

# CHAPTER 4 METHODOLOGY AND PARTICIPANTS

## 4.1 Methodology

### 4.1.1 Strategy

Huysamen (1983) describes three approaches to the selection of items when developing a questionnaire: the **logical-keying** approach, the **homogeneous-keying** approach and the **criterion-keying** approach.

Two strategies may be used with the **logical-keying** approach. The test developer may use statements based either on intuition or experience (intuitive-rational strategy), or on formal psychological theory (theoretical strategy).

Two strategies may also be used with the **homogeneous-keying** approach. Firstly, items may be chosen according to their tendency to cluster into a distinct factor or set of factors, as determined by factor-analytical methods. Secondly, items may be selected according to their high item-test correlation. The homogeneous-keying approach aims to maximize the internal consistency of the test.

With the **criterion-keying** approach, items are chosen either for their high item-criterion correlation, or for their capability of discriminating between criterion groups. This approach attempts to maximize the correlation between the items on a test and an external criterion, or criteria.

For this research, logical-keying was used for the selection of items on the Part B of the questionnaire, as items already used in similar measurement scales formed, with possible modifications for the South African context, the basis of the measurement scale to be developed.

The overall design methodology used for this research is depicted in Figure 4.1.

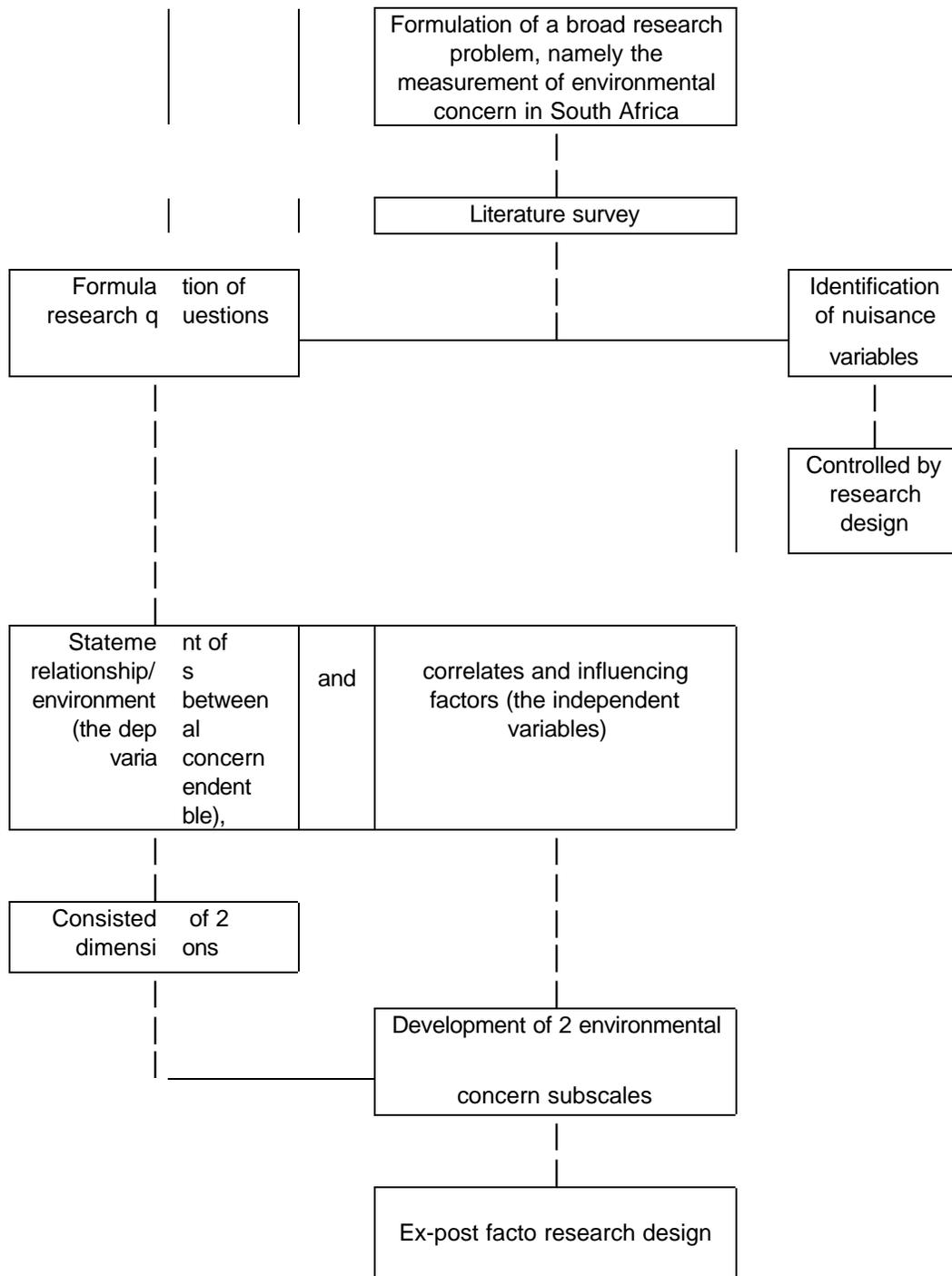


Figure 4.1 Diagrammatic summary of the research design process

(Adapted from Tutorial Letter PSY314E/107/1994, Unisa, 1994,  
pp.10, 42.)

#### ***4.1.2 Measurement of variables and the structure of the questionnaire***

The questionnaire consisted of Parts A and B, which were preceded by a cover page and suitable instructions to the participants, as contained in Appendix 1. The cover page of the questionnaire described the language options available to the participants. (Note that, as described in Section 5.4.2, only English-language questionnaires were distributed for the preliminary study, hence the cover page was not used in this instance).

Part A of the questionnaire consisted of questions relating to the those biographic and demographic variables which were relevant to the research questions formulated in Section 2.5.1. It is shown in Appendix 2, and its construction is detailed in Section 5.1.

Part B of the questionnaire represented the environmental concern scale under development, and consisted of statements relating to the two dimensions of environmental concern proposed in Section 2.6. Its construction is described in Sections 5.2 through 5.5, and the scale itself, together with any modifications performed during its development, is shown in Appendix 3. It was hoped that, using this scale, two factors could be identified which would correspond to the proposed anthropocentric and ecocentric dimensions of environmental concern.

The intention was to distribute the questionnaires to participants covering as broad a selection of the independent variables as possible. With specific relevance to Home Language, the Instructions to Participants and Parts A and B of the questionnaire were translated as described in Section 4.1.5 and were presented in five of South Africa's eleven official languages: English, Afrikaans, Xhosa, Zulu and Sesotho.

### **4.1.3 Research design**

The design specific to this research project is known as a **non-experimental**, or **ex-post facto** research design. The name “non-experimental” derives from the fact that the independent variables specified in Section 4.1.2 are not subject to manipulation by the researcher; as such, they are known as “classification factors”. Kerlinger (1992, p348) defines non-experimental research as *“systematic empirical enquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables”*.

It is important, however, when using a non-experimental research design, to give cognisance to the likelihood that participants may bring other characteristics or qualities into the research situation (Christensen, 1994) which may or may not be controlled by random selection of participants.

### **4.1.4 The initial item pool**

Statements relevant to environmental concern would be developed using ideas from existing measurement scales of a similar nature. Items would be modified, if necessary, for the South African context. Section 5.2 details the construction of the initial item pool.

### **4.1.5 The translation**

In order to make the questionnaire as meaningful as possible to those participants whose home language was not English, the Instructions to Participants and both Parts A and B of the questionnaire would be translated into an additional four official South African languages. The questionnaire would thus be made available in five

official languages. The assumption was that the participants would have a good working knowledge of at least one of these languages, even though their home language might not have been one of those available.

#### ***4.1.6 The initial assessments***

It was reasoned that it would be beneficial to identify and address any misinterpretation of, or other difficulties with, statement format or content before the evaluation by experts and the main study were conducted.

##### ***4.1.6.1 The assessment for readability***

Parts A and B of the four non-English language questionnaires would be assessed for readability and "grammatical appropriateness" by a person whose home-language corresponded with that of the questionnaire.

##### ***4.1.6.2 The preliminary study***

The preliminary study would be conducted to determine whether participants would have any difficulty in understanding the "Instructions to Participants" section, or experience any difficulty in responding to Parts A or B. It was reasoned that it would be beneficial to identify and address any misinterpretation of, or other difficulties with, statement format or content before the main study was conducted.

#### ***4.1.7 The evaluation by experts***

In order to select those statements which were the most likely to provide an accurate measure of environmental concern, the set of statements in Part B of the questionnaire would be rated by six expert evaluators, with the goal of identifying those items which most closely represent the proposed Anthropocentric and Ecocentric subscales, as well as the "Air, Land and Water" and "Non-Human Life" categories. These identified items would form a shortened measurement scale which would be used to complete the research.

### ***4.1.8 The main and known-groups studies***

A main study would then be conducted using this shortened measuring scale. The questionnaire would be distributed to participants selected as mentioned in Section 4.5. The study itself, together with its results, are detailed in Chapter 6. A construct (known-groups) validity test would be performed using the responses from the participants described in Section 4.6.

### ***4.1.9 Quantitative statistical analysis***

The statistical analysis of the data would be performed using the Statistical Package for Social Sciences for Windows Version 11.5 (SPSS V11.5). Factor analyses would be carried out to investigate the existence of the hypothesized factors, and reliabilities, as indicated by Cronbach's (1951) alpha coefficient, frequencies and correlations would be obtained.

## **4.2 The initial assessors**

Four assessors, each of whose home language corresponded with one of the non-English languages in which the questionnaire was available, were selected to evaluate Parts A and B of the questionnaire for readability and general understanding. These assessors were employed in the Cape Town office of a multinational company.

## **4.3 The participants for the preliminary study**

As only English-language questionnaires were to be used for the preliminary study, five participants whose home language was English were selected from the employees of an international computer company with offices in Cape Town.

Participant biographics as extracted from the completed preliminary study questionnaires are indicated in Table 4.1.

Table 4.1 Biographic details of the participants for the preliminary study

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AGE	GENDER	HIGHEST QUALIFICATION	ETHNIC GROUP	HOME LANGUAGE
50 to 59	Female	Diploma	White	English
40 to 49	Male	Postgraduate degree	White	English
20 to 29	Female	Diploma	White	English
30 to 39	Female	Diploma	White	English
20 to 29	Female	Diploma	White	English

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#### 4.4 The expert evaluators

In order to identify those items as specified in Section 4.1.7, six expert evaluators were selected based on their knowledge of questionnaire construction as well as issues of relevance to the natural environment in South Africa. The biographic details of the evaluators are shown in Table 4.2.

Table 4.2 Biographic details of the expert evaluators

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AGE	GENDER	HIGHEST QUALIFICATION	JOB TITLE
45	Male	PhD	Psychology Professor
46	Female	DLitt et Phil	Psychology Lecturer
30	Female	Postgraduate diploma in Industrial Relations	Human Resource Manager
48	Male	BA	Industrial Relations Manager
54	Male	PhD (Chem Eng)	Human Resource Planner
51	Female	MA (Ind Psych)	Organizational Design Consultant

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#### 4.5 The participants for the main study

Representatives of various relatively large companies with operations in the Western Cape and Gauteng Provinces of South Africa were requested to distribute the questionnaires randomly to employees in such a way that various population groups, home languages, ages, income and educational levels, and both sexes were represented. Random selection of participants was considered to be a reasonable and effective means of controlling other possible influencing variables, for example, locus-of-control and social responsibility (Tucker, 1978), and anxiety (Navarro, Simpson-Housley and De Man, 1987). Due to the extremely low response rate as well as the number of invalid responses, some of the original representatives were re-approached and requested to extend the distribution of the questionnaires to colleagues.

In accordance with research evidence provided by Evans and Jacobs (1981), participants who were possibly associated with an organization or organizations that were considered to be major polluters or whose activities may possibly have a negative affect on the natural environment were requested not to participate.

#### **4.6 The participants for the construct (known-groups) validity test**

In accordance with other research, for example, that carried out by Weigel and Weigel (1978), who found that people who were members of the Sierra Club showed greater levels of environmental concern than members of the general public in the United States, it was reasoned that participants who answer "yes" to the question: "Are you, or have you ever been, actively involved in the activities of an environmental organization or club?" would likewise show a greater level of environmental concern than participants who answer "no". In order to investigate the applicability of this to the South African context, and to ensure an adequate sample size, it was planned to petition a local environmentally-oriented club to permit its members to participate in the research.

Other participants who answered "yes" to the same question would also be included in the group of participants for the construct validity test.