

Chapter 5

Empirical Investigation: Methodological Orientation and Research Method

“We are generally the better persuaded by the reasons we discover ourselves than by those given to us by others.”

*Blaise Pascal
French Physicist and Mathematician*

In the preceding sections the theoretical framework was discussed by focusing on descriptions of important concepts, namely meaning in life, sense of coherence, coping with stress, and late adolescence/young adulthood.

The aim of this chapter is to describe the nature of the empirical investigation in this research project. Firstly, types of research methodology in the social sciences will be investigated in order to establish the most appropriate method for the current study, and then the participants will be described, followed by a description of the three measurement instruments used. The hypotheses of this study will be formulated and this will be followed by an explication of the statistical techniques selected for this project.

The various research methodologies employed in the social sciences will now be explored with the purpose of selecting the most appropriate method for the current study.

5.1 Research Methodology

Research methodology constitutes the ‘science’ part of social science, as it refers to the various procedures and practices which regulate and govern research (Neuman, 2003). There are different types of methods which people may use, and the choice of research methodology depends largely on what the researcher intends to accomplish. This section will focus on the various research methodologies available as well as on the chosen methodology for this particular study based on the research question. The aim of the study, the research questions addressed by this research project, and the rationale for choosing this particular research approach will also be explored.

In the following section the various research methodology approaches used in the social sciences will be investigated.



5.1.1. Research Approaches in the Social Sciences

Neuman (2003) notes three different types of research methodologies that may be employed by researchers and social scientists, namely positivist social science, interpretive social science and critical social science, and he claims that choosing one of these methods may be dependant on the research question, previous research findings set out in the literature review, and various assumptions made about the nature of the study.

These three research approaches, as well as the feminist approach to research, and the differences between postmodernism and modernism in the research context will be explored in this section, in order to explain the modernist research approach utilised in

this study. In addition, a rationale for the particular research approach chosen for this study will be explained.

Firstly, positivist social science as a specific type of research methodology will be discussed.

5.1.1.1. Positivist Social Science

Positivism grew in popularity in the eighteenth and nineteenth centuries in Western Europe as a product of the social, cultural and political climate of the post- World War II era (Neuman, 2003). A positivist approach to research refers to the investigation of cause-effect relationships. This type of research is rigorous, precise and objective and the researcher remains neutral and detached while measuring real world aspects of society. Positivist social science attempts to discover or confirm social events and laws based on empirical investigation (Howell, 2002). This type of research methodology is associated with quantitative data which is analysed by using mathematical statistics.

A second type of research methodology according to Neuman (2003) is interpretive social science.

5.1.1.2. Interpretive Social Science

In contrast to the objective laws of positivism, interpretive social science is aware of context and more concerned with an empathic understanding of human behaviour (Neuman, 2003). Two philosophers and social scientists that are well-known for their contributions to this approach are Max Weber (1864-1920) and Wilhelm Dilthey

(1833-1911). Dilthey claims that there are two types of social science *Naturwissenschaft* and *Geisteswissenschaft*, the former based on *Erklärung* or abstract explanation and the latter based on *Verstehen* or empathetic understanding (Honderich, 1995). Weber argues that social science should focus on meaningful social action and claims that *Verstehen* facilitates social action with purpose and concentrates on people's personal feelings, reasons and motives. Interpretive social science is linked to hermeneutics which is a theory of meaning that focuses on discovering meaning within texts (Neuman, 2003). Studying texts gives rise to subjective interpretation and therefore many meanings may be discovered in one text. Interpretive social science is often criticized as being subjective and relative, leading to passive research. Critical social research attempts to overcome this criticism.



5.1.1.3. Critical Social Science

Like interpretive social science, critical social science rejects many of the ideas of positivism. However, unlike interpretive social science, critical social science attempts to be less subjective and relative. This approach originates with Karl Marx (1818-1883), Sigmund Freud (1856-1939), and was later developed further by Theodor Adorno (1903-1969), Erich Fromm (1900-1980) and Herbert Marcuse (1898-1979) (Neuman, 2003). Critical social science rejects positivism for not focusing enough on people's real meanings, thoughts and feelings, for ignoring social context, for being antihumanist and for assuming that the social order is stable and unchanging. Critical social science rejects interpretive social science as subjective and relativist. Critical social science aims to uncover what's on the surface so that people are able to transform aspects of their social context for the better (Rosnow &

Rosenthal, 1996). This approach utilizes a number of research techniques but is unique in terms of how a research problem is approached, the types of questions one asks and the purpose of doing the actual research. The aim is usually to bring about change.

Another approach which, like critical social science, differs from that of positivism is feminist research.

5.1.1.4. *Feminist Research*

Feminist social research rejects sexist assumptions, concepts and research questions, as well as unequal gender and power structures (Neuman, 2003). Feminist research emphasizes the value of the female perspective and notes the contributions of women in terms of their ability to connect empathically with subject matter being studied, whilst taking into account personal feelings and experiences. Any one of a number of techniques may be used in this approach, but the importance of the emotional aspect of human experience is emphasized and the research is often action-oriented as feminist researchers point out the value in facilitating personal and/or societal change (Honderich, 1995). Feminist research rejects the positivist focus on objectivity, and extremely rigorous, logical, task-oriented research which is so often representative of the male view in a male-dominated society governed by facts (Neuman, 2003).

5.1.1.5. *Postmodernism and Modernism*

Postmodern research originates in the humanities, in existential philosophy and in the philosophical ideas of Heidegger, Nietzsche, Sartre and Wittgenstein, and argues that

research can only ever describe things – it cannot explain them (Neuman, 2003). Postmodern social research rejects all traditional research ideologies and belief systems which lay claim to objective knowledge and ultimate truth. This approach is extremely subjective and relies on imagination, intuition, personal experience, emotion and subjective interpretations of events (Neuman, 2003). Postmodernism rejects the idea that cause-effect relationships can be studied because it argues that essentially life is complex and in constant flux, and that research can never present an accurate picture of the real world.

Postmodernism rejects modernism entirely. Modernism, which arose in the Enlightenment period, focuses on logical and rational ways of reasoning, has an optimistic view of the future, focuses on progress, utilizes technology and science and views these constructs as useful and good, and concentrates on humanist values by seeking out ideas that benefit humanity. Furthermore, modernism maintains that there are certain standards of beauty, truth, life and morality and that most people can agree on these standards (Honderich, 1995). Postmodernists reject this quest for ultimate truth and morality which is so dependant on rules, order, logic and so-called rationality (Neuman, 2003). Postmodernist research may employ a work of art, a drama or play, a movie or some other novel way to express an idea, rather than trying to predict human behaviour and publishing research journal articles (Honderich, 1995).

The modern approach to research forms the framework for this study and the aim of the study, research questions addressed in this project and the rationale for the selected research methodology utilized in this study will now be investigated.

5.1.2. Aim of Study, Rationale for Research Methodology and Research Questions

Clearly, it is at times useful to be able to predict human behaviour. This research project aims to do just that by looking at the ability to cope, based on the extent to which a young adult has found meaning in life and developed a sense of coherence. The current project is thus firmly situated in the modernist tradition, and not in that of postmodernism.

This study will be conducted quantitatively in order to identify responses in a large group so that specific variables relating to meaning in life, sense of coherence and coping with stress may be investigated. The statistical relationships between meaning in life, sense of coherence and various coping strategies will be investigated by selecting a homogeneous subgroup to quantify the nature and strength of these relationships. This study is positivist as well as interpretive; linear as well as critical.

The overarching research question of this study asks whether there are relationships between meaning in life, sense of coherence and level of coping in young adulthood, and attempts to identify relationships between the variables. The researcher intends to investigate the possibility of predicting whether adolescents and young adults can cope with stress based on the extent to which they have discovered meaning in life as well as being able to predict their coping abilities based on their measures of sense of coherence.

In order to investigate the relationships between meaning in life, as measured by the Purpose in Life test (Crumbaugh & Maholick, 1981), sense of coherence, as measured by the Sense of Coherence scale/Orientation to Life questionnaire (Antonovsky, 1987) and level of coping, as measured by the Adolescent Coping Scale (Frydenberg & Lewis, 1993), the following specific research questions have been formulated.

Research question 1: Is there a relationship between meaning in life and sense of coherence?

Research question 2: Is there a relationship between meaning in life and level of coping?

Research question 3: Is there a relationship between sense of coherence and level of coping?



Similarly, research questions may be formulated regarding the relationship between level of coping as a dependent variable and sets of predictor variables, namely:

Research question 4: Is there a relationship between level of coping as a dependent variable, and meaning in life and the dimensions of sense of coherence as independent variables?

Research question 5: Is there a relationship between ability to cope as a dependent variable, and meaning in life and the dimensions of sense of coherence as independent variables?

Based on these research questions the specific aim of the research is to investigate whether there are correlations between scores on the Purpose in Life test (Crumbaugh & Maholick, 1981), the Sense of Coherence scale (Antonovsky, 1987) both as a whole and using the three subscales namely Comprehensibility, Manageability and Meaningfulness, and the Adolescent Coping Scale (Frydenberg & Lewis, 1993). In addition the current study aims to ascertain whether high versus low scores on the Adolescent Coping Scale (Frydenberg & Lewis, 1993) can be predicted by the scores on the Purpose in Life test (Crumbaugh & Maholick, 1981) and scores on the Sense of Coherence scale (Antonovsky, 1987) considered both as a whole and as individual subscales. A group of late adolescents/young adults with an average age of between 17 and 22 years of both genders will be used to investigate these specific aims.

The general aim of the study is to provide an explication of relevant literature regarding meaning in life, sense of coherence and ability to cope in late adolescence/young adulthood. Furthermore, the study aims to contribute to theory building in the field of stress and coping.

A detailed explanation of the participants is specified in the following section.

5.2 Participants

The current study utilises questionnaires as opposed to an experimental design, and therefore individuals taking part in this study are referred to as participants and not subjects (APA, 2001). In the literature review, it was shown that late adolescence/young adulthood is a turbulent and restless period (Levinson, 1978; Super, 1980) and thus in order to reliably investigate and identify relationships

between meaning in life, sense of coherence and coping in this life phase, a large sample is needed for the current study. Given that a large sample is required, and given the time and financial restraints, it is not possible to select a random sample. A sample which is not randomly selected places limitations on the generalisability of the results. The results can therefore not be generalised to populations other than the given group and the results of other studies which make use of similar measurement instruments may differ from that of the current study. The results of the present study may be seen as a first step in describing the relationships between meaning in life, sense of coherence and coping with stress in young adulthood. Future studies should make use of other populations and random samples.

The purpose of the following section is to discuss the information regarding the participants. Firstly, the population and sample will be discussed and this will be followed by an exploration of the biographical information provided by participants as well as any possible confounding variables in the study.



5.2.1. Population and Sample

The population identified for this particular study is male and female young adults, enrolled as tertiary education first year students in South Africa with psychology as one of their chosen subjects, with average ages of between 17 and 21. Convenience sampling was used and, due to the large number of participants required for the study, students at one particular tertiary institution were recruited for this purpose. The sample was thus comprised of a group of first year students at a university in South Africa. All of these students have chosen to do psychology as a subject in their first

year of study. The sample included males and females and people from various racial and cultural backgrounds.

Possible limitations resulting from the choice of sample are discussed in section 5.2.3.

A relatively large sample size was used in this particular study (see section 5.2).

There were 269 students who responded and filled out questionnaires, of which 258 contained complete data (N=258).

Certain biographical information (see Appendix A) was requested from the participants in this study, namely

- Age based on Date of Birth (day/ month/ year)
- Gender
- Home Language
- Degree enrolled for



Information from the participants in the sample pertaining to various biographical variables will now be discussed.

5.2.1.1. Age

Based on the literature review (see chapter 4), it is clear that for the purpose of this study, adolescents and young adults are deemed to be those in the exploratory phase of life. Super's (1980) theory regarding the exploratory phase of adolescence which proposes that adolescence begins at 14 and continues until the age of 24, offers one of the most encompassing explanation for development in this phase of life (see section 4.2.1). In this study the terms *adolescent* and *young adult* will be referred to interchangeably.

Meaning in life can be explored in participants of any age but is best observed in people in late adolescence and onwards because younger adolescents and children may not necessarily be aware of meaning in life yet.

Given that some researchers indicate that age can be a determining factor of sense of coherence (for example Antonovsky, 1987; Bernstein & Carmel, 1991; Carmel & Bernstein, 1990), it was decided that young adults in the exploratory phase should be targeted.

Antonovsky (1987) indicates that sense of coherence is developed in early adulthood. Levinson (1978) indicates that the phases between ages 17 and 34 may be described as a transition period and a period in which an individual is required to make important decisions. In general this phase is described as a relatively turbulent and dynamic phase (Cloete, 2003).

Given the above it was decided to limit the participants to first year students. First-year students have a fairly well-established understanding of meaning in life as well as a relatively well-developed and stable sense of coherence. The rationale behind this decision is that these young adults are in a transition phase of their lives, entering tertiary education, and it is the purpose of this study to determine how they cope with the stress of these transitions based on their meaning in life and sense of coherence.

Participants of 17 and 18 comprised 18,2% of the sample and 19 year old students constituted the majority 42,9% of the sample. Those who are 20 or 21 years of age made up 29,1% of the sample and participants over 21 made up only 9,7% of the sample. The average age group of the final sample (N=258) in this study was 17 to 21, and the results of the statistical analyses are in chapter 6.

The next biographical response required from participants was gender.

5.2.1.2. Gender

It was decided that gender should be established so that the researcher could control for possible differences between males and females in this study. The sample comprised more female than male students. Given that there are more female than male students in the first year psychology course, more females than males participated in the study. There were 207 female students and 50 male students who participated in this study.

In the statistical analyses (see chapter 6), it was found that there were no significant differences between male and female responses and thus both male and female responses were included in the final sample and statistical analyses.

Home language was another variable that the participants were required to indicate on the biographical information sheet.



5.2.1.3. Language

In order to statistically control for the influence of language on one of the three variables, meaning in life, sense of coherence and coping, students were asked on the questionnaires to indicate their home language. Language can also indirectly be used to research underlying culture differences. The Purpose in Life Test (Crumbaugh & Maholick, 1981), the Orientation to Life Scale (Antonovsky, 1987) and Adolescent Coping Scale (Frydenberg & Lewis, 1993) are all English language questionnaires (see section 5.3) and all participants thus completed them in English, although Afrikaans versions of the Orientation to Life scale (Antonovsky, 1987) are available. The participants all met the requirements for admission to a tertiary institution, which conducts all degree courses in English and thus participants were assumed to be

linguistically competent enough to complete the questionnaires in English. In order to ensure that no-one struggled with answering the questionnaires in English, the researcher was available to answer questions and explain concepts (see section 5.2.2).

The results of the statistical analysis in terms of language appear in chapter 6. The language distribution was as follows: Afrikaans 15,8%; English 53,4%; Sotho language group 10,2%; Nguni language group 10,5%; Other languages identified which individually did not constitute a significant proportion of the data amounted to 10,2% of the sample.

The final biographical information question posed to participants pertains to direction of study.

5.2.1.4. Degree

Given that participants all take psychology as a subject, it can be assumed that the sample was relatively homogeneous in terms of general direction of study. In order to test if degree has a possible influence on the results, information regarding the degree for which participants enrolled was collected.

In terms of the participants the majority were registered in the BA faculty which, excluding law, amounted to 63,5% of the participants; those registered in the B Com faculty, excluding law constituted 5,3% of the sample; B Cur and B Ed students made up 12,8% of the sample; 8,3% of the participants were registered in the BSc faculty; LLB and other law degrees constituted 8,6% of the sample, and other directions of study which did not contribute significantly amounted to 1,5%. The results of the statistical analyses are presented in chapter 6.

The following section investigates the procedure for data gathering from the participants in the sample described above.

5.2.2. Procedure for Data Gathering

The most efficient method for conducting research for this study is by using questionnaires which measure the variables within a given and defined period. The students attended a given venue at hourly intervals over two Mondays in April 2005. Permission to conduct the study was requested from the chairperson of the psychology department as well as from the first year psychology lecturers and course coordinators. The first year course coordinators suggested providing students with a small mark incentive for participating in the study. It was decided that during the research session, a register would be taken which was separate from the questionnaires in order to ascertain which students would qualify for the mark incentive. The researcher presented a short five-minute information session on the aims of the study and other issues, such as informed consent, but they were not given any directives that may jeopardise the results of the research, during a psychology class contact session and the students were requested to complete the volunteer form at the psychology department in their own time. The lists were left at the department until the last day of the study so that all students had the opportunity to take part. A variety of times were offered. Participants could select one of 7 one-hour sessions conducted back-to-back over two consecutive Mondays.

Participants were assured of anonymity and confidentiality and participants were instructed to not put their names, surnames or student numbers on their questionnaires. The participants were instructed to fill out only the information

required of them on the biographical information sheet and they were told that this information was for the purposes of the study and could not be used to identify them.

The three questionnaires were stapled together and, stapled to the front was the biographical questionnaire (see Appendix A). The researcher gave verbal instructions at every session and instructions for the various questionnaires were also printed above the relevant questionnaire. The researcher was present at each of the testing sessions.

Before the questionnaires were handed out the aim of the study was again briefly explained to the students. Although the students were encouraged to take part in the study it was made clear that any students who did not wish to take part would not be forced. The students were thanked for their participation.

Students were informed that an abstract of the research would be placed on the first year psychology website so that participants may view the results of the research. The researcher's contact details were also provided should any person have any questions regarding the results.

The participants were given an hour to complete the three questionnaires but most people were finished within 40 minutes and were allowed to leave the venue. Participants were encouraged to answer as quickly as possible, as per instructions in the individual questionnaires, as they were informed that the first answer that comes to their mind is usually the most accurate one.

The participants were informed that they could ask the researcher during the testing if they had any questions regarding the answering of the questionnaires.

The researcher transferred the raw data from the questionnaires to Microsoft Excel on the computer, and these scores were double-checked for accuracy. Any mistakes made by participants (such as incomplete data) were highlighted in yellow on the programme. Out of a total of 269 questionnaires submitted to the researcher, 11 were rejected due to incomplete data or incorrectly filled out questionnaires. The final number of questionnaires thus analysed was 258 (N=258).

The raw data was submitted to the Statistical Consulting Services (Statcon) of the University of Johannesburg in electronic format for statistical analysis. Statistical analyses are conducted in order to investigate relationships between variables.

Possible confounding variables will be discussed in the following section.



5.2.3. Confounding Variables

There are a number of possible confounding variables which could contaminate the results. IQ is one such confounding variable. Geyer (1997) notes that there may be a relationship between sense of coherence and intelligence. Given the expected homogeneity of first-year students in terms of intelligence, it was assumed that there will be no significant differences in intelligence which may contaminate the results. A limitation of the sample is however that all participants may be said to have a high IQ, given that they all meet the requirements for studying at university. This means that the results of this study cannot be generalised to young adults who are not enrolled in university level tertiary education.

The fact that all of the participants have chosen psychology as a subject may be a further confounding variable. It can be argued that there are certain aspects of the social sciences that they are aware of, which may not be true for students in other faculties who do not have psychology as a subject. It can be argued that school children are a homogeneous group in terms of academic focus, and it is expected that first year university students would exhibit similar focus, having just recently completed school. Thus the choice of psychology as a subject should not have a significant impact on the current study.

A further variable which was not controlled for which may be a confounding variable is socioeconomic status. Very little research has been done on the relationship between socioeconomic status and meaning in life and well-being, but some research has indicated links. For example, in a study of exposure to violence among African American Adolescents, it was found that meaning in life was related to the socioeconomic status of the head of the household and to the adult socioeconomic status anticipated by adolescents (Adler & Matthews, 1994). Adler and Matthews (1994) report that there is no indication that socio-economic status has a direct relationship with the construct sense of coherence. They indicate that Antonovsky's (1979; 1987) concept of sense of coherence is based on the idea that different life experiences as well as negative experiences and the consequences of these varied experiences and reactions are more important than the nature of the experiences, and thus socio-economic status is not assessed in the current study.

Another possible confounding variable is race. One cannot assume that the varying races and cultures of the participants are interchangeable in this particular study.

However, the participants were asked to record their home language on the biographical information sheet, and in this way, race and culture were controlled for to some extent because home language provides an indication of the cultural group of the participant. For example, someone who indicates that they speak *Sotho* can be said to belong to the Nguni language group. Future research is required on the relationships between meaning in life, sense of coherence and coping, which will analyse differences between groups, including social class, ethnicity and culture.

A description of the three measurement instruments used in the study will now be given.

5.3 Measuring Instruments

Three measurement instruments were utilized.

Meaning in life was measured using the Purpose in Life Test (Crumbaugh & Maholick, 1981).

In order to measure sense of coherence the Orientation to Life questionnaire, formulated and published by Antonovsky, was used (Antonovsky, 1987). The Orientation to Life questionnaire is sometimes referred to as the Sense of Coherence scale and the two names are used interchangeably in this study.

The Adolescent Coping Scale (Frydenberg & Lewis, 1993) was used to measure choice of coping strategy in participants.

These measurement instruments will now be discussed in greater detail.

5.3.1. Purpose in Life Test (Crumbaugh & Maholick, 1981)

The Purpose in Life (PIL) Test (Crumbaugh & Maholick, 1981) was the first psychometric instrument designed to measure Frankl's (1992) concept of meaning in life, which is a self-report questionnaire designed to operationalise perceived meaning in life (Moomal, 1999). The PIL Test (Crumbaugh & Maholick, 1981) will now be investigated by focusing on content, administration and scoring of the questionnaire as well as on the psychometric properties.

5.3.1.1. Content, Administration and Scoring

The construct of the meaning of life was measured by the PIL (Crumbaugh & Maholick, 1981). This logotherapeutic test is designed to measure the degree to which an individual has found meaning in life (Crumbaugh & Maholick, 1981). The test can be used with addicted, retired, disabled individuals and those struggling to make sense of philosophical issues for the purpose of clinical assessment, student counselling, vocational guidance, and rehabilitation. It is a paper and pencil test which assesses the major life motivations of a particular individual. In section A, participants rate 20 statements according to their own beliefs. This test is based on Frankl's (1946; 1992) concepts of "Will to Meaning", logotherapy and the existential vacuum. It is a self-report test, which is suitable for group testing and takes approximately 15 minutes to complete. Sections B and C of this test are qualitative self-report items. Section B requires participants to complete 13 sentences and section C asks respondents to write a paragraph describing their aims, ambitions and goals in life and how much progress they feel that they are making in achieving them. Most researchers choose to use only the quantitative section A of this test. In section

A, the scores are simply added together to indicate one total score which indicates the extent to which a person has found meaning in life. A score of 113 indicates definite meaning in life and a score of 91 or less indicates lack of life-meaning; scores between 92 and 112 are indeterminate. Sections B and C are not scored per se, but are usually utilised by researchers for qualitative information, if they are used at all. As this study is a quantitative undertaking, it was decided that only section A would be included.

The validity and reliability of the questionnaire will be discussed in the following section.

5.3.1.2. Psychometric Properties

This test has been shown to be both reliable (split-half reliability 0.85 and alpha reliability 0.91) and valid (Edwards & Holden, 2003). Crumbaugh and Maholick (1981) report split-half reliabilities of over 0.90 and test- retest coefficients of 0.83 have been reported (Meier & Edwards, 1974). Although the validity of the PIL (Crumbaugh & Maholick, 1981) has been criticized (Moomal, 1999) on the grounds that it does not measure meaning in life as a unidimensional construct; they argue that it in fact measures different dimensions, other studies have shown the test to be valid (Meier & Edwards, 1974; Shek, 2003). For example, research conducted by Zika and Chamberlain (1992) supports the validity of the PIL (Crumbaugh & Maholick, 1981).

The PIL (Crumbaugh & Maholick, 1981) has also been criticized for its design insofar as respondents are said to respond in a socially desirable way (Moomal, 1999). However, Crumbaugh and Maholick (1981) argue that social desirability is not an issue when it comes to interpreting the PIL, and this has been supported by further

studies (Furnham, 1986; McRae & Costa, 1983; Pearson & Sheffield, 1974), where social desirability was shown to be more of a personality trait than a confound.

The second and longest questionnaire used as part of this research project is the Orientation to Life questionnaire (Antonovsky, 1987).

5.3.2. Orientation to Life questionnaire (Antonovsky, 1987)

The Orientation to Life questionnaire (1987) is sometimes also referred to as the Sense of Coherence Scale (SOC). Antonovsky (1987) formulated and developed the SOC. This scale will now be discussed in terms of content, administration, scoring and psychometric properties.



5.3.2.1. *Content, Administration and Scoring*

There are three subscales of the SOC (Antonovsky, 1987), namely Comprehensibility, Manageability and Meaningfulness, but researchers favour focusing on sense of coherence as a whole and not on the scores of the subscales. Antonovsky (1987) conceptualizes the Comprehensibility scale as a measure of the extent to which an individual can understand life events and situations as clear, ordered, structured and consequential. There are 11 items in the Orientation to Life questionnaire (Antonovsky, 1987), which measure Comprehensibility, namely numbers 1, 3, 5, 10, 12, 15, 17, 19, 21, 24, and 26. The second subscale, Manageability, is defined as a measure of control which an individual exhibits in different situations. There are ten items which measure Manageability and they are 2, 6, 9, 13, 18, 20, 23, 25, 27 and 29. The Meaningfulness scale measures the extent to which a person feels that events

make sense in an emotional way (Antonovsky, 1987). Meaningfulness is measured by 8 items in the questionnaire, namely 4, 7, 8, 11, 14, 16, 22 and 28.

The SOC (Antonovsky, 1987) is a 29 item semantic-differential questionnaire, and the development was based on Guttman's phase theory (Antonovsky, 1993). Semantic differential scales are characterized by a 7-point continuum, anchored by the two contrasting descriptions on each side (Dawis, 1998). Thirteen of the total 29 items are formulated negatively and these items must therefore be subtracted in the calculation of the total scores. The items marked for 'reverse' are 1, 4, 5, 6, 7, 11,13, 14, 16, 20, 23, 25 and 27.

A 13-item version of the SOC (Antonovsky, 1987) is also available but has been found by researchers to be less reliable due to the unreliability of the subscales (Hart, Hittner & Paras, 1991). Cloete (2003) also reports that the full scale is more reliable than the 13-item scale, and thus in this study, it was decided that the full scale should be used. The full 29-item scale takes 15 to 20 minutes to complete.

The SOC (Antonovsky, 1987) is published in English, but is also available in Afrikaans and Tswana (Antonovsky, 1993). However, this questionnaire was presented in English due to the fact that all the participants were fluent in English, and since the PIL (Crumbaugh & Maholick, 1981) and the Adolescent Coping Scale (Frydenberg & Lewis, 1993) are only available in English. Strümpfer and Wissing (1998) indicate that between the range of 29 to 203, 137 appears to be an average score of the total sense of coherence in South Africa, including all age groups, races, education levels and careers. International data indicates that the average sense of coherence scores range from 117 to 152. Cloete (2003) hypothesizes that South Africa's slightly lower score might be indicative of cultural differences in terms of

sense of coherence. Antonovsky (1993) mentions that the average scores of students range from 129 to 150.

5.3.2.2. Psychometric Properties

The Cronbach alpha reliability ranges from 0.82 to 0.95 (Eriksson & Lindstrom, 2005) and Antonovsky (1987) found ranges from 0.84 to 0.93 which is indicative of internal consistency and reliability. A high score represents a strong sense of coherence. In a study by Eriksson and Lindstrom (2005), the validity and reliability of the SOC (Antonovsky, 1987) were systematically investigated by analysing 458 scientific publications and 13 doctoral theses between 1992 and 2003. Results show that the questionnaire has been used in at least 33 languages in 32 countries. The researchers concluded that the scale seems to be a reliable, valid and cross culturally applicable scale (Eriksson & Lindstrom, 2005). Before calculating the total score the 13 items marked "R" should be reversed. The *Norms and Scores* (Antonovsky, 1987) sheet has a breakdown of the answers into the three subscales and the *reverse* questions.

The third questionnaire selected for the current study is the Adolescent Coping Scale (Frydenberg & Lewis, 1993), and this scale will be explored in the following section.

5.3.3. Adolescent Coping Scale (Frydenberg & Lewis, 1993)

The following sections will focus on the content, administration, scoring and psychometric properties of the Adolescent Coping Scale or ACS (Frydenberg &

Lewis, 1993), taken from the administrator's manual (Frydenberg & Lewis, 1993) as well as from other research findings.

5.3.3.1. Content, Administration and Scoring

The Adolescent Coping Scale (Frydenberg & Lewis, 1993) is a self-report questionnaire which measures choice of coping strategy or behaviour. There is an 80-item *long form* questionnaire and an 18-item *short form* questionnaire, both of which reliably assess 18 conceptually and empirically distinct coping strategies according to the authors Frydenberg and Lewis (1993). The short form was used for this study. There are 18 constructs which can be reduced through factor analysis to 3 coping styles; solving the problem, reference to others, and non-productive coping. Frydenberg and Lewis (1993) report that an individual's behaviour may be situation-specific and they thus developed the *specific form* version of both questionnaires, which enables respondents to base their responses on a particular concern. The *general form* version was used in this study which enables participants to respond based on any stressors or concerns that an individual must cope with. Frydenberg and Lewis (1993) recommend allowing 10-15 minutes to allow enough time for the researcher to hand out the questionnaires, give information and instructions, answer respondents' questions and give participants time for completing the questionnaire.

Scoring the short form version of the ACS (Frydenberg & Lewis, 1993) is straightforward as each of the 18 items represents a separate scale. However, Frydenberg and Lewis (1993) indicate that users of the short form version of the questionnaire should score the scale based on the three underlying coping styles

which have been established through factor analysis. The three coping styles are comprised of the following coping strategies:

Problem-focused: Focusing on Solving the Problem (SolvProb), Seek Relaxing Diversions (Relax), Physical Recreation (PhysRec), Seek to Belong (Belong), Work Hard and Achieve (Work), Focus on the Positive (FocPos).

Reference to Others: Seek Social Support (SocSup), Seek Spiritual Support (Spirit), Seek Professional Help (ProfHelp), Social Action (SocAc).

Non-productive Coping: Worry (Worry), Invest in Close Friends (Friends), Seek to Belong (Belong), Wishful Thinking (WishThink), Not Coping (NotCope), Ignore (Ignore), Tension Reduction (TensRed), Keep to Self (KeepSelf), Self-Blame (SelfBlame).

The ACS is aimed at adolescents but Frydenberg and Lewis (1993) have done extensive research with the scale and, based on their years of experience, indicate that it can be used with significantly older participants. Also see section 5.2.1.1 for a discussion on age.

The correlations for the three scales when looking at the long or short form versions of the ACS are shown by the test developers and researchers to be high (Frydenberg & Lewis, 1993).

5.3.3.2. Psychometric Properties

In terms of content analysis of the items on the ACS (Frydenberg & Lewis, 1993; Plucker, 1997), adolescents of all ages were consulted and their responses were used to formulate and test the items. All the data was reduced by grouping similar ideas

and actions into various conceptual categories representing coping strategies. The short form version was formulated by selecting the main 18 concepts of the 79 long form version. This was done by selecting items where the wording accurately assessed one of the 18 coping strategies. In addition this was carried out by judging whether an item's relationship with other constructs on the scale was significant enough to justify it being utilized independently as an indicator of a particular coping dimension. Furthermore, the test developers and researchers found that the language used in the questionnaires, yielded by the respondents themselves, was generalisable and understandable to participants in older and younger age groups.

In determining test-retest reliability, it was found that participants' responses remained stable over time, and test-retest correlations based on Pearson's product-moment correlation coefficient indicated that all responses were highly stable. The Cronbach alpha coefficients of internal consistency (Alpha) and the test-retest stability coefficients (r_{xx}) range between .62 and .87 and .49 and .82 respectively. The mean for the Alpha coefficients was .75 and for r_{xx} , it was .68. In terms of validity, except for the items SolvProb and NotCope which both had correlations of less than .7 with the scales from which they were selected, all of the items are useful indicators of the constructs they were designed to measure and are thus suitable for independent usage. Validity correlations range between .61 and .88 with a mean score of .78 for the general short form version of the ACS (Frydenberg & Lewis, 1993; Plucker, 1997).

In order to investigate relationships between meaning in life, sense of coherence, and coping with stress in young adulthood, based on the three questionnaires selected for

the study namely the Purpose in Life test (Crumbaugh & Maholick, 1981), Orientation to Life Questionnaire (Antonovsky, 1987) and the Adolescent Coping Scale (Frydenberg & Lewis, 1993) respectively, certain hypotheses and postulates have been formulated.

5.4 Hypotheses and Postulates

The following alternative two tailed hypotheses are proposed in order to investigate any differences in terms of biographical variables:

Hypothesis 1: The vector for means of different age groups in terms of scores on the Purpose in Life test will exhibit statistically significant differences.

Hypothesis 2: The vector for means of different age groups in terms of the scores on the Sense of Coherence scale as a whole and in terms of its components will exhibit statistically significant differences.

Hypothesis 3: The vector for means of different age groups in terms of scores on the Adolescent Coping Scale will exhibit statistically significant differences.

Hypothesis 4: The vector for means of males and females in terms of scores on the Purpose in Life test will exhibit statistically significant differences.

Hypothesis 5: The vector for means of males and females in terms of the various scores on the Sense of Coherence scale as a whole and in terms of its components will exhibit statistically significant differences.

Hypothesis 6: The vector for means of males and females in terms of scores on the Adolescent Coping Scale will exhibit statistically significant differences.

Hypothesis 7: The vector of means for different language groups in terms of scores on the Purpose in Life test will exhibit statistically significant differences.

Hypothesis 8: The vector of means for different language groups in terms of scores on the Sense of Coherence scale as a whole and in terms of its components will exhibit statistically significant differences.

Hypothesis 9: The vector of means for different language groups in terms of scores on the Adolescent Coping Scale will exhibit statistically significant differences.

Hypothesis 10: The vector of means for different directions of study in terms of scores on the Purpose in Life test will exhibit statistically significant differences.

Hypothesis 11: The vector of means for different directions of study in terms of scores on the Sense of Coherence scale as a whole and in terms of its components will exhibit statistically significant differences.

Hypothesis 12: The vector of means for different directions of study in terms of scores on the Adolescent Coping Scale will exhibit statistically significant differences.

The following postulates have been formulated in order to investigate the relationships between meaning in life, sense of coherence and level of coping.

Postulate 1: It is postulated that there will be statistically significant cross-correlations between scores on the Purpose in Life test and scores on the Adolescent Coping Scale.

Postulate 2: It is postulated that there will be statistically significant cross-correlations between scores on the dimensions of the Sense of Coherence scale (Meaningfulness, Manageability and Comprehensibility) and scores on the Adolescent Coping Scale.

Postulate 3: It is postulated that there will be statistically significant cross-correlations between scores on the Purpose in Life test and scores on the dimensions of the Sense of Coherence scale (Meaningfulness, Manageability and Comprehensibility).

Postulate 4: It is postulated that there will be statistically significant cross-correlations between scores on the Sense of Coherence scale as a whole and scores on the Adolescent Coping Scale.

Postulate 5: It is postulated that there will be statistically significant cross-correlations between scores on the Purpose in Life test and scores on the Sense of Coherence scale as a whole.

Following are the postulates in terms of the regression models. Due to the nature of regression models, the postulates are formulated differently to those above.

Postulate 6: It is postulated that scores on the Adolescent Coping Scale will be predicted by scores on the Purpose in Life test and scores on certain dimensions of the Sense of Coherence scale (Meaningfulness, Manageability and Comprehensibility).

Postulate 7: It is postulated that scores on the Adolescent Coping Scale will be predicted by scores on the Purpose in Life test and scores on the Sense of Coherence as a whole.

Postulate 8: It is postulated that high or low scores on the Adolescent Coping Scale (coping or not coping) will be predicted by scores on the Purpose in Life test and scores on certain dimensions of the Sense of Coherence scale (Meaningfulness, Manageability and Comprehensibility).

These hypotheses will be investigated by conducting various statistical analyses and these analyses will be described in the following section.



5.5 Statistical Analyses

This section focuses on the statistical analyses which were conducted with the assistance of the Statistical Consultation Services department of the University of Johannesburg.

Firstly, factor analyses will be explained. Thereafter, statistical analyses in terms of normality will be explored, followed by an explication of analysis of variance, correlation analysis, multiple linear regression and logistic regression.

5.5.1. Factor Analysis and Reliability

For each of the three measuring instruments utilised in this study, namely the Purpose in Life Test (Crumbaugh & Maholick, 1981), Orientation to Life Questionnaire (Antonovsky, 1987) and the Adolescent Coping Scale (Frydenberg & Lewis, 1993), first-order factor analyses and second-order factor analyses will be conducted. In addition, the reliability of each questionnaire will be investigated.

5.5.2. Statistical Analysis in Terms of Normality

The distribution of the underlying data may restrict the types of statistical analyses which may be performed on a data set. A large number of statistical techniques are applicable only to data which can be assumed to be normally distributed. The third and fourth moments (i.e. skewness and kurtosis) of the distributions of the subscales will be observed and compared to that expected from normally distributed data.

The distributions will be observed for the Adolescent Coping Scale (Frydenberg & Lewis, 1993) as well as the Purpose in Life questionnaire (Crumbaugh & Maholick, 1981). In terms of the Sense of Coherence measure (Antonovsky, 1987) the distributions of each of the underlying subscales, namely Comprehensibility, Manageability and Meaning will each be analysed, as well as the distribution of Sense of Coherence as a whole.

5.5.3. Analysis of Variance (ANOVA) and T-Tests

The analysis of variance or ANOVA will be used to determine whether or not there are any differences between the groups of participants based on the biographical variables for each questionnaire, namely the Purpose in Life test (Crumbaugh & Maholick, 1981), the Orientation to Life questionnaire (Antonovsky, 1987) and the Adolescent Coping Scale (Frydenberg & Lewis, 1993). ANOVA provides a formal model of the differences between mean results per group and allows these differences to be investigated (Rosnow & Rosenthal, 1996). A t-test is used where the data forms two groups in order to evaluate the null hypothesis that the mean responses for the two groups are equal (Howell, 2002). Where the biographical variables divide the data into two groups in the current study, t-tests will be performed.



5.5.4. Correlation Analysis

The Pearson product-moment correlation coefficient (r) for continuous variables will be used to obtain correlations between the three sets of variables. A positive Pearson correlation coefficient indicates that an increase in the first variable is associated with an increase in the second variable, while a negative r indicates that an increase in the first variable is associated with a decrease in the second variable (Rosnow & Rosenthal, 1996).

5.5.5. Multiple Linear Regression

Multiple linear regression is an extension of correlation analysis where it is possible to predict a variable based on a number of other variables. Multiple linear regression is

used in order to evaluate the impact of a change in a set of independent variables on a set of dependent variables (Rosnow & Rosenthal, 1996). It describes a causal relationship between sets of variables. Multiple regression results have a measure called R-squared which indicates how well a set of variables explains a dependent variable. The regression results also measure the direction and size of the effect of each variable on the dependent variable (Neuman, 2003). The regression model in this study will be fitted in a step-wise manner, with significant independent variables added to the model one by one.

5.5.6. Logistic Regression

Logistic regression is a form of regression which is used when the dependent variable is a binary response. This method transforms the dependent variable into a logit variable, which is the natural log of the odds of the dependent occurring or not. The probability of a certain event occurring is thus estimated as a result of the logistic regression (Garson, 2001). Logistic regression may also be used in situations where the variables are not necessarily normally distributed. In this study the ability to cope is coded as a binary response where *coping* is 1 and *not coping* is 0.

5.6 Chapter Summary

In this chapter the research methodology is outlined in the context of the research aims. This study is described as an empirical study which makes use of quantitative information to research the relationships between meaning in life, sense of coherence and coping with stress in young adulthood. The aim, research question and rationale

for the research methodology, the population and composition of the sample, the procedure for collection and analysis of data, the measurement instruments employed to measure the variables are all outlined. Lastly, the hypotheses and the proposed statistical methods used to measure these are described. The following chapter will focus on the results of the statistical analysis.

