
CHAPTER 4

RESEARCH DESIGN AND RESEARCH METHOD

4.1 INTRODUCTION

In this chapter all the relevant information concerning the quantitative and qualitative research designs and research methods are presented which were used to investigate the contextual effects of and to evaluate the effectiveness of Clinically Standardized Meditation (CSM) as a strategy for stress management and the promotion of wellness in teachers, whom participated in this study. Those are the effects that CSM had upon their functioning in all context if their existence – biological, intra-psychic, ecological and metaphysical.

It was decided to make use of both quantitative and qualitative research designs and methods in order to capitalise on the strengths of the different methods, and to obviate their different weaknesses. It was intended that the quantitative research results make up the 'skeleton' of the research, and that of the qualitative research results the less rigid 'tissue' of the research, all-in-all to provide a more rich, 'thick' and conclusive understanding of the contextual effects of, and effectivity of the CSM as a strategy for stress management and the promotion of wellness in participating teachers' context of existence.

4.2 THE RESEARCH DESIGN

In the quantitative part of this study, a pre-test-post-test control-group design (Borg & Gall, 1989:674-676), and more specifically, a random groups design have been used where comparable groups were formed prior to the introduction of the independent variable. This was accomplished by sampling subjects in a way that each subject had an equal likelihood of being included in either the experimental or control group (Shaughnessy & Zechmeister, 1997: 199).

One possible (and more ideal) procedure for accomplishing this goal is random selection, as, for example, when a list of all teachers in the city of Potchefstroom is used to obtain a representative sample of teachers for the investigation. Shaughnessy and Zechmeister (1997:199), however, point out that random selection is rarely used to establish comparable groups in psychology experiments, because random selection requires well-defined populations (for example, a list from the Department of Education of the North West Province of all teachers in Potchefstroom). Psychology experiments usually involve accidental samples from ill-defined populations. This investigation, for example, used adult participants who were volunteering teachers from schools contacted directly by personal visits or letters or faxes or indirectly through the media. The most common solution to the problem of forming comparable groups when ill-defined populations are involved, is to use random assignment to place subjects in the conditions of the experiment (Shaughnessy and Zechmeister, 1997:199), those who will be introduced to Clinically Standardized Meditation (experimental group) and a waiting list control group. Both of the groups will be subjected to pre and post-testing by the use of selected instruments for measurement as part of the experimental and therefore quantitative part of the study.

A phenomenological design is used in the qualitative part of the study. Semi structured interviews, telephone interviews, field notes and diaries are used to conduct the phenomenological research where the "*emphasis is on describing an experience from the participants' perspective*" (Leedy, 1997:161). The qualitative research is therefore focused only on the personal experiences of the experimental group as the only group being subjected to an independent variable.

4.3 THE INVESTIGATION GROUP

The investigation population was teachers in the city of Potchefstroom currently teaching in primary or secondary schools or involved in some other capacity in the educational training and development structures. Due to potential logistical and practical problems it was decided to focus the research, as far as the investigation population was concerned, on resident teachers of the city of Potchefstroom. If others outside the boundaries of Potchefstroom were interested to participate, they were accommodated with the understanding that they would overcome any potential logistical and practical problems, such as travelling, attending group sessions, et cetera, by themselves. Because the type

of investigation in this research dictates a certain amount of energy and commitment from participants, nonprobability sampling instead of probability sampling was used. More specifically, accidental sampling, a type of nonprobability sampling, was used to compile the investigation group. Accidental sampling involves selecting respondents primarily on the basis of their availability and willingness to respond (Shaughnessy and Zechmeister, 1997:139), or in this instance, to participate. This makes the research findings only applicable to this particular investigation group.

The investigation group was selected by means of accidental sampling because of their indicated interest to participate and learn a self-management technique for stress management upon providing them with the opportunity to do so. Although it was aimed at obtaining 40 participants, 121 indicated their initial interest. From these interested persons, only 41 attended the initial information session held for interested persons. Two of these persons declined to participate after receiving all the relevant information. That left the investigation group with 39 persons who were later randomly assigned to the experimental and waiting list control groups respectively. At the beginning of the research, the experimental group comprised 20 persons, and the control group 19 persons. Of these 6 from the experimental group discontinued their practice/involvement at some point in the research project and 7 from the control group discontinued their involvement at some point.

The composition of the investigation group from the Biographical Questionnaire at the start of the study can be graphically presented in tables, as follows:

Table 4.1: Type of school

	Secondary school	Primary school	Other	
Experimental group (%)	15,38	23,08	11,45	
Control group (%)	19,23	11,54	19,23	
Total (%)	34,62	34,62	30,77	100

Table 4.2: Post level

	Principal	Vice principal	Head of dept.	Teacher	
Experimental group (%)	8	0	0	44	
Control group (%)	4	0	8	36	
Total (%)	12	0	8	80	100

Table 4.3: Gender

	Male	Female	
Experimental group (%)	7,69	42,31	
Control group (%)	11,54	38,46	
Total (%)	19,23	80,77	100

Table 4.4: Marital status

	Married	Unmarried	
Experimental group (%)	30,77	19,23	
Control group (%)	26,92	23,08	
Total (%)	57,69	42,31	100

Table 4.5: Table of age

	20-30 years	31-40 years	41-50 years	51-60 years	
Experimental group (%)	11,54	19,23	15,38	3,85	
Control group (%)	23,08	15,38	7,69	3,85	
Total (%)	34,62	34,62	23,08	7,69	100

Table 4.6: Service in years

	0-1 years	1-5 years	6-10 years	11-20 years	21-30 years	31 + years	
Experimental group (%)	0	11,54	3,85	26,92	3,85	3,85	
Control group (%)	0	19,23	3,85	19,23	7,69	0	
Total (%)	0	30,77	7,69	46,15	11,54	3,85	100

Table 4.7: Highest qualification

	Diploma	B- degree	Honours degree	Masters degree	Doctoral degree	Other	
Experimental group (%)	30,77	15,38	3,85	0	0	0	
Control group (%)	15,38	11,54	15,38	3,85	0	3,85	
Total (%)	46,15	26,92	19,23	3,85	0	3,85	100

Table 4.8: Appointment

	Temporary	Permanent	Other	
Experimental group (%)	4	40	4	
Control group (%)	4	48	0	
Total (%)	8	88	4	100

4.4 DATA COLLECTION

4.4.1 Rationale

Data were collected by means of quantitative as well as qualitative methods. The quantitative method of data collection is used by means of a pre-test as well as a post-test and the qualitative method of data collection by means of a continuous and a final evaluation. The quantitative method of data collection was done by way of utilising selected measuring instruments, and that of the qualitative method of data collection by way of utilising a semi-structured interview and telephone interview, physical examinations, diaries and participant observations. Data collection was aimed at obtaining information about the effects of the practise of CSM in aspects of the four contexts of human existence, namely the biological, intra-physic, ecological and metaphysical contexts in order to evaluate the effectiveness of CSM as a strategy for stress management and the promotion of wellness in teachers. It is in practise however only possible to measure certain aspects across and representative of the contexts of human existence, but virtually impossible to measure all aspects across the contexts of human existence. Specific ways in which data were collected have been determined by the availability and applicability of such ways, as well as financial and time constraints. It was, for instance, originally planned to measure cardio-vascular reactivity and certain biochemical parameters such as the levels of cortisol, glucose, cholesterol and ACTH to be used as pre and post intervention stress indicators. The availability of such ways of data collection, as well as financial and time constraints unfortunately ruled out such possibilities. The rationale for selecting measuring instruments and interviews was based upon the possibility of each instrument as a whole, or a particular sub-scale or sub-scales, and the qualitative methods' ability to provide information about the effect(s)

of CSM in one or more of the contexts of human existence due to the interaction between the different contexts of existence after the practise of CSM which is essentially an intra-psychic technique, but with more than intra-psychic effects.

To validate these effects in the contexts of human existence in terms of the evaluated effectiveness of CSM as a strategy for stress management and the promotion of wellness, it was necessary to make use of triangulation by employing various forms of quantitative as well as qualitative research tools. Triangulation means "to support a finding by showing that independent measures of it agree with it or, at least, does not contradict it" (Miles & Huberman, 1994: 266). Denzin (in Hurrell *et al.*, 1988: 201) defined triangulation as "the combination of methodologies in the study of the same phenomenon". The triangulation metaphor is taken from navigation and military strategies that use multiple reference or citing points to locate an object's exact position.

In this study the between (or across) form of triangulation was used as a vehicle for cross-validation to determine if distinct methods of data collection (qualitative and quantitative) are found to be congruent and therefore yield comparable data. In such an instance when multiple and independent measures reach the same conclusions, it provides a more complete portrayal of the particular phenomenon being studied. In this study the effectiveness of CSM as a strategy for stress management and the promotion of wellness in teachers are reflected in the effects on their biological, intra-physic, ecological and metaphysical, and therefore holistic functioning.

4.4.2 Quantitative data collection

The following measuring instruments were used for this investigation:

4.4.2.1 *The biographical questionnaire*

The biographical questionnaire is used to provide information concerning the composition of the investigation group which has already been graphically represented in 4.3.

4.4.2.2 Perceived stress scale (PSS)

(Cohen, Kamarck & Mermelstein, 1983)

- **Development and rationale**

The PSS measures the degree to which situations in one's life are appraised as stressful. The PSS is suggested for examining the role of non-specific appraised stress in the etiology of disease and behavioural disorders and as an outcome measure of experienced levels of stress (Cohen *et al.*, 1983:385).

The use of objective measures of stress (as implied by the stimulus approach see 2.2.1) implies that events are, in and of themselves, the precipitating cause of pathology and illness behaviour. This implication runs counter to the view that persons actively interact with their environments, appraising potentially threatening or challenging events in the light of available coping resources (see 2.6). From the latter perspective, stressor effects are assumed to occur only when both the situation is appraised as threatening or otherwise demanding and insufficient resources are available to cope with the situation. The point being made is that the causal 'event' is the cognitively mediated emotional response to the objective event, but not the objective event itself. This also means that this response is not based solely on the intensity or any other inherent quality of the event, but rather is dependent on personal and environmental factors as well. This assumed centrality of the cognitive appraisal process suggests the desirability of measuring perceived stress as opposed or in addition to objective stress.

It was therefore desirable to develop an instrument to measure a global level of perceived stress by tapping the degree to which respondents found their lives unpredictable, uncontrollable and overloading. These three issues have been repeatedly found to be central components of the experience of stress (Cohen *et al.*, 1983:387). The scale also includes a number of direct queries about current levels of experienced stress.

- **Nature, administration and interpretation**

The PSS is a 14-item measure of the degree to which situations in a person's life are appraised as stressful. The PSS is an economical scale that can be administered in only a few minutes and is easy to score. The items are easy to understand and the response alternatives are simple to grasp. Moreover, as noted above, the questions are quite

general in nature and hence relatively free of content specific to any subpopulation group.

The person completing the PSS has to respond on 14 items in the form of questions concerning his/her feelings and thoughts during the last month. The person is asked to indicate how often he/she felt or thought as suggested by the questions, ranging from "Never" to "Very often". A PSS score is obtained by reversing the scores on the seven positive items, and then summing across all 14 items. In this study only the raw scores are used because the PSS has not been standardised in South Africa.

- **Reliability and validity**

Coefficient alpha reliability for the PSS was found to be 0,84; 0,85 and 0,86 in three separate studies (Cohen *et al.*, 1983:390). Cohen *et al.*, (1983:387) remark that the evidence from studies suggests the internal and test-retest reliabilities and the concurrent and predictive validities of the PSS.

- **Motivation for selection and use**

This study is about the use and evaluation of meditation as a stress management strategy and the promotion of wellness in teachers. The PSS can therefore be seen as a direct indicator of the effectiveness of CSM as a stress management strategy in teachers. In contrast the following inventories/questionnaires/scales that will be discussed and used in this study, can be seen as more indirect indicators - aimed at the dynamics of stress - of the effectiveness of meditation as a stress management strategy.

These other instruments will, however, serve as more direct indicators of the effectiveness of CSM as a strategy for the promotion of wellness in teachers. Cohen *et al.*, (1983:393) indicate that the PSS can also be used to look more closely at the process by which various moderators of the objective stressor/pathology relationship operate. Meditation can be regarded as one such a moderator. The PSS can finally also be used as an outcome variable, measuring people's experienced levels of stress as a function of objective stressful events, coping resources (the use of meditation in this study), personality factors, et cetera.

4.4.2.3 Profile of adaptation to life-holistic (PAL-H)

(Ellsworth, 1981)

- **Development and rationale**

Holistic health is based on the premise that there is an interrelationship between body, mind (thoughts and feelings) and spirit (energy or life force). Illness is looked upon as a symptom of imbalance or disharmony at some level within this interrelated system (Ellsworth, 1981:1). One of the basic challenges of the so-called Holistic movement is the recognition that each person must ultimately assume the responsibility for maintaining or improving his or her own physical health and psychological well-being. Meditation can be seen as one such practice.

In 1975 a 154 – item self-report questionnaire called the Profile of Adaptation to Life Scale (PAL) was compiled to determine the essential life style ingredients of emotional and physical health. This questionnaire measured various aspects of physical symptoms, psychological adjustment, interpersonal relationships, life style activities, and personal beliefs. An analysis of the responses obtained in research revealed, as has already been shown by other studies, that there is an interrelationship between physical health, psychological adjustment and interpersonal relationships. It was also found that there were differences in some life-style activities and personal beliefs of well adjusted versus poorly adjusted persons. This meant that persons who were relatively free from emotional or physical problems and who had a sense of well-being and satisfying interpersonal relationships not only lived some aspects of their lives differently than more poorly adjusted others, but also differed with respect to certain personal beliefs.

The Holistic form of the PAL Scale that was developed afterwards is used in this study. The Holistic PAL Scale includes the seven dimensions of adjustment measured by the shorter Clinical form of the PAL Scale, and also those life style activities and beliefs that were found to be related to good health and adjustment.

- **Nature, administration and interpretation**

The Holistic PAL Scale contains two parts, namely a clinical part and a holistic part. The first section includes the seven dimensions of adjustment and functioning contained in the shorter Clinical PAL Scale. These include the four areas considered to be important to good adjustment, namely the absence of Negative Emotions, Physical symptoms, the

presence of Psychological Well-being and Close Relationships. The other three Clinical PAL areas include Income Management, Alcohol/Drug Use, and Child Relations.

The second section includes four life style areas correlated with good adjustment namely Social Activity, Self Activity, Nutrition and Exercise, and Personal Growth. The fifth additional area of the Holistic PAL Scale is Spiritual Awareness.

The Holistic PAL Scale can be completed individually or in groups and the instructions are very clear. It can be completed within 12 – 20 minutes. Items are answered on a four point rating scale which varies between Never, Rarely, Sometimes, and Often on some sub-scales to Not Once, 1-2 Times per Month, 1-2 Times per Week, Almost Daily for other sub-scales. The Holistic PAL Scale can be scored by hand. Scoring is done by assigning a score of 1, 2, 3 or 4 to each response, depending on which block is marked out of the four possibilities corresponding with each item. These scores are then added in their clusters to give an indication of a person's functioning with respect to Negative Emotions (items 1-5), Well-being (items 6-10), et cetera. These and other areas are respectively indicated on a Profile Sheet. A low score in negative areas (Negative Emotions, Physical Symptoms and Alcohol /Drug Use) indicates good adjustment. For the positive areas (Well-Being, Income Management, Close and child relationships), a high score indicates good adjustment.

The Holistic PAL Scale can also be used to measure pre and post treatment adjustment in the Clinical Areas of Adjustment and Functioning. In this case the Change Norm tables at the end of the manual can be used to determine whether or not a person changed more or less than others with similar pre-treatment scores. The Change Norms reflect the amount of change typically found for both initially well adjusted and poorly adjusted people. Change scores therefore control the effects of initial differences in people's adjustment level.

The five Holistic areas (the four life style areas and spiritual awareness) are scored in the same way as the seven Clinical areas and the scores can also be transferred to the back of the Profile Sheet. In this study only the raw scores are used, because the PAL-Holistic has not been standardised in South Africa.

- **Reliability and validity**

The PAL-Clinical upon which the PAL-Holistic is based reflects a high level of internal consistency with alpha values of 0.90 and higher on three Clinical Scales and 0.80 and higher on the Holistic subscales (Ellsworth, 1981). The clinical part of the PAL-Holistic is largely similar to that of the original scale. Satisfactory levels of reliability can therefore be accepted. The alpha values of the holistic subscales are, however, not reported. Wolf and Allen (in Van Eeden, 1996:133) indicate low to moderate concurrent validity for the holistic subscales.

- **Motivation for selection and use**

The Holistic PAL Scale is firstly based on the same premise as that of the Meta-approach, which is central to this study, namely that various Clinical and Holistic Sub-Scales (or sub-contexts) are interrelated. Secondly, the different Clinical and Holistic Sub-Scales reflect some of the aspects present in the biological, intra-physic, ecological and metaphysical contexts of human existence, which can be indicated as follows:

		Contexts of Existence			
		Biological	Intra-physic	Ecological	Metaphysical
PAL Scale	Clinical subscales	Physical symptoms	Negative emotions (absence) Psychological well-being Alcohol/Drug use	Close relationships Income management Child relations	
Holistic	Holistic subscales	Nutrition & Exercise	Self activity Personal growth	Social activity	Spiritual awareness

Statistically significant differences - more so if practically meaningful differences are found - between pre and post testing of the experimental and control groups, on any one more of the Scales or on the Total Scale score, can serve as an indication of a move towards greater well-being or wellness due to the increase/decrease in scores as a consequence of the practise of CSM. The inverse is also true.

4.4.2.4 General health questionnaire (GHQ)

(Goldberg & Hillier, 1979)

- **Development and rationale**

The GHQ is developed to focus on “the hinterland between psychological sickness and health” (Goldberg and Hillier, 1979: 139). The GHQ has been extensively used as an indicator of minor psychiatric disturbance in the community and as a measure of teacher distress (Punch & Tuettemann, 1991: 64). The GHQ provides information concerning the current mental status of a person, but does not measure personality characteristics or future possible psychological disturbances. The focus is on a person’s inability to perform ‘healthy’ functions and on the presence of symptoms of a disturbing nature. The test questions accentuate the present situation and not that of the past. The GHQ is aimed at detecting common symptoms of mental disorders and will thus differentiate individuals with psychopathology as a general class from those who are considered normal.

- **Nature, administration and interpretation**

The original questionnaire consisted of 140 items. A shortened form, the GHQ 28, containing 28 items was later compiled by the use of factor analysis. This form of the GHQ consists of four sub-scales with seven items each. These sub-scales are Somatic symptoms (A), Anxiety and Insomnia (B), Social Dysfunction (C) and Severe Depression (D). A total score is also obtainable.

The questionnaire can be administered individually or in a group. Administration time varies between 10 and 15 minutes. The items are answered by making a choice between four ordered response categories for each item, for example Better than usual, Same as usual, Worse than usual and Much worse than usual. Depending on the specific item and the question asked or statement made, the wording of the four response categories can vary accordingly.

Each response on an item, irrespective of the wording, is scored in the same sequence, by collapsing the categories into a dichotomous response: naught (0) for the first two options and one (1) for either the second two options. The authors call it the "GHQ scoring method" (0-0-1-1) and found it gave better results than the Likert method (Goldberg & Hillier, 1979: 142). The scale points across all four sub-scales must be summed up to get a total score for the 28 items. A low score (0-4) indicates a more positive sense of mental health, and a higher score (5-28) indicates a progressively more negative state of negative mental health. In this study only the raw scores are used because the GHQ has not been standardised in South Africa.

- **Reliability and validity**

In a South African study Wissing and Van Eeden (1994) reported Cronbach alpha coefficients reflecting reliability of 0,78 for Scale A (Somatic Symptoms); 0,84 for Scale B (Anxiety and Insomnia); 0,79 for Scale C (Social Dysfunction); 0,36 for Scale D (Severe Depression) and 0,90 for the total Scale score.

The concurrent validity of the GHQ has been determined by the correlation of the scores of the four sub-scales as well as the total score with that of applicable psychiatric evaluations, namely the Clinical Interview Schedule (Goldberg & Hillier, 1979: 141). The correlations obtained were: 0,32 for Scale A (Somatic Symptoms); 0,70 for Scale B (Anxiety and Insomnia); 0,56 for Scale C (Social Dysfunction); 0,56 for Scale D (Severe Depression) and 0,76 for the total Scale score.

The low correlation for Scale A (Somatic Symptoms) is attributable to differences in the operational defining of somatic symptoms (Van Eeden, 1996: 118). The correlations between scale scores and the total score (Scale A=0,79; Scale B=0,90; Scale C=0,75; Scale D=0,69) demonstrate a reasonable level of internal consistency.

- **Motivation for selection and use**

The different Scales of the GHQ reflect some of the aspects present in the biological, intra-physic, ecological contexts of human existence, which can be indicated as follows:

Contexts of Existence			
	Biological	Intra-psyhic	Ecological
GHQ	Somatic symptoms	Anxiety and insomnia Severe depression	Social dysfunction

Statistically significant differences, more so if practically meaningful differences are found, between pre and post testing of the experimental and control groups, on any one more of the Scales or on the Total Scale score, can serve as an indication of a move towards greater well-being or wellness due to the increase/decrease in scores as a consequence of the practise of CSM. The inverse is also true.

4.4.2.5 Quality of life inventory (QOLI)

(Frisch, 1994; 1994a;1994c)

- **Development and rationale**

The QOLI was developed to provide a measure of positive mental health that could supplement measures of negative affect and psychiatric symptoms in both outcome assessment and treatment planning. The QOLI was also developed to focus the attention of health providers on a client's sources of fulfilment, including real-life concerns of work, money and physical surroundings. Finally, the QOLI was developed to provide a measure of life satisfaction based on an articulated theory – Quality of Life Theory – because the construct has such great integrative, heuristic, and practical appeal to the fields of psychology and medicine, among others (Frisch, 1994a: 6).

The Quality of Life Theory of life satisfaction, which underlies the QOLI, takes the combined cognition-and-effect approach (instead of the either/or approach) to defining subjective well-being. Life satisfaction and negative and positive affect are viewed as components of the broader construct of subjective well-being or happiness. It is assumed that the affective correlates of subjective well-being largely stem from cognitively based life satisfaction judgements. Life satisfaction is equated with quality of life and refers to a person's subjective evaluation of the degree to which his/her most important needs, goals, and wishes have been fulfilled. This means that the perceived discrepancy

between what a person has and what he/she wants to have in valued areas of life determines his/her satisfaction or dissatisfaction or quality of life (Frisch, 1994a: 2).

- **Nature, administration and interpretation**

Quality of Life Theory assumes that a finite number of areas of human aspirations and fulfilment can be identified that is applicable to both clinical and nonclinical populations. Based on an exhaustive review of the literature, especially cognitive mapping, studies of human concerns and studies identifying particular areas of life that are associated with overall life satisfaction and happiness, a comprehensive list of 16 human concerns or areas of life was developed for inclusion in the QOLI. An effort was made to be comprehensive but to limit the areas of life to those that are empirically associated with overall satisfaction and happiness (Frisch, 1994a: 6). The 16 areas of life form the centrepiece of the QOLI. They are Health, Self-Esteem, Goals-and-Values, Money, Work, Play, Learning, Creativity, Helping, Love, Friends, Children, Relatives, Home, Neighbourhood and Community. The QOLI also yields an overall raw score that can be converted into T scores and percentiles for the purpose of classifying a respondent's Overall Quality of Life. In this study only the raw scores are used because the QOLI has not yet been standardised in South Africa.

The QOLI has various uses. It can firstly be used as a measure of treatment outcome. Because the QOLI is not a disorder or disease-specific measure and because all health care interventions aim to improve a patient's quality of life, regardless of their theoretical differences, the QOLI has potential as a universal outcome measure. This means that the QOLI may be used to evaluate the effectiveness of psychological and medical treatments for virtually any mental or physical disorder based on any theoretical field (Frisch, 1994: 7-8). The QOLI can secondly also be used as a treatment planning tool and thirdly, as a screening tool for identifying individuals who are at risk from health problems.

The QOLI contains 32 items on the Answer Sheet (Frisch, 1994b) and takes about five minutes to score on the worksheet (Frisch, 1994b) of the hand scored version that also allows respondents to further explain their satisfaction ratings by listing specific problems that interfere with their satisfaction in all 16 areas of life assessed by the QOLI. The QOLI has been successfully applied in non-health-related settings such as college counselling centres and businesses with organisational development programs, and a

whole range of the diverse settings. In this study only the raw scores are used because the QOLI has not been standardised in South Africa.

- **Reliability and validity**

Frisch (1994:12) reports reliability coefficients of 0,73 (test-retest reliability coefficients) and 0,79 (internal consistency reliability – Cronbach alpha). The convergent validity of the QOLI has been shown by the validity coefficients between QOLI T scores and Satisfaction With Life Scale (SWLS) and Quality of Life Index scores (Frisch, 1994: 15). The QOLI was significantly and positively correlated with both measures. The correlations obtained were: 0,56 (with the SWLS) and 0,75 (with the Quality of Life Index).

- **Motivation for selection and use**

The 16 different areas of life and their related measure of satisfaction and happiness reflect some of the aspects present in the biological, intra-physic, ecological and metaphysical contexts of human existence which can be indicated as follows:

Contexts of Existence				
	Biological	Intra-physic	Ecological	Metaphysical
QOLI	Health	Self-esteem Play Learning Creativity Helping Love	Money Work Friends Children Relatives Home Neighbourhood Community	Goals-and-Values

Statistically significant differences - more so if practically meaningful differences are found - between pre and post testing of the experimental and control groups, on any one or more of the Scales or on the Total Scale score, can serve as an indication of a move towards positive mental health and sources of fulfilment and life satisfaction (as subjective well-being or wellness) when scores improve as a consequence of the practise of CSM. The inverse is also true.

The QOLI can secondly also be used as a measure of treatment outcome, as has been pointed out, because the QOLI is not a disorder or disease-specific measure, and due to the fact that all health care interventions (psychological or medical) aim to improve a person's quality of life.

4.4.2.6 Symptom checklist – 90 – R (SCL-90-R)

(Derogatis, 1994a; 1994b; 1994d)

- **Development and rationale**

Due to the shortcomings of the Hopkins Symptom Checklist (HSCL) and as a result of research, the SCL-90 was developed. Although it is historically related to the HSCL as a psychological symptom inventory, the SCL-90-R transcended not only the limitations of the former checklist; it also expanded the breadth of coverage of psychopathology and psychological distress. This includes four new symptom dimensions, the extension of the distress continuum to a five-point scale, the revision of various aspects of the instructions and administrative format. Three distinct but related global measures of distress were developed and seven 'configural' items were designed to aid in nosological discrimination. Initially, the SCL-90 served as a prototype for the final 'R(evised)' SCL-90-R.

The SCL-90-R is a 90-item self-report symptom inventory designed to reflect the psychological symptom patterns of community, medical and psychiatric respondents. The SCL-90-R is a measure of current point-in-time psychological symptom status. It is also not a measure of personality, except indirectly in that certain personality types and disorders may manifest a characteristic profile in the primary symptom dimensions (Derogatis, 1994a: 5).

- **Nature, administration and interpretation**

The SCL-90-R contains 90 items and each is rated on a five-point scale of distress (0-4) ranging from "Not at all" to "Extremely". The SCL-90-R is answered on answer sheets (Derogatis, 1994c), which are scored with the aid of answer keys (Derogatis, 1994b), and the scores are noted on worksheets and profile forms (Derogatis, 1994d). The profile forms have not been used in this study, because South African norms are not available. The SCL-90-R is scored and interpreted in terms of nine primary symptom dimensions and three global indices of distress, and are:

Somatisation (SOM)

Obsessive-Compulsive (O-C)

Interpersonal Sensitivity (I-S)

Depression (DEP)

Anxiety (ANX)

Hostility (HOS)

Phobic Anxiety (PHOB)

Paranoid Ideation (PAR)

Psychotism (PSY)

Additional items (ADD)

Global Severity Index (GSI)

Positive Symptom Distress Index (PSDI)

Positive Symptom Total (PST)

The global indices were developed to provide more flexibility in the overall assessment of the patient's psychologic status and to furnish summary indices of levels of symptomatology and psychological distress. Research using analogs of these measures confirms the rationale that the three indicators reflect distinct aspects of psychological disorder (Derogatis, 1994a: 5).

The SCL-90-R can be administered in one of two formats: paper-and-pencil or online. Typical time for administrative instruction is 2 to 5 minutes and under normal circumstances requires between 12 to 15 minutes to complete. The SCL-90-R can be used as an one-time assessment of a client's clinical status, or it can be used repeatedly

to document formal outcomes, response trends, or pre-post therapeutic evaluations. The raw scores for the nine symptom dimensions and the three global indices can be converted to standard (normalised) T scores using the norm group that is appropriate for the person being examined. In this study only the raw scores are used because the SCL-90-R has not been standardised in South Africa.

- **Reliability and validity**

Internal consistency reliability coefficients are reported by Derogatis (1994: 28) to be 0,77 to 0,90 across the various symptom dimensions. Test-retest reliability coefficients are reported by Derogatis (1994a: 28) to be 0,80 to 0,90 that is seen as "... an appropriate level for measures of symptom constructs".

Several studies have contrasted the SCL-90-R with other established multidimensional measures of psychopathology in an effort to determine the instrument's convergent-discriminant validity. Derogatis (1994a: 33) reports that in contrasting the dimension scores of the SCL-90-R with scores from the MMPI, highly acceptable levels of convergent-discriminant validity have been illustrated. The SCL-90-R dimensions have their highest correlations with like MMPI constructs in every case except Obsessive-Compulsive, which has no directly comparable scale on the MMPI.

In a somewhat analogous study to the above, the SCL-90-R has been compared with the dimensions of the Middlesex Hospital Questionnaire MHQ (currently called the Crown-Crisp Experimental Index). In the majority of instances, there was very good convergence between like dimensions and good discrimination between dissimilar constructs. The Global Severity Index of the SCL-90-R yielded a correlation coefficient with the MHQ Global of 0,92 that is highly significant (Derogatis, 1994a: 33).

Derogatis (1994a: 33-34) reports that although not using convergent-discriminant paradigms specifically, numerous investigators have established concurrent validity for the SCL-90-R in terms of correlations with simultaneously administered analogous instruments' similar symptom dimensions or between global scores and total scores. Preveler and Fairburn (1990) also published a series of validation studies with the SCL-90-R that reflect elements of concurrent, predictive, and construct validity.

- **Motivation for selection and use**

The 9 primary symptom dimensions of the SCL-90-R reflect some of the aspects present in the biological and intra-physic contexts of human existence, which can be indicated as follows:

		Contexts of Existence		
		Biological	Intra-psyhic	Ecological
SCL-90-R	Somatisation		Obsessive-compulsive	Interpersonal sensitivity
	Additional items		Interpersonal sensitivity	
			Depression	
			Anxiety	
			Hostility	
			Phobic anxiety	
			Paranoïd ideation	
			Psychotism	
			Additional items	

Statistically significant differences - more so if practically meaningful differences are found - between pre and post testing on any one or more of the scores on the primary symptom dimensions and/or global indices can serve as an indication of the improvement in well-being or wellness due to the lessening of symptoms of psychological distress as a consequence of the practise of CSM. The inverse is also true. Symptom dimensions such as Interpersonal Sensitivity and Hostility have been indicated as aspects present in the intra-physic context of human existence in the table above. These aspects will in all probability impact directly on social relationships in the sub-contexts of the ecological context of human existence if their scores are high, illustrating the principle of interaction between different contexts of existence.

The SCL-90-R can secondly also be used as a measure of treatment outcome. The review of psychotherapy outcome studies shows the SCL-90-R's sensitivity to a broad array of traditional and non-traditional psychotherapeutic interventions (Derogatis, 1994: 37). Derogatis (1994a: 38,40) also refers to the work of Carrington *et al.* (1980) that has been cited earlier (see 3.6.4), and asserted that SCL-90-R has been demonstrated to be highly sensitive to differences between meditation and control groups in the treatment of stress.

4.4.2.7 The spiritual well-being scale (SWBS)

(Ellison, 1983; Ellison & Smith, 1991)

- **Development and rationale**

Campbell (in Ellison, 1983: 330) suggests that well-being depends on the satisfaction of the basic kinds of need, namely, the need for having, the need for relating, and the need for being. A fourth set of needs that might be termed the need for transcendence has been, however, ignored (Ellison, 1983: 330). This refers to the sense of well-being that persons experience when they find purposes to commit themselves to, which involve the ultimate meaning of life. It refers to a non-physical dimension of awareness and experience that can best be termed spiritual. Ellison (1983: 331) notes that all of the great religions of the world recognise and call human beings to transcendence as the path to the highest levels of well-being.

According to Ellison (1983: 331-332), it is the spirit of human beings which enables and motivates persons to search for meaning and purpose in life, to seek the supernatural or some meaning which transcends them to wonder about their origins and identities, to require morality and equity. It is the spirit that synthesizes the total personality and provides some sense of energising direction and order. The spiritual dimension does not exist in isolation from a person's psyche and soma, but provides an integrative force. It affects, and is affected by a person's physical state, feelings, thoughts and relationships. If persons are spiritually healthy they will feel generally alive, purposeful and fulfilled, but only to the extent that they are physically and psychologically healthy as well. The relationship is bi-directional because of the intricate intertwining of the parts of a person.

Spiritual well-being involves a religious component and a social-psychological component. Spiritual well-being has therefore been conceptualised as two-faceted, with both vertical and horizontal components. The former refers to a person's sense of well-being in relation to God; the latter refers to a sense of life purpose and life satisfaction,

with no reference to anything specifically religious. To have a sense of existential well-being is to know what to do and why, who the person (him/herself) is, and where he/she belongs in relation to ultimate concerns. Both the dimensions referred to involve transcendence, or stepping back from and moving beyond what is. Because persons function as integrated systems the two dimensions, although partially distinctive, would also affect each other (Ellison, 1983: 331).

The SWBS was developed due to the absence of any systematic subjective quality of life measure, which included both religious and existential well-being. The SWBS is one of the most extensively researched measures of subjective and spiritual well-being across a wide variety of settings (Ellison & Smith, 1991: 39). These researchers are also of the opinion that the SWBS is an effective integrative or systematic measure of health and well-being. Spiritual well-being is inversely related to stress (as has been measured with the Health and Stress Profile) with the most statistically significant relationship being between existential well-being and stress (Ellison & Smith, 1991: 41).

- **Nature, administration and interpretation**

The SWBS consists of 20 items evenly divided to comprise two subscales. Each item is rated on a six-point scale, ranging from "Strongly Agree" to "Strongly Disagree". Items are scored from one to six, with a higher number representing more well-being. Reverse scoring has to be done for negatively worded items. Odd-numbered items assess religious well-being and even numbered items assess existential well-being. As is clear from the above, the SWBS is scored and interpreted in terms of the following two subscales:

Religious well-being (RWB)

Existential well-being (EWB)

RWB as a vertical dimension, describes a person's well-being as it relates to God. EWB as a horizontal dimension, on the other hand, describes a person's well-being as it relates to a sense of life purpose and life satisfaction, without any specific religious reference (Ledbetter, Smith, Vosler-Hunter & Fischer, 1991: 49).

In scoring the SWBS the 10 RWB and 10 EWB items are summed to yield the two subscale scores. Possible values for each subscale range from 10 to 60, with high scores indicating "more" religious and existential well-being and low scores, indicating

“less”. Similarly, the total SWBS score is obtained by summing both the RWB and EWB subscales to obtain a score of 20 to 120 for the spiritual well-being continuum (Ledbetter *et al.*, 1991: 50 – 51).

Since its introduction the SWBS has been primarily used for research purposes. Despite the number of research studies, no normative information was originally available for the SWBS (Ledbetter *et al.*, 1991: 49). Bufford, Paloutzian and Ellison (1991) however, did develop norms for the SWBS, which are not used in this study due to the fact that these norms are not standardised in South Africa.

- **Reliability and validity**

Puchalski (1999) report test-retest reliability coefficients to be 0,93 (SWBS), 0,96 (RWB) and 0,86 (EWB). Coefficient alphas, an index of internal consistency, were shown to be 0,89 (SWBS), 0,87 (RWB) and 0,78 (EWB). The magnitude of these coefficients suggests that SWB has high reliability and internal consistency.

With regard to validity, examination of the item content suggests good face validity. SWBS scores have also correlated in predicted ways with other theoretically related scales. The SWBS, RWB and EWB were all found to be negatively correlated with the UCLA Loneliness Scale, and positively with the Purpose in Life Test, Intrinsic Religious Orientation and self-esteem (Ellison, 1983: 333).

- **Motivation for selection and use**

The 2 sub-scales of the SWBS reflect some of the aspects present in the metaphysical context of human existence that can be indicated as follows:

	Contexts of human existence
SWBS	Metaphysical
	Religious well-being Existential well-being

Statistically significant differences, more so if practically meaningful differences are found, between pre and post testing of the experimental and control groups, on any one or more of the scores on the sub-scales or the total SWBS score, can serve as an indication of improved spiritual well-being as a consequence of the practise of CSM. The inverse is also true.

Ellison (1983: 337) is of the opinion that the SWBS might be related to additional religious beliefs, experiences and practises of both Christian and non-Christian religious systems to see which of these are associated with, and may indeed produce spiritual well-being. One such a practice referred to is meditation. As indicated earlier, both the subscales of religious and existential well-being involve transcendence, or stepping back from and moving beyond what is. Clinically Standardized Meditation may facilitate this process and it is therefore imperative to determine if it is true or not.

4.4.2.8 Work environment scale (WES)

(Moos, 1986)

- **Development and rationale**

The WES is one of nine Social Climate Scales. The WES has three forms: the Real Form (Form R), which measures perceptions of existing work environments, the Ideal Form (Form I) and the Expectations Form (Form E). Form R is used in this study. The WES has 10 subscales which assess three underlying domains, or sets of dimensions, namely the Relationship dimensions, the Personal Growth dimensions and the System Maintenance and the System Change dimensions.

The subscales measuring the Relationship dimensions assess the extent to which employees are concerned about and committed to their jobs; the extent to which employees are friendly to and supportive of one another; and the extent to which management is supportive of employees and encourages employees to be supportive of one another. The subscales measuring the Personal Growth, or goal orientation, dimensions assess the extent to which employees are encouraged to be self-sufficient and to make their own decisions; the degree of emphasis on good planning, efficiency and getting the job done; and the degree to which the pressure of work and time urgency dominate the job milieu. The subscales measuring the Systems Maintenance and Systems Change dimensions assess the extent to which employees know what to expect in their daily routines and how explicitly rules and policies are communicated; the extent

to which management uses rules and pressures to keep employees under control; the degree of emphasis on variety, change and new approaches; and the extent to which physical surroundings contribute to a pleasant work environment. The WES can be used to describe or contrast the social environment of work settings, to compare employee and manager perceptions, to compare actual and preferred work environments, and to assess and facilitate change in work settings.

- **Nature, administration and interpretation**

The Form R items are printed in a reusable booklet designed to be used with a separate answer sheet. There are 90 items in the form of statements. They are statements about the place in which a person works and are intended to apply to all work environments. The person completing the WES then indicates if the statements are "True" or "False" for him/her. The 10 subscales are organised into 10 columns on the answer sheet. The scorer simply counts the number of marks showing through the template in each column and enters the total in the R/S (raw score) box at the bottom. An average score can then be calculated for all the members of a work group, or for an individual on each subscale. Although these raw scores can be converted to Form R standard scores, it has not been done in this study, because the WES has not been standardised in South Africa yet. Only the raw scores have therefore been used.

- **Reliability and validity**

Internal consistency reliability coefficients are reported to range between .69 to .86 for the different subscales of the WES (Moos, 1986:5). The test-retest reliabilities are all in acceptable range, varying from a low of .69 to .80 (Moos, 1986:6). The internal validity for the WES is also acceptable (Moos, 1986:6).

- **Motivation and selection for use**

The 10 subscales of the WES reflect some of the aspects present in the ecological context of human existence, especially the work subcontext, which can be indicated as follows:

		Contexts of existence
		Ecological
WES	Relationship dimensions	Involvement Peer cohesion Supervisor support
	Personal Growth dimensions	Autonomy Task orientation Work pressure
	Systems maintenance and Systems change dimensions	Clarity Control Innovation Physical Comfort

Statistically significant differences, more so if practically meaningful differences are found, between pre and post testing of the experimental and control groups, on any one or more of the scores on the dimensions or subscales of the WES can serve as an indication of the perceived improvement in the work environment or well-being or wellness in the work environment as a consequence of the practise of CSM. The inverse is also true. The work environment is an important potential source of stressors and potential reflector of stress as has been indicated in Chapter 2. The effects of CSM might lead to changing perceptions of the work environment and as a consequence possibly the work environment itself due to the person-(work)environment interaction. The WES, lastly, can also be used for evaluating the impact of intervention programmes (Moos, 1986:16).

4.4.2.9 Profile of mood states (POMS)

(McNair, Lorr & Droppleman, 1992)

- **Development and rationale**

The understanding of the psychology of emotion requires not only the inclusion of psychological and behavioural data, but also the subjective data of feeling, affect, and mood. Increasing attention to mood states and mood changes is reflected in the literature on the effects of brief psychotherapies, psychotropic medications and other drugs, sleep deprivation, emotional stimulation, and similar experimental operations. This interest and effort has accentuated the need for a rapid, economical method of identifying and assessing transient, fluctuating affective states. To meet this need a factor analytical derived inventory, the POMS, has been developed which measures six identifiable mood or affective states in six identifiable mood as affective states in six mood scales (McNair *et al.*, 1992: 1).

These mood scales have proved to be particularly useful descriptive measures for assessing psychiatric outpatients and are very sensitive indicators of their responses to various therapeutic approaches. The POMS has also proved to be a sensitive measure of the effects of various experimental manipulations upon normal subjects and other nonpsychiatric populations (McNair *et al.*, 1992:1).

- **Nature, administration and interpretation**

The POMS contains 65 adjective rating items with a five-point rating scale each, which is rated between "Not at all" to "Extremely". The POMS is answered on an answer sheet, which is scored with the aid of six hand-scoring keys representing the six mood affective states. The six raw scores are then noted on the POMS Profile Sheet from which the T-scores can then be obtained. Because the POMS lack the South African and normal (not psychiatric outpatient) norms, only the raw scores will be used in this study. The six represented mood or affected states referred to as mood factors are:

Tension-Anxiety

Depression-Dejection

Anger-Hostility

Vigour-Activity

Fatigue-Inertia

Confusion-Bewilderment

Ideally, the scores obtained across all the mood factors should be as low as possible in order to indicate low negative feelings, affect and mood and therefore well-being, except the mood factor of Vigour-Activity which should ideally be high. A Total Mood Disturbance (TMD) score may be obtained by summing the scores (with Vigour-Activity weighted negatively) on the six primary mood factors. The TMD score can be used as a single global estimate of affective state. The person about to complete the POMS is asked which response best describes: "How have you been feeling during the last week including today?" (McNair *et al.*, 1992: 2) as part of the instructions. The purpose of the one-week rating period in the instructions is to emphasize a period both sufficiently long to depict the patient's typical and persistent mood reactions to his current life situations and sufficiently short to access acute treatment effects (McNair *et al.*, 1992: 2). The POMS is practically self-administering and takes about 3 to 5 minutes to complete.

- **Reliability and validity**

Internal consistency reliability coefficients are reported by McNair *et al.* (1992: 7) to be near 0.90 or above, across the six mood factors. Test-retest reliability coefficients are reported by McNair *et al.* (1992:7) to be 0,65 for Vigour-Activity to 0,74 for Depression-Dejection with a median time between intake and pre-treatment, of 20 days.

Seven areas of research have indicated the predictive and construct validity of the POMS. These seven areas are:

Brief psychotherapy studies

Controlled outpatient drug trails

Cancer research

Drug abuse and addiction research

Studies of response to emotion-inducing conditions

Research on sport and athletes

Studies of concurrent validity coefficients and other POMS correlates.

In respect of the last area, the finding of a relationship between the POMS and conceptually similar tests (with their related sub-scales) such as the Hopkins Symptom Distress Scales, the Taylor Manifest Anxiety Scale and the MMPI-2 lends support to the validity of the POMS (McNair *et al.*, 1992: 13 – 15).

• **Motivation and selection for use**

The 6 mood or affective states reflect some of the aspects present in the intra-physic context of human existence which can be indicated as follows:

Contexts of existence				
	Biological	Intra-psyhic	Ecological	Metaphysical
POMS	Tension-Anxiety	Tension-Anxiety	Anger-Hostility	Depression- Dejection
	Vigour-Activity	Depression- Dejection	Tension-Anxiety Vigour-Activity	
	Depression- Dejection	Anger-Hostility Vigour-Activity Fatigue-Inertia	Fatigue-Inertia Depression- Dejection	
		Vigour-Activity Fatigue-Inertia		
		Confusion- Bewilderment		

Statistically significant differences - more so if practically meaningful differences are found - between pre and post testing of the experimental and control groups, on any one or more of the scores in the mood or affective states or the TMD score can serve as an indication of the improvement of well-being or wellness in mood as affective states due to the increase/decrease in scores as a consequence of the practise of CSM. The inverse is also true. This is in accordance with the POMS which has also proved to be a sensitive measure of the effects of various experimental manipulations (McNair *et al.*, 1992: 1).

The POMS is secondly recommended primarily as a measure of mood states in persons and as a method for assessing change in such persons.

4.4.2.10 Generalized self-efficacy scale (GSES)

(Schwarzer & Jerusalem in Schwarzer, 1992)

- **Development and rationale**

Perceived self-efficacy has continuously become a more widely accepted psychological construct used to explain and predict coping behaviours. It pertains to optimistic self-beliefs about dealing with critical demands that tax an individual's resources. If a person feels confident enough to be able to control challenges or threats, then successful action is more likely (Schwarzer, 1992: V).

Human functioning is facilitated by a personal sense of control. If people believe that they can take action to solve a problem instrumentally, they become more inclined to do so and feel more committed to this decision. While outcome expectancies refer to the perception of the possible consequences of a person's action, self-efficacy expectancies refer to personal action control or agency. A person who believes in being able to cause an event can conduct a more active and self-determined life course. This cognition of 'I can' mirrors a sense of control over a person's environment. It reflects the belief of being able to control challenging environmental demands by means of taking adaptive action. It can be regarded as a self-confident view of a person's capability to deal with certain life stressors (Schwarzer, 1992: 1). As such it seems as if self-efficacy is central to problem-focused coping referred to in Chapter 2.

Self-efficacy makes a difference in how persons feel, think and act. It is also based on experience and does not lead to unreasonable risk taking; instead, it leads to venturesome behaviour that is within reach of a person's capabilities. Self-efficacy is usually considered to be specific or having situation-specific beliefs (the belief of a person in his/her ability to perform a specific action) that is, a person can have more or less firm beliefs in different domains of functioning, but some researchers have also conceptualised a generalised sense of self-efficacy. These are general beliefs in a person's ability to respond to and control environmental demands and challenges (Schwarzer, 1992: 1).

- **Nature, administration and interpretation**

The GSES is a 10-item scale translated from German. It assesses the strength of a person's belief in his/her ability to respond to novel or difficult situations and to deal with any associated obstacles or setbacks.

It is a self-administered scale that takes 2 to 3 minutes to complete on an answer sheet. Respondents are required to indicate the extent to which each statement applies to them. For each item there is a four choice response ranging from "Not at all true" which scores 1, to "Exactly true" which scores 4. The scores for each of the ten items are summed to give a total score. The higher the score, the greater is the individual's generalized sense of self-efficacy. Only German norms are available, therefore only the raw scores will be used in this study.

- **Reliability and validity**

The GSES has been used in numerous research projects, where it typically yielded internal consistencies between $\alpha = 0,75$ and $0,90$ (Schwarzer, 1992: 2). The scale is not only parsimonious and reliable, it has also proven valid in terms of convergent and discriminant validity. It correlates for example positively with self-esteem and optimism, and negatively with anxiety, depression and physical symptoms (Schwarzer, 1992: 2).

In this study the following Cronbach alpha-coefficients have been obtained, giving an indication of the internal consistency of the test:

- **Motivation for selection and use**

The GSES reflects an important aspect present in the intra-physic context of human existence that can be outlined as follows:

	Contexts of existence
	Intra-physic
GSES	General self-efficacy

Statistically significant differences - more so if practically meaningful differences are found - between pre and post testing of the experimental and control groups on the GSES, can serve as an indication of the improvement in general self-efficacy due to the increase in the score as a consequence of the practise of CSM which can be related to well-being and wellness (see Chapter 3). The inverse is also true.

As the GSES is said to be assessing the strength of a person's belief in his/her ability to respond to novel or difficult situations and to deal with any associated obstacles or setbacks, a higher score might indicate a move toward a more problem-focused coping approach to stress.

4.4.3 Qualitative data collection

The aim of qualitative data collection in this study is to provide a 'thick' and rich account of experiences had by participants who practised CSM. These data are viewed as equally significant to those collected by quantitative means. Although quantitative data can yield statistically significant and structured findings and conclusions about the research questions asked, qualitative data can provide an opportunity to obtain insights into detailed and rich experiential contents in an unstructured way. This means that experiences can also be accounted for that often cannot be measured or accounted for by formal and structured quantitative measures (Maykut & Morehouse, 1994: 70) such as inventories, scales and questionnaires.

The process of data collection in qualitative research especially, is in itself guided by the principle of triangulation as stated earlier. The following methods were used for qualitative data collection:

4.4.3.1 Literature study

The literature study contributed firstly to the formulation of a theoretical framework concerning the potential sources and potential effects and dynamics of stress and the process of experiencing and coping with stress in all contexts of human existence, and secondly, a theoretical understanding of the connotations and denotations of wellness and meditation in general and CSM specifically. These theoretical insights guided the formulation of appropriate questions for the interviews conducted and served as another point of reference for the purpose of triangulation.

4.4.3.2 Participant observation

The role of the researcher in this study can be seen as that of a participatory observer, although participatory observation was not so much done in a true ethnographical way. The researcher was, however, not an outsider noting on a specific phenomenon, but was part of the process of teaching, guiding, monitoring and evaluating the effects of CSM on

participants as is often done in classroom settings in the context of education. This essentially reflected the participant-as-collaborator approach to research (Maykut & Morehouse, 1994: 68) in gaining access to the experiences of participants related to their practise of CSM in and upon their day-to-day lives.

Participant observation for qualitative research simultaneously combines document analysis, interviewing of respondents and informants, direct participation and observation and introspection (Maykut & Morehouse, 1994: 69). These techniques were all used in the research process (see 4.5) of this study. These were documented in the form of field notes. Field notes in this study were reflective (the researcher's own thoughts, feelings, impressions and speculations), demographic (time, place, date), and descriptive (quotations from dialogue, descriptions of events, reactions, activities) (Creswell, 1994: 152). Field notes were made during and especially after each two-weekly checking session held for monitoring and motivation (cf. 4.5), and of any other individual contacts, face-to-face or over the phone.

4.4.3.3 Interview

The interview conducted was of a semi-structured nature – also referred to as a semi-standardised interview (Berg, 1998: 60). The semi-structured interview is located somewhere between the extremes of completely structured and completely unstructured interviews.

This type of interview involves the implementation of a number of predetermined questions and/or special topics. The questions are typically asked of each interview in a systematic and consistent order, but the interviews are allowed freedom to digress; that is, the interviewers are permitted (in fact expected) to probe far beyond the answers to their prepared and standardised questions (Berg, 1998:61).

Although the interviews were conducted in group format, it was essentially individual interviews conducted in groups and as such cannot be classified as group interviews only (Maykut & Morehouse, 1994: 104). It would perhaps be more accurate to categorise the interviews as individual interviews in group format. This gave each participant the opportunity to reflect on his/her experience upon all the questions asked, but had the opportunities (such as in a group interview) to listen to each other's contributions, which could spark new insights or realisations or help participants to develop and present their ideas more clearly. As such, information that may not have been thought of or shared in

an individual interview may emerge in the group setting. Participants were also invited and asked to share their new insights even after they already had the opportunity to answer a specific question. This was made easier by asking all participants to answer the same question consecutively – everybody answered question 1, then 2 and so on. After explaining the reason for the interview and obtaining the participants' permission to take part in the interview and to record the interview on audio cassette, the interview was started by asking the first question.

Questions asked were the following:

Since starting the practise of CSM have you noticed any:

- effects in your body/physical functioning?
- effects in your psychological functioning - thinking, feeling, behaviour, et cetera?
- effects in your relationship with the environment - social - family, friends, colleagues; or any other environment?
- effects in your spiritual, philosophic, world-view, et cetera, outlook and functioning?
- what advice can you give to improve these in future?
- what was good about the program with which you were taught meditation?
- how would you describe meditation to somebody who doesn't know anything about it – for instance to an interested journalist?
- was learning meditation worth the effort (effective)? Do you think you will use meditation as a technique/strategy or as a life skill for stress management in the future?

4.4.3.4 Telephone interview

Apart from serving as another point of reference for the purpose of triangulation, is the possibility suggested by clinical reports, that indicates that trainees frequently fail to acknowledge benefits from a meditation – relaxation technique even when such benefits are readily apparent to other persons. This has for instance been noted in a study of businessmen and women who learned to meditate where a number of discrepancies

between the changes that meditators themselves reported from their practise and those noticed by their co-workers have been revealed (Carrington *et al.*, 1980: 229).

Consequently, a telephone interview was conducted with any one of the participant's spouse/ intimate friend or colleague (the first one that was available on telephone) that knew him/her well and who lived intimately/worked closely with the participant. At least one of the two persons whose names were given was contacted for the interview. After establishing rapport, the reason for phoning the respondent and obtaining his/her permission to tape record the interview one open-ended question was asked to facilitate a short but unstructured interview. The following questions were asked:

- (Person A) participated in a research project about meditation – are you aware of it?
- (Person A) has given your name and telephone number to me. Do you mind if I ask you a question about it?
- Do you mind if I record your response?
- Which effect or effects do you think did the meditation have?

4.4.3.5 Diaries

Each participant in the experimental group received a diary drawn up especially for the research and covering only the time that the research took place. Meditators were asked to fill in the number of times they meditated each day and the duration in minutes of each session. They were also asked to make a note of any effects or experiences they had whenever they occurred.

This was done to serve as another point of reference for the purpose of triangulation, to aid with motivation for compliance to the meditation practise, to see if low or high compliance had any effect on the effects of meditation and lastly to be able to take cognisance of noted effects or experiences from a research point of view.

4.4.3.6 Physical examination

A medical professional was employed to conduct a non-intrusive physical examination to obtain insight into the general health status of each person participating. Blood pressure, heart frequency and weight were the main measurements made. General

observations were made and general questions in a semi-structured way concerning health were asked such as the participant's perceived health status, health problems, medication used, dose, et cetera.

This evaluation was done both before and after the study to serve as another point of reference for the purpose of triangulation and to ascertain the health status of especially the persons assigned to the experimental group with the limitations of, cautions in, and contra-indications of the use of meditation in mind (see 3.6). Physical examinations done were also to serve as a means of comparison before and after the intervention.

4.4.3.7 Reliability and validity and generaliseability in qualitative research

Mason (1996: 21) points out that validity, reliability and generaliseability are essentially different kinds of measures of the quality, rigour and wider potential of research.

- **Reliability**

Reliability involves the accuracy of the research methods and techniques used by Mason (1996: 24). As such, Hammersley (*in* Silverman, 1994: 145) describes reliability as "the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions". This should be done in terms of ensuring –and demonstrating to others – that the data generation and analysis have been not only appropriate to the research questions, but were also thorough, careful, honest and accurate. This means that the researcher must satisfy him/herself and others that the data have not been invented or misrepresented, or been recorded and analysed in a careless and slipshod manner. In order to be convincing, some sort of account of exactly how the degree of reliability and accuracy claimed, has been achieved (Mason, 1996: 146).

In this study, this ideal has been attempted by providing as much as possible information about the research design and research method and by utilising the strategies of 'long-term involvement' and "coding checks". Long-term involvement, according to Leedy (1997: 169), is used to increase the reliability of findings. If data are collected over long periods of time, the researcher is in a better position to distinguish situational perceptions from more consistent trends. This was done by the utilisation of diaries, participant observation and field notes throughout the duration of the research between the pre and post-tests that lasted three months.

A coding check (Leedy, 1997: 169) involves having more than one researcher code the data obtained from field notes, interviews and documents to calculate interrater reliability coefficients. A high level of agreement between raters suggests that the coding process was highly reliable. To this effect, an independent psychologist was asked to countercheck, verify and corroborate findings. The experts in this research are the teachers who participated in this study. To ensure that their original meanings are reflected in the findings of the research, the researcher returned to the teachers to clear his qualitative data with them.

- **Validity**

Mason (1996: 24) states that "if your research is valid, this means that you are observing, identifying, or 'measuring' what you say you are". According to Miles and Huberman (1994: 278), internal validity also known as authenticity or credibility, refers to the degree to which research design rules out explanations for a study's findings, other than that the variables involved are in fact relating (also see Slavin, 1992: 103 and Rudestam & Newton, 1992: 38).

Altheide and Johnson (*in* Leedy, 1997: 168) refer to four types of 'interpretive validity' that they believe should be used to judge the validity of qualitative research: usefulness, contextual completeness, research positioning and reporting style. Usefulness in the context of this study refers to whether the research report enlightens those who read it. Contextual completeness refers to the extent to which a comprehensive view of the situation is provided. Completeness can be achieved by including information about the history of the phenomenon, the physical setting, the activities, schedules and routines of the participants, as well as their individual perceptions and meanings (Chapters 2,3,4). Research positioning refers to the researcher's awareness of his/her own influences (both subtle and direct) in the research setting. These influences (such as beliefs, values, biases) must be made explicit so that readers can determine for themselves the credibility of the findings (this has been done in Chapter 1, especially 1.8). Finally, the researcher's reporting style has a notable effect on a study's credibility. The researcher's reconstruction of participants' perceptions must be perceived to be authentic. The four types of 'interpretive validity' were constantly strived for throughout the study.

This strive has been enhanced by the use of additional strategies aimed at increasing the study's validity (see Creswell, 1994:157 – 159; Leedy, 1997:32 – 35; Maxwell, 1996:86 – 95; Maykut & Morehouse, 1994:145 - 148; Miles & Huberman, 1994:245–277) which will be elaborated on further. Firstly, a variety of data sources and methods of data

collection has been used, namely a literature study, the utilisation of a meta approach, interviews, telephone interviews, diaries, physical examinations and questionnaires and inventories or scales. In doing so, triangulation as a strategy was employed to check the validity of findings, because if similar themes are noted in data collected from a variety of sources, the credibility of the interpretation is enhanced. Secondly, an effort was made to establish a strong chain of evidence among the research questions, methodology, raw data and findings to strengthen the validity of the study. This was done by fully describing and explaining the research process in order to allow the readers to follow the researcher's reasoning to enable the readers to determine whether the conclusions offered are logical or not. Thirdly, the strategy of pattern matching is appropriate when a qualitative study is designed to study the effects of an intervention. If the observed behaviours or patterns of benefits match those that were expected in a specific case, as for instance reflected in other research or literature or theoretical construct, the validity of the study is increased.

- **Generaliseability**

Miles and Huberman (1994: 279) see the potential generaliseability or transferability of findings on qualitative research as an affirmative answer upon the questions: "are they transferable to other contexts? Are they fit?" Qualitative research is contextually bound, and therefore the purpose of this type of research should always be kept in mind. The purpose of phenomenological research (referred to earlier - see 4.2) as is the case with this study, is to attempt to understand what a specific experience is like by describing it as it appears to the people who are living it (Leedy, 1997: 261).

According to Strauss and Corbin (1990: 191) and Swart (1994: 175), the question in qualitative research is not to which degree results can be universally generalised, but rather how thorough the participants and contexts of research are described in order to be able to transfer findings to similar or matching contexts: " We specify the conditions under which our phenomena exist, the action /interaction that pertains to them, and the associated outcomes or consequences. This means that our theoretical formulation applies to these situations or circumstances but to no others..." (Strauss & Corbin, 1990: 191).

However, due to the type of quantitative research design used and the associated limited number of participants, the main focus of this study is to obtain findings that may suggest the effects of CSM on all the contexts of human existence and therefore the

effectiveness of CSM as strategy for stress management and the promotion of wellness in the sample of available teachers.

4.4.4 Ethical considerations

The attention to ethical issues indicates the recognition of individual rights and the demand for accountability from the researcher. An important ethical focus of this study was therefore the obtaining of informed consent on a document designed for this purpose from the persons participating in this research (see Annexure C). This signed document of consent was based on the divulgence of all information deemed necessary and participants' questions answered, assurance of confidentiality, the right and observance of participants' wellness, and lastly the assurance of personal help and assistance throughout and after the research program has been finished. (See also 4.5). Participants have also understood the demands involved in their participation and to accept these demands freely without coercion and being free to discontinue their participation at any time. Participants have been encouraged to disclose relevant information about themselves, but were also informed of their right to disclose or withhold information about themselves and their activities (Miles & Huberman, 1994: 292- 294). (See also 4.5).

Due to ethical reasons, lastly, it was also deemed necessary to introduce the control group to CSM after the research had been completed in order to address a possible genuine deep need for a stress management strategy which participants may have had which motivated them and made them willing to participate in the research.

4.5 RESEARCH METHOD

4.5.1 The research process

Seven distinct but chronological phases can be identified in this study in the research process, assuming that the planning has already been done.

PHASE 1: Pilot study

A pilot study was undertaken in the teaching of CSM. This was done in order to ascertain if, and which potential problems or obstacles could be expected in the teaching of CSM, especially in a conservative societal setting, and also to assess and address any practical problems that might arise in conducting the research. Five persons were invited to participate. They were invited because of their expertise and/or experience. Two of them were psychologists and lecturers, one of which had also been a teacher, a teacher

from the auxiliary services of the provincial department of education, one a lecturer in natural (not social) sciences and one a labour consultant. No teacher from the schools in the small city of Potchefstroom were used due to reasons evident from the discussion of Phase 2 and the associated possibility that the recruitment drive may have been compromised. The persons involved in the pilot study had the right mix of expertise and experience to provide the necessary feedback needed, as was found to be the case indeed.

PHASE 2: Recruitment of participants

Letters were written to principals of schools in all the communities in the city of Potchefstroom. These letters gave the background, rationale and aim of the study in short (see Annexure A). Appointments were also made with the principals during which the letters were handed over personally and the matter discussed. Opportunity was also given to answer all questions pertaining to the research. The principals were then asked to permit the researcher an opportunity to speak to the members of the staff in order to give them some information regarding the stress phenomenon and the prospective study, to provide an opportunity to ask questions and to recruit participants.

A local journalist specialising in health and matters of well-being was also contacted for an interview concerning the research in order to place an article about stress and the prospective research with a view to reach teachers who have not been exposed to the recruitment drive (see Annexure B). Relevant contact details were also supplied. These two methods of recruiting participants yielded 121 prospective participants.

During the initial recruitment drive the prospective participants who gave their names and thus indicated their interest to take part in the study, were invited to a more detailed information session at the local university. Two such sessions were held to accommodate persons' personal and professional programmes. Because the city of Potchefstroom is a rather conservative community, the exact nature of the research, concerning the use of meditation specifically as a stress management technique, was initially not divulged during the recruitment drive. The reason is that meditation is generally regarded as an esoteric 'Eastern' practise in the rather conservative community and it was therefore feared that persons might decline to participate in the study on the grounds of faulty perceptions, inadequate information and/or group think and social pressure.

The information session referred to above served as an opportunity to divulge all information to the interested persons about the study and the use of CSM. During this information session prospective participants filled in, and scored a Distress Symptom Scale in order to obtain a rough estimate of their own stress (see Annexure C). They were also presented with a short conceptualising lecture in stress and stress management techniques, which included various forms of meditation. Great care was taken to inform participants about the non-cultic nature of CSM as opposed to some other forms of meditation and the commitment expected from them in terms of practising meditation and attending group meetings every two weeks.

Ample opportunity was given to ask questions. Only after this process were persons asked to fill in a form to indicate their willingness and permission to participate or not (see Annexure C). Of the 41 persons who attended the information session, two declined to take part in the study, leaving the investigation group with 39 informed and willing participants.

PHASE 3: Pre testing

Those persons who indicated their willingness to participate in the study were consequently contacted telephonically and invited to participate in the pre-testing that was scheduled over two consecutive days (see Annexure D for examples of questionnaires, inventories, scales). Participants were able to choose any one or both of the days to complete the pre testing.

The pre testing session was also used as an opportunity to assign participants randomly into the experimental and control groups. This was done by arranging the names of the participants alphabetically and numbering them. Thereafter a coin was flipped by an assistant to determine if the even or uneven numbers would be assigned to the experimental group. Persons with uneven numbers turned out to be in the experimental group, and therefore the persons with even numbers were assigned the control group. After each person had completed the pre testing, he/she was told to which group he/she was assigned.

PHASE 4: Learning CSM

The pre testing was planned to fall in the last week of March in the last week just before the April holiday started. That gave the persons learning CSM ample time during the holiday to go, uninhibited by a work schedule, through the instruction and learning

process of CSM. Secondly, this would allow a period of three months (a whole school term) to practice CSM before the post tests were conducted. The post tests were done 1 to 2 days after the schools had closed for the June/July holiday - an extremely stressful period for teachers generally, because of a long and hectic academic and extra-mural programme during the school term and just after a major school examination. This time is usually characterised by a substantial amount of stress and tension amongst teachers.

Persons assigned to the experimental group were briefed by the researcher about the process of learning CSM and its co-ordination. They subsequently received their CSM materials, which consisted of audiotapes and course workbook (see Chapter 3) and an extra list of Greek and Hebrew words of Christian significance (see Annexure E) and a diary (see Annexure F). They were all invited to contact the researcher for help if they had any questions or experienced any problems in any way in their practise of CSM – be that telephonically or during a personal appointment.

Participants were asked to go home and listen to the Introduction to CSM on audio cassette (side 1 and side 2) and to phone the researcher / supervisor to provide feedback and secondly ask questions about CSM should they have any. Participants were then asked to undergo the Instruction in Meditation (side 3), complete the Post – Instruction Questionnaire in the workbook, listen the Post-Instruction on audio cassette (side 4) and read the Post-Instruction Advisory Sheet in order to learn Meditation. Participants were asked to proceed and complete the Day Two Questionnaire, listen to the Second Day talk on the audio cassette (side 5) and read the Day Two Advisory Sheet. They were invited to phone or see the researcher/supervisor at any time during this process should they felt the need to.

Meditating participants were then asked to make a personal and individual appointment with the researcher/supervisor at his practice at home for a checking session. During this checking session the two completed questionnaires and the accompanying advisory sheets and general experiences were explored, questions answered and help and/or suggestions given. If the Meditating participants were unable to schedule a personal appointment due to being on holiday for instance, a checking session was held per telephone. Meditating participants were asked to continue with their meditation practise, complete the Day Nine Questionnaire, listen to the Ninth Day Instruction talk (side 6) on the audiotapes and read the Day Nine Advisory Sheet.

Meditating participants were then asked to attend a group checking session after the ninth day activities and after the new school term had started on a specified date and time at the university. All Meditating participants were given an individual opportunity to contribute to the group. Discussions were held and questions were answered. The group also started sharing experiences and practical solutions to common meditation-related problems. The researcher/supervisor tried to motivate the Meditators to keep up the CSM practise. Participants were once again invited to ask for help, should they feel they needed any.

PHASE 5: Monitoring and motivation

The Meditators were divided into four sub-groups that met every second Tuesday for the remainder of the duration of the three-month intervention. In keeping with the general permissive orientation of CSM, Meditators were asked to attend the checking sessions if possible, depending on their own personal and professional programmes – nobody was ever 'forced' to attend.

It was part of the researcher's set ideals to evaluate CSM in as little of a laboratory setting as possible, but in as much real-life replicable conditions as possible. By taking a permissive approach in training meditators and evaluating the effectivity of CSM as a strategy for stress management and the promotion of wellness, it was thought that the Hawthorne Effect (Solberg, Berglund, Engen, Ekeberg & Loeb, 1996:344) could be limited as far as possible. (This means that the effect expected with increased attention given to the experimental group can potentially lead to increased expectancy to perform).

Throughout this study an attempt was made to maintain and develop the Meditators' own internal locus of control with respect to their own meditation practise to counteract the Hawthorne Effect. No Meditator was therefore pressured or "forced" to keep to the "ideal" meditation practise of 20 minutes twice daily. Instead, Meditators were encouraged to adapt both CSM and their lives to one another. This approach was taken against the background of the finding by Carrington *et al.* (1980:225) which indicated that no differences in degree of symptom improvement had been found when frequent and occasional practisers of meditation were compared. In fact, as long as Meditators practised at all, they were likely to show improvement in symptoms of stress. However, when they did not practise they were unlikely to improve more than the controls.

Checking sessions were held to monitor Meditators' practise and progress, to answer questions, facilitate the sharing of practical solutions to common meditation-related problems and to motivate Meditators for continuing practise. To this end two pieces of reading materials were given to provide extra help with motivation, namely "Why meditate?" and "When it doesn't come easy – getting unstuck" (Davis *et al.*, 1988:273-276) (see Annexure G). Care was taken to keep to the supervisor's role as indicated in the Supervisors' Manual provided by Carrington (1988) (See Chapter 3).

PHASE 6: Post testing

Letters were sent out to all participants to remind them of the event and the dates of the post-testing (see Annexure H). Post testing was conducted in exactly the same manner as the pre-testing with the experimental and control groups (as has been described in Phase 2: Pre-testing). The only difference was, that the experimental group participated with the control group in the qualitative part of the study after the completion of the study.

The qualitative part of the study meant that the experimental group had to hand in their diaries and provide two telephone numbers of a spouse/intimate friend or colleague for the telephone interviews and participate in the semi-structured interviews in small-group format.

PHASE 7: Execution of data analysis

Both quantitative and qualitative research methods have been used as has been described. Although the quantitative and qualitative research have been carried out alongside each other, the manner of data analysis will be explained separately and done separately to adhere to the demands of each research method. The results will also be explained separately, but in the end the results will be integrated and synthesised into coherent findings in order to answer the formulated research questions.

4.6 DATA ANALYSIS

4.6.1 Method of quantitative data analysis

To determine the reliability index of each measuring instrument, Cronbach's alpha coefficients were calculated (Ferguson, 1987). Following in the next instance, it was determined if the pre-tests of the experimental group and control group, obtained from the measuring instruments, were comparable. This was done by using t-tests for

independent groups, to determine if the averages differed significantly, or not (Ferguson, 1987). This was done in order to ascertain if the experimental and control groups were sufficiently similar before the independent variable (CSM) was introduced, so that the groups could indeed be compared with one another. Ideally, therefore, the groups would have to be as similar as possible with respect to the pre-test scores obtained. Hereafter it was determined with paired t-tests (within group comparisons) (Ferguson, 1987), if there existed any statistically significant differences between the mean of the differences between pre and post-test scores, as obtained with each measuring instrument in the experimental and control groups respectively. By means of t-tests for independent groups (between group comparisons) (Ferguson, 1987), it was lastly determined if statistically significant differences between the means of the differences between the pre and post- tests scores of the experimental and control groups existed, as was measured with each measuring instrument.

By means of calculating p-values it was determined if the differences in scores were statistically significant between pre and post-tests. P-values serve as the basis for the statistical rejection of the hypotheses. For the purpose of this study a probability level of 0.05 (5%) was accepted as statistically significant, and that of 0.01 (1%) as statistically highly significant. In the case of a t-test this will mean that a p-value of of 0.05 will be regarded as statistically significant and a p-value of 0.01 as a statistically highly significant difference between or within different groups. However, all the p-values were divided by 2, because this study is specifically aimed at investigation and determining the improvements in die experimental group, and not only if there occurred changes in the groups (Statistical Consultation Service, 2000).

An inferential test, like the independent group t-test can indicate whether there is a statistically significant difference between the means for the experimental and control groups. Inferential statistics are used to estimate certain characteristics of a population by using a random sample which was drawn from the population under discussion. By choosing a probability level of, for example 5%, one can be sure that an error of not more than 5% will occur if estimates from the random sample for the population are used. What a statistically significant t-test, however, cannot divulge is how large the practical effect of the independent variable is. Measures of effect size are used to determine the practical strength of the relationship between the independent and the dependent variables (and is independent of sample size). Measures of effect size, therefore, reflect

how large the 'effect' of an independent variable was (Shaughnessy & Zechmeister, 1997:229, 395). A common measure of effect size is 'd', which will be used in this study.

By means of calculation and use of Cohen's (1977; Steyn, 1999) d-values for effect size, it was determined if statistically significant differences could be found that were also significant in terms of effect sizes found. This was done to determine the effect sizes of the difference between the pre-test scores of the experimental and the control groups; secondly, if the mean scores of the pre and post-test scores within the experimental and control groups respectively, differed, and thirdly, if the mean pre and post-test difference scores between the experimental and control groups differed.

The d-values can in the case of non-paired t-test scores (pre-test scores as well as post test scores) be calculated by means of the following formula:

$$d = \frac{|\bar{X}_E - \bar{X}_K|}{\max(\text{STDE} \text{ STDc})}$$

and can be interpreted for significance by using the following criteria (Shaughnessy and Zechmeister, 1997:229, 396; Steyn, 1999:3):

$d = 0.20$ indicates a small effect. In the context of this research, a small effect is seen as non-significant.

$d = 0.50$ indicates a medium effect and represents an effect lightly to be visible to the naked eye of a careful observer. A better planned experiment or investigation may produce more significant results. In the context of this study a medium effect is therefore also seen as significant.

$d \geq 0.80$ indicates a large effect, of practical significance, the results being undoubtedly seen as significant and of practical importance.

The d-values can, in the case of paired t-tests (pre and post-test difference scores), be calculated by means of the following formula:

$$d = \frac{\bar{X}_{\text{pre-test}} - \bar{X}_{\text{post-test}}}{\text{STD}_{\text{pre-test}} - \text{STD}_{\text{post-test}}}$$

and can be interpreted for significance by using the same criteria as given above.

Effect sizes are only calculated in the instances where at least a statistically significant p-value ($p \leq 0,05$) has been found. Where either no statistically significant p-value has been found, or a statistically significant p-value has actually been found, but with not more than a d-value of 0,20 (small effect), it will be assumed that there were no differences between the experimental and control groups (between group comparisons), or between pre and post-test scores of the experimental or control group (within group comparisons). However, both medium effect ($d = 0,50$) sizes representing an effect likely to be visible to the naked eye of a careful observer, and large effect ($d \geq 0,80$) sizes will be taken as strong indications of change between, or in experimental and control groups (Statistical Consultation Services, 2000). In order to deploy the quantitative data analysis in its fullest sense, inferential analysis of the data is needed, which in the case of this study involves what is called hypothesis testing (Goodwin, 1995: 119).

4.6.2 Null and alternative hypotheses

The first step in testing hypotheses is to make the assumption that there is no difference in performance between the different conditions (experimental group exposed to CSM, control group not) that are being studied. This assumption is called the null hypothesis (H₀) (null=nothing). The research hypothesis, the outcome that the researcher in his/her study 'hopes' to find, is called the 'alternative hypothesis' (H₁). Thus the researcher in his/her study hopes to be able to disprove or reject H₀, thereby supporting H₁ ('beyond reasonable doubt') (Goodwin, 1995:119).

Goodwin (1995:119) and Shaughnessy and Zechmeister (1997:220) also point out that an inferential statistical analysis yields only two results – one can either reject H₀ or fail to reject it. Failing to reject H₀ means that any differences that have been found were most likely chance differences – the researcher has failed to find a genuine effect that can be generalized beyond the sample in his/her research - but in this study only to individuals in the sample used in the research (due to the use of accidental sampling and the small number of participants results are not generalizable to the wider population). Rejecting H₀ means that the researcher has found that an effect truly happened in his/her study, reflected in a statistically significant difference and that the results can be generalized, but in this study only to the sample used in the research (due to use of accidental sampling and the small number of participants results are not generalizable to the wider population).

In this empirical investigation the null hypothesis (HO) is rejected if $p \leq 0,05$; that means that the probability is very low (5 out of 100 or less), that the research outcome is the result of chance factors. The following null and alternative hypotheses are being tested in this study (hypotheses are formulated together for the different measuring instruments in order to limit verbosity):

HO1: There is no significant difference between the pre-test scores of the experimental group and that of the control group (HO1: $\mu_e = \mu_c$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HA1: There is a significant difference between the pre-test scores of the experimental group and that of the control group (HO1: $\mu_e = \mu_c$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HO2: There is no significant difference between the pre and post-test scores of the experimental group (HO2: $|\mu_{pr} - \mu_{po}| = 0$) as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HA2: There is a significant difference between the pre and post-test scores of the experimental group (HA2: $|\mu_{pr} - \mu_{po}| < > 0$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HO3: There is no significant difference between the pre and post-test scores of the control group (HO3: $|\mu_{pr} - \mu_{po}| = 0$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HA3: There is a significant difference between the pre and post-test scores of the control group (HA3: $|\mu_{pr} - \mu_{po}| < > 0$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HO4: There is a significant difference between the pre and post-test difference scores of the experimental group and that of the control group ($HO4: \mu \text{ dif E} = \mu \text{ dif C}$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

HA₄: There is a significant difference between the pre and post-test difference scores of the experimental group that of the control group ($HA_4: \mu \text{ dif E} < > \mu \text{ dif C}$), as measured with a specific measuring instrument (PSS, PAL-Holistic, GHQ, QOLI, SCL-90-R, SWLS, WES, POMS or GSES).

The quantitative part of this study is therefore based on rejecting the Null hypotheses or supporting the Alternative Hypotheses in order to provide tangible quantitative insights and conclusions. Qualitative data analyses were understandably approached somewhat differently, as will be evident from the following section.

4.6.3 Method of qualitative data analysis

According to Maxwell (1996: 78), data analysis is probably the aspect of qualitative research that most clearly distinguishes it from experimental and survey research. Maykut and Morehouse (1994: 122) describe three approaches to analysing qualitative data that are instructive for researchers and readers of qualitative research. These three approaches to analysis can be thought of as varying along a continuum ranging from a low level of interpretation and abstraction engaged in by the researcher, to a high level of interpretation and abstraction required for theory building.

The second approach (lying somewhere in the 'middle' of the continuum described above), is that of the researcher who is primarily concerned with accurately describing what he/she has understood, reconstructing the data into a 'recognisable reality' for the people who participated in the study. This second approach requires some selection and interpretation of the data, and the skilled researcher using this approach becomes adept at *"weaving descriptions, speaker's words, field note quotations and their own interpretations into a rich and believable descriptive narrative"* (Strauss & Corbin, 1990:22), referred to by the term "interpretative – descriptive research" by Maykut & Morehouse (1994:123).

Qualitative data have been collected throughout the course of this study by means of observation, field notes and spontaneous sketches made by participants, during the

checking, and monitoring and motivation sessions held every two weeks. Complementary to this were the data obtained from the telephone interviews, diaries and physical examination. These data were integrated with those obtained from the semi-structured interview held with the participants of the experimental group directly after they had completed their post-tests (see also 4.4.3 and 4.5 in this study).

The nature of the specific questions asked during the semi-structured interview (see 4.4.3.3), were determined by, and to ascertain:

- The paradigmatic perspective of the researcher and that of the study (see chapter 1) in determining the effects of CSM (first four questions).
- The importance to know the strong and weak points of CSM and how it was taught in this study, as well as advice on improvements (questions five and six).
- The subjective conceptualisation of what CSM is – based on own experience (question seven).
- The worthwhileness and future personal use of CSM as an effective/strategy or life skill for the management of stress (question eight).
- The first four questions concerning the contents of human existence were not intended to serve as categories, but rather as a framework within which categories and sub-categories had to be identified concerning the effects of CSM. In this instance the qualitative research had to contribute to provide insights that were not necessarily measurable and obtainable by quantitative means.

After the said data had been collected, they were analysed according to a combination of the methods used by Kerlinger (1986:479-481) and Giorgi (Omery, 1983:57):

- All the interviews were firstly transcribed from audio cassette.
- All the data sources in the data pool were then read through in order to obtain a holistic picture, whilst "*bracketing*" and "*intuiting*" were applied as control measures.
- All the data sources in the data pool were then read a second time (slowly), in order to identify and underline semantic units of words and themes.

- After the themes had been identified, corresponding themes were grouped together into main and sub-categories. When data are categorised, "*concepts are grouped together under a higher order, a more abstract concept called a category*" (Strauss & Corbin, 1990:61; 65). Main categories and sub-categories were identified and defined for all data sources in the data pool in order to form a logical chain of evidence and to operationalize triangulation to enhance reliability and validity of the study.
- These categories with their sub-categories were then grouped into their respective and corresponding sub-contexts in accordance with the paradigmatic perspective of this study referred to earlier. Participants often responded to a context-specific question (one of the first four questions) in the semi-structured interview with an account of the effect of CSM, which could be grouped into a different context of existence. Such responses were consequently assigned to the corresponding and "proper" context – this was seen as a natural occurrence due to the intra and interaction of the contexts of human existence as well as the climate of permissiveness established in the semi-structured interviews.
- The rest of the questions of the semi-structured interview provided the opportunity to identify categories concerning the general experience of CSM by participants in the experimental group.
- A protocol of the method used by the researcher was set up and subsequently provided to an independent coder, who then coded and categorised the data sources on her own.
- Following this independent coding, the researcher and coder then met in order to try and obtain the greatest possible degree of consensus regarding the identified themes as well as the connection between them.
- Qualitative data were presented to some of the teachers who participated in the study to ensure that their original meanings have been reflected in the findings of the research.
- Although themes are divided into main and sub-categories, in order to distinguish between them, these categories cannot really be regarded as separate. A category should therefore not be seen in isolation but as part of the greater "*Gestalt*".

Correlations between categories have been verified by means of method triangulation (a co-coder has been used), and by looking for outliers (Miles & Huberman, 1994:258).

- Lastly, categories were quantified with a view to quantify the results in order to determine priorities and frequencies in the data (Miles & Huberman, 1994:253).

The qualitative part of this study, in incorporating various methods of data collection, was aimed at providing a rich and 'thick' phenomenological description of the effects of CSM in all the contexts of human existence as well as the effectivity of CSM as a stress management strategy equally significant to the quantitative part of the study.

4.7 SUMMARY

The quantitative and the qualitative research design as well as research method were presented in this chapter. This has also included the quantitative as well as qualitative means of data collection and data analysis which were used to investigate the contextual effects of, and to evaluate the effectiveness of CSM, as a strategy for stress management and the promotion of wellness in teachers.

In the next chapter the research findings of this study will be presented in order to evaluate how effective CSM is as a strategy for stress management and the promotion of wellness in the teachers who participated in this study.