CHAPTER 6 THE MAIN STUDY - ITS BIOGRAPHIC AND

The main study, which included a construct validity test, is described here. It followed the assessment for readability, the preliminary study, the evaluation of the original 116-item scale by the expert evaluators, and the selection of the 32 items considered to be most indicative of the proposed dimensions of environmental concern.

6.1 Objectives

The objectives of the main study were:

(i) to investigate the bi-dimensional nature of environmental concern based

(ii) to investigate the reliability of the measurement scale;

(iii) to investigate biographic and demographic factors which may be related to

(iv) to verify the construct (known-groups) validity of the measuring instrument

(v) to suggest finer adjustments and/or improvements to the measurement

Note that points (i) to (iv) are described in the current chapter, recommendations pertaining to point (v) are presented in Sections 7.2 and 7.3.

6.2 Research questions

With respect to the theoretical basis of environmental concern presented in Sections 2.4.2 and 2.6, the following research question is posed:

1 Is environmental concern bi-dimensional in relation to the

With respect to the biographic and demographic influencing factors discussed in Section 2.5.1, the following research questions are posed:

2(a) Is age related to level of environmental concern in the South

2(b) Is gender related to environmental concern in the South

2(c) Is level of education related to environmental concern in the

2(d) Is income level related to environmental concern in the South

2(e) Does environmental concern vary among different ethnic

2(f) Does environmental concern vary among different language

An additional question relevant to the construct (known-groups) validity of the measurement instrument may be asked:

3 Do individuals in the South African sample group used in this than those who are not?

6.3 The measurement instrument/s

The measurement instruments consisted of Part A as described in Section 5.1 and detailed in Appendix 2, and Part B as described in Sections 5.2 through 5.5 and detailed in Appendix 3. Parts A and B were preceeded by a cover page and Instructions to Participants, as shown in Appendix 1. The complete questionnaire comprising the cover page, Instructions to Participants, Part A and Part B was available in five languages.

6.4 The main study procedure

The main study, as well as the construct validity test, was conducted using the complete questionnaire as described above.

For the main study, a total of 154 hardcopy questionnaires were distributed to the participants described in Section 4.5. 65 were not returned. Several participants offered to distribute additional questionnaires electronically. These comprised an unknown number.

Representatives from two different organizations offered to copy and distribute the questionnaires themselves, indicating the likelihood that 70 to 80 would be returned of which 20 to 30 would be from participants who were active members of an environmental society. After a period of several months (and follow-up enquiries) none of these had been returned.

Nevertheless, in total, 208 questionnaires were returned. 47 of these were discarded, 19 having omissions in Part A, 20 having omissions in Part B, the remaining 8 having multiple responses to one or more questions and/or statements. This left 161 useable questionnaires available for initial input to the main study.

Data analysis was carried out using the Statistical Package for Social Sciences for Windows Version 11.5 (SPSS V11.5). An averaging model as described in Section 2.1.1 was followed to determine the scores for the 16-item anthropocentric and ecocentric subscales as well as the full 32-item scale.

Note that although Likert's (1932) scale was developed as a "summated rating" scale, the use of means as opposed to sums does not affect conclusions drawn from the results, as the correlation between mean scores and summated scores equals 1.

Factor analysis was employed to examine research question 1, using principal axis factoring (PAF) and oblique rotation (Direct Oblimin) with Kaiser normalization. Output scree plots and pattern matrices were analyzed in order to interpret the results. The number of points to the left of the point of inflection on the scree plots were considered indicative of the number of factors on which the items being analyzed loaded (Field, 2000). With regard to the factor and pattern matrices, items

with loadings of 0.300 or higher were considered as contributing to the factor on which the respective item loaded.

Cronbach's alpha, also an output of the factor analysis, provided an indication of the reliablity of the measuring scale.

Frequency information was displayed which indicated the number of participants in each level of the independent variables.

In order to address research questions 2(a) through 2(d) correlations were obtained between the following independent variables:

Age
Gender
Level of education
Income level

and the following three measures of environmental concern described in Section 6.5: "**Anthropocentric**", "**Ecocentric**" and "**Meanec**".

As can be seen from the frequency tables shown in Section 6.5.3, the number of participants in the different levels of the "Ethnic Group" and "Home Language" variable categories was extremely uneven. It was therefore decided that correlations between these variables and the three measures of environmental concern would not be meaningful. Research questions 2(e) and 2(f) were therefore not addressed.

In order to investigate the construct validity of the measuring scale (research question 3), the reasoning mentioned in Section 4.6, in accordance with the research findings of Weigel and Weigel (1978), was followed. Office-bearers of the Tygerberg Bird Club in Cape Town were petitioned and agreed to permit members of the club to participate in the research. To ensure an adequate sample size, useable responses from this group supplemented those from members of the general population who had answered "yes" to the question: "Are you, or have you ever been, actively involved in the activities of an environmental organization or club?". The "construct validity", or "involved", group therefore comprised all

participants who had returned useable questionnaires, and had answered the above question in the affirmative. They numbered 16 of the 95 participants whose responses were used as final input in this research project. A correlation between group membership and the three measures of environmental concern described in Section 6.5 was determined. Note that this group was included in the main study group.

6.5 Results and discussion

Three measures of environmental concern were obtained for each participant, the first being the mean of the 16 Anthropocentric item scores (called the **Anthropocentric** score), the second being the mean of the 16 Ecocentric item scores (called the **Ecocentric** score), and the third being the mean of the 32 Anthropocentric and Ecocentric item scores (called the **Meanec** score). The range for each of these measures was 1 to 4, with high values being indicative of greater environmental concern than low values.

A summary of the classification of the 32 statements (Part B of the questionnaire) used in the main study is shown in Table 6.1.

Table 6.1 Main study item pool details showing item suffix

SUBSCALE	CATEGORY	POS/ NEG	ITEM SUFFIX	NO. OF ITEMS	ITEM NUMBERS (in 32-item scale)
ANT	ALW	P	AAP	4	1 11 17 19
ANT	ALW	N	AAN	4	3 6 20 30
ANT	NHL	P	ANP	4	7 23 29 31
ANT	NHL	N	ANN	4	5 14 25 28
ECO	ALW	P	EAP	7	4 8 10 12 15 27 32
ECO	ALW	N			
ECO	NHL	P	ENP	9	2 9 13 16 18

					21 22 24 26
ECO	NHL	N			

Refer to Glossary for a description of the abbreviations used in this table

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To assist with the identification of items listed by the factor analysis, for example in the factor and pattern matrices, in relation to the subscale and category of the item, as well as the positive or negative nature of the scoring, each item was preceeded by the following identifier:

"SnXYZ" or "SnnXYZ" where:

S	-	an uppercase S (indicating "statement")
n or nn	-	the statement number (from 1 to 32)
X	-	subscale, A (for Anthropocentric) or E (for Ecocentric)
Y	-	category, A (for Air, land and water) or N (for
Z	-	P (positively-scored item) or N (negatively-scored

Note that "XYZ" is the ITEM SUFFIX shown in Table 6.1.

6.5.1 Factor analyses

It was decided to investigate factors within the AA* (anthropocentric, air-land-water) and AN* (anthropocentric, non-human life) categories first.

The AA* group consisted of 8 items, 4 positively-scored and 4 negatively-scored. Factor analysis (for N=161) showed 2 distinct factors, the first consisting of the 4 positively-scored statements and the second consisting of the 4 negatively-scored statements. It was initially suspected that the negatively-scored statements may have been consistently misinterpreted by some or most participants. If this was the case, then it would seem reasonable that these participants would show a similar level of environmental concern, that is, have similar scores, on both the positively-

scored and the negatively-scored statements. This would mean that these two factors would be significantly correlated. However, it was found that the correlation between these two factors was extremely low (0.076).

A further literature search was then carried out with the object of investigating the effect of negatively-scored items on identified factors. The following information relevant to negatively-worded items was found. King, commenting on research by Kelloway, Catano, and Southwell (1992) and Roberts, Lewinsohn and Seeley (1993), states that negatively-worded items sometimes tend to load on a separate factor, and mentions the debate regarding the possibility that negatively-worded items may be evaluated by participants in a quantitatively different manner than positively-worded items. This may happen when participants have low verbal ability (Marsh, 1996) or are careless (Schmitt & Stults, 1985). Although these researchers dealt specifically with negatively-worded items, it was reasoned that the similarity of the results found warranted further investigation in relation to its applicability to this research.

This led to the magnitude of the difference between the means of the positively- and negatively-scored item scores being examined for its effect on the factor analysis. It was found that restricting the magnitude of this difference as follows:

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*Refer to Glossary for a description of the abbreviations used

-0.25<= diff<=+0.25

where "diff" represents the difference between the means of the positively-scored and negatively-scored item scores for the AA* group, yielded a sample size of N=24.

Altering the restriction to:

-0.50<= diff<=+0.50

yielded a sample size of N=65.

Attention was then given to the AN* group which also consisted of 8 items, 4 positively-scored and 4 negatively-scored. Factor analysis (N=161) showed 2 factors, with items 5, 14, 25 and 28 (negatively-scored) and 7 (positively-scored) loading on one factor, and 23 and 31 (positively-scored) loading on a second. At this stage it was decided that the second factor should not be considered as only 2 items loading on it would be too few for an adequate measure of reliability. Item 29 was ignored, as it appeared that it was consistently interpreted incorrectly by the participants, possibly due to its association with the hunting of animals, giving rise to the idea that it should originally have been intended as a negatively-scored statement.

It was then decided to apply a similar method of filtering out cases with a large difference between the means of the scores of the positively- and negatively-scored items of both the AA* and AN* groups, that is, the 16 Anthropocentric items.

With the following restriction applied:

-0.75<= diff<=+0.75 and -0.75<=diff2<=+0.75

where "diff" represents the difference between the means of the positively-scored and negatively-scored item scores for the AA* group; and

"diff2" represents the difference between the means of the positively-scored and negatively-scored item scores for the AN* group,

the sample size was N=95 and factor analysis indicated the existence of a single factor for the Anthropocentric items, as described below.

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*Refer to Glossary for a description of the abbreviations used

The scree plot and the factor matrix were two outputs from the factor analysis that were considered. As mentioned in Section 6.4, the number of points to the left of the point of inflection of the scree plot is indicative of the number of factors on which the items load, 1 in this case, as shown in Figure 6.1.

Note that mean values, as described in the first paragraph of Section 6.5, were used in the computation of values shown in the figures and tables which follow in this section.

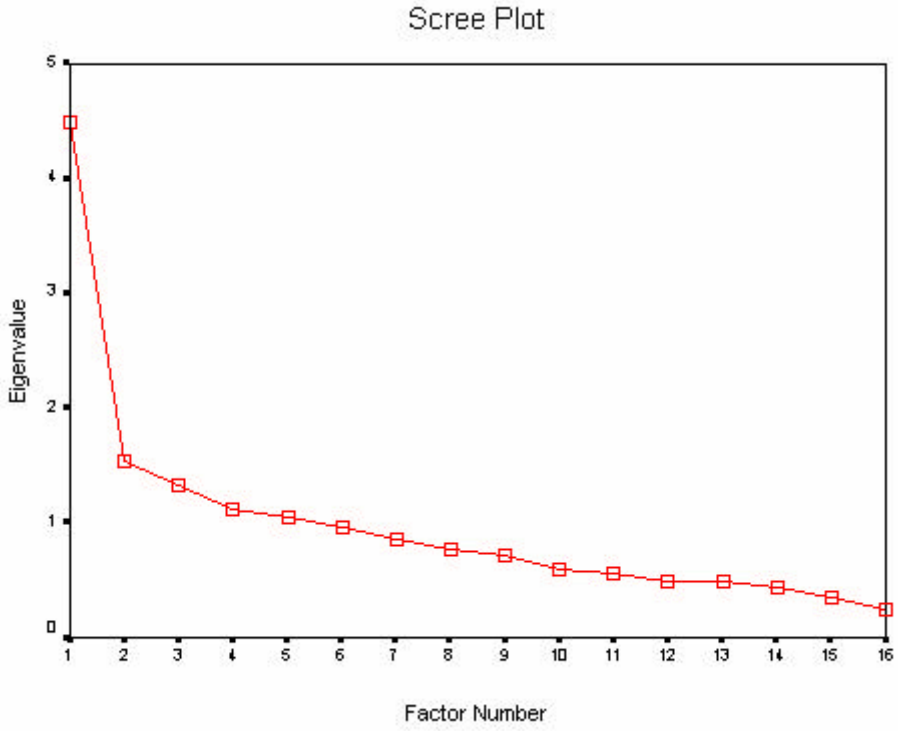
Scree Plot
Eigenvalue
Factor Number
0
1
2
3
4
5
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Figure 6.1 Scree plot, Anthropocentric subscale (N=95)

Examination of the factor matrix shown in Table 6.2, and using 0.30 as a reasonable critical value above which items can be considered as loading on a particular factor, shows that 15 of the 16 Anthropocentric items load on one factor, statement number 29 (S29) being the exception.

Table 6.2 Factor Matrix, Anthropocentric subscale (1 factor) (N=95)

Factor Matrix(a)

	Factor
	1
S30AAN There is no reason to worry about future generations' chances of living in a clean environment	.700
S23ANP The world's oceans must not become depleted as fish are an important source of food for people	.675
S20AAN Even though the air we breathe may be polluted, the effect on people is very small	.618
S11AAP Wetlands are important as they are appreciated for their beauty by many people	.584
S6AAN Environmental degradation is not a serious threat to the quality of life of most people in this country	.581
S25ANN Wildlife conservation will be of little value to future generations	.535
S7ANP In order to survive, people must live in harmony with other living creatures	.490
S17AAP Rivers and dams should be kept clean to provide people with better opportunities for recreation	.485
S19AAP Natural areas of land should be protected so that people can enjoy them	.467
S1AAP Pollution is negatively affecting the health of many people in this country	.411
S31ANP It is important to restrict the catching of certain types of fish in order to ensure future jobs for fishermen	.394
S3AAN Natural resources	.392

will be of little value to future generations	
S28ANN Wild animals and other living creatures are not necessary in order for people to survive	.351
S14ANN Wild animals have no educational value for people	.336
S5ANN People are not affected by the extinction of animal species	.319
S29ANP Wild animals must be conserved so that there will always be enough to hunt	-.058

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 4 iterations required.
Refer to Section 6.5 for a description of the item identifier which preceeds each statement

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At this stage it was decided to proceed with this group, N=95, for the remainder of the main study. Note that filtering out cases, as had been done with this group, may also help to reduce or minimize undesirable artefacts.

A factor analysis was then run for the 16-item Ecocentric subscale. The scree plot shown in Figure 6.2 indicated 1 factor.

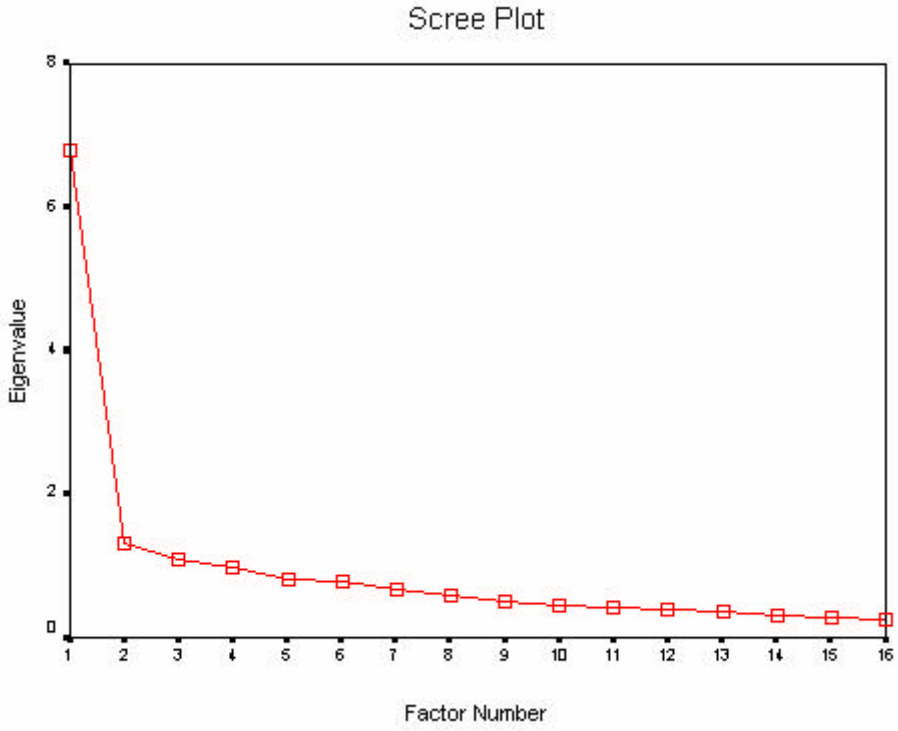
Scree Plot
Eigenvalue
Factor Number
0
2
4
6
8
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Figure 6.2 Scree plot, Ecocentric subscale (N=95)

The factor matrix shown in Table 6.3 indicated that all 16 Ecocentric items loaded on one factor.

Table 6.3 Factor Matrix, Ecocentric subscale (1 factor) (N=95)

Factor Matrix(a)

	Factor
	1
S9ENP Organizations like the Cheetah Foundation and the Endangered Wildlife Trust need more support so that endangered	.736
S15EAP To preserve our beautiful country, many environmental problems need urgent attention	.703
S32EAP It is our responsibility to look after the environment and to solve environmental problems	.694
S16ENP Forests are important as they are home to many animals	.686
S26ENP Rivers and dams should be kept clean so that fish can live safely in them	.679
S27EAP We should all help to protect our planet by preventing further depletion of the ozone layer	.671
S18ENP The conservation of wetlands is important as they are necessary for the survival of many birds	.668
S21ENP We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves	.632
S10EAP The misuse of natural resources is destroying our country's environment	.611
S24ENP Places where animals live are essential for the animals' survival, and should not be interfered with	.581
S4EAP It is better to use slightly more expensive detergents and soaps which are environmentally friendly rather than cheaper ones	.577
S22ENP Wetlands are important as they are the	.577

home of many migratory birds	
S13ENP The government and local authorities should establish more reserves to protect endangered species of animals	.571
S8EAP It is wise to recycle paper to prevent the unnecessary cutting down of trees	.548
S2ENP The conservation of wildlife areas is important as they are necessary for the survival of many animals	.520
S12EAP The use of off-road vehicles on beaches should be prohibited to prevent the destruction of sand dunes	.429

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 4 iterations required.
Refer to Section 6.5 for a description of the item identifier which preceeds each statement

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A factor analysis was then performed for the 32-item scale, specifically to investigate the existence of 2 factors. The scree plot shown in Figure 6.3, however, suggested only 1 factor.

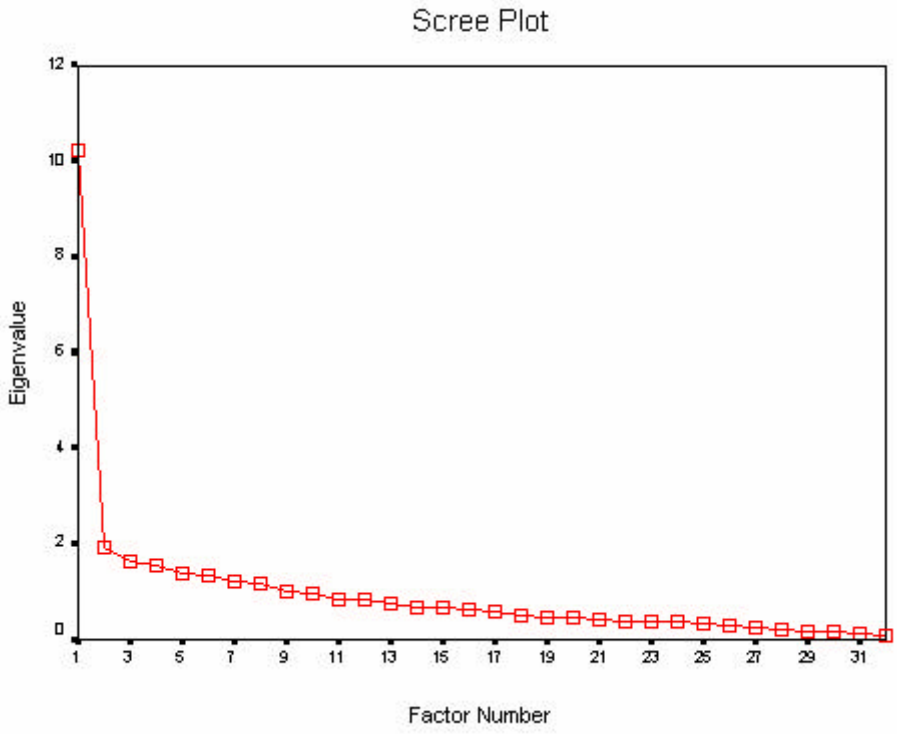
Scree Plot
Eigenvalue
Factor Number
0
2
4
6
8
10
12
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31

Figure 6.3 Scree plot, 32-item scale (N=95)

Tables 6.4 and 6.5 show the factor matrix and the pattern matrix, respectively, for all 32 items in the measurement scale.

Table 6.4 Factor Matrix, 32-item scale (2 factors) (N=95)

Factor Matrix(a)

	Factor	
	1	2
S18ENP The conservation of wetlands is important as they are necessary for the survival of many birds	.703	-.152
S26ENP Rivers and dams should be kept clean so that fish can live safely in them	.696	.246
S9ENP Organizations like the Cheetah Foundation and the Endangered Wildlife Trust need more support so that endangered	.686	-.114
S15EAP To preserve our beautiful country, many environmental problems need urgent attention	.670	-.185
S23ANP The world's oceans must not become depleted as fish are an important source of food for people	.669	.169
S16ENP Forests are important as they are home to many animals	.663	-.003
S32EAP It is our responsibility to look after the environment and to solve environmental problems	.657	-.165
S27EAP We should all help to protect our planet by preventing further depletion of the ozone layer	.644	-.166
S10EAP The misuse of natural resources is destroying our country's environment	.644	.095
S21ENP We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves	.639	-.078
S30AAN There is no reason to worry about future generations' chances of living in a clean environment	.615	.156
S24ENP Places where	.610	.363

animals live are essential for the animals' survival, and should not be interfered with		
S11AAP Wetlands are important as they are appreciated for their beauty by many people	.579	.027
S20AAN Even though the air we breathe may be polluted, the effect on people is very small	.575	.106
S4EAP It is better to use slightly more expensive detergents and soaps which are environmentally friendly rather than cheaper ones	.566	-.228
S13ENP The government and local authorities should establish more reserves to protect endangered species of animals	.565	-.086
S22ENP Wetlands are important as they are the home of many migratory birds	.552	-.190
S2ENP The conservation of wildlife areas is important as they are necessary for the survival of many animals	.551	.092
S8EAP It is wise to recycle paper to prevent the unnecessary cutting down of trees	.528	-.029
S6AAN Environmental degradation is not a serious threat to the quality of life of most people in this country	.520	.040
S25ANN Wildlife conservation will be of little value to future generations	.513	-.097
S7ANP In order to survive, people must live in harmony with other living creatures	.485	-.055
S19AAP Natural areas of land should be protected so that people can enjoy them	.472	.366
S17AAP Rivers and dams should be kept clean to provide people with better opportunities for recreation	.453	.355
S1AAP Pollution is negatively affecting the health of many people in this country	.452	.024
S31ANP It is important to restrict the catching of certain types of fish in	.433	.155

order to ensure future jobs for fishermen		
S12EAP The use of off-road vehicles on beaches should be prohibited to prevent the destruction of sand dunes	.401	-.299
S3AAN Natural resources will be of little value to future generations	.380	-.196
S14ANN Wild animals have no educational value for people	.365	-.296
S5ANN People are not affected by the extinction of animal species	.304	-.115
S28ANN Wild animals and other living creatures are not necessary in order for people to survive	.277	.345
S29ANP Wild animals must be conserved so that there will always be enough to hunt	-.102	.293

Extraction Method: Principal Axis Factoring.
a 2 factors extracted. 5 iterations required.
Refer to Section 6.5 for a description of the item identifier which preceeds each statement

Table 6.5 Pattern Matrix, 32-item scale (2 factors) (N=95)

Pattern Matrix(a)

	Factor	
	1	2
S18ENP The conservation of wetlands is important as they are necessary for the survival of many birds	.724	-.024
S15EAP To preserve our beautiful country, many environmental problems need urgent attention	.706	-.064
S9ENP Organizations like the Cheetah Foundation and the Endangered Wildlife Trust need more support so that endangered	.693	.011
S32EAP It is our responsibility to look after the environment and to solve environmental problems	.686	-.046
S27EAP We should all help to protect our planet by preventing further depletion of the ozone layer	.674	-.049
S21ENP We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves	.634	.039
S16ENP Forests are important as they are home to many animals	.627	.119
S4EAP It is better to use slightly more expensive detergents and soaps which are environmentally friendly rather than cheaper ones	.625	-.126
S22ENP Wetlands are important as they are the home of many migratory birds	.597	-.090
S10EAP The misuse of natural resources is destroying our country's environment	.569	.214
S13ENP The government and local authorities should establish more reserves to protect endangered species of animals	.568	.017
S23ANP The world's	.563	.293

oceans must not become depleted as fish are an important source of food for people		
S26ENP Rivers and dams should be kept clean so that fish can live safely in them	.557	.376
S11AAP Wetlands are important as they are appreciated for their beauty by many people	.536	.134
S25ANN Wildlife conservation will be of little value to future generations	.523	-.003
S30AAN There is no reason to worry about future generations' chances of living in a clean environment	.517	.270
S8EAP It is wise to recycle paper to prevent the unnecessary cutting down of trees	.510	.067
S20AAN Even though the air we breathe may be polluted, the effect on people is very small	.500	.213
S12EAP The use of off-road vehicles on beaches should be prohibited to prevent the destruction of sand dunes	.499	-.228
S2ENP The conservation of wildlife areas is important as they are necessary for the survival of many animals	.483	.194
S7ANP In order to survive, people must live in harmony with other living creatures	.480	.034
S6AAN Environmental degradation is not a serious threat to the quality of life of most people in this country	.475	.136
S14ANN Wild animals have no educational value for people	.463	-.231
S3AAN Natural resources will be of little value to future generations	.437	-.128
S1AAP Pollution is negatively affecting the health of many people in this country	.416	.108
S31ANP It is important to restrict the catching of certain types of fish in order to ensure future jobs for fishermen	.346	.236
S5ANN People are not affected by the extinction of	.332	-.060

animal species		
S24ENP Places where animals live are essential for the animals' survival, and should not be interfered with	.429	.479
S19AAP Natural areas of land should be protected so that people can enjoy them	.298	.456
S17AAP Rivers and dams should be kept clean to provide people with better opportunities for recreation	.285	.442
S28ANN Wild animals and other living creatures are not necessary in order for people to survive	.123	.399
S29ANP Wild animals must be conserved so that there will always be enough to hunt	-.214	.276

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization.
a Rotation converged in 19 iterations.
Refer to Section 6.5 for a description of the item identifier which preceeds each statement

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Table 6.5 indicates that 28 of the 32 items load on a single factor.

The number of items loading on a second factor as well as the first (2 items, statement numbers 24 and 26, as indicated by the pattern matrix) taken together with the number of items loading exclusively on the same second factor (3 items, statement numbers 17, 19 and 28, as indicated by the pattern matrix) is sufficiently low to result in scores based on these items being unreliable. Statement number 29 did not load on either of the 2 factors.

However, to investigate a possible relationship between these 2 factors, the factor correlation matrix shown in Table 6.6 was examined.

Table 6.6 Factor Correlation Matrix, 32-item scale (2 factors) (N=95)

Factor Correlation Matrix

Factor	1	2
1	1.000	.221
2	.221	1.000

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization.

A low correlation of 0.221 taken together with the results obtained from the pattern matrix shown in Table 6.5 strongly suggested that the second factor could be discarded.

These results so far indicated the existence of a single factor, and suggested that confirmation be obtained by performing a factor analysis on the same item set using the "factors(1)" parameter in SPSS. The results of this factor analysis follow.

The scree plot shown in Figure 6.4 again indicates 1 factor.

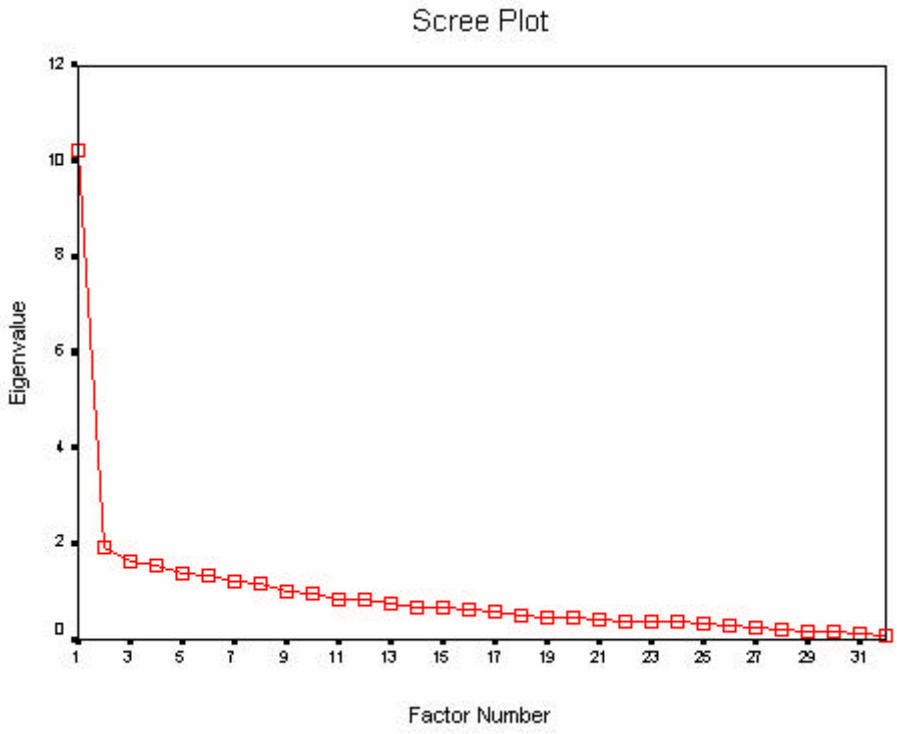
Scree Plot
Eigenvalue
12
10
8
6
4
2
0
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
Factor Number

Figure 6.4 Scree plot, 32-item scale (N=95)

The factor matrix for all 32 items in the measurement scale, when investigating the existence of a single factor, is shown in Table 6.7.

Table 6.7 Factor Matrix, 32-item scale (1 factor) (N=95)

Factor Matrix(a)

	Factor
	1
S18ENP The conservation of wetlands is important as they are necessary for the survival of many birds	.703
S26ENP Rivers and dams should be kept clean so that fish can live safely in them	.692
S9ENP Organizations like the Cheetah Foundation and the Endangered Wildlife Trust need more support so that endangered	.687
S15EAP To preserve our beautiful country, many environmental problems need urgent attention	.668
S23ANP The world's oceans must not become depleted as fish are an important source of food for people	.668
S16ENP Forests are important as they are home to many animals	.664
S32EAP It is our responsibility to look after the environment and to solve environmental problems	.656
S10EAP The misuse of natural resources is destroying our country's environment	.644
S27EAP We should all help to protect our planet by preventing further depletion of the ozone layer	.644
S21ENP We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves	.640
S30AAN There is no reason to worry about future generations' chances of living in a clean environment	.614
S24ENP Places where animals live are essential for the animals' survival,	.602

and should not be interfered with	
S11AAP Wetlands are important as they are appreciated for their beauty by many people	.580
S20AAN Even though the air we breathe may be polluted, the effect on people is very small	.575
S13ENP The government and local authorities should establish more reserves to protect endangered species of animals	.566
S4EAP It is better to use slightly more expensive detergents and soaps which are environmentally friendly rather than cheaper ones	.564
S2ENP The conservation of wildlife areas is important as they are necessary for the survival of many animals	.552
S22ENP Wetlands are important as they are the home of many migratory birds	.551
S8EAP It is wise to recycle paper to prevent the unnecessary cutting down of trees	.529
S6AAN Environmental degradation is not a serious threat to the quality of life of most people in this country	.521
S25ANN Wildlife conservation will be of little value to future generations	.513
S7ANP In order to survive, people must live in harmony with other living creatures	.486
S19AAP Natural areas of land should be protected so that people can enjoy them	.466
S1AAP Pollution is negatively affecting the health of many people in this country	.453
S17AAP Rivers and dams should be kept clean to provide people with better opportunities for recreation	.447
S31ANP It is important to restrict the catching of certain types of fish in order to ensure future jobs for fishermen	.432

S12EAP The use of off-road vehicles on beaches should be prohibited to prevent the destruction of sand dunes	.398
S3AAN Natural resources will be of little value to future generations	.379
S14ANN Wild animals have no educational value for people	.362
S5ANN People are not affected by the extinction of animal species	.304
S28ANN Wild animals and other living creatures are not necessary in order for people to survive	.274
S29ANP Wild animals must be conserved so that there will always be enough to hunt	-.102

Extraction Method: Principal Axis Factoring.
a 1 factors extracted. 3 iterations required.
Refer to Section 6.5 for a description of the item identifier which preceeds each statement

---

The factor matrix indicates that only statement number 28 (S28) has a loading less than 0.30 and again highlights the anomaly associated with statement number 29 (S29). 30 of the 32 items therefore load on 1 factor.

A summary of the results of the factor analyses is as follows:

(i) 15 of the 16 Anthropocentric items load on 1 factor;

(ii) All 16 Ecocentric items load on 1 factor;

(iii) 30 of the 32 Anthropocentric and Ecocentric items also load on 1

This would suggest that the Anthropocentric and Ecocentric factors, which are each separately identifiable, are both aspects of a single measure of environmental concern, namely a general factor.

Research question 1 can therefore be answered by concluding:

There is no evidence to suggest that environmental concern is

Further discussion of this statement and the relationships between these factors will be addressed in Section 7.1.

6.5.2 Reliabilities

Reliability, or internal consistency, was indicated by Cronbach's Alpha coefficient provided by SPSS. Three coefficients of reliability were obtained, one for each of the 16-item Anthropocentric and Ecocentric subscales, and one for the full 32-item scale.

The reliability analysis for the 16-item Anthropocentric subscale is shown in Table 6.8.

Table 6.8 Reliability analysis of the 16-item Anthropocentric subscale (N=95)

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

	Identifier*	Mean	Std Dev	Cases
1.	S1AAP	3.5579	.5402	95.0
2.	S3AAN	3.3053	.7729	95.0
3.	S6AAN	3.2842	.6789	95.0
4.	S11AAP	3.1684	.5771	95.0
5.	S17AAP	3.2421	.5964	95.0
6.	S19AAP	3.2316	.5917	95.0
7.	S20AAN	3.4000	.5907	95.0
8.	S30AAN	3.5368	.5981	95.0
9.	S7ANP	3.4211	.5939	95.0
10.	S23ANP	3.4316	.5584	95.0
11.	S29ANP	2.0737	.7472	95.0
12.	S31ANP	2.7263	.7915	95.0
13.	S5ANN	3.0316	.7213	95.0
14.	S14ANN	3.1789	.6992	95.0
15.	S25ANN	3.2842	.6944	95.0
16.	S28ANN	3.0316	.7916	95.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	50.9053	27.5548	5.2493	16

Item-total Statistics

Identifier*	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
S1AAP	47.3474	25.2291	.3748	.7839
S3AAN	47.6000	24.1362	.3715	.7844
S6AAN	47.6211	23.5996	.5297	.7717
S11AAP	47.7368	24.5364	.4697	.7776
S17AAP	47.6632	24.6726	.4265	.7802
S19AAP	47.6737	24.8605	.3973	.7821
S20AAN	47.5053	24.1462	.5270	.7735
S30AAN	47.3684	23.7458	.5921	.7689
S7ANP	47.4842	24.7205	.4202	.7806
S23ANP	47.4737	24.0179	.5893	.7703
S29ANP	48.8316	27.1841	-.0241	.8151
S31ANP	48.1789	23.9783	.3806	.7838
S5ANN	47.8737	24.9839	.2844	.7909
S14ANN	47.7263	24.9669	.3004	.7893
S25ANN	47.6211	23.8336	.4777	.7756
S28ANN	47.8737	24.2179	.3478	.7867

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients

N of Cases = 95.0 N of Items = 16

Alpha = .7933

*Refer to Section 6.5 for a description of the item identifier

---

Note that the Anthropocentric subscale reliability will increase to 0.8151 if statement number 29 is removed as recommended in Section 7.2.

The reliability analysis for the 16-item Ecocentric subscale is shown in Table 6.9.

Table 6.9 Reliability analysis of the 16-item Ecocentric subscale (N=95)

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

	Identifier*	Mean	Std Dev	Cases
1.	S4EAP	3.2526	.5829	95.0
2.	S8EAP	3.5895	.4945	95.0
3.	S10EAP	3.4421	.5201	95.0
4.	S12EAP	3.2421	.7816	95.0
5.	S15EAP	3.4211	.5375	95.0
6.	S27EAP	3.5368	.5013	95.0
7.	S32EAP	3.5789	.4963	95.0
8.	S26ENP	3.3368	.5180	95.0
9.	S24ENP	3.3158	.5312	95.0
10.	S22ENP	3.3684	.4849	95.0
11.	S21ENP	3.0947	.6370	95.0
12.	S18ENP	3.4737	.5227	95.0
13.	S16ENP	3.3684	.5468	95.0
14.	S13ENP	3.3579	.5242	95.0
15.	S9ENP	3.4105	.5156	95.0
16.	S2ENP	3.5895	.5156	95.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	54.3789	31.4719	5.6100	16

Item-total Statistics

Identifier*	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
S4EAP	51.1263	27.7924	.5434	.8986
S8EAP	50.7895	28.5510	.5064	.8996
S10EAP	50.9368	27.9534	.5905	.8970
S12EAP	51.1368	27.5236	.4069	.9075
S15EAP	50.9579	27.4450	.6637	.8944
S27EAP	50.8421	27.9003	.6270	.8959
S32EAP	50.8000	27.8000	.6545	.8951
S26ENP	51.0421	27.7854	.6259	.8958
S24ENP	51.0632	28.1024	.5482	.8983
S22ENP	51.0105	28.3722	.5545	.8982
S21ENP	51.2842	27.1205	.5947	.8969
S18ENP	50.9053	27.6399	.6475	.8951
S16ENP	51.0105	27.4361	.6524	.8948
S13ENP	51.0211	28.1485	.5481	.8983
S9ENP	50.9684	27.4139	.7024	.8933
S2ENP	50.7895	28.4446	.5021	.8998

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients

N of Cases = 95.0 N of Items = 16

Alpha = .9032

*Refer to Section 6.5 for a description of the item identifier

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The reliability analysis of the 32-item scale is shown in Table 6.10.

Table 6.10 Reliability analysis of the 32-item scale (N=95)

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

	Identifier*	Mean	Std Dev	Cases
1.	S1AAP	3.5579	.5402	95.0
2.	S3AAN	3.3053	.7729	95.0
3.	S6AAN	3.2842	.6789	95.0
4.	S11AAP	3.1684	.5771	95.0
5.	S17AAP	3.2421	.5964	95.0
6.	S19AAP	3.2316	.5917	95.0
7.	S20AAN	3.4000	.5907	95.0
8.	S30AAN	3.5368	.5981	95.0
9.	S7ANP	3.4211	.5939	95.0
10.	S23ANP	3.4316	.5584	95.0
11.	S29ANP	2.0737	.7472	95.0
12.	S31ANP	2.7263	.7915	95.0
13.	S5ANN	3.0316	.7213	95.0
14.	S14ANN	3.1789	.6992	95.0
15.	S25ANN	3.2842	.6944	95.0
16.	S28ANN	3.0316	.7916	95.0
17.	S4EAP	3.2526	.5829	95.0
18.	S8EAP	3.5895	.4945	95.0
19.	S10EAP	3.4421	.5201	95.0
20.	S12EAP	3.2421	.7816	95.0
21.	S15EAP	3.4211	.5375	95.0
22.	S27EAP	3.5368	.5013	95.0
23.	S32EAP	3.5789	.4963	95.0
24.	S26ENP	3.3368	.5180	95.0
25.	S24ENP	3.3158	.5312	95.0
26.	S22ENP	3.3684	.4849	95.0
27.	S21ENP	3.0947	.6370	95.0
28.	S18ENP	3.4737	.5227	95.0
29.	S16ENP	3.3684	.5468	95.0
30.	S13ENP	3.3579	.5242	95.0
31.	S9ENP	3.4105	.5156	95.0
32.	S2ENP	3.5895	.5156	95.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	105.2842	103.4822	10.1726	32

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

Identifier*	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
S1AAP	101.7263	98.5200	.4355	.9117
S3AAN	101.9789	97.0208	.3852	.9131
S6AAN	102.0000	96.1277	.5178	.9105
S11AAP	102.1158	97.0184	.5393	.9103
S17AAP	102.0421	98.0833	.4269	.9119
S19AAP	102.0526	97.9440	.4430	.9116
S20AAN	101.8842	96.7205	.5519	.9101
S30AAN	101.7474	96.1908	.5911	.9095
S7ANP	101.8632	97.7151	.4611	.9114
S23ANP	101.8526	96.1270	.6433	.9089
S29ANP	103.2105	104.1892	-.0830	.9210
S31ANP	102.5579	96.1429	.4325	.9123
S5ANN	102.2526	98.7653	.2927	.9144
S14ANN	102.1053	98.0952	.3536	.9133
S25ANN	102.0000	96.1702	.5015	.9108
S28ANN	102.2526	98.3823	.2849	.9151
S4EAP	102.0316	97.0735	.5284	.9104
S8EAP	101.6947	98.4484	.4880	.9111
S10EAP	101.8421	96.8152	.6249	.9094
S12EAP	102.0421	97.4876	.3488	.9138
S15EAP	101.8632	96.5236	.6315	.9092
S27EAP	101.7474	97.3398	.5956	.9098
S32EAP	101.7053	97.2739	.6089	.9097
S26ENP	101.9474	96.4759	.6622	.9089
S24ENP	101.9684	97.2437	.5685	.9100
S22ENP	101.9158	98.2269	.5223	.9108
S21ENP	102.1895	95.4105	.6160	.9090
S18ENP	101.8105	96.3467	.6687	.9088
S16ENP	101.9158	96.4609	.6259	.9092
S13ENP	101.9263	97.4094	.5603	.9102
S9ENP	101.8737	96.8137	.6310	.9093
S2ENP	101.6947	97.7888	.5322	.9106

Reliability Coefficients

N of Cases = 95.0 N of Items = 32

Alpha = .9137

*Refer to Section 6.5 for a description of the item identifier

Note that the scale reliability will increase to 0.9210 if statement number 29 is removed as recommended in Section 7.2.

A summary of the scale reliabilities is shown in Table 6.11.

Table 6.11 Scale and subscale reliability coefficients (Cronbach's Alpha)

SCALE/SUBSCALE	ALPHA	ALPHA IF S29 REMOVED
Anthropocentric	0.7933	0.8151
Ecocentric	0.9032	n/a
32-item	0.9137	0.9210

The sum of means, variances and standard deviations for each subscale and the 32-item scale are shown in Table 6.12.

Table 6.12 Scale and subscale sum of means, variances and standard

SCALE/SUB-SCALE	SUM OF MEANS	VAR	STD DEV	N	AVERAGE SCORE *
Anthropocentric	50.9053	27.5548	5.2493	16	3.1816
Ecocentric	54.3789	31.4719	5.61	16	3.3987
32-item	105.2844	103.4822	10.1726	32	3.2901

* Range: 1 to 4

The method used to determine environmental concern scores was based on an averaging model. The "average score" column shown in Table 6.12 indicates the environmental concern score averages for the Anthropocentric items, the Ecocentric items and the full 32-item scale for the N=95 sample.

6.5.3 Frequencies

Frequency information for the independent variables Age, Gender, Education, Income, Ethnic Group, Home Language and Involved is shown in Tables 6.13 through 6.19.

Table 6.13 Age frequencies

AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 10 years	1	1.1	1.1	1.1
	10 to 19 years	2	2.1	2.1	3.2
	20 to 29 years	25	26.3	26.3	29.5
	30 to 39 years	27	28.4	28.4	57.9
	40 to 49 years	22	23.2	23.2	81.1
	50 to 59 years	9	9.5	9.5	90.5
	60 to 69 years	8	8.4	8.4	98.9
	more than 69 years	1	1.1	1.1	100.0
	Total	95	100.0	100.0	

Table 6.14 Gender frequencies

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	52	54.7	54.7	54.7
	Female	43	45.3	45.3	100.0
	Total	95	100.0	100.0	

Table 6.15 Education frequencies

EDUCATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Junior School	1	1.1	1.1	1.1
	Standard 8	6	6.3	6.3	7.4
	Matric	42	44.2	44.2	51.6
	Diploma	19	20.0	20.0	71.6
	Graduate Degree	20	21.1	21.1	92.6
	Postgraduate Degree	7	7.4	7.4	100.0
	Total	95	100.0	100.0	

Table 6.16 Income frequencies

INCOME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than R1000	4	4.2	4.2	4.2
	R1000 to R1999	6	6.3	6.3	10.5
	R2000 to R4999	27	28.4	28.4	38.9
	R5000 to R9999	31	32.6	32.6	71.6
	R10000 to R14999	9	9.5	9.5	81.1
	R15000 to R19999	11	11.6	11.6	92.6

more than R19999	7	7.4	7.4	100.0
Total	95	100.0	100.0	

Table 6.17 Ethnic Group frequencies

ETHNIC GROUP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African	7	7.4	7.4	7.4
	Asian	1	1.1	1.1	8.4
	Coloured	18	18.9	18.9	27.4
	White	69	72.6	72.6	100.0
	Total	95	100.0	100.0	

Table 6.18 Home Language frequencies

HOME LANGUAGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sepedi	2	2.1	2.1	2.1
	Setswana	1	1.1	1.1	3.2
	Afrikaans	35	36.8	36.8	40.0
	English	54	56.8	56.8	96.8
	isiXhosa	2	2.1	2.1	98.9
	other	1	1.1	1.1	100.0
	Total	95	100.0	100.0	

Table 6.19 Involved frequencies

INVOLVED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	16.8	16.8	16.8
	No	79	83.2	83.2	100.0
	Total	95	100.0	100.0	

6.5.3.1 Summary of frequency data

Tables 6.13 to 6.19 show that, apart from Ethnic Group and Home Language, a reasonable range of participant characteristics was represented in this study. Age ranged from less than 10 years to more than 69 years, with 77.9 percent of participants between the ages of 20 years and 49 years. Males represented 54.7 percent, and females 45.3 percent, of the participants. Level of Education ranged from junior school to post-graduate, with 85.3 percent of participants having either a matric, a tertiary diploma or a graduate degree as their highest qualification. Income ranged from less than R1000 to more than R19999 nett per month, with 82.1 percent of participants earning between R2000 and R19999 nett per month.

While all Ethnic Groups were represented, 72.6 percent of participants were White. Regarding Home Language, 56.8 percent and 36.8 percent indicated that their Home Language was English and Afrikaans, respectively. Only three of the remaining nine official South African languages were represented, and one participant indicated a Home Language of 'Other'.

6.5.4 Correlations

Bivariate, 2-tailed correlations were obtained using SPSS. Correlations between the independent variables Age, Gender, Education, Income and Involved and the dependent variables Anthropocentric, Ecocentric and Meanec, as described in Section 6.5, were obtained. As can be seen from the Ethnic Group frequency information shown in Figure 6.17, it was reasoned that the distribution of participants in the sample group used in this study (N=95) was sufficiently uneven across the four levels to render any correlation relatively meaningless. Similar reasoning was applied to the Home Language variable. Correlations between Ethnic Group and Home Language were therefore not investigated.

Correlations are shown in Table 6.20.

Table 6.20 Correlation of Age, Gender, Education Level, Income and Involved

Correlations

		ANTHROPOCENTRIC#	ECOCENTRIC#	MEANEC#
AGE	Pearson Correlation	.149	.143	.156
	Sig. (2-tailed)	.148	.168	.131
	N	95	95	95
GENDER	Pearson Correlation	.029	.056	.040
	Sig. (2-tailed)	.783	.592	.698
	N	95	95	95
EDUCATION	Pearson Correlation	.050	.028	.045
	Sig. (2-tailed)	.627	.785	.663
	N	95	95	95
INCOME	Pearson Correlation	-.037	-.006	-.028
	Sig. (2-tailed)	.721	.957	.790
	N	95	95	95
INVOLVED	Pearson Correlation	-.342(**)	-.302(**)	-.348(**)
	Sig. (2-tailed)	.001	.003	.001
	N	95	95	95

** Correlation is significant at the 0.01 level (2-tailed).
# Refer to Section 6.5 for a description of these variables.

No correlations were found between the variables Age, Gender, Education and Income and any of the three measures of environmental concern. However, Involved (indicating an association with an environmental organization) did correlate positively and significantly with all three measures. Note that the negative signs in the "Involved" row in Table 6.20 are due only to the way in which this variable was scored. (Refer to Appendix 4).

Research questions 2(a) through 2(d) can therefore be answered in relation to the sample tested by concluding:

In this South African sample group no significant relationships were anthropocentric/ecocentric scale developed and

Research question 3 can be answered by concluding:

In this South African sample group there is a significant and positive concern as measured by the

The absence of significant correlations between the biographic variables and environmenal concern led to further consideration of the possible reasons for this. One possibility for the absence is that filtering out responses according to the criterion specified in Section 6.5.1 may have resulted in the sample group used for the main study (N=95) being more homogeneous than an unfiltered sample would have been, and therefore significant correlations would become less apparent, or even undetectable, that is, the more homogenous the group with respect to the variables under consideration, the more difficult it is to find a correlation. To illustrate this possibility Table 6.21 shows similar information as Table 6.20, but for the unfiltered sample (N=161). Significant correlations are found between Age and the measures Anthropocentric, Ecocentric and Meanec; and Education and the measures Anthropocentric and Meanec.

Table 6.21 Correlation of Age, Gender, Education Level, Income and Involved

Correlations

		ANTHROPOCENTRIC#	ECOCENTRIC#	MEANEC#
AGE	Pearson Correlation	.265(**)	.185(*)	.257(**)
	Sig. (2-tailed)	.001	.019	.001
	N	161	161	161
GENDER	Pearson Correlation	.061	.088	.076
	Sig. (2-tailed)	.443	.266	.339
	N	161	161	161
EDUCATION	Pearson Correlation	.193(*)	.099	.174(*)
	Sig. (2-tailed)	.014	.213	.027
	N	161	161	161
INCOME	Pearson Correlation	.146	.077	.132
	Sig. (2-tailed)	.064	.334	.094
	N	161	161	161
INVOLVED	Pearson Correlation	-.140	-.192(*)	-.171(*)
	Sig. (2-tailed)	.076	.014	.030
	N	161	161	161

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
# Refer to Section 6.5 for a description of these variables.

6.6 Comparison with similar measures

The internal consistency of similiar environmental concern-type scales used in the United States, the details of which were found in the literature and which could be compared to that provided by this research are shown in Table 6.22. In addition, the results of two South African studies based on the Environmental Concern Scale

developed by Weigel and Weigel (1978) are presented. A summary of the comparative attributes of the scales follows.

During the development of a 25-item environmental responsibility scale Horvat and Voelker (1976) used 645 5th and 8th grade students from 4 different communities in southern Wisconsin, United States. The reliability of their scale was reported as 0.73.

Dunlap and Van Liere (1978) used two samples of Washington state residents (N=806) and Washington environmental organization members (N=407) to research public acceptance of the New Environmental Paradigm. These researchers used 12 items on a 35-item scale for this investigation and found the reliability to be 0.813 (N=806) and 0.758 (N=407).

Weigel and Weigel (1978) investigated the level of environmental concern of participants in a medium-sized New England town using the 16-item Environmental Concern Scale. Cronbach's alpha for 162 participants (79 males and 83 females from 19 to 70 years of age) was found to be 0.85. As a measure of construct validity this sample was compared with the scores of 126 active members of the Sierra Club. Mean scores were 54.5 (S.D.=6.6) and 44.2 (S.D.=8.4) for the Sierra Club members and the general population, respectively.

A further test of construct validity revealed that scale scores for Sierra Club members were significantly higher than for another sample of randomly selected participants (N=288), Chi-square = 77.32 ($p<0.001$).

Steel, List and Schindler (1994) used a 9-item forest values scale to research opinions regarding the protection of federal forest land in the Pacific Northwest of the United States. For a national sample (N=1094) Cronbach's alpha was 0.82, while for participants from Oregon (N=872) Cronbach's alpha was 0.81.

In a study of environmental concern in South Africa involving 2131 White English- and Afrikaans-speaking participants, Grieve and Van Staden's (1985) research

using a modified version of the Environmental Concern Scale (Weigel & Weigel, 1978) yielded a Cronbach's alpha coefficient of 0.60.

In a further South African study using the Environmental Concern Scale developed by Weigel and Weigel (1978), Willers (1996) analyzed data provided by Africans, Asians, Coloureds and Whites during 1991 and 1992, and found Cronbach's alpha to be 0.67 for the 1991 sample and 0.69 for the 1992 sample. This researcher identified 2 factors, namely "active concern" and "passive concern". After adjusting the reduced item sets which loaded on these factors to enable comparisions to be drawn, Cronbach's alpha was found to be 0.77 for the 1991 sample and 0.76 for the 1992 sample with regard to both active and passive concern.

Table 6.22 Comparison of reliability with similar measures

RESEARCHERS /SCALE	SAMPLE	CRONBACH'S ALPHA*
Horvat & Voelker	Southern Wisconsin students N=(645)	0.73
Dunlap & Van Liere	Washington State residents (N=806)	0.81
Dunlap & Van Liere	Washington State residents (N=407)	0.76
Weigel & Weigel	New England residents N=(162)	0.85
Steel, List & Schindler	USA national sample N=(1094)	0.82
Steel, List & Schindler	Oregon State sample N=(872)	0.81
Grieve & Van Staden	English- and Afrikaans-speaking participants N=(2131)	0.60
Willers	1991 sample N=(4470)	0.67
Willers	1992 sample N=(1949)	0.69
Willers	1991 sample (active concern) N=(4466)	0.77
Willers	1991 sample (passive concern) N=(4470)	0.77
Willers	1992 sample (active concern) N=(1948)	0.76
Willers	1992 sample (passive concern) N=(1949)	0.76
SA scale under development	RSA Western Cape & Gauteng Provinces N=(95)	**0.91**

*Rounded up to 2 decimal places for consistency when necessary

6.7 Note on the language choice of participants

The following observations relating to the language choice of the participants were made. As this does not affect the results of the main study in any way, the total number of cases N=161, was used to provide the information below. It is presented on the basis that it may be of some use to researchers in South Africa who employ multiple-language questionnaires. Table 6.23 shows the questionnaire language (English or not English) chosen by the participants in relation to their home language (English or not English). Here, "not English" refers to the non-English Home Language options available on Part A of the questionnaire, including "Other". Of note is that:

(i) 66 of the total number of 161 participants' home language was not

(ii) 27 of the total number of 161 participants (16.8 percent) did not answer

Table 6.23 Questionnaire language used by the participants related to their home language (summarized by "English" or "not English")

		HOME LANGUAGE		
		English	not English *	Total
QUESTIONNAIRE LANGUAGE	English	95	39	134
	not English *	0	27	27
	Total	95	66	161

* "not English" refers to the non-English Home Language options, including "Other"

In addition, the following text was included at the end of Part B of the non-English language questionnaires:

Please read PART B of the English questionnaire briefly then answer the

Do you think your answers to PART B would have been the same if you

Yes ..... No ..... Uncertain .....

Please explain your answer:

.....

.....

.....

.....

.....

Table 6.24 shows further information relating to the participants who did not answer in English and the response to the above question.

Table 6.24 Responses of participants who did not answer the English language questionnaire to the question: "Do you think your answers to PART B would have been the same if you had completed the English questionnaire?"

	RESPONSE			
	Yes	No	Uncertain	null
Number of participants who did not answer in English	21	2	3	1

This indicates that 21 of the 27 participants (77.8 percent) who did not answer in English, that is, those whose home language was not English, felt that completing the English questionnaire would have made no difference to their answers.

In an attempt to identify the characteristics of the subsample of 27 participants who did not answer in English, it was reasoned that level of education (as a correlate of language ability) would be a possible influencing factor of the participants' responses to the above question. Table 6.25 relates the responses of the 27 participants (each of whom answered the questionnaire corresponding to their home language) to their level of education and home language.

Table 6.25 Responses of participants who did not answer the English language questionnaire to the question:
"Do you think your answers to PART B would have been the same if you had completed the English questionnaire?"
related to Level of Education and Home Language

		Home Language						
		Sepedi	isiXhosa	Afrikaans				
		Yes	Yes	Yes	No	Uncertain	null	Response
Level of Education	Std 8		1			1		
	Std 10	1		6	1		1	
	Diploma			3		1		
	Graduate			4	1	1		
	Post-graduate			6				

Clearly, no meaningful conclusions can be drawn from the data shown above. However, the usefulness of this type of data, provided valid conclusions can be reached, may lie in the psychometric importance of home language versus second

language measurement instruments to the South African researcher. This point is discussed further in Section 7.4.3.

Finally, only 2 responses to "Please explain your answer" were received. These were from 2 of the 21 participants who had replied "yes", and both added the same comment: "Because the questions are the same".