

CHAPTER 5 THE EMPIRICAL RESEARCH

Chapter 5 contains the empirical investigation with the specific aim of determining the statistical strategies that can be employed to investigate the relationship dynamics between the variables personality preferences, self-esteem and emotional competence as manifested in a sample of respondents employed in a typical South African organisational setting. Although the research is predominantly exploratory in nature, research hypotheses will be formulated regarding the relationship between the variables personality preferences, self-esteem and emotional competence. The research hypotheses will be tested by means of descriptive, common and inferential statistics. This phase consists of nine steps, as outlined below:

Step 1	Determination and description of the sample
Step 2	Choosing and motivating the psychometric battery
Step 3	Administration of the psychometric battery
Step 4	Capturing of criterion data
Step 5	Statistical processing of the data
Step 6	Formulation of research hypotheses
Step 7	Reporting and interpretation of the results
Step 8	Integration of the research
Step 9	Formulation of research conclusions, limitations, and recommendations

Steps one to six are addressed in this chapter and steps seven to nine in chapters 6 and chapter 7.

5.1 DETERMINATION AND DESCRIPTION OF THE SAMPLE

A population refers to the entire collection of events, things or individuals to be represented, whilst a sample refers to a subset of the population, that is, the set of actual observations which may include any number of individuals less than the population (Christensen, 1997; Howell, 1989; Tredoux & Durrheim, 2002). The manner in which the sample of participants is selected depends on the goals of the research project. When the research question requires an accurate description of the general population, a random sampling technique must be used. Random sampling is a technique whereby every member of the population has an equal chance of

being selected for the study and thus has the advantage of providing a sample of participants whose responses represent those of the general population.

This research was conducted in three South African companies in the manufacturing industry. The population was defined as the total number of managers (comprising of supervisors and middle managers) from the technical departments in these three organisations. This represents a population of 600 managers (200 managers from each of the three companies). Operating in the manufacturing industry, all three companies are technically orientated in terms of their core business operations and therefore share the same population characteristics.

The choice of sample size was based on the following considerations:

- Anticipated statistical analyses had to be considered. The research questions dictate the analyses to be performed and these in turn indicated the sample sizes to be aimed at. The 360 degree measurement includes self and other measurements which increased the intended sample size to 2400 as a minimum of three “other” ratings (evaluations of either peers, superiors and subordinates) were decided on. It was decided to cluster the evaluations of the peers, superiors and subordinates into one group, marked as “other” in the statistical analyses in an attempt to simplify the statistical analyses. This was possible as it was not the purpose of this research to study the differences between peer, superior and subordinate evaluations versus the self-evaluations of the sample group.
- The anticipated response rate also had to be considered given the logistical and time constraints of 360 degree measurements. An assumption of 60% response rate was made and the final sample size for the self-evaluations consisted therefore of the total population of 600 managers, including a sample of 1800 other evaluations, thus a total sample size of 2400.

Sampling was accomplished in three stages. Firstly, the total population of managers was approached for participation in the research. In the second stage, a random sample of 200 managers (including supervisors and middle managers) from each company (in total 600) was drawn and approached for participation in the research. Finally, in the third stage, participants were requested to randomly select three other individuals (either peers, superiors and/or subordinates) to evaluate them in terms of the 360 Degree Emotional Competency Profiler measurements.

With the assistance of the human resource practitioners, special sessions were set up with each of the groups at the three companies to explain the rationale behind the use of the three questionnaires (the Myers-Briggs Type Indicator, Culture-Free Self-Esteem Inventories-AD and the 360 Degree Emotional Competency Profiler). A standardised presentation was used to provide the participants with instructions for completing the questionnaires. Participants were then requested to return the completed questionnaires by a certain date, including the evaluations of their selected peers, superiors and/or subordinates on the 360 Degree Emotional Competency Profiler. A three-week period was suggested to allow for logistical arrangements with regard to the “other” evaluations. The human resource practitioners assisted with the collection of the completed questionnaires.

Forty-nine questionnaires (of each of the three measuring instruments), including 157 (three, in some cases four for each participant) “other” evaluations with regard to the 360 Degree Emotional Competency Profiler were returned from one company, 38 (of each of the three measuring instruments), including 119 (three, in some cases four for each participant) “other” evaluations with regard to the 360 Degree Emotional Competency Profiler were returned from the second company, and 20 (of each of the three measuring instruments), including 64 (three, in some cases four for each participant) “other” evaluations with regard to the 360 Degree Emotional Competency Profiler were returned from the third company. The questionnaires that could be used for statistical analysis purposes had in terms of the total sample (including self and others’ evaluations) a total response rate of 18,6%. An apparent reason for this low response rate was attributed to the logistical constraints pertaining to 360 degree evaluations. In conclusion, the self-evaluations (including all three of the measuring instruments) achieved a sample size of 107, and the “other” evaluations a sample size of 340. In total, this gave a sample size of 447.

Table 5.1 gives an overview of the initial and final sample sizes per self and other evaluations.

Table 5.1 Initial and final sample sizes

Company	Initial sample Self- evaluations (n) (MBTI, CFSEI-AD, 360° ECP)	Questionnaires returned & used Self- evaluations (n)	Response Rate %	Initial sample Other evaluations 360°ECP (n)	Questionnaires returned & used Other- evaluations- 360°ECP (n)	Response Rate %
1	200	49	24,5%	600	157	26,2%
2	200	38	19%	600	119	19,8%
3	200	20	10%	600	64	10,7%
TOTAL	600	107	17,8%	1800	340	18,9%
TOTAL SAMPLE SIZE	N=447 (Self & Others) Response rate: 18,6% (Self & Others)					

5.2 CHOOSING AND MOTIVATING THE PSYCHOMETRIC BATTERY

The consideration given to the selection of the psychometric battery was guided by the literature review. The literature review can be categorised as exploratory research in which the relevant models and theories of personality preferences, self-esteem and emotional competence were presented in an integrated manner.

The psychometric instruments were considered for their applicability to the relevant models and theories of the research. Particular emphasis was placed on the validity and reliability of the various instruments. Validity refers to the extent to which the instrument measures what it is supposed to measure. Reliability refers to the precision, accuracy, and stability of a measuring instrument. A measuring instrument is reliable if it accurately and constantly produces the same measurement (Kerlinger, 1986; Nunnally, 1978; Tredoux & Durrheim, 2002).

The following measuring instruments were used for this research project:

- A biographical questionnaire to ascertain the personal information needed for the statistical analysis of the data. The type of information to be ascertained included name, surname, organisation, age, gender, racial group, and length of service with the organisation. The decision to include this information was based on the theoretical review of variables that may have an influence on the empirical results.
- The Myers-Briggs Type Indicator (MBTI), Form G, developed by Briggs and Myers (1977) to measure the personality preferences construct.
- The Culture-free Self-esteem Inventories for Adults (CFSEI 2-AD) developed by Battle (1992) to measure the self-esteem construct.
- The 360° Emotional Competency Profiler (ECP) developed by Wolmarans (Wolmarans & Martins, 2001) to measure the emotional competence construct.

The psychometric properties of the Myers-Briggs Type Indicator (MBTI), the Culture-free Self-esteem Inventories for Adults, and the 360° Emotional Competency Profiler (ECP) will be described in turn.

5.2.1 The Myers-Briggs Type Indicator (MBTI)

The MBTI (Briggs & Myers, 1977) will be discussed with reference to the theoretical basis for its development, rationale of the questionnaire, description of the scales, administration, interpretation, validity, reliability and motivation for choice of the instrument.

5.2.1.1 The theoretical basis for the development of the MBTI

The MBTI is an instrument which has been designed to operationalise the theory of Psychological Type developed by Jung (1921, 1959, 1971, 1990). Jung (1921) developed three dimensions to explore individual cognitive style. These were:

- How individuals approach life;
- The way in which individuals become aware of the world; and
- The way in which individuals reach conclusions about the world (Higgs, 2001).

In developing the explicatory framework, Jung (1921) articulates a number of his underlying assumptions, which are the following:

- Past experience, and expectations about the future, influence behaviour and personality;
- Individuals are capable of constant and creative development;
- Personality is an open system which is receptive to inputs and exchanges.

Jung (1921, 1971) considers behaviour to be a sub-system of personality and one which can change as a result of inputs from, and interactions with, the external environment. Within this belief he highlights the influences of other people as having a significant impact on behaviour.

Jung's (1971, 1990) theory postulates two attitudinal orientations and four basic psychological functions. The attitudinal orientations comprise introversion and extraversion which relate to the focus of attention and flow or psychic energy of an individual. The extravert's attention is externally focused, whilst the introvert is inwardly focused. The basic psychological functions, identified by Jung (1921, 1971), relate to perceptual functions, which mediate the way in which information is handled by the individual.

Implied in Jung's (1921, 1971) typology are two additional orientations relating to the way in which individuals approach the outer world in terms of judgment or perception. These were made explicit by Myers (1962), who labeled them judging and perceiving. Judging is described as being related to the evaluation of external stimuli and an orientation to cope with these via structure and control. Perceiving is described in terms of receptivity to stimuli and seeking to understand and adapt to life based on these stimuli (Higgs, 2001).

The MBTI attempts to operationalise these constructs and to identify, from self-report, the basic preferences of people in regard to perception and judgment, so that the effects of each preference (singly and in combination) can be put to practical use (Myers, et al., 1998). In broad terms the descriptions of type used within the MBTI are the following:

- *Sensing perception (S)*: Observation by senses. Focus on immediate experience. Enjoy the here and now. Realistic, practical and detailed focus.
- *Intuitive perception (N)*: Possibilities through insights. Perception of patterning. Creative discovery. Perception beyond what is visible to senses. Future oriented. Imaginative, abstract thinking and creative.
- *Thinking judgment (T)*: Links ideas by logical connection. Cause and effect analysis. Analytical ability, objective, critical.
- *Feeling judgment (F)*: Weighing relative values and merits. Understand relative values. More subjective than objective. Link to values of others. Understand people. Need for affiliation. Tender-minded.
- *Extraversion (E)*: Desire to act on environment. Rely on environment for stimulation and guidance. Action oriented. Impulsive. Frank and open. Sociable. Communicative.
- *Introversion (I)*: Focus on inner world of concepts and ideas. Focus on clarity of concepts and ideas. Consecutive. Thoughtful. Self-sufficient.
- *Perceptive attitude (P)*: Attuned to information. Focus on realities and/or possibilities. Curious, open, interested, spontaneous, adaptable. Open to new experience.
- *Judging attitude (J)*: Decision focus. Seeking closure. Linked to logical analysis. Closure when enough information. Decisive, organised.

The MBTI is seen to differ from other personality instruments in that it is designed to implement a theory; therefore the theory must be understood in order to understand the MBTI. The theory postulates dichotomies; therefore some of the psychometric properties are unusual (Myers, et al., 1998). The MBTI measures types rather than traits or continuous variables. It is used to explain the behaviour of a wide range of individuals. Furthermore, the MBTI is built around bimodal distribution or preference scores (McCrae & Costa, 1988).

5.2.1.2 Rationale of the MBTI, Form G

The MBTI, Form G, was used for this research project. Form G contains research items as well as the items scored for personality type. In Form G items are arranged so that items that best predict total personality type are at the beginning, thus increasing the likelihood that respondents who do not finish the MBTI will receive accurate reports of their personality type.

The MBTI, Form G, is a self-reporting instrument and consists of three parts. Part I contains 26 items; part II, 45 items and part III, 55 items. Overall, the individual has to respond to 126 items. The items measure individuals' preferences in regard to the basic functions of perception and judgment that enter into almost every behaviour. The items describe various types of easily recognised behaviours or reactions in various life settings. In parts I and III items force individuals to choose between types of behaviours or reactions and in part II, the items force individuals to choose between word pairs. In choosing a preferred type of behaviour or a word, individuals actually indicate preferences in regard to the four scales or indices, Extraversion/Introversion (EI), Sensing/Intuition (SN), Thinking/Feeling (TF), and Judging/Perceiving (JP) (Myers & McCaulley, 1992).

5.2.1.3 *Description of the scales of the MBTI, Form G*

The MBTI contains four separate indices or scales. Each index reflects one of four basic preferences which, in Jung's (1921, 1971, 1990) theory, direct the use of perception and judgment. The preferences affect not only what people attend to in any given situation, but also how they draw conclusions about what they perceive. The indices EI, SN, TF, JP are designed to point in one direction or the other. They are not designed as scales for measurement of traits or behaviours. The intent is to reflect a habitual choice between rival alternatives (Myers & McCaulley, 1992).

The EI index is designed to reflect whether a person is an extravert or an introvert. The SN index is designed to reflect a person's preference between two opposite ways of perceiving. One may rely primarily upon the process of Sensing (S), which reports observable facts or happenings through one or more of the five senses; or one may rely more upon the less obvious process of Intuition (N), which reports meanings, relationships and/or possibilities that have been worked out beyond the reach of the conscious mind.

The TF index is designed to reflect a person's preference between two contrasting ways of judgment. A person may rely primarily on Thinking (T) to decide impersonally on the basis of logical consequences or a person may rely primarily on Feeling (F) to decide on the basis of personal or social values. The JP index is designed to describe the process a person uses primarily in dealing with the outer world, that is, with the extraverted part of life. A person who prefers Judgment (J) has reported a preference for using a judgment process (either Thinking or Feeling) for dealing with

the outer world. A person who prefers Perception (P) has reported a preference for using a perceptive process (either Sensing or Intuition) for dealing with the outer world.

The preference on each scale of index is independent of preferences for the other three scales, so that the four indices yield sixteen possible combinations called personality types, denoted by the four letters of the preferences (for example, ESTJ, INFP). The characteristics of each personality type follow from the dynamic interplay of the attitudes of extraversion and introversion and the processes of perception (S and N) and judgment (T and F).

For the purpose of this research project, the combinations of the two attitudes, E-I with the four functions, S-N, T-F (ET-IT, EF-IF, ES-IS, EN-IN), the combinations of the four attitudes (EJ-IJ, EP-IP) and the four scales (E-I, S-N, T-F, J-P) are of particular importance.

5.2.1.4 Administration of the MBTI Form G

The MBTI is virtually self-administering. All necessary instructions are given on the cover of the question booklets and on the response sheets. The same response sheet is used for hand scoring and computer scoring (Myers & McCaulley, 1992).

The MBTI has no time limit, but those who are making unusually slow progress may be encouraged to work rapidly and not study the items at length. In group testing, group members should not be allowed to discuss the items (Myers & McCaulley, 1992).

Omissions are permitted if respondents do not understand a question or cannot choose an answer. The reason for permitting omissions is that no item can reliably contribute useful evidence of personality type unless choices are understood and the question lies within the respondent's experience (Myers & McCaulley, 1992).

MBTI scoring generates four basic scores. Points are the sums of the "votes" cast for each pole of the four preference scales or indices (EI, SN, TF, JP). For the EI preference, for example, the scores total the answers in the direction of E and the answers in the direction of I. Answers carry weights of 0,1 or 2. Weights reflect the relative popularity of each answer with those for whom it was intended and with those

at the opposite pole of the preference. Points were not intended for further analysis. Preference scores are the basic scores for the MBTI. They consist of a letter to denote the direction of the preference and a number to show the consistency of the preference (for example, E 31 and F 13) (Myers & McCaulley, 1992).

5.2.1.5 *Interpretation of the MBTI Form G*

Preference scores reflect the relative preference for one pole over the other. The letters indicate which of each pair of alternatives the person prefers and presumably has, or can develop, to a greater degree. For example, a preference score letter E suggests that the person prefers extraverting to introverting and probably has spent more time extraverting than introverting. Consequently, the person is likely to be better at activities that call for extraversion than activities that call for introversion. The characteristics associated with a preference are often less apparent when the numerical portion of the preference score is low. A low score shows almost equal votes for each pole of the preference. While letters indicate the direction of the preference, the number indicates the strength of the preference (Myers, et al., 1998).

The dominant function associated with a combination of the four index preferences is determined by understanding which function each type will use in their favourite attitude. Thus Extraverts use the first function mainly in the outer world of extraversion, whilst Introverts use the first function mainly in the world of concepts and ideas. Working from this it is possible to map the dominant functions within the MBTI model and associated profiles. Using this analysis it is proposed that individuals can benefit from identifying their predominant behaviour preferences and working on the development of their weaker function preferences to deliver more rounded behaviour (Myers, et al., 1998).

5.2.1.6 *Validity of the MBTI Form G*

The validity of the MBTI is determined by its ability to demonstrate relationships and outcomes predicted by theory. Most of the validation data presented focus on the construct validity of the instrument. The MBTI manual (Myers, et al., 1998) provides extensive validity data and the large number of correlations with other personality instruments show a large number of significant results. However, these correlations do have a limitation in terms of evidence for construct validity, as they are based on the four scales (EI, SN, TF, and JP) and thus only report four preferences at a time

and not the relationship of the sixteen types (that is for example, ESTJ, ESFJ). While there are different views on many aspects of the validity of the MBTI, there is general agreement on its high levels of face validity (McCrae & Costa, 1988; Dulewicz & Higgs, 1999). Pinder and Herriot (1990) report that the functional attitude dichotomy of judgment-perception (JP) has been found to be the strongest area of correlation between the MBTI and other measures of personality, competency or behaviour.

5.2.1.7 Reliability of the MBTI Form G

In presenting reliability data in the MBTI manual, Myers, et al. (1998) examined internal consistencies based on Alpha coefficients, none of which are below 0,7 for the four scales. They also examined split-half reliability for type categories. Items were selected for X and Y halves by a logical split-half procedure. Each index was split into halves, taking all item statistics into consideration and pairing items that most resembled each other and correlated most highly. However, they do point out that these are derived from product-moment correlations of continuous scores from the X half and Y half of the index and take no account of the dichotomies for which the MBTI was designed. To correct for this they investigated the score reliability by use of a two-by-two table examining how often the X half and the Y half of a given index agree or differ as to type category.

Again, in examining test-retest reliabilities, Myers, et al. (1998) point out that the nature of the MBTI goes beyond the typical computations of correlations for the four continuous scores (for example EI, SN, TF, JP). The test-retest reliability of type categories showed probabilities significantly greater than the chance probability of choice of all four preferences on retest (that is, coming out as the same type) and that this difference is 6,25 per cent. Myers, et al. (1998) claim that the actual test-retest probabilities are different from chance, and test-retest reliabilities show consistency over time.

5.2.1.8 Motivation for choice

The MBTI was chosen for its value as a self-insight or development tool. Results obtained from analysing the dominant and non-preferred functions and attitudes can benefit individuals by identifying their predominant personality preferences and working on the development of their non-preferred function preferences to deliver more balanced behaviour.

5.2.2 The Culture-free Self-esteem Inventories for Adults (CFSEI 2-AD)

The CFSEI-AD (Battle, 1992) will be discussed with reference to the theoretical basis for its development, rationale of the questionnaire, description of the scales, administration, interpretation, validity, reliability and motivation for choice of the instrument.

5.2.2.1 *Theoretical basis for the development of the CFSEI 2-AD*

The need for a valid and reliable instrument that assesses the construct self-esteem arose from various research studies and theories on self-esteem as being a fundamental human need at all stages of development (Battle, 1982, 1990, 1992). Battle (1992) refers to self-esteem as the cognitive self-evaluations and feelings about one's competence and worthiness to be successful. Self-esteem affects one's level of achievement ability to adjust to socio-cultural demands, and one's general state of psychological well-being.

The CFSEI 2-AD is a self-report inventory developed over the course of several years' work with students and adult clients. The inventories, which are intended to measure an individual's perception and feelings of self-worth and achievement in comparison to others, have been proven to be of value in offering greater insights into clients' subjective feelings and psychological state of well-being.

The self-esteem components of the CFSEI 2-AD are general, social, and personal:

- General self-esteem is the aspect of self-esteem that refers to individuals' overall perceptions (cognitive self-evaluations) and feelings of their worth and competence.
- Social self-esteem is the aspect of self-esteem that refers to individuals' perceptions (cognitive self-evaluations) of the quality of their relationships with peers.
- Personal self-esteem is the aspect of self-esteem that refers to individuals' most intimate feelings of self-worth.

5.2.2.2 *Rationale of the CFSEI 2 –AD*

The CFSEI 2-AD is designed to assess the construct self-esteem in adults in a valid and reliable manner. The CFSEI 2-AD has been successfully used by psychologists, psychiatrists, counselors, and teachers as a screening device to identify individuals who may be in need of psychological assistance. The CFSEI 2-AD is viewed as a valuable clinical tool although it has also been used extensively for research purposes.

Results obtained from the CFSEI 2-AD may, for example, indicate that the client possesses average self-esteem in all areas except the social area. This information would assist the therapist in developing an appropriate therapeutic programme for the client. An objective of sessions, then, may be to assist the client in developing more effective interpersonal skills. Similarly, results derived from scores on the CFSEI 2-AD over time will provide valuable data for the therapist in terms of decision-making regarding the course of therapy, and whether to continue or terminate counseling sessions. The instrument as such serves as a tool in designing personal development interventions and measuring growth progress (Battle, 1992).

5.2.2.3 *Description of the scales of the CFSEI 2-AD*

The CFSEI 2-AD was standardised on adults aged 16 through 65, representing a wide cross-section of the population. The inventory has been used effectively with senior high school students and adults in all walks of life (Battle, 1992:5). The second edition of the CFSEI 2-AD was used for the purposes of this research. The CFSEI 2-AD contains 40 items and the following subtests:

- General self-esteem (16 items)
- Social/peer related self-esteem (8 items)
- Personal self-esteem (8 items)
- Lie subtest items that indicate defensiveness (8 items)
- Total self-esteem score

The items in the instrument are divided into two groups, namely those that indicate high self-esteem and those that indicate low self-esteem. Responses are of the forced-choice variety, in other words the individual checks each item either yes or no.

5.2.2.4 *Administration of the CFSEI 2-AD*

The inventory can be administered to individuals and groups, and usually requires only 15 to 20 minutes for administration. The respondent is instructed by the test administrator how to complete the questionnaire. The instructions are also stipulated on the response sheet. The respondent completes the 40 items by checking each item as either yes or no. The examiner can either score the form manually or by means of a software programme.

Scores for the CFSEI 2-AD are derived by totaling the number of items checked that indicate high self-esteem, excluding the lie scale item. A separate score may be computed by totaling the number of items checked correctly in the lie scale. The total possible score for Form AD is 32, and the highest lie score is 8.

5.2.2.5 *Interpretation of the CFSEI 2-AD*

Each subscale (general, personal, social, and total) is measured separately and reflects the perceptions (self-evaluations) and feelings of the respondent in these dimensions. As a result, an analysis can be carried out as to what dimensions are perceived to be true for the respondent and which are not. This serves as a useful diagnostic technique to ascertain the level of the respondent's self-esteem. The higher the score, the more positive the level of self-esteem.

5.2.2.6 *Validity of the CFSEI 2-AD*

Findings of the studies cited by Battle (1992) in the Examiner's Manual provide quantitative data indicating that the CFSEI 2-AD constitutes valid measures of self-esteem.

Content validity was built into the instrument by developing a construct definition of self-esteem and by writing items intended to cover all areas of the construct. The factor analysis data presented by Battle (1992) indicated that the items in the subtests possess acceptable internal consistency.

5.2.2.7 *Reliability of the CFSEI 2-AD*

Means, standard deviations, and correlations for the total sample involved in the initial test-retest reliability study indicate that the test-retest correlation for all subjects was 0,81, for males and females, 0,79 and 0,82. Data presented by Battle (1992) indicate that correlations for the standardisation sample were significant for the total and all subtests as well.

Coetzee (2004) investigated the construct validity of the Culture-free Self-esteem Inventories for Black and White South African adults. The results of confirmatory factor analyses provided support for the construct validity of the Culture-free Self-esteem Inventories as measures of personal, social, general, and total self-esteem respectively. The analysis of co-variance structures or confirmatory factor analysis indicated that the proposed model underlying the self-esteem construct fits the data. The Cronbach alpha coefficients of the item analyses on the total and subscales indicated a relatively high internal consistency reliability (0,85). Furthermore, test-retest reliability showed that all the correlations are higher than 0,74 for each of the subscales and the total scale (0,91). The sample population (n=190) constituted 52.6% Whites and 47.4% Blacks which confirm the culture-free properties of the instrument.

5.2.2.8 *Motivation for choice*

The CFSEI 2-AD was selected for its appropriateness, brevity, validity and reliability, its culture-free property and because it is user-friendly. At face value it also did not seem to be susceptible to practice, memory or other transfer effects which could influence the internal consistency reliability and the internal and external validity of the research. The instrument has been proven as a tool in designing personal development interventions and measuring growth progress. It has also been proven to be of value in offering greater insights into clients' subjective feelings about themselves and their psychological state of well-being (Battle, 1992).

5.2.3 **The 360° Emotional Competency Profiler (ECP)**

The ECP (Wolmarans & Martins, 2001) will be discussed with reference to the theoretical basis for its development, rationale of the questionnaire, description of the

scales, administration, interpretation, validity, reliability and motivation for choice of the instrument.

5.2.3.1 *Theoretical basis for the development of the ECP*

Wolmarans (Wolmarans & Martins, 2001) developed the 360° Emotional Competency Profiler (ECP) to measure emotional intelligence in the South African organisational context. The ECP was designed to include a broader range of competencies than only the traditional intrapersonal and interpersonal competencies. The emotional intelligence competencies measured by the ECP are based on a content analysis conducted by Wolmarans (1998) of contemporary leadership competency requirements as determined by various authors and service providers. Wolmarans (2002:5) defines emotional intelligence as a meta-competency which includes competencies such as self-management, accessing emotional energy, emotional literacy, change resilience, emotional honesty, vision, goal-directedness, balancing head and heart and the ability to motivate oneself and others. The ECP divides emotional intelligence into seven major clusters of emotional competencies. Wolmarans and Martins (2001) labeled these clusters of emotional competencies emotional literacy, self-esteem/self-regard, self-management, self-motivation, change resilience, interpersonal relations and integration of the head and heart.

Wolmarans and Martins (2001) provide the following definitions for the emotional competencies measured:

(a) *Emotional literacy*

Emotional literacy represents an awareness of the ebb and flow of one's own and other people's emotions, an understanding of what causes the emotions, and the skill to interact at an emotional level in an appropriate way, at the right time, with the right person, within the boundaries of a particular context. An advanced level of emotional literacy is demonstrated by an ability and willingness to acknowledge and apologise for emotional hurt caused, to express sincere regret and to restore damaged relationships sensitively and sensibly (Wolmarans & Martins, 2001).

(b) *Self-esteem/self-regard*

Self-esteem/self-regard refers to an honest, objective and realistic assessment of, and respect for, one's own worth as an equal human being. It includes unconditional, non-defensive acceptance of one's talents, values, skills and shortcomings. A high level of self-esteem is demonstrated by the courage to act in accordance with personal values and convictions, in the face of opposition, and the ability to admit one's mistakes in public and even laughing at oneself when appropriate (Wolmarans & Martins, 2001).

(c) *Self-management*

Self-management is the ability to manage stress and harness energy to create a state of wellness and healthy balance between body, mind and soul, without overindulging in one area at the expense of another. An advanced state of self-management is demonstrated by the ability to remain calm in the face of conflict and provocation, eventually minimising defensiveness and restoring rationality with the aggravated party (Wolmarans & Martins, 2001).

(d) *Self-motivation*

Self-motivation is the ability to create a challenging vision and set stretching goals; to remain focused and optimistic in spite of setbacks; to take action everyday and remain committed to a cause; and to take responsibility for one's successes and failures. A high level of self-motivation is demonstrated by the ability to "hang in there" when others give up, as well as the judgement to change direction when it is time to move on (Wolmarans & Martins, 2001).

(e) *Change resilience*

Change resilience is the ability to remain flexible and open to new ideas and people, advocating the imperative for change and innovation when appropriate, with due concern and consideration for the emotional impact of change on people. An advanced level of change resilience is demonstrated by an ability to cope with ambiguity, to thrive on chaos, without forcing premature closure, and to get re-energised by the beautiful scenes encountered along the way, as well as anticipation of the unknown (Wolmarans & Martins, 2001).

(f) *Inter-personal relations*

Inter-personal relations are underpinned by an intuitive understanding of, and deep level of caring and compassion for people; a real concern for their well-being, growth and development, and joy and recognition for their successes. It involves relating to others in such a way that they are motivated by high expectations and are willing to commit them to a cause. It includes both the ability to lead a team and to contribute to a team to achieve results. An advanced level of relationship competence is demonstrated by the ability to make emotional contact with people and to build the kind of trust and loyalty that nurtures long-term relationships (Wolmarans & Martins, 2001).

(g) *Integration of head and heart*

Integration of head and heart implies that a person's potential is optimised by accessing the functions of both sides of the brain. Decisions are made and problems are solved, with due consideration of both facts and feelings, and with the commitment to create win-win solutions that serve both the goals and the relationships concerned. An advanced level of skill is demonstrated by the ability to turn adversity into opportunity, and making intuitive, inventive, yet implementable breakthroughs in moments of crisis (Wolmarans & Martins, 2001).

5.2.3.2 *Rationale of the ECP*

The ECP was designed for workplace applications of emotional intelligence, hence the focus on emotional competence. The ECP is a statistically validated 360° (multi-rater) assessment tool, requiring the individual who is assessed (self-assessment) and at least three other individuals to evaluate the individual being assessed. The purpose of the ECP is to give the individual an opportunity to look at:

- Emotional skills in a “mirror” through his or her own eyes;
- Behaviour through the eyes of other people, as indicated;
- Strengths and development areas.

The aim of the ECP is to enable individuals to capitalise on their strengths and improve in the areas that might prevent them from achieving their full potential.

The ECP questionnaire consists of the seven clusters of emotional competence and 46 items:

- Emotional literacy (6 items)
- Self-esteem/self-regard (6 items)
- Self-management (6 items)
- Self-motivation (6 items)
- Change resilience (7 items)
- Interpersonal relations (9 items)
- Integration of head and heart (6 items)

5.2.3.3 Description of the scales of the ECP

The ECP uses two four-point Likert scales to measure levels of current emotional competence and the importance of those emotional competence behaviours to the individual being assessed. High scores on the current emotional competence behaviour scales indicate that the individual being assessed exhibits this behaviour. A high score on the importance of behaviour scale indicates that the particular emotional competence behaviour is important for the person being assessed. Low scores on the current behaviour scale indicates the absence of such behaviour, while low scores on the importance of behaviour scale indicate that the particular emotional competence behaviour is unimportant for the person being assessed.

5.2.3.4 Administration of the ECP

The ECP is virtually self-administering. All necessary instructions are given in the questionnaire. The ECP has no time limit and respondents are requested to assess all the emotional competence behaviours. ECP scoring generates scores for each scale (current level of behaviour and importance of the behaviour) for each of the subscales (clusters) of emotional competence, as well as an overall emotional competence mean score for both the current and importance of behaviour scales.

5.2.3.5 Interpretation of the ECP

The higher the mean score on the current behaviour scale, the higher the level of emotional competence demonstrated by the individual. The higher the mean score

on the importance of behaviour scale, the more important the emotional competence behaviour. The ECP therefore provides information on a person's strong and weak points (areas for growth) in terms of emotional competence. It also provides information on the importance of the particular behaviour, which assists in focusing energy on development efforts.

5.2.3.6 Validity of the ECP

Content validity of the ECP was built into the instrument by developing a construct definition of each emotional competence behavioural cluster. Items were written to cover all areas of the identified construct for each of the seven emotional competence clusters. Factor analysis indicates that the items in the subtest clusters possess acceptable internal consistency.

5.2.3.7 Reliability of the ECP

The Coefficient Alpha was used to determine the internal consistency of the ECP. The reliability of the ECP was found to be as follows: Emotional literacy (0,863); Self-esteem/Self-regard (0,872); Self-management (0,851); Self-motivation (0,911); Change resilience (0,933); Interpersonal relations (0,953); and Integration of head/heart (0,903). The overall reliability of the ECP was reported to be 0,981 (Wolmarans & Martins, 2001).

5.2.3.8 Motivation for choice

The ECP was designed for workplace applications of emotional intelligence in the South African organisational context, and thus focuses on the construct emotional competence, which is relevant to this research. As a 360° assessment tool, the ECP provides information on a person's strong and weak points (areas for growth) in terms of emotional competence. It also provides information on the importance of the particular behaviour, which assists in focusing energy on development efforts. The 360° assessment approach allows for a more objective evaluation of an individual's performance and is effective in improving performance (Landy & Conte, 2004). The competencies covered in the questionnaire relate to behaviours that the ratee can easily act on and that can easily be translated into a development plan. The ECP is also user-friendly.

5.2.4 Limitations of the psychometric battery

The three instruments chosen to be included in the psychometric battery are self-report assessment instruments. The MBTI and CFSEI 2-AD are both forced-choice general inventories. The advantage of the forced-choice response features is the limitation on how responses may be made. Furthermore, the scoring or keying of the responses is also fixed. The manner in which the choice affects the score is also standardised. The meaning of this single response is not open to interpretation by the examiner as in a projective test. Questions are presented in an objective format that allow for computer scoring which reduces the possibility of human error in scoring the results.

Potentially serious disadvantages of self-reporting instruments that need to be considered are the following: Self-reports focus on individuals' verbalisations of their feelings toward themselves or others, and individuals may be unable or unwilling to reveal aspects of themselves. Self-perceptions will only be accurate to the extent that the person is willing to express him/her honestly. Self-report measures are also subject to faking and spurious responses called response set (such as the set to present oneself in a favourable light; the set to respond "true", no matter what the content of the inventory item may be; and the set to respond deviantly) (Borg & Gall, 1989:306). The major concerns in using self-reporting instruments are that the results may be biased due to the motivation of the test-taker to be less than honest and their inability to respond to certain constructs.

The ipsative nature of the MBTI and CFSEI 2-AD may also potentially limit the nature of the methods of study which may be used to determine their validity and compare them with other instruments (Baron, 1996; Bartram, 1996).

In terms of 360° assessments, Kenny and DePaulo (1993) found that individuals tend to be inaccurate about the effect they have on other people. They tend to impose their own perceptions of their behaviour on other people. Raters tend to use their own preference as a standard against which they rate others. Ratees may also perceive negative feedback as inaccurate and not very useful and may respond with anger and discouragement. Theron and Roodt (2000) and Van Wyk, Boshoff, and Bester (2003) observe that there is limited research into the judgment process with regard to 360° assessments. Different possible relationships could play a role in idiosyncratic variance, for instance between superior and subordinate, subordinate

and peer and self-ratings. Rater biases can develop as systematic variance in 360° competency assessments that has nothing to do with the actual performance of the individual, but rather associated with the bias of the rater. This could be due to attributive observations, affective/emotional responses, expectancies and motivations. This could in turn influence rater bias of halo error or leniency. Ratees should therefore be informed that the purpose of 360° assessments is for developmental and growth purposes. Discrepancies between self-evaluation ratings and ratings by others should be used to motivate ratees to improve their performance in order to reduce or eliminate such discrepancies.

In conclusion, the three measurement instruments, MBTI, Form G, CFSEI-AD, and the 360° ECP, were selected after an in-depth review of several devices designed to measure personality preferences, self-esteem and emotional competence. A major criterion in their selection was the ability to use statistical correlation analysis to determine the degree of relationship between multiple variables considered in the study. However, the limitations of the three measuring instruments should be considered when interpreting the results stemming from the research findings.

5.2.5 Ethical considerations

The Employment Equity Act, No. 55 of 1998, requires all psychological tests and other similar assessments to be valid, reliable, fair, as well as not biased against any employee or any specific group of employees. In order to comply with legislation, care has been taken in the choice and administration of the psychometric battery by evaluating the validity of items (content and face validity); the process followed in data collection (procedural reliability); the way the data are analysed (appropriate, valid and reliable analysis procedure). Furthermore, anonymity of the sources in the 360° assessment process must be ensured. Feedback on the multi-rater assessments should be anonymous, confidential and used for developmental purposes only.

5.3 ADMINISTRATION OF THE PSYCHOMETRIC BATTERY

This step refers to the data collection step in the research design. The critical consideration of validity concerning the process of data collection is that of reliability.

In gathering the data, the following procedure was used: With the assistance of the human resource practitioners, special sessions were set up with each of the groups at the three companies to explain the rationale behind the use of the three questionnaires (the Myers-Briggs Type Indicator, Culture-Free Self-Esteem Inventories-AD and the 360 Degree Emotional Competency Profiler) using a standardised presentation and to provide the participants with instructions for completing the questionnaire. Participants were then requested to return the completed questionnaires at a certain date, including the evaluations of their selected peers, superiors and/or subordinates on the 360 Degree Emotional Competency Profiler. A three-week period was suggested to allow for logistical arrangements with regard to the “other” evaluations. The human resource practitioners assisted with the collection of the completed questionnaires.

Each participant received an envelope containing seven questionnaires as outlined below:

- The biographical questionnaire,
- The MBTI, Form G
- The CFSEI 2-AD,
- The 360° Emotional Competency Profiler (for self-assessment purposes), and
- Three 360° Emotional Competency Profiler questionnaires with the instruction to request three other people (either peers, superiors and/or subordinates) who are well known to the participant to assess him/her.

Each questionnaire was coded to identify the participant and this was used to construct a match between the responses measured by the various measuring instruments. A letter describing the purpose of the research and follow-up procedure (in terms of feedback to the respondents) was included in each envelope.

5.4 CAPTURING OF CRITERION DATA

The responses of the 447 subjects on the various measuring instruments were captured into an Excel spreadsheet by a data capturer and were then verified by the researcher. The data was then sent to the UNISA Statistical Support Department who uploaded it into a database for scoring. Reports were produced for the total

sample and then per race, gender, age and years of service. All data was then converted into SPSS (Field, 2000) data bases.

5.5 STATISTICAL PROCESSING OF THE DATA

The type of research used for this study is correlational research. The purpose of correlational research is to find relations or relationships between two or more variables. Such correlations enable researchers to understand better the conditions and events that are encountered and the direction and nature of specific relationships, which can be employed to predict future conditions and events. Correlational research also describes and explores the strength of the relationship. It may suggest cause and effect, but cannot prove it. Correlational research can provide information useful for making educated guesses about what goes with what (Christensen, 1997; Howell, 1989; Norusis, 1994; Tredoux & Durrheim, 2002). A correlational research approach was selected because it identifies relationships between variables, in this case, personality preferences, self-esteem and emotional competence – personality preferences and self-esteem being the independent variables and emotional competence being the dependent variable. Correlational research provides information in order to answer the empirical research questions that are pertinent to this research project.

Four types of files were created from the databases, namely:

- A file containing the biographical information;
- A file containing the MBTI responses;
- A file containing the CFSEI-AD responses; and
- A file containing the 360° ECP Self and Other responses.

Specific statistical procedures were executed before merging these four separate files into one file, namely frequency tables, point bi-serial correlations, Pearson product moment correlations, and multiple linear regression analyses. These are described below:

5.5.1 Frequency distribution tables

The first step in ordering a dataset is to identify the range of scores and establish the frequency with which each occurs. A frequency distribution table is an efficient way to

summarise this information to enable the researcher to investigate patterns (Tredoux & Durrheim, 2002). Frequency distribution tables were calculated for the biographical variables and the MBTI personality type preferences. These tables were used to verify data, and to enable the researcher to describe the sample population and the distribution of the personality preferences.

5.5.2 Internal consistency reliability analyses of the scales (Cronbach alpha coefficient)

In this research item reliability of the 360° ECP was tested to establish whether the items grouped together within each construct contribute towards explaining the specific construct on each of the seven scales. Item analyses were therefore performed on firstly the items of each of the seven scales for firstly the self-evaluations and secondly for the other-evaluations to enable the researcher to compare measurements between the self-evaluations and the other-evaluations in terms of the Current Behaviour scale. Thereafter a Total Emotional Competence was calculated and item analyses were performed on the Total Emotional Competence construct for both the Self-evaluations and the Other-evaluations. Cronbach alpha coefficients were calculated as a measurement of item reliability or internal consistency reliability for each of the seven scales and the Total Emotional Competence scales. Internal consistency means the degree to which the items intercorrelate or the degree to which the items measure the same trait. Cronbach's coefficient alpha is an estimate of consistency of responses to different scale items (Tredoux & Durrheim, 2002).

5.5.3 Point bi-serial correlation coefficient

Since the MBTI personality preference indicators are treated as dichotomous data, and the scores of the CFSEI-AD and 360°ECP are treated as scale or continuous variables, point bi-serial correlations were chosen as the appropriate statistical procedure. The point bi-serial correlation is calculated as a special case of Pearson's product-moment correlation coefficient (Higgs, 2001; Lowry, 2004; Norusis, 1994). Norusis (1994) points out that, when using strictly categorical data on a nominal basis for point bi-serial correlation, the significance of the correlations may be computed, but its direction may not be implied, due to the artificial nature of the categorisation. For example, in using gender as a dichotomous variable, the direction of the correlation with a continuous variable could be changed by reallocating the

value ascribed to male and female (Higgs, 2001). Thus a negative correlation could become positive by reversing the numerical allocation for the male/female dichotomy. However, according to Higgs (2001), in working with the MBTI, the four scales are bipolar and an ascription of value to each end of the scale can have meaning. Thus, for example, on the introversion/extraversion scale using the value of 0 to describe dominance of introversion and 1 to denote dominance of extraversion has meaning which enables the positive or negative relationships to a continuous variable to be imputed when employing point bi-serial correlation.

Based on the above arguments and in line with Higgs' (2001) approach, it was decided to analyse the data using point bi-serial correlations applied to the four MBTI scales (E-I, S-N, T-F, and J-P), the combinations of the four MBTI attitudes E-I and J-P (EJ-IJ, EP-IP) and the combinations of the two MBTI attitudes E and I with the four functions S-N and T-F (EF-IF, ET-IT, ES-IS, EN-IN).

Point bi-serial correlation coefficients were calculated as follows:

- between the four MBTI scales (E-I, S-N, T-F, and J-P) and the CFSEI-AD scores;
- between the combinations of the four MBTI attitudes E-I and J-P (EJ-IJ, EP-IP) and the CFSEI-AD scores;
- between the combinations of the two MBTI attitudes E and I with the four functions S-N and T-F (EF-IF, ET-IT, ES-IS, EN-IN) and the CFSEI-AD scores;
- between the four MBTI scales (E-I, S-N, T-F, and J-P) and the 360° ECP self and other current behaviour scores;
- between the combinations of the four MBTI attitudes E-I and J-P (EJ-IJ, EP-IP) and the 360° ECP self and other current behaviour scores;
- between the combinations of the two MBTI attitudes E and I with the four functions S-N and T-F (EF-IF, ET-IT, ES-IS, EN-IN) and the 360° ECP self and other current behaviour scores.

These four MBTI scales and the various combinations of the four scales constituted 10 overall personality preferences indicators as dichotomous data sets.

It was also decided to utilise box plots to further illustrate the nature and direction of the point bi-serial correlations between only the X and Y variables that significantly

correlate. The box plot reports are computer-generated for scores on the X and Y variables. By convention, the dichotomous variable is treated as the X variables, its two possible values being coded as $X=0$ and $X=1$; and the non-dichotomous variable is treated as the Y variable (Lowry, 2004). A box plot is a means of displaying data that emphasises the dispersion of the dataset, rather than the frequency of individual values (Howell, 1989; Tredoux & Durrheim, 2002; Tukey, 1977).

5.5.4 Pearson product-moment correlations

The Pearson product-moment correlation coefficient r is calculated as a measure of the linear relation between any two variables when two or more scales are considered to be measured on an interval scale. The correlation coefficient r indicates the estimated extent to which the changes in one variable are associated with changes in the other variable on a range of +1,00 to -1,00. A correlation of +1,00 indicates a perfect positive relationship, a correlation of 0,00 indicates no relationship, and a correlation of -1,00 represents a perfect negative relationship (a perfect inverse relationship). In the case of a positive correlation between two variables, the higher the score on one variable, the higher the score tends to be on the other variable. If the correlation is negative, then the higher the score on one variable, the lower the scores on the other variable tend to be (Howell, 1989; Tredoux & Durrheim, 2002). According to Howell (1989), the correlation coefficient must be interpreted cautiously so as not to attribute to it meaning that it does not possess. The correlation coefficient is simply a point on the scale between -1,00 and +1,00, and the closer it is to either of those limits, the stronger the relationship is between the two variables.

Pearson product-moment correlations were employed to investigate the relationship between the self-esteem scores and the emotional competence current behaviour scores for both the self and other evaluations.

It is important to note that in terms of the 360° ECP it was decided to use only the current behaviour scores of self and others and not the importance of behaviour scores. This decision was based on the principle that the core focus of the research is the current performance of the subjects.

5.5.5 Regression analysis

Multiple linear regression analysis allows the researcher to find a linear combination of independent variables that maximally predicts (or explains) a dependent variable. From this, the researcher can gauge the relative contribution of variables in the combination, and the combination (or equation) can be used as a predictive device to predict a value on the dependent variable for particular configurations of data on the independent variables (Tredoux & Durrheim, 2002).

The values of the regression coefficients are partial gradient or slope coefficients. The regression coefficient of each variable represents the unique contribution of that variable to the prediction equation.

Sample size can affect multiple regression results (especially R^2 values). The assumption of linearity is of particular importance: it is assumed that the relationship between each of the predictor variables and the dependent variable is linear to be able to draw conclusions.

A potential danger in regression analysis is the presence of multicollinearity, that is, when some of the predictor variables are highly intercorrelated. This can make regression coefficients very unstable, and the analysis difficult to interpret.

5.5.6 Analysis of variance (ANOVA)

In order to determine whether statistically significant differences exist between the ECP Self and Other Total Emotional Competence evaluations regarding the CFSEI-AD Total Self-esteem scale, that is, whether self-esteem had any effect on the difference between the ECP self and other ratings on the Total Emotional Competence scale, a one-way ANOVA is conducted. A pair-wise comparison of means is then conducted to establish the significance of the difference between the means in respect of the four rating levels of the CFSEI-AD Total Self-esteem scale.

The one-way Analysis of Variance *F-test* is a statistical technique used to test the significance of the differences between the means of a number of different groups (Tredoux, 2002). The one-way ANOVA is an analysis of variance where groups are defined on only one independent variable with more than two levels, that is, involving more than two groups. With regard to this research, the Total Self-esteem scale

mean will be the independent variable with the Total Emotional Competence means of both the Self-raters and the Other-raters.

Durrheim (2002) notes the following assumptions regarding the use of the *F-test*:

- *Normality*: The scores within each population are normally distributed.
- *Homogeneity of variances*: Variances of scores in the population are equal.
- *Independence*: The measurement scores in the different groups are independent of one another (usually achieved through random sampling).

According to Tredoux and Durrheim (2002), the *F-test* is a fairly robust measure, so if the assumptions are violated to a limited degree, the final results will not be influenced.

5.5.7 Statistical significance

The level of significance is the maximum probability with which a researcher would be willing to risk the rejection of the null hypothesis, where in fact it should have been accepted (Spiegel, 1972). This probability is generally specified before any samples are drawn, so that the results obtained will not influence the researcher's choice. In practice a level of significance of 0,05 or 0,01 is customary, although other values may be used. If a 0,05 or 5 percent level of significance is chosen to test the hypothesis, then there are about 5 chances in 100 that the researcher could reject the hypothesis when it should be accepted, in other words, the researcher is 95 percent confident that the right decision has been made. In such a case, the researcher would reject the null hypothesis at 0,05 level of significance, which means that the decision could be wrong with a probability of 0,05.

In terms of the power of a statistical test, not only is the level of significance important, but so too is the sample size. The larger the sample size, the more powerful the statistical test will be, as it is more likely that the null hypothesis will be rejected when it is false (Jaccard & Becker, 2002). If samples are large, however, even the best models may have to be rejected if emphasis is solely based on the p-value (Hays, 1994). The p-value of a test generally decreases as the sample size increases.

The levels of 0,05 and 0,01 as levels for statistical tests are quite severe and are used when the purpose is to limit the risk of incorrectly rejecting the null hypothesis, or concluding a significant result erroneously. Samples are used as they enable one to study the properties of a population within the limitations of time and money. In such cases the statistical significance tests are used to show that the results are significant. The p-value is a criterion of this, giving the probability that the obtained value or larger could be obtained under the assumption that the null hypothesis (i.e. no difference between the means) is true. A small p-value (i.e. smaller than 0,05) is considered sufficient evidence that the result is statistically significant. However, statistical significance does not necessarily imply that the result is important in practice because these tests have a tendency to yield small p-values (indicating significance) as the size of data sets increases.

5.5.7.1 *Statistical significance of Pearson product-moment correlations*

Tredoux and Durrheim (2002) offer informal interpretations for statistically significant Pearson correlations of various sizes:

Value of $r < 0,2$: Slight; almost no relationship

Value of r : 0,2 – 0,4: Low correlation; definite but small relationship

Value of r : 0,4 – 0,7: Moderate correlation; substantial relationship

Value of r : 0,7 – 0,9: High correlation; strong relationship

Value of r : 0,9 – 1,0: Very high correlation; very dependable relationship

In choosing a level of significance for the present research, the following viewpoints were taken into account:

- In the human sciences, the researchers are concerned about missing a significant result or making a type-II error as they are concerned about falsely concluding a significant result. Hays (1994) points out that when both types of errors (type-I and type-II) are equally important, practical significance levels such as 0,20 (and possibly even 0,30) are more appropriate than the conventionally used 0,05 and 0,01 levels.
- As the total number of statistical tests to be performed on the one sample increases, the probability of a type-I error also increases. One approach to counter this accumulating effect is to set the level of significance smaller for the individual statistical test so as to compensate for the overall type-I error

effect. For example, if the overall practical significance level is 0,30, then the significance level for the individual test might be 0,05 or 0,01. However, deciding on the significance level is never easy and the final choice remains to a large extent arbitrary.

- The sample size in the present study is relatively small, thus influencing the power of the statistical tests to detect significant results.

In view of all these considerations, it was decided to use a significance level of 0,05 as the cut-off point for rejecting the null hypotheses.

5.5.7.2 *Statistical significance of point bi-serial correlations*

The point bi-serial correlation is a *t*-test for the difference between two means, with the added advantage of the strength of the test included in the correlation. Significance of the correlation coefficient indicates that the two means – in this research, the means of the two members of the personality preference bi-polar pair – differ significantly from one another with regard to the particular score under investigation. As the point bi-serial correlation is calculated as a special case of Pearson's product-moment correlation coefficient (Higgs, 2001; Lowry, 2004; Norusis, 1994), it was also decided to use a significance level of 0,05 as the cut-off point for rejecting the null hypotheses.

5.5.7.3 *Statistical significance of multiple linear regression analysis*

Each variable in the equation is tested for statistical significance (test whether the value of each regression coefficient is greater than 0). Some computer programmes report *t*-values for this test, and others report F-values they amount to the same thing (Tredoux & Durrheim, 2002). The levels of significance decided upon were:

$F(p) < 0,001$;

$F(p) < 0,01$; and

$F(p) < 0,05$ as the cut-off point for rejecting the null hypotheses.

5.5.7.4 *Statistical significance of analysis of variance*

General significance associated with the one-way ANOVA is indicated as the probability associated with the F -statistic, F (probability). The analysis is only significant, and valid, if the probability associated with the analysis is less than $p < 0,05$.

5.6 FORMULATION OF RESEARCH HYPOTHESES

According to Kerlinger (1986), there are essentially two criteria for good hypotheses and hypothesis statements, namely:

- Hypotheses are statements about the relations between variables.
- The hypothesis statements should be such that they carry clear implications for the empirical testing of the stated relations.

These criteria mean, then, that hypothesis statements contain two or more variables that are measurable or potentially measurable and that they specify how the variables are related.

Research hypotheses will be formulated for the relationships outlined below in order to allow for the empirical testing of the relationships between the three variables:

- The relationship between personality preferences and self-esteem
- The relationship between personality preferences and emotional competence
- The relationship between self-esteem and emotional competence

The following research hypotheses are formulated with a view to covering the objectives of the study and meeting the criteria for the formulation of hypotheses:

Ho1: There is no relationship between the four MBTI scales (E-I, S-N, T-F, J-P) and total self-esteem and the three subscales (general, social, personal self-esteem) as measured by the CFSEI 2-AD.

H1: There is a relationship between the MBTI scales (E-I, S-N, T-F, J-P) and total self-esteem and the three subscales (general, social, personal self-esteem) as measured by the CFSEI 2-AD.

Ho2: There is no relationship between the MBTI personality preferences EF - IF, ET-IT, ES – IS, EN- IN, EJ - IJ, EP – IP and total self-esteem and the three subscales (general, social, personal self-esteem) as measured by the CFSEI 2-AD.

H2: There is a relationship between the MBTI personality preferences EF - IF, ET-IT, ES – IS, EN- IN, EJ - IJ, EP – IP and total self-esteem and the three subscales (general, social, personal self-esteem) as measured by the CFSEI 2-AD.

Ho3: There is no relationship between the MBTI scales (E-I,S-N, T-F, J-P) and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour) for both the self and other evaluations as measured by the 360° Emotional Competency Profiler.

H3: There is a relationship between the MBTI scales (E-I, S-N, T-F, J-P) and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour)for both the self and other evaluations as measured by the 360° Emotional Competency Profiler.

Ho4: There is no relationship between the MBTI personality preferences EF - IF, ET-IT, ES – IS, EN- IN, EJ - IJ, EP – IP and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour) for both the self and other evaluations as measured by the 360° Emotional Competency Profiler.

H4: There is a relationship between the MBTI personality preferences EF - IF, ET-IT, ES – IS, EN- IN, EJ - IJ, EP – IP and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour) for both the self and other evaluations as measured by the 360° Emotional Competency Profiler.

Ho5: There is no relationship between total self-esteem and the sub-elements (general, social, personal) and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour) for both the self and other evaluations as measured by the CFSEI 2-AD and 360° Emotional Competency Profiler, respectively.

H5: There is a relationship between total self-esteem and the sub-elements (general, social, personal) and total emotional competence (in terms of current behaviour) and the seven sub-elements (in terms of current behaviour) for both the self and other evaluations as measured by the CFSEI-AD and 360° Emotional Competency Profiler respectively.

Ho6: Personality preferences cannot predict total emotional competence.

H6: Personality preferences can predict total emotional competence.

Ho7: Total self-esteem cannot predict total emotional competence.

H7: Total self-esteem can predict total emotional competence.

Ho8: There is no difference between self-other current emotional competence behaviour ratings for subjects with high self-esteem ratings.

H8: There is a difference between self-other current emotional competence behaviour ratings for subjects with high self-esteem ratings.

The research hypotheses will be tested by firstly testing for the relationship between the variables personality preferences and self-esteem, and secondly, by testing for the relationship between personality preferences and emotional competency, and thirdly, by testing the relationship between self-esteem and emotional competence.

5.7 CHAPTER SUMMARY

This chapter discussed the first six steps of the empirical investigation. The choice of the psychometric battery, the determination of the sample population, the administration and scoring of the psychometric battery; the statistical processing of the data and the formulated research hypotheses were discussed.

Chapter 6 discusses steps seven and eight of the empirical investigation, namely the reporting and interpretation of the results and the integration of the research results.