Consequently, as the emotion words and features used in the present research are highly similar to those commonly used in procedures for assessing emotion, one would expect to find a similar four-factor structure in assessments of emotional experience. But this is for future research to show. Of course, a representative selection of emotion words and emotion features is a precondition for an emotion-experience instrument to uncover the same structure.

Given that the comprehensive approach reported here confirms the existence and the importance of the classic factors of valence and arousal, working with these two factors is not an issue of right or wrong choices. The optimal number of dimensions to be included in a study depends on the question the researcher is asking. For a researcher interested in the effects of sympathetic activation, one dimension (arousal) may be sufficient. For a researcher interested in the subtle distinctions among related emotions such as shame, guilt, embarrassment, and self-anger, four dimensions might not be enough. But for researchers interested in providing a fairly comprehensive general account of the emotional experiences of the people they study, we strongly advocate using at least four dimensions.

Because models drive research design, restricting the number of emotion dimensions studied may severely bias the choice of methods and the interpretation of results. The current results imply that simple two-dimensional models, such as the valence-arousal model, miss major sources of variation in the emotion domain. Such models fail to differentiate important emotions like fear and anger (see Fig. 1b), which are clearly separated on the potency-control dimension (Fig. 1a) and on the unpredictability dimension (Fig. 1c). The potency-control dimension is of particular interest for emotion research. Its meaning is not limited to social and interpersonal experiences of dominance and submissiveness, as has been suggested in the past (e.g., Russell, 1991). It is also characterized by specific vocal response characteristics and action tendencies, such as wanting to take initiative versus being apathetic. Low potency-control is particularly relevant for emotion researchers who are interested in the biological underpinnings of emotions, as this dimension also captures parasympathetic forms of activation, such as weak limbs and gastrointestinal symptoms. The currently dominant two-dimensional models, such as the valence-arousal model, represent only sympathetic forms of activation (see Fig. 1b).

The findings of the present study have implications for very diverse forms of emotion research. For instance, experimental neuropsychological research designed to identify the brain processes underlying subjective emotional experiences requires a representative mapping of these subjective experiences. For many clinical and applied studies, it is crucial to distinguish whether a person is experiencing fear or anger, and two-dimensional models do not capture this distinction, which can be more adequately studied with the four-dimensional emotion model. Even for those researchers who are interested only in evaluation and activation, the four-dimensional model allows for better control of unintended variation on the two other emotion dimensions. Whereas two-dimensional models may be appropriate for studying some questions, researchers should seriously consider whether such models are sufficient for their particular questions.

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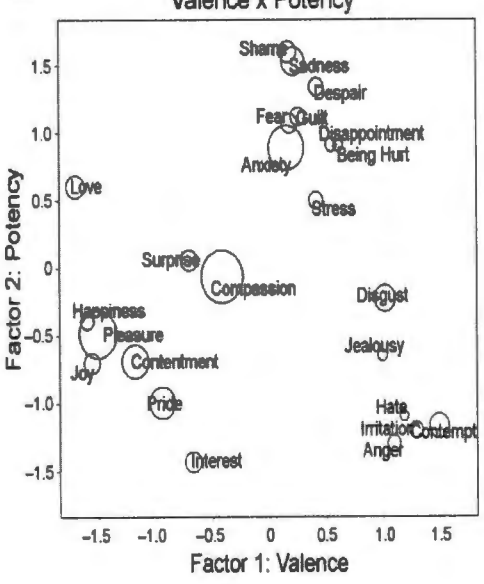
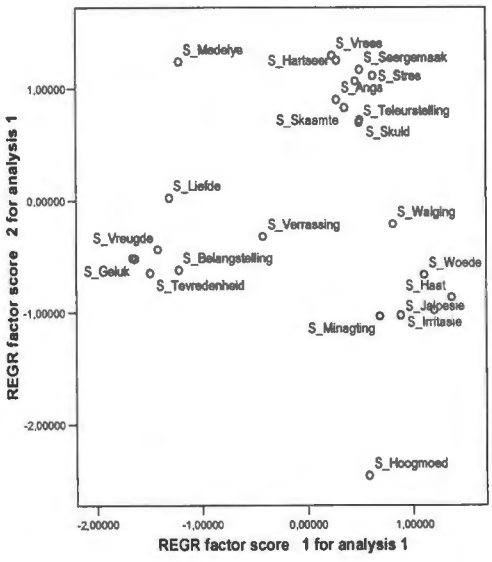
Appendix B

A visual comparison between the GRID results of (a) the study by Fontaine et al., 2007 and (b) the Afrikaans-speaking group.

a





b