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Identification as a motivator of environmentally responsible tourist behaviour

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IDENTIFICATION AS A MOTIVATOR OF
ENVIRONMENTALLY RESPONSIBLE TOURIST BEHAVIOUR

Steve Sertis
BA. (CURTIN)  B.Psych. (ECU)

A Thesis Submitted in Partial Fulfilment of the
Requirements for the Award of

Master of Psychology
Faculty of Health and Human Sciences
Edith Cowan University

30th June, 1996
DECLARATION

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Date..............28/4/1988..............................
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title page</td>
<td>I</td>
</tr>
<tr>
<td>Declaration</td>
<td>II</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>III</td>
</tr>
<tr>
<td>Table of contents</td>
<td>V</td>
</tr>
<tr>
<td>List of tables and figures</td>
<td>VII</td>
</tr>
<tr>
<td>Abstract</td>
<td>VIII</td>
</tr>
<tr>
<td>1.0 Introduction</td>
<td></td>
</tr>
<tr>
<td>1.1 Rationale</td>
<td></td>
</tr>
<tr>
<td>1.2 Approaches to changing environmental behaviour</td>
<td></td>
</tr>
<tr>
<td>1.3 The role of information</td>
<td></td>
</tr>
<tr>
<td>1.4 Motivational bases of attitudes and behaviour toward the natural environment</td>
<td></td>
</tr>
<tr>
<td>1.4.1 Instrumentation motivation</td>
<td></td>
</tr>
<tr>
<td>1.4.2 Identification motivation</td>
<td></td>
</tr>
<tr>
<td>1.4.3 Value expressive motivation</td>
<td></td>
</tr>
<tr>
<td>1.5 Education, information and motivation</td>
<td></td>
</tr>
<tr>
<td>1.6 Ecotourism</td>
<td></td>
</tr>
<tr>
<td>1.7 Present research</td>
<td></td>
</tr>
<tr>
<td>1.8 Research questions</td>
<td></td>
</tr>
<tr>
<td>2.0 Method</td>
<td></td>
</tr>
<tr>
<td>2.1 Participants</td>
<td></td>
</tr>
<tr>
<td>2.2 Instruments</td>
<td></td>
</tr>
<tr>
<td>2.2.1 Information brochures</td>
<td></td>
</tr>
<tr>
<td>2.2.2 Behavioural checklist</td>
<td></td>
</tr>
<tr>
<td>2.2.3 The questionnaire</td>
<td></td>
</tr>
<tr>
<td>2.3 Rater training and inter-rater agreement</td>
<td></td>
</tr>
<tr>
<td>2.4 Procedure</td>
<td></td>
</tr>
</tbody>
</table>
3.0 Results

3.1 Questionnaire Data

3.1.1 Data screening

3.1.2 Value expressive motivation

3.1.3 Instrumental and identification motivations

3.2 Behavioural data

3.2.1 Data screening

3.2.2 Behaviour as a function of information

4.0 Discussion

4.1 The role of value expressive motivations

4.2 The effects of information on identification and instrumental motivations

4.3 The effects of information on environmental behaviour

4.4 The theoretical and practical implications

4.5 Summary and conclusions

References

Appendix A: Identification information brochure

Appendix B: Factual information brochure

Appendix C: Behavioural checklist

Appendix D: Questionnaire
LIST OF FIGURES

Figure 1.1 The model of responsible environmental behaviour 10
Figure 1.2 The linear flow chart of environmental behaviour. 13
Figure 1.3 Neofunctional theory of attitudes 23
Figure 1.4 A tripartite model of the motivational bases of attitudes 25

LIST OF TABLES

Table 2.1 Age group frequencies for males and females 44
Table 2.2 Place of residence for males and females 44
Table 2.3 Length of stay for males and females 45
Table 3.1 Correlations of value expressive categories with instrumental and identification motivations 60
Table 3.2 Value expressive motivations as a function of information condition 61
Table 3.3 Instrumental motivation as a function of information condition 62
Table 3.4 Identification motivation as a function of information condition 63
Table 3.5 Statistics of behaviour criteria as a function of information condition 65
This study examined the use of information in motivating environmentally responsible behaviour. In light of the ineffectiveness of traditional educational methods that have focussed upon affecting behaviour by changing attitudes through the manipulation of cognitive variables, an attempt was made to produce a sense of identification with the Rottnest Island Quokka using the tripartite model of motivational bases of attitudes developed by Hills (1993). This model was used to determine whether different kinds of information would produce changes in environmental behaviour. Three groups of tourists were given either no information; factual information, consistent with current educational techniques used to influence behaviour; or identification information designed to produce feelings of identification with the quokka directed at protecting the quokka and its environment.

Results indicated that wording the same information differently affected the self-reported motivational bases of behaviour toward the quokkas and their environment. Identification motivations were reportedly higher with tourists given the identification information brochure compared to those given factual or no information. The literature suggests that with heightened identification motivations, instrumental motivations are likely to be reduced. Results offered no support for this argument. Furthermore, behavioural observations indicated that the manipulation did not lead to differences in the behaviour of tourists across the three information groups.

Behavioural observations of the interactions between tourists and quokkas highlighted the role of instrumental motivations among tourists. Whilst instrumental motivations should therefore be recognised and incorporated into any educational or environmental strategy aimed at protecting the environment, it is suggested that further research is needed to better understand how alternative motivations, such as one with an identification base, can better promote a valuing of the environment and its fauna for its own sake.
CHAPTER 1

INTRODUCTION

1.1 Rationale

For some time, environmental psychologists and educators have attempted to provide answers to the question of what needs to be done to influence and change people's behaviour toward the natural environment. A review of the literature suggests that education is seen as the main component of the answer. The dominant approach makes use of attitudinal theory that posits that a change in behaviour can be achieved by education through a change in attitudes (Newhouse, 1990; Burrus-Bammel, 1988; Finger, 1994). However, this approach has not delivered the necessary changes in behaviour, particularly in the domain of environmental protection. Whilst most of the literature still focuses on attitudes and their effect on behaviour, a new approach is emerging based on questions about the type of education needed to effect behaviour change.

Given that there is little literature and research linking environmental behaviour with any theoretical framework in mainstream psychology, the present research examined the contribution of motivational theory to environmental behaviour, focusing on the concept of identification (Hills, 1991; Naess, 1984). The question addressed was whether it is possible to influence environmental behaviour using information based on the notion of identification as a means of motivating tourists to behave responsibly toward wildlife and the natural environment.

The setting for the research was the resort island of Rottnest. It lies 13 kilometres of the coast of Western Australia and is visited by over 250,000 tourists every year (Rottnest Island Authority, 1996) As with any island resort, the island has a very high
ecotourist potential. The Rottnest Island Authority (RIA) looks toward education as an important strategy for protecting its fragile natural environment, and there are a number of educational programs and activities directed toward this end. Where tourists are concerned, the RIA perceives the most pressing problems as protecting the wildlife, especially the native quokka, and protecting the vegetation which is the quokka's natural habitat. At present the RIA is aiming to instill a sense of stewardship among tourists to protect the quokka. However, problems that are faced stem from the fact that most tourists are one-day visitors who probably will not return to the island, at least not in the near future, and are less likely to be too concerned about the environmental consequences of their visit than those who consistently visit the island throughout the year.

Thus far education about the quokka has concentrated upon scientific descriptions utilising information based solely in the cognitive domain. The affective domain of learning has not been used as a tool for educating tourists (see Iozzi, 1989a & 1989b, for a full account of environmental education and the affective domain). The present research examined the influence on behaviour of information designed to produce feelings of identification with the quokka and the natural environment. An attempt was made to include environmental protection in the tourist's field of concern through identification. By stimulating an identification motivation base, behaviour motivated by self satisfaction and personal enjoyment might be expected to diminish, in favour of a genuine concern for the environment.

Empirical research investigating whether information with an identification motivation base affects environmental behaviour has the potential to assist the RIA to more effectively educate tourists and motivate environmentally responsible behaviour, ensuring the protection of the quokka and the fragile island environment.

1.2 Approaches to Changing Environmental Behaviour

Education has tended to be viewed as the solution to most environmental
problems, yet after two decades of empirical research and continued education its effectiveness is still unclear.


- **Awareness** - to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems and/or issues;

- **Sensitivity** - to help social groups and individuals gain a variety of experiences in, and acquire a basic understanding of, the environment and its associated problems and/or issues;

- **Attitudes** - to help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection;

- **Skills** - to help social groups and individuals acquire skills for identifying and solving environmental problems and/or issues;

- **Participation** - to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems and/or issues.

Gigliotti (1990) has made the claim that if it is the contention that environmental education, based on these objectives, is aimed at not only making people aware and concerned about environmental issues and problems, but also skilled in how to solve them, and most importantly motivated toward action, then environmental education has thus far failed.

---

1 An interesting point to note is the difference between environmental issues and environmental problems. The terms "issues" and "problems" are used differently because a "problem" exists when something is at risk, for example water pollution, the "issue" on the other hand refers to the differing values and beliefs people have on how to solve such problems.
Gigliotti (1990) observed that environmental education has resulted in unprecedented awareness of threats to our environment, and has produced individuals who are ecologically concerned. However, despite this high level of awareness most people are unwilling to undergo personal sacrifices for the sake of the environment and they "lack the knowledge and conviction of their own role in environmental problems" (Gigliotti, 1990, p.9). Gigliotti has argued that environmental education seems to have made it easier to deflect the blame for environmental problems onto others rather than motivate us to accept responsibility and undergo personal sacrifice to solve environmental problems. Education has tended to focus upon the notion that nature is good and that all human behaviour negatively impacts upon the environment, resulting in a good - bad conflict whereby to be "good" means to merely oppose those who harm the environment rather than take on the responsibility of performing environmentally friendly behaviours (Gigliotti, 1990). For example, it is easier to collectively demonstrate against the construction of an environmentally unfriendly power plant than personally reduce power consumption in one's household.

Environmental psychologists and environmental educators have on several occasions tried to explain why education has not significantly influenced people to display more pro-environmental behaviours (Finger, 1994). Environmental education has received much criticism because the necessary changes, perhaps in values, have not occurred. Rather, people exposed to various forms of education, mostly through the media, have selectively chosen the messages they wish to believe, usually those consistent with their own value systems, instead of altering their life style to any significant degree (Gigliotti, 1990). Given that people have the choice of rejecting information inconsistent with their belief systems, it is no surprise that environmental education has not had the expected effect upon behaviour. Why would one expect individuals to protect the environment by behaving in a manner inconsistent with their belief systems through forgoing their luxuries such as cars and air conditioners? Moreover, studies that have
suggested that environmental education has had success in changing environmental
behaviour have either been descriptive, correlational and therefore limited in explaining
any causation, or have been studies performed by educators using psychological principles
superficially and not grounded in a sound theoretical framework with which to explain
findings (Hungerford & Volk, 1990).

Finger (1994) has argued that problems with environmental education have been
intensified by the simplistic framework on which it has been based. Traditional thinking
has been based on the premise that if individuals are made more knowledgeable about
environmental issues and problems, a higher awareness will result in increased motivation
to behave in a more environmentally responsible manner (Hungerford & Volk, 1990). A
similar model, based on a link between knowledge and behaviour through attitudes,
assumes that if individuals are made knowledgeable of environmental issues and problems,
favourable attitudes will develop. Favourable attitudes toward the environment then lead
to action resulting in environmentally friendly behaviour. However, research on the
relationship of attitudes to behaviour in environmental education (see Arcury 1990; and
Hines, Harold, Hungerford, & Tomera, 1987) has not supported these models.
Knowledge does not necessarily translate to behaviour.

Hines et al. (1987) noted that the variables involved in motivating responsible
environmental behaviour are still not clear. They attempted to establish a multi-
component view of environmental behaviour. A meta-analysis synthesised research
between 1971 and 1986. These studies revealed a multitude of variables associated with
environmental behaviour. Studies were categorised in terms of their approach to the
research area. The categories included (1) cognitive variables, (2) psycho-social
variables such as locus of control, (3) demographic variables, and (4) behavioural
intervention approaches and classroom strategies directed at motivating environmentally
responsible behaviour.

Cognitive variables have embraced factors relating to knowledge of environmental
issues or problems. This knowledge has three components, (a) knowledge of the issue or problem, (b) knowledge of the consequences of the issue or problem, and (c) knowledge of how to take action on the issue or problem. The meta-analysis included 17 descriptive studies and found that a positive correlation existed between knowledge and behaviour. That is, individuals who had greater knowledge in the above three components were more likely to have engaged in responsible environmental behaviour compared to those who did not have a high level of knowledge (Hines, et al. 1987). This suggested that knowledge, while not ensuring pro-environmental behaviour, does play a major role. Moreover, the data indicated that the type of behaviour assessment acted as a moderating variable whereby positive correlations between knowledge and behaviour were obtained when studies employed actual measures of overt behaviour, like behavioural checklists, rather than self-report techniques, such as questionnaires. This would suggest that behavioural observation is more valid in establishing the success of educational strategies.

Psycho-social variables have focused upon attitudes, locus of control, economic orientation, personal responsibility, and verbal commitment. Hines et al. (1987) found that across fifty-one of the studies analysed, forty-two dealt with general or specific attitudes. Attitudes were judged as either favourable or unfavourable and assessed in terms of general attitudes toward the environment, specific attitudes such as those toward air pollution, and attitudes toward taking environmental action. Analysis of the relationship between attitudes and behaviour agreed with previous research (Regan & Fazio, 1977) that favourable attitudes toward the environment (general and specific) had a strong positive correlation with responsible environmental behaviour. Only nine studies focused upon attitudes toward taking environmental action. Despite little attention given in this domain, the meta-analysis revealed a stronger relationship between attitude toward action and environmental behavior than was observed between general attitudes toward the

\[ \text{Differences between the affective and cognitive components of attitudes were not addressed, thus ignoring the multi-component structure of attitudes as outlined by Rosenberg (1956).} \]
environment and environmental behaviour. Once again the mode of behaviour assessment, that is direct behavioural assessment, attenuated the attitude - behaviour relationship.

Fifteen studies were analysed that looked at individual locus of control as a psycho-social predictor of environmental behaviour. Data showed that those who have an internal locus of control were more likely to have engaged in pro-environmental behaviour than those with a more external locus of control.

Another factor was economic orientation, defined as a person's "cost consciousness and concern about the economic impact of certain responsible environmental behaviors and environmental regulations" (Hines, et al. 1987, p.5). A common example is the buying of unleaded fuel. Research by Herberlein and Black (1976) showed that individuals who believed that buying unleaded fuel would save them money were more likely to purchase it than those who did not. However, meta-analysis by Hines et al. (1987) of six studies showed that there was a lack of strong support for a positive correlation between economic orientation and responsible environmental behaviour. This can perhaps be explained in terms of the effect economic orientation may have on environmental behaviour. Concern about the economic impact of buying biodegradable washing powder that costs more than non-biodegradable powder, may lead an individual to override environmental concern and buy the cheaper, environmentally unfriendly product. The important issue here lies in the fact that economic orientation may act as a medium for instrumental self interested motivations of an individual - an issue that will be explored in greater depth later in this chapter.

A further six studies in the meta-analysis by Hines et al. (1987) were concerned with personal responsibility. Personal responsibility was defined as an individual's feeling of duty or obligation toward the environment as a whole or toward one facet of the environment, such as purchasing unleaded fuel. Individuals who to some extent felt personal responsibility toward the environment, were more likely to have behaved environmentally responsibly than those who had no such feelings of responsibility.
The last psycho-social variable to be analysed was verbal commitment. Verbal commitment referred to the expressed intention to take action on an environmental problem in written rather than oral statements. Six studies in the meta-analysis showed that those who expressed an intention to act were more likely to engage in environmental action than those who expressed no such intention.

Age, gender, income and education were the demographic variables assessed. Results showed that there was little difference in environmental behaviour as a function of these variables. Analysis of ten studies focusing on age and environmental behaviour found that younger individuals were only slightly more likely to perform pro-environmental behaviours than their older counterparts. Similarly, there was only a slight difference between males and females on environmental behaviour. A weak relationship \( r = .16 \) was found between income and behaviour, where individuals with higher incomes were found to be slightly more likely to behave in an environmentally responsible manner than those with lower incomes. Eleven studies which looked at level of school education showed that there was a relationship between level of education and environmental behaviour (Hines, et al. 1987). However, given only a small significant positive correlation of .18, it would suggest that strategies aimed at motivating environmentally friendly behaviour need not be based on the level of education of an individual.

Finally, intervention studies have included either classroom intervention techniques or behavioural intervention strategies (see Asch & Shore, 1975; Ramsey, 1979; & Partian, 1979, cited in Hines et al, 1987). Investigation of the classroom studies showed that short term intervention strategies (those lasting only one day) were unsuccessful in motivating environmentally responsible behaviour. However, those that employed techniques focusing on knowledge of environmental issues and problems, discussion of various solutions, the ability to identify issues, environmental problem solving skills, discussions on values, and ability to take action over a longer time, were successful in increasing the frequency of pro-environmental behaviour (Hines, et al. 1987). For example conservation
behaviour, in particular the reduction of energy consumption, was achieved through behaviour modification strategies that employed incentives, appeals and information. Due to the small number and diversity of these studies, a meta-analysis was not possible. It is interesting to note that it was found that type of information used was related to success in changing behaviour with techniques such as feedback.

From their meta-analysis, Hines, et al. (1987) developed a model of environmentally responsible behaviour (see Figure 1.1). The model assumes that an individual who expresses an intention to act is more likely to do so than one who expresses no such intention. Even though this is intuitively obvious, the model suggests that behavioural intention is perhaps only a mediator of several other variables (such as cognitive and psycho-social variables) influencing responsible environmental behaviour. Before behaviour can take place, a person must first be cognizant of the existence of a problem. This requires knowledge of the problem, knowledge of an effective course of action, and knowledge of the skills necessary to carry out the action. Hines, et al. (1987) also noted that an individual must desire to take action. Personality factors, such as internal locus of control, are likely to lead an individual to desire to behave pro-environmentally.

Also included in the model proposed by Hines et al. (1987) are situational factors affecting responsible environmental behaviour. These include economic pressures, social pressures and alternative actions available to individuals. These factors may either strengthen or weaken the variables in the model. Hines et al. gave the following examples:

[If] an individual has the cognitive ability, desire, and opportunity to help stop pollution by contributing to a local toxic waste fund, but simply cannot afford to do so, that person will not engage in the environmental action...[on the other hand] a person may curb energy consumption only to save money and to collect the
Figure 1.1 The model of responsible environmental behaviour according to Hines et al. (1987, p.7)
incentives offered in association with reduced consumption. While this person
obviously possesses the knowledge and abilities to conserve, his actions have likely
not stemmed from a deep seated desire to conserve fossil fuels, but rather from
personal [instrumental], and financial bases. (1987, p. 7)

In a review of this model, Boerschig and DeYoung (1993) added a further
variable: that of sensitivity toward the general environment. Whereas attitudes were seen
by the authors as focusing on specific aspects of environmental problems, sensitivity was
defined as respect for the stability and integrity of the environment stemming from the
belief that humans must develop an ecological harmony with the natural environment

Hines et al. (1987) conceded that it is unknown at which point an individual will
sacrifice economic or other personal benefits to behave in a manner that preserves the
stability and integrity of the environment. It is argued that while it is desirable to produce
a citizenry who behave responsibly toward the environment through the pathway
represented by the model, the manipulation of situational factors (such as monetary
incentives that appeal to material self interest) may be more effective in producing the
desired effect. Arguably this suggests that we should continue to acknowledge the
influence of instrumental factors in motivating behaviour whilst exploring other avenues of
motivating responsible environmental behaviour.

A common thread throughout the meta-analysis was the use of members of
environmental organisations in most studies. Such group members sharply attenuated
relationships between cognitive, psycho-social, and demographic factors with
environmental behaviour. It could be argued that restricting the sample to such groups
could certainly be a factor contributing to the strong relationships found between the
above variables and environmental behaviour. What must be stressed with these studies,
as with all other correlational studies, is that no cause and effect relationships can be
established in determining responsible environmental behaviour. Moreover, the factors in
the model are those which, through correlation analysis, appear to be associated with preserving the environment. An argument may be made that while the model by Hines et al. (1987) goes further than studies concentrating on a uni-component view of environmental behaviour, it does not clearly delineate the psychological components used in the model. It categorises attitudes under personality factors on the one hand but then places personal instrumental motives under situational factors on the other. Furthermore, not only does the model not take into account motivational factors pertaining to the affective domain, but the affective domain is not differentiated from cognitive factors in the analysis of attitudinal variables in the model.

In the decade that followed, some studies focussed upon predictors of pro-environmental behaviour and others on the results of instructional strategies. Hungerford and Volk (1990) noted that these studies incorporated a number of the variables outlined by Hines, et al. (1987). A linear flow chart of environmental behaviour was proposed, but one in which variables operate in a synergistic relationship with each other (see Figure 1.2). The model "reflects variables associated with the prediction of [and] modification of...[a] broad range of behaviours...[where] an emphasis has been placed on variables which may be attended to in educational programs" (1990, p.18).

Hungerford and Volk (1990) proposed entry-level variables (initial requirements for the process leading to environmental behaviour) as those that are good predictors of behaviour and are related to responsible citizen behaviour. Whereas Boerschig and DeYoung (1993) defined sensitivity toward the general environment as respect for the stability and integrity of the environment, Hungerford and Volk placed environmental sensitivity as an entry-level variable defined in terms of empathy toward the environment that has a strong relationship with behaviour (see Hungerford & Volk, 1990, p.18, footnote 3). This is as close as Hungerford and Volk's model comes to suggesting that affect, through feelings of empathy, can influence environmental behaviour.
Figure 1.2 The linear flow chart of environmental behaviour according to Hungerford & Volk (1987, p.11)
Hungerford and Volk (1990) pointed out that knowledge by itself does not necessarily influence behaviour change in the environmental domain. They suggested knowledge of ecology, as a conceptual basis for sound decision making, that may lead to action in solving environmental problems. Attitudes were shown as minor entry-level variables because the authors maintained that although the extent of their influence has been significant in some research, their involvement in behaviour is still uncertain. Hines et al. (1987) however, would argue that the influence of attitudes toward the environment and upon action are far more salient and should be treated as major variables.

Ownership variables were defined as those that allow individuals to "own" environmental issues and carry with them a sense of vested responsibility. Hungerford and Volk (1990) purported that ownership of environmental issues (and ultimately responsible environmental behaviour) depended largely on the level of knowledge an individual has about such issues. An individual must fully understand the nature of issues and their implications. The level of personal investment was put forward as a further precursor to ownership of environmental issues. The authors suggested that individuals come to "own" issues by "identifying" with them. This notion of identification, however, tends to be based upon what Hungerford and Volk termed a "proprietary interest", that is an interest motivated by instrumental factors such as the monetary benefits of recycling.

The behaviour flow model refers to empowerment variables that can be paralleled to the personal efficacy and behavioural efficacy beliefs outlined by Saltzer (1982). These refer to beliefs that one can perform a given behaviour and that performing that behaviour will lead to a desired outcome. Saltzer (1982) proposed that efficacy beliefs are concerned with perceptions of one's own skill in performing a given behaviour, a sense of personal mastery of issues, locus of control, and behavioural intention. Hungerford and Volk (1990) proposed that perceived skill in action strategies is likely to lead individuals to believe that they can resolve environmental issues. Furthermore, an internal locus of control suggests that an individual will tend to have strong personal and behavioural
efficacy beliefs (Saltzer, 1982) or high levels of empowerment (Hungerford and Volk, 1990). That is, they will believe they have the power to bring about change with respect to environmental issues and problems.

Finally, Hungerford and Volk (1990) classify intention under empowerment variables where the chances of an individual engaging in pro-environmental behaviour are increased if there exists the intention to act. Recall also that Hines et al. (1987) have argued that without intention, there is no chance that behaviour will follow.

One weakness in the behaviour model proposed by Hungerford and Volk (1990), however, can be described in terms of the analogy of links in a chain. Where a chain can only be as strong as the weakest link, responsible citizenship behaviour can only be as effective as the weakest variable in the linear model. Strong entry-level variables coupled with strong ownership variables will not produce the desired behaviour when the empowerment variables are weak or non-existent. Furthermore, the model has been based upon classroom education strategies that require in-depth curricula goals, objectives and activities over a substantial period of time that may not be easily transferable to educating different groups of people, such as a group of tourists on a day trip to a resort island. In fact the behaviour flow model may perhaps be too complex for such undertakings and therefore not effective when applied to a group of tourists. Moreover, the model of responsible environmental behaviour shown in Figure 1.2, is developed from an educational perspective. It tends to confuse a wide selection of psychological variables again by dealing with them in a superficial manner to explain behaviour. These variables have not been linked to any sound psychological framework which may advance further understanding in human behaviour. The model presents a range of psychological variables in terms of their position in a flow chart but fails to clearly define and operationalise each of those variables. Rather, motives, attitudes, feelings, beliefs, knowledge, and personality factors are included in a confused model without sufficient grounding in any theoretical framework.
Whilst much of the literature (see Arcury, 1990; Gigliotti, 1990; Hungerford and Volk, 1990) suggests that knowledge does not lead to behaviour change in the environmental domain, Hines et al. (1987) concluded that research efforts must concentrate on all factors in the environmental behaviour picture rather than individual components. Yet perhaps it is not the multi-faceted nature of behaviour which needs further attention but rather a new approach looking at behavioural change, one that focusses upon the nature of information and one not restricted to knowledge and attitudes.

1.3 The Role of Information

A subsection of the literature on environmental behaviour change has focused upon the role of information. Most of the studies have used different types of information to reduce resource use and in particular energy resource consumption (see Geller, 1981; Winett, Kagel, Battalio, & Winkler, 1978; Hayes and Cone, 1977; Wright and Huston, 1983). Such studies have used some form of abstract or conceptual information to change behaviour, yet none have focused upon affective information to change behaviour. Winett and Kagel (1984) have argued that the way information is used to convey issues of conservation has not been sufficiently researched. They suggested that different information formats have an unexplored educational value, especially with respect to motivational qualities.

The literature supports the notion that information can influence behaviour. Bettman and Kakkar (1977) found that information can influence consumer acquisition behaviour, and Lansana (1992) looked at a variety of ways to transmit information to encourage recycling. Lansana (1992) found that print media such as brochures, newspapers and posters tended to be effective in conveying information to nonrecyclers but not necessarily effective in inciting recycling behaviour. Studies are almost always faced with the problem that not all information has the desired effect upon behaviour. Interestingly, Winett and Kagel (1984) stated that information similar in content can have
very different effects on behaviour depending largely upon the format, modality and context in which the information is presented.

Winett and Kagel (1984) noted that information strategies have been used extensively by governments to effect behaviour change. However the desired behaviour outcomes have not been achieved because such techniques have not been attuned to the factors guiding the effective use of information to encourage resource conservation behaviour. Yates and Aronson (1983) outlined a social psychological perspective of energy conservation behaviour through the use of information strategies such as appeals and written materials. They suggested that the formulation of public policy through government information campaigns leaves room for much improvement because the information has not been presented in the appropriate format and context for the target audience. Several laboratory studies (such as Bettman and Kakkar, 1977; see also Winter, 1975, and Crosby and Taylor, 1981) have found that the effectiveness of information on desired behaviour is dependent upon the specificity of the information, situational variables, and the format and modality of the information. Furthermore, an abundance of field studies (see Wright, 1979; Winett, Love & Kidd, 1982) looking at reducing energy consumption through information formats have produced similar findings.

Winett and Kagel (1984) distinguished between antecedent and consequence strategies used to influence behaviour. Antecedent strategies employed stimuli designed to precede and influence a particular behaviour or elicit a preferred behaviour, for example, messages written on food packaging that say "Dispose of thoughtfully". Conversely, consequence strategies employed stimuli that followed the presence or absence of a given behaviour, and subsequently increased or decreased the frequency of a behaviour. Examples include feedback on the amount of waste disposed by households versus the amount recycled. Research performed by Goldenhar and Connell (1992) showed that abstract information posters with feedback messages on recycling yielded more recycling behaviour than abstract information alone.
Winett and Kagel (1984) suggested that while these are examples of using information techniques, not all are effective. They may also require modification to produce results in different contexts. Furthermore, information techniques used to influence behaviour are not atheoretical. A more conventional approach would see information strategies following a body of knowledge based on a sound psychological framework showing how to achieve the desired behavioural outcome.

Government departments, in particular those dealing with environmental issues and problems, have tended to use antecedent behavioural strategies such as brochures and booklets, prompts and modeling to affect behaviour change. Most brochures and pamphlets describe a "how to" or "how and why" procedure for environmentally responsible behaviour. Studies reviewing these basic methods of information, such as those by Hayes and Cone (1977), Winett et al. (1978) and Geller (1989), have found such procedures have no effect on individual's recycling, waste reduction, transport, water use or energy consumption behaviours. However, the reason why such methods have been ineffective has been obscured by field studies explaining these results in terms of flaws with the behavioural measure rather than the manipulation itself (Winett & Kagel, 1984). For instance, the problem may be that people simply do not read the brochures or that they read them but do not understand the material. Moreover, it is unknown how much information is gained once individuals read the material or whether there has been a sufficient motivational trigger for behaviour to occur.

Written material containing information suggesting desired behaviours through prompts (such as signs asking for lights to be switched off before leaving the room) are suggested by Winett and Kagel (1984) to be more effective than "how and why" written information. According to Winett and Kagel (1984), messages should be highly specific, stated in non-demanding, non-threatening language, salient in the appropriate context, convenient in terms of behaviour, proximal to the requested behaviour, and also repetitive. Furthermore, Winett and Kagel (1984) argued that prompting methods tend to be only
slightly effective. Moreover, these effects have been predominantly transient.

Winett (1978) performed a pilot study examining the effectiveness of stickers near light switches reminding people to switch off the lights when they left the room. Relating back to the above criteria for effective prompts, use of such stickers in a variety of situations has not been successful because they are not salient, do not suggest who should turn off the lights and are not proximal to the behaviour. The three-phase pilot study gave some interesting insights into the potential of information strategies:

In the first phase, all such stickers and signs were removed...[which resulted in lights being] left on when rooms were unoccupied in 100% of the daily observations. In the next phase, the small signs and stickers were put back on the light switches, but the lights were still left on in 100% of the observations. In the last phase, very large signs with bold, black lettering were placed at the exits of classrooms requesting that lights be turned off by faculty or students after each class. Under this condition, lights were left on for only 40% of the observations (1984, p. 657).

The result of only 40%, however, suggests that there is still room for improvement in the development of better information techniques. More importantly, the study reiterated that messages using prompts are more effective when they are highly specific, stated in appropriate language, salient, convenient, proximal and repetitive.

Winett and Kagel (1984) opposed the popular belief that information conveyed through media cannot induce behaviour change and suggested that the effectiveness of such methods depends on the manipulation of the type of media used, how the message is conveyed, the temporal space between messages, explicit mention of to whom it is directed, mention of the behaviour desired, and the incentives offered for performing the desired behaviour, if any. Incidentally, on the issue of incentives, Witmer and Geller (1976) found that brochures depicting the importance of recycling together with

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3 Stickers asking to switch off lights when leaving the room have been placed on light switches, but the switches have not been proximal to exits when people leave the room.
prompting recycling behaviour, were less effective than when incentives such as a raffle or contest were introduced. However, not only has it been shown that it is difficult to regularly provide meaningful incentives (Burn & Oskamp, 1986), but as Goldenhar and Connell (1992), and DeYoung (1993) argue, once these incentives (particularly those of an economic nature) are removed, the desired behaviour ceases.

Research by DeYoung et al. (1993) found that while economic incentives had some effect in reducing resource use, the best method incorporated rationales from two perspectives. Research was conducted whereby participants were either given information pertaining to an economic rationale, an environmental rationale, both rationales or neither. Self-report results indicated that participants were concerned with both their economic interests and about the environment. That is, resource reduction behaviour was most effective when participants were given both rationales. The authors concluded that neither rationale on its own was as effective as the two combined.

While research (Herbelien & Black, 1976; and Simmons & Widmar, 1993) has shown that economic factors are important in influencing environmental behaviour, Costanzo, Archer and Pettigrew (1986) argue that an alternative model of conservation behaviour is needed to understand why information can sometimes be ineffective. However the model they present, is one that is still largely focused on the cognitive domain. The model consists of two interacting factors: psychological and positional, relating directly to energy conservation behaviour. The psychological factor is concerned with a range of cognitive variables that determine how information is processed by individual decision makers. Positional variables are the situational factors, such as social and economic pressures that affect individual decision making on action or inaction.

Psychological factors include four intra-psychic events that must take place for information to be effective. Similar to the criteria outlined by Winett and Kagel (1984), information must firstly be perceived. In other words the problem of people not reading brochures must be overcome. Information then must be favourably evaluated. This is an
important issue in that if the information that is presented is inconsistent with the beliefs and values held by the individual, it is likely to be disregarded in favour of information that is consistent (Gigliotti, 1990). If information is consistent with one's values and beliefs then a favourable evaluation of the information is likely to occur. The information must also be fully understood, and finally it must be remembered.

However, if these psychological variables encourage the desired behaviour, such action may not occur unless there are favourable positional variables. Moreover no conservation behaviour can occur unless all psychological variables and all positional variables support the desired conservation behaviour. Costanzo et al. (1986) have argued that these somewhat obvious steps are frequently overlooked by governments and organisations using information to influence conservation behaviour.

An important point to note is that each model that examines the effect of information on environmental behaviour is influenced to some extent by economic factors. This carries with it an underlying notion that, no matter how effective information campaigns are, or no matter how much individuals want to act to conserve and protect the environment, and despite their motivations for performing such behaviour, they are to some extent restricted by situational factors beyond their control. Research reviewed and performed by Simmons and Widmar (1993) implies that unless there is an inducive economic climate toward environmental behaviour, environmental education solely based upon the cognitive domain, will always fail.

As stated previously, Gigliotti (1990) and Hungerford and Volk (1990) suggest that education has been unrealistically used as a tool to solve the problems of the world, especially those concerned with environmental issues because many educators wrongly give credence to the notion that if we teach learners and make them aware, then their behaviour will change (Hungerford and Volk, 1990). Some researchers suggest that the type of information is the key to motivating environmental behaviour. Hills (1991) has argued that if education is to be used as a useful tool, then its effectiveness depends on the
kind of information used, whether it be factual, scientific, moral, emotional or spiritual; the motivations of the people involved; and the end result that is desired. The present review has noted that educators often focus upon ineffective strategies which centre around raising levels of awareness. Furthermore, these strategies have tended to emphasise information about ecology and biology (Hills, 1995). Hills (1995) has argued that we must go beyond knowledge and awareness to explore and develop compelling motivations for environmental protection.

1.4 Motivational Bases of Attitudes and Behaviour Toward the Natural Environment

Hills (1993) identified three motivational bases with respect to the natural environment: instrumental motivation, identification motivation, and value expressive motivation. Hills (1993) developed a tripartite model of motivational bases derived from a functional approach to attitudes (Herek, 1987). Herek's neofunctional theory of attitudes differentiates between two fundamental categories of attitude function, evaluative and expressive (Figure 1.3 illustrates the model proposed by Herek, 1986). In the evaluative category, the attitude object is seen as an end in itself in terms of the perceived associations with reward (or punishment) allowing individuals to "organise the world's objects according to their own self-interest" (Herek, 1986, p.105). Furthermore, attitudes in the evaluative category directly relate to the instrumental significance of attitude objects, whereby attitudes are based upon that object's potential to meet self-interested needs and goals (Hills, 1993).

In the expressive category the attitude object is symbolic of an underlying concern. Herek (1986, p.106) outlines three types of expressive function:

- *social-expressive*, that are formulated on needs to be accepted by others into one's immediate social environment;
Amount of benefit derived from object

<table>
<thead>
<tr>
<th>Amount of benefit derived from attitude's expression</th>
<th>Low</th>
<th>High</th>
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<tbody>
<tr>
<td>Low</td>
<td>Nonfunctional attitudes</td>
<td>Evaluative function</td>
</tr>
<tr>
<td>High</td>
<td>Expressive function</td>
<td>Complex function</td>
</tr>
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Figure 1.3 Neofunctional theory of attitudes proposed by Herek (1986, p. 1060)

defensive, based on needs to reduce levels of anxiety as a result of intra-psychic conflicts; and

value-expressive, resulting from the need to define oneself with meaningful reference groups.

Herek (1986) suggests that when a high level of importance (positive or negative) is attributed to the attitude object but little value is associated with the expression of that attitude, the attitude serves an evaluative function. Whereas in the converse situation, where a high level of value is associated with the attitude's expression yet not the object itself, the attitude serves an expressive function. The third possibility may be that little or no value is attached to the attitude object or to the expression of that attitude in which case the attitude is nonfunctional. Attitudes serving both kinds of function are referred to as complex (Herek, 1986).

In applying this model to an explanation of attitudes toward the treatment of animals, Hills (1993) argued that the evaluative category includes two subcategories each forming a distinct motivational bases. The model was extended to include identification and instrumental motivation bases as subcategories. Instrumental motivations refer to a self interested motive to use the attitude object in order to fulfill ones needs and goals. The attitude object is a means to an end. Identification motivations, on the other hand, result in the attitude object being perceived as having intrinsic value and as an end in itself.
The expressive category remains unmodified by Hills (1993) where the attitude object is symbolic of underlying concerns such as the values we hold toward the world and ourselves. Figure 1.4 illustrates the tripartite model of motivational bases developed by Hills (1993) adapting Herek's (1986) neofunctional theory of attitudes. Hills (1993) related this model to the environment and animals. She argued that people's relationship with animals is dependent upon instrumental, identification, and value expressive motivations. The following discussion focuses upon this model with instrumental, identification and value expressive motivational bases influencing behaviour.

<table>
<thead>
<tr>
<th>Motivational category and significance of attitude object: †</th>
<th>Evaluative</th>
<th>Instrumental</th>
<th>Low</th>
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<th>High</th>
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<tr>
<td>Identification</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
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<tr>
<td>Expressive: Symbolic Low</td>
<td>Nonfunctional attitudes</td>
<td>Identification base</td>
<td>Instrumental base</td>
<td>Complex Evaluative base</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Expressive base</td>
<td>Expressive / Identification base</td>
<td>Expressive / Instrumental base</td>
<td>Complex Expressive / Evaluative base</td>
<td></td>
</tr>
</tbody>
</table>

† Hills (1993) notes that there are two categories of attitude function: *evaluative* and *expressive*. In the evaluative function, attitudes are assessed in terms of whether they have instrumental (self interest) significance or intrinsic significance through feelings of identification. In the expressive function, attitudes are symbolic of underlying concerns such as one's values.

Figure 1.4 A tripartite model of the motivational bases of attitudes proposed by Hills (1993).
1.4.1 Instrumental Motivation

The literature focussing upon instrumental motivations, with respect to the environment, tends to be highly theoretical and philosophical. Instrumental motivations have tended to be referred to in terms of their origins in Christian and Judaism religion (Callicott, 1986); in terms of attitude function (Herek, 1986); or in terms of values and ethics (Seligman, 1989) as a means of explaining behaviour. The origins of the instrumental view of the world can be traced back to notions of stewardship of man's relationship to nature postulating that humanity is the most important of all forms of life. Chandler and Dreger (1993)\(^4\) suggest that such beliefs are evident in the works of classical Greek and Judeo-Christian philosophers and that this view of humanity in the scheme of things flourished with the emergence of Christianity that asserts "man's transcendence of, and rightful mastery over, nature" (1993, p.170)

It can be argued that instrumental motivations have resulted in many pro-environmental behaviours. Take for example the purchase of unleaded fuel, it is possible that the underlying motivation is self-interest, that is to save money rather than a genuine concern for lead pollution. Such a motivation stems from an instrumental view of the world whereby the attitude object, the environment and its well being, is perceived as having little or no inherent value. However, the end result in this example is the same. If the unleaded fuel was purchased as a result of motivations based on a genuine concern for the environment rather than instrumental motivations, the environment would still benefit to the same degree. It is arguable that the environment can be protected with behaviour based on instrumental motivations. Though here lies a deeper issue. The basis of instrumental motivations, by definition, is that the attitude object is a means to an end.

Therefore the environment need only be protected so as to be exploited. Nash (1989, p.64) pointed out that rather than protect, instrumental motivations result in the need to

\(^4\)Chandler and Dreger (1993) refer to this view as anthropocentrism, a more general term where humans are the centre of the world and their well-being is the ultimate purpose of things - including the instrumental use of nature.
conserve the environment where:

conservation did not mean protecting or preserving nature. On the contrary, it stood
for the wise and efficient use of natural resources. The idea was to control nature
and serve the material interests of humankind but with an eye to long-term needs.

The utilitarian basis of this approach is strengthened with the use of language such as
"resources", "use", "control" and "serve". Hills (1993) has argued that the only difference
between conservation and exploitation of the natural environment is the emphasis on
sustainable development which conserves rather than totally consumes natural resources.
Moreover, conserving is driven by the need to ensure the long term availability of
resources - an inherent instrumental motivation. A further example of this is where
governments employ information techniques to encourage a sense of stewardship. The
motivation behind these strategies is instrumental in nature - where human survival
depends largely on the quality of the environment.

Seligman (1989), in reviewing contemporary thought in environmental ethics,
argues that resource economics looking at cost-benefits and optimal usefulness has further
ingrained a utilitarian view toward the environment. He argues that utilitarian notions
(which embrace instrumental motivations) have supplied a rationale for managing the
environment and still satisfying human needs. Seligman captures the idea of instrumental
motivations very well when he states that "our obligation to nature derives solely from our
concern not to kill the goose that lays the golden egg" (1989, p.173).

In defining instrumental motivations, Hills (1993) has cautioned against using a
broad definition that encompass everything that is self interest as instrumental motivation.
For example Callicott (1986) maintains that instrumental motivation is homocentric where
it includes "any argument for species preservation which is addressed to human happiness
(whether material or spiritual)" (1986, p.139). Hills (1993) suggested that there is a need
for a more narrow definition of instrumental motivation and gives the following example
to support her argument.
Consider a battery hen farmer who happens to care nothing for the welfare of the birds beyond what is necessary to ensure their productivity, but for whom intensive farming is a means of remaining economically competitive in order to gain an income to spend on things that produce satisfaction (e.g., a comfortable home). Then consider an animal liberationist, whose focus of concern is genuine sympathy for the hen's and their perceived distress, for whom campaigning on their behalf is conducted to secure their release into an open range where they will have a more fulfilling life; an event that will produce satisfaction in the animal liberationist (Hills, 1993, p.25)

An all encompassing definition would see both the farmer and the animal liberationist with instrumental motivations in the sense that both behaviours can be seen as selfish and that personal satisfaction is derived in both cases. A more narrow definition of instrumentality would view only the farmer as motivated by self-interest since the animal liberationist, although deriving personal satisfaction, experiences direct concern for the hen's distress and well being. The important difference that requires attention lies in the underlying motivations of the farmer and the liberationist. The farmer is motivated by economic factors whereas the animal liberationist is motivated by a genuine concern for the animals perceived well-being. This more narrow definition would serve as a simpler way of examining the impact of the different motivations upon behaviour. It acknowledges differences between the two and sanctions a more concise investigation of the different motivational forces affecting behaviour.

A final point to be made is that instrumental motivations may be seen as a principle factor explaining why environmental education has failed to translate awareness, knowledge and a strong commitment or concern for the environment into action (Thompson & Barton, 1994). When there is a possibility of sacrifice or inconvenience, people are likely to find it difficult to act on their intentions to behave more environmentally friendly.
1.4.2 Identification Motivation

Identification motivation refers to the process whereby "the interests of another being are reacted to as our own interests" (Naess, 1984, p.261). That is, there exists a genuine concern for the well being of "the other". This concern operates in the same way as concern for our own personal well being. Callicott refers to identification in terms of intrinsic value where something is "valued for itself, not for the sake of any subjective experience (pleasure, knowledge, aesthetic satisfaction, etc.) it may afford the valuer" (1986, p.142). Moreover, identification motivation can extend beyond human beings to include the non-human world, that is animals, and even the natural environment itself (Naess, 1984, p.261).

Identification in the present context assumes a bonding and a one-ness, and seems to be based largely on perceived similarity. Furthermore, it involves a dynamic component where one can model oneself on another's values and where these values can be internalised and become as important as one's own values (Marwell, 1964). In other words, not only are the interests of another viewed in the same terms as one's own, but further, feelings toward the other are produced. It relates to a feeling of "one-ness" with others, and is not dissimilar to the experience of empathy (Hills, 1995). Furthermore, the literature suggests that we might foster feelings of identification by providing information about the similarity between people and animals.

Opotow (1994) examined how manipulating the perceived similarity of an insect species (the Bombardier beetle) affected people's perception of whether it was deserving of rights, respect and protection. Opotow (1994), examined the psychological constructs of inclusion or exclusion of the natural world in the scope of justice and whether inclusion or exclusion led to environmental protection. Opotow (1994) argued that the natural environment is often beyond our scope of justice, moral rules and ideas of fairness, which

\[5\] See also Fox (1991) for a discussion on the evolution of the Self and World from anthropocentrism [shallow ecology] to identification [deep ecology].
would help to explain why education has been largely unsuccessful in modifying behaviour:

Social categories outside our scope of justice are perceived as nonentities, expendable, or undeserving. Exploiting or harming them can appear appropriate, acceptable, and just, and does not result in the remorse or outrage accompanying similar behaviour when it is directed at those within the scope of justice (Opotow, 1994, p.50).

According to Regan (1983, cited in Opotow, 1994, p. 54), we are only concerned about members of our moral community. Assuming this is correct, Opotow reasoned that if the beetle is perceived as being within our scope of justice, we would be concerned for its survival and well being. Yet the process of allowing the beetle, or any animal for that matter, into our scope of justice is complex. Developing perceived similarity and identification between human and non-human species in an attempt to motivate acceptable environmental behaviour, requires an understanding of the complex relationship between humans and animals.

Opotow (1994) used three manipulations so that the beetle was perceived as similar or dissimilar to humans, as beneficial or harmful to people, and as in conflict with humans over a piece of land. Similarity was used as a manipulation on two levels in a between subjects design, similar and dissimilar. The beetle was described as being similar to people in terms of its need for food and shelter to survive, avoiding enemies, possessing a neurological system similar to ours, being capable of learning, and having the capacity to care for offspring. Dissimilarity to humans was conveyed by describing the beetle as incapable of learning, unintelligent, pre-programmed in behaviour and response to stimuli, being non-conscious, and as not having a localised brain.

The utility of the beetle was seen as either beneficial or harmful. It was perceived as beneficial in terms of its agricultural value (e.g. through acting as a natural pest controller), and its economic contributions (e.g. by saving the expense of chemical pest
control). Conversely it was perceived as harmful in terms of damaging agriculture and the economy by destroying valuable plants.

"Need" was used to create a conflict scenario. Participants were told that the same piece of land that the beetle needed to prevent its endangerment, was needed to build a reservoir. Need was measured in terms of the allocation of land for the beetle's or people's need for a resource. Participants allocated the land according to which they thought needed the land the most. Incidentally, a reservoir was used in the scenario because it was a need reflecting human well-being rather than economic gain (such as the need for an industrial factory) and it has been shown that individuals are more likely to favourably perceive such construction projects that affect nature if they are for basic human survival rather than economic gain (Opotow, 1994).

Participants were presented with a script as an excerpt from a text on invertebrates that induced them to perceive the beetle as either similar or dissimilar to people and as beneficial or harmful to people. They were also given a script describing the conflict scenario. They rated the similarity and utility of the beetle on a bipolar Likert-type scale and were asked how they would allocate the piece of land in the need scenario.

Opotow (1994) found that perceptions of similarity and identification lead to inclusion in the scope of justice and subsequently to environmental concern. The results indicated that the scope of justice influenced attitudes toward environmental protection. This was achieved by mediating the effect of perceived similarity on environmental protection, for example, complexity lead to the inclusion of the beetle into the scope of justice. However, perceived intelligence was seen as a threat and subsequently led to exclusion from the scope of justice and environmental concern. Opotow (1994) suggested that intelligence may be perceived as a negative attribute heightening a sense of threat with those in situations where conflict is intensified by resource scarcity.

Results also found that perceived utility (helpfulness to humans) was a strong predictor of protection of the beetle, suggesting that the protection of animals is motivated
Identification and Behaviour

by self-interest. Furthermore, perceived need also led to the inclusion of the beetle into the scope of justice and subsequently environmental protection. The more the beetle was perceived as needed (in terms of a resource) the greater was its inclusion into the scope of justice which mediated its protection. There were no significant correlations found between need and aspects of similarity (intelligence and complexity) but utility and need were found to correlate.

Given that perceived similarity may lead to the inclusion of animals into one's scope of justice through identification, Opotow (1990a & 1990b) suggests that this may lead to pro-environmental behaviour provided that the animal in question is not perceived as a threat. Findings indicate that perceived similarity may not lead to identification when conflict is present, suggesting that whilst relations exist between identification and perceived similarity, the terms are not synonymous. The assertion that perceived similarity does not necessarily suggest that identification has taken place, runs parallel to Hills' (1991) argument that identification seems to obligate a "feeling of similarity or union over and above cognitive recognition of similarity" (p.38).

The literature indicates that there may exist an inverse relationship between instrumental motivations and identification motivations. Hills (1991) found that farmers who perceived animals with high instrumental value, had low levels of empathy for them. At the same time, high levels of empathy can be associated with high levels of identification except when instrumental motivations are present (Hills, 1995). This indicates that if one strongly identifies with an animal through empathic emotion, then it is likely that there exist only low levels, if any, of instrumental motivations. Furthermore, it is logical to say that if an individual has a deep, genuine concern for an animal (i.e.: they identify strongly with its interests), then one would expect that the protection of that animal would not be motivated by self-interest.

Before concluding this section on identification, there is another viewpoint that further defines the notion of identification and its effect on behaviour. Naess (1984)
points out that the opposite of identification is alienation. Hills (1991 & 1995) likens alienation to Hornstein's (cited in Hills, 1995, p.5) concept of "they-ness", where unconnectedness or perceived dissimilarity forms a barrier between the self and other. As suggested by Opotow's research, this barrier excludes the other from the scope of justice and justifies the ill-treatment of that other. The most extreme and widely documented account of this process is the treatment of Jews in Nazi Germany. Hitler continually alienated Jews by constructing dissimilarities between them and the Germans to the point where Jews were considered sub-human (Hills, 1995). Hills (1991) argues that alienation has also been the case with animals where differences have focussed upon a perceived lack of attributes such as intellect.

1.4.3 Value-Expressive Motivation

The final factor in the tripartite model proposed by Hills (1993) shown in figure 1.4 is that of expressive motivations. Three types of expressive motivations (social, defensive and value expressive) were outlined, each based on the satisfaction of needs through the expression of attitude. From these three expressive motivations, the literature suggests that the value expressive motivation base seems to be especially important in a variety of psychological domains (see Hills, 1991, 1993, 1995, McCarty & Shrum, 1994, & Seligman, 1989, on environmental psychology; Shetzer, Stackman, & Moore, 1991 on consumer and business behaviour; Betancourt, Hardin & Manzi, 1992 on helping behaviour; and Van Lange & Liebrand, 1991 on social psychology). Research on values in the environmental domain has largely concentrated upon the influence they have upon attitudes and behaviour in terms of ethical versus instrumental values (Hills, 1991).

Hills (1991) examined values in relation to environmental ethics toward animals and the natural environment. Hills (1991) argued that values are divided into two broad categories where animals are concerned: instrumental and ethical. Instrumental values relate to instrumental motivations in that there exists a belief that the environment ought
to be exploited for one's material well being. One who is instrumentally motivated is likely to have instrumental values. Ethical values, on the other hand, are grounded in moral principles and are likely to exist in individuals who believe the environment ought to be protected for its own sake and not protected to be used as a resource. Furthermore ethics link values to identification motivation.

It is important to note at this point that an individual's motivations (whether instrumental or identification) may not be reflective of his or her values. In other words, whilst one's values may be linked to a strong identification base such that people *ought* to protect quokkas because they are a living creature, that same individual's behaviour may not be reflective of these values due to instrumental motivations dominating the situation, such as feeding the quokka to get a better photo. Values operate on a higher cognitive level determining where animals fit into the overall scheme of things, whereas instrumental and identification motivations come into play at the lower level of attitudes and behaviour.

Stern and Dietz (1994) suggest that literature in environmental ethics associates environmental concern with three classes of valued objects: the self, other people, and nonhuman objects. Corresponding to these three valued objects, Stern and Dietz (1994) have put forward a tripartite classification of values underlying environmental ethics and justice, namely egoistic, social-altruistic and biospheric value orientations. Furthermore, Stern and Dietz take a constructive approach to attitudes whereby environmental attitudes are constructed in terms of expectations about how an attitude object affects people or objects people place value upon (1994, p.67). Moreover, similar to Gigliotti's (1990) assumption, values are seen to act as filters for information. People selectively accept information when it is congruent with their values. For example, one who is informed that chasing quokkas is harmful to the quokka, yet has an instrumental value orientation, may not accept this information.

Furthermore, values may influence behaviour when information plays a role in affecting identification and instrumental motivations. For example, information is given
that chasing quokkas does not harm them. This information may lead to a higher instrumental motivation to enjoy oneself as a tourist (perhaps by acquiring a better photo by chasing them). However, if one's values are indicative of respect for the environment, then the individual may not be motivated by the instrumental situational forces at work to enjoy chasing quokkas. Rather the individual is driven by one's values that one ought to respect other living things.

**Egoistic values.**

Egoistic values, which parallel Seligman's (1989) notion of self-centred values, can predispose people to either protect or oppose protection of the natural environment to the extent that their own well-being is affected. Based on egoistic values, an individual would be predisposed to sanction environmental protection only if expected personal benefits outweighed expected personal costs. Stern, Dietz and Kalof (1993) also describe this stance in terms of the NIMBY (Not In My Back Yard!) paradigm where for example, individuals protest against the development of a proximal industry because they believe it will harm them and would thus be better located in any other area but theirs.

Stern and Dietz (1994) identify economic approaches that value the environment in terms of summing material costs and benefits to individuals across society. Moreover, because of the assumed benefit to people, this value orientation is closely linked to anthropocentrism as outlined by Thompson and Barton (1994). Thompson and Barton (1994) are in agreement with the environmental literature when they suggest that egoistic values, although operating on a higher cognitive level and being durable aspects of an individual's persona, can have similar effects on behaviour as instrumental motives.

**Social-altruistic values.**

Where egoistic values reflect concern for one self, social-altruistic values reflect concern for the sake of other people. Stern and Dietz (1994) derive social-altruistic values from the Schwartz (1970, cited in Stern & Dietz, 1994) norm-activation model of altruism that endeavours to explain actions that are intended to solve environmental issues
and problems. Schwartz's theory treats pro-environmental behaviour as a kind of altruism based on the notion that responsible environmental behaviour is more likely to occur when an individual becomes aware of the harmful consequences environmental problems may have on others. Furthermore, the individual may take it upon his or herself to help solve the environmental problem that affects other people. The individual may also experience a moral obligation to prevent and mitigate such problems. This model infers that individuals have a general value orientation toward the welfare of others, "they value outcomes that benefit others and can be motivated to act to prevent harm to others" (Stern et al. 1993, p.324).

As noted, a social-altruistic value orientation reflects concern for the environment for the sake of other people or humanity as a whole. Concerns about global issues such as the ozone layer and global warming often stem from value systems where it is believed that humanity will be unable to survive in the future with these problems. Stern and Dietz (1994) argue that individuals who act on this value orientation view environmental problems and their solutions on a cost-benefit basis for a human group from a local community group to all of humanity.

Furthermore, several instances are cited in the literature where this value base is accountable for many environmentally responsible behaviours. For example, Heberlein and Black (1976) looked at the motivations of purchasing unleaded fuel. People were more likely to protect the environment (by purchasing unleaded fuel) for our future generations. Stern, Dietz and Black (1986) looked at altruism as a motivational force behind conservation behaviour such as waste reduction, and Vining and Ebreo's (1990) findings support the notion that nonrecyclers will be more likely to recycle when they become aware of threats to human life support. Stern and Dietz (1994) argue that social altruistic values implicate an underlying moral imperative pertaining to the golden rule -- "Do unto others as you would have them do unto you". 
Biospheric values.

Contrary to egoistic or social altruistic values that in some way focus upon humans, biospheric values reflect concern for the environment, for the sake of the environment (Stern et al., 1993). Individuals with high biospheric values are more likely to identify with the environment than those who have stronger egoistic value orientations. However one need not have high biospheric values to identify with the environment.

This view can also be seen as a cost-benefit analysis but one that is based upon ecosystems or nature as opposed to human welfare. Biospheric value orientations can be likened to ecocentrism where individuals value nature for its own sake and "judge that it deserves protection because of its intrinsic value" (Thompson & Barton, 1994).

Research into attitudes suggests that individuals may possess varying degrees of all three value orientations. Stern and Dietz (1994) found that egoistic, social-altruistic and biospheric value orientations are significantly correlated which gives justification to the argument that environmentalists who encourage concern for animals and nature may very well be concerned similarly with human welfare. Finally, these value orientations also present a conceptual framework from which environmental behaviour can be explained for a variety of environmental problems and issues. Moreover, environmental education can employ such a conceptual framework as a basis for developing more effective strategies in affecting behaviour change.

1.5 Education, Information and Motivation

It has been argued that environmental education has focussed upon increasing knowledge and awareness, but has failed to effectively influence environmental behaviour. It has also been assumed that if a person is educated and has undergone appropriate attitudinal change then responsible environmental behaviour will follow. The desired behaviour changes have not occurred given that many of the models of environmental behaviour and the research supporting them have lacked in a sound theoretical framework.
Furthermore, whilst information strategies have been employed to affect behaviour change, they have predominantly focussed upon ecological or biological accounts that simply raise awareness of issues. They have done little in terms of addressing the motivational qualities of information formats.

The use of motivational bases to affect behaviour change may not only bring about the desired changes in behaviour, but also explain why the effectiveness of environmental education had thus far been unclear. Instrumental motivations can explain why environmental education has sometimes failed to translate awareness, knowledge and concern for the environment into action. Also, environmental education has not taken into account the role of values that individuals hold. Value expressive motivations could explain why some information techniques have not been successful in motivating appropriate behaviour.

An attempt to bring about a genuine concern or identification motivation for protecting the environment, through the use of information may act as a useful tool for motivating responsible environmental behaviour in a variety of domains. One particular domain of concern is that of ecotourism where there exists a dichotomy. On the one hand is the tourist industry, providing a service and making a profit from the direct use of the environment. On the other hand is the protection of the same environment that may be harmed as a direct result of tourism.

1.6 Ecotourism

The motivational bases of identification with nature and biospheric values have relevance to the emerging interest in ecotourism. Given that identification may lead to pro-environmental behaviour, this concept is highly applicable to the area of ecotourism, where there is a need to instill a concern for the environment and to change behaviour accordingly. There are a number of definitions of ecotourism, some simply the result of people in the tourism industry labeling their operation as "ecotourist" in an attempt to
attract more people and to be seen as environmentally sensitive. As a result, the differences between ecotourism, traditional exploitative tourism using the environment as a resource, and simple nature tourism (where activities take place in the natural environment) are no longer clearly defined. The situation where a wide range of tourist activities have been called ecotourist even though they do not accord with a basic definition of the concept, is argument enough to develop a concise definition.

Before ecotourism became a popular term for tour operators trying to promote their own particular activities, it referred to nature based tourism that emphasised appreciation of nature without negative environmental impacts (Valentine, 1991). However, a more narrow definition is now required. The two-way relationship or the symbiotic role that ecotourism can play between tourism and the environment needs to be recognised. That is, ecotourism has the potential to establish a win-win relationship between the environment and the tourism industry. Tourism can continue to be a source of enjoyment and a source of income, while also promoting environmentally responsible behaviour. Valentine (1991, p.5) proposes the following criteria before defining any form of tourism as ecotourism:

Ecotourism is restricted to that kind of tourism which is:

a. based upon relatively undisturbed natural areas,

b. non-damaging, non-degrading

c. a direct contributor to the continued protection and management of the protected areas used, and

d. subject to an adequate and appropriate management regime.

Valentine goes on to say that these criteria, especially the last, are essential for the long-term survival of environmental resources. This implies that instrumental motives also underlie ecotourism, for the mere statement that the environment is a resource is

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6The term conservation is not used as it has connotations of an instrumental motivation base - - the reason why we conserve is so that we can further benefit from the same resource in the future.
inconsistent with any notion of the intrinsic value for nature.

Given that the term ecotourism has become a "buzz" word loosely used by tour operators, a stricter definition of ecotourism is required. Such a definition would contend that not only does tourism require redirection toward an environmentally responsible approach, but that individuals become aware of what it means to be an ecotourist for the primary benefit of the environment rather than personal self-interest; in other words with an ecocentric view rather than anthropocentric. A more focused definition might be advanced as follows: Ecotourism refers to tourism where the appreciation of nature and its intrinsic value is the primary motive. Ecotourism can exist as an environmentally responsible behaviour which need not have any negative environmental impacts nor be detrimental to tour operators. Most importantly tourists are motivated to behave responsibly toward the environment.

Ecotourism also attempts to foster education, yet unfortunately the problems that have plagued environmental education in the broadest sense pointed out earlier, have also affected aspects of ecotourism. Oliver (1991) points out that many education programs undertaken by resorts and tour operators are based on a "you look, therefore you learn" approach. Moreover, education programs in resorts tend to simply involve a "show and tell" presentation with some abstract information about the environment. Oliver (1991) argued that such education programs are based upon passive participation that has little or no impact upon attitudes, motivations, or behaviour.

Attempts at educating tourists in resort or holiday destinations have been problematic. Firstly, tourists are very diverse in their needs, attitudes, motivations and values. Attempting to influence them in very short spaces of time can be feeble if effective methods are not employed. Furthermore, there is a lack of trained personnel at these tourist attractions. What has been the case is that such tasks are being completed by people playing a mutli-role. The person who organises the mini-golf one day and a guided
walk the next, may not have the required skills in influencing behaviour (Oliver, 1991).

In addition, the majority of tourists are essentially there to have a good time not be trapped in a school environment where a guide plays a "teacher" role and where educational messages are continually delivered to them (Oliver, 1991). Such a situation provides incentives not to learn and in fact may lead the travel experience to be a disappointment for the tourist, leaving the way open for irresponsible environmental behaviour or causing the tourist not to return. Moreover, the other extreme of simply placing displays of factual information around the tourist sites does not encourage learning and cannot be expected to influence behaviour (Oliver, 1991). This method is simply another non-interactive passive means of disseminating information which has not been empirically shown to stimulate any desire to behave in a pro-environmental manner.

Furthermore, the effects of different presentation formats of information has been ignored. Research by Winett and Kagel (1984) suggested that the same information, presented differently could affect behaviour in different ways. Depending on the method used, this behaviour change could be indicative of a shift in motivation.

Given the multidisciplinary nature of environmental education, empirical research has tended to focus upon descriptive information lacking a strong theoretical foundation. Furthermore, environmental education literature, and the discipline of environmental education, has concentrated upon knowledge and awareness centred learning, and almost exclusively ignored information pertaining to the motivation of individuals. The literature reviewed thus far on environmental education, the role of information, the motivations toward animals, and on ecotourism, suggest evidence that an avenue in need of further investigation is the effects of different information formats with respect to motivational bases. Whilst incorporating awareness and knowledge, information techniques can tap into the deeper issue of identification with non-human species and nature in motivating pro-environmental behaviour.
1.7 Present Research

The present research focused upon encouraging responsible behaviour toward the native animal of Rottnest Island, Western Australia -- the quokka. The Rottnest Island Authority (RIA) uses education as a primary method for protecting its flora and fauna. Furthermore, the RIA perceives the most pressing issues concerning the natural environment, resulting from scores of tourists visiting the island every year, are the effects of human interaction with the wildlife (such as feeding, chasing or disturbing the quokkas) and the vegetation -- the quokka's natural habitat.

Based on the literature on the motivational bases of attitudes and behaviour toward animals, and the effectiveness of different information formats, the present research focussed on the relative effects of information directed at different motivations, especially the motivational base of identification. Empirical research yielding this knowledge will assist the RIA to effectively educate tourists as ecotourists, and to be able to better protect the quokka and the natural environment on which it depends.

Utilising the concepts of identification, instrumental and value expressive motivations, the research examined the effects on behaviour of two types of information: (1) factual information specific to the quokka such as its life-cycle and the natural habitat of the quokka that is characteristic of many biological and ecological accounts; and (2) information designed to produce feelings of identification that included information about the perceived similarities of humans and quokkas, as well as about its natural habitat and the protection of the quokka and its habitat. Furthermore, given that it is likely that value expressive motivations play an important role where instrumental and identification motives are concerned, it is also the intention of this research to ascertain the value profile of tourists. Based on this, the research questions are as follows.
1.8 Research Questions

1. When tourists are given different kinds of information concerning the quokka, are there any differences in the self-reported motivational bases of behaviour toward the natural environment? In particular, does information designed to produce feelings of identification, result in a strong identification base, and have any impact on self-reported instrumental motivations, given that the literature suggests that heightened levels of concern for the environment reduce instrumental motivations,

2. When tourists are given different kinds of information concerning the quokka, are there any differences in the behaviour they exhibit when interacting with the quokkas?
CHAPTER 2

METHOD

2.1 Participants

Rottnest Island, at the time of data collection, operated two guided bus tours per day around most of the island. Each tour lasted approximately two hours. The tours made three stops: a quokka observation stop for around 10 minutes, a 10 minute stop at the lighthouse, and finally a half hour stop at West End, after which the return journey followed a different route.

There were two buses operating on each tour, making a maximum of 16 individual bus tours over the four day study period. Each bus was randomly allocated to an information condition of either factual information, identification information or no information. Participants were 236 tourists (144 females and 92 males) who participated on either of the two tours on any week day within the week of data collection. Tables 2.1, 2.2, and 2.3 indicate the demographic characteristics of male and female participants.

2.2 Instruments

The instruments included two information brochures, a behavioural checklist and a self-report questionnaire. Information brochures were developed to provide either factual or identification information about the quokkas. Researchers utilised a behavioural checklist to record four kinds of environmentally unfriendly behaviours observed at the first bus stop on the tour (i.e., the quokka observation stop). The study also employed a self administered questionnaire that included four categories of questions (demographic, identification motivation, instrumental motivation and value orientation). The questionnaire required no more than 10 minutes to complete. An introductory statement accompanied each questionnaire administered giving an assurance of confidentiality and
the right to withdraw cooperation at any time. No names or other means of identification were required to be placed on the questionnaire.

Table 2.1

**Age group frequencies for males and females**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Under 18</th>
<th>18 to 35</th>
<th>36 to 55</th>
<th>Above 56</th>
<th>Unknown</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>3</td>
<td>25</td>
<td>35</td>
<td>29</td>
<td>0</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>(3.2%)</td>
<td>(27.2%)</td>
<td>(38.0%)</td>
<td>(31.6%)</td>
<td>(0.0%)</td>
<td>(38.9%)</td>
</tr>
<tr>
<td>Females</td>
<td>5</td>
<td>40</td>
<td>51</td>
<td>47</td>
<td>1</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>(3.5%)</td>
<td>(27.8%)</td>
<td>(35.4%)</td>
<td>(32.7%)</td>
<td>(0.6%)</td>
<td>(61.1%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8</td>
<td>65</td>
<td>86</td>
<td>76</td>
<td>1</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>(3.3%)</td>
<td>(27.6%)</td>
<td>(36.5%)</td>
<td>(32.2%)</td>
<td>(0.4%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Table 2.2

**Place of residence for males and females**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Metropolitan</th>
<th>Intrastate</th>
<th>Interstate</th>
<th>International</th>
<th>Unknown</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>29</td>
<td>1</td>
<td>25</td>
<td>26</td>
<td>11</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>(31.5%)</td>
<td>(1.1%)</td>
<td>(27.2%)</td>
<td>(28.2%)</td>
<td>(12.0%)</td>
<td>(38.9%)</td>
</tr>
<tr>
<td>Females</td>
<td>38</td>
<td>1</td>
<td>33</td>
<td>52</td>
<td>20</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>(26.4%)</td>
<td>(0.7%)</td>
<td>(22.9%)</td>
<td>(36.1%)</td>
<td>(13.9%)</td>
<td>(61.1%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>67</td>
<td>2</td>
<td>58</td>
<td>78</td>
<td>31</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>(28.4%)</td>
<td>(0.8%)</td>
<td>(24.6%)</td>
<td>(33.0%)</td>
<td>(13.2%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>
Table 2.3

Length of stay for males and females

<table>
<thead>
<tr>
<th>Sex</th>
<th>One day</th>
<th>2 to 7 days</th>
<th>8 to 14 days</th>
<th>Unknown</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>72</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>(78.2%)</td>
<td>(18.5%)</td>
<td>(1.1%)</td>
<td>(2.2%)</td>
<td>(38.9%)</td>
</tr>
<tr>
<td>Females</td>
<td>102</td>
<td>30</td>
<td>5</td>
<td>7</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>(70.8%)</td>
<td>(21.0%)</td>
<td>(3.4%)</td>
<td>(4.8%)</td>
<td>(61.1%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>174</td>
<td>47</td>
<td>6</td>
<td>9</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>(73.7%)</td>
<td>(20.0%)</td>
<td>(2.5%)</td>
<td>(3.8%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

2.2.1 Information Brochures

Two different information brochures were developed to provide either factual information about the quokka or information designed to foster a sense of identification with them. The first brochure (factual) contained scientific information such as: "Quokkas are herbivores and they eat several types of grass and wattle", and "Females enter oestrus in the late summer and give birth after a gestation period of just under a month". The second brochure (identification) included statements like: "Quokkas are vegetarians, living on the grasses and wattles that grow naturally on the island", and "Quokkas go through a short pregnancy period of one month during autumn and do not mate again after weaning in the spring". While the same information was supplied, it was conveyed in a different way using subtle differences in the language. For example, "gestation period" in the factual information brochure was changed for "pregnancy " in the identification information brochure. Whilst meaning the same, the latter uses the kind of language that would be applied to humans, thereby creating a sense of similarity with humans.
Each brochure was of approximately equal length (around 480 words) formatted to fit onto one A4 page and divided into three columns so that the brochure would fold into three allowing ease of distribution and reading. The brochures were printed on buff paper with green ink as opposed to black and white, to enhance the interest of the reader. Each brochure began with a title and identical introduction stating what the brochure was about and asking people to fill in the response slip which accompanied the brochures. The slip asked for comments on the effectiveness of the brochure in terms of information value and interesting reading. Tourists were also asked if they thought the information brochure would help protect the quokkas. Responses were not used in any data analysis but rather were used to ascertain whether brochures were being read.

Given that messages need to contain specific action oriented information (Winett & Kagel, 1984), the brochures included a statement pertaining to what tourists should or should not do to protect quokkas. The establishment of a sense of identification on its own could not be expected to lead to appropriate behaviour without the tourist having information as to what constitutes appropriate behaviour. Information on the effects of people feeding quokkas, along with the negative impacts of walking over vegetation that the quokkas feed upon, were included in the closing paragraphs, culminating with a two point reminder. “So remember two points during your stay on the island. It is important that you: 1) do not feed the quokkas, and 2) avoid walking on their vegetation.”

The titles of the brochures differed only slightly. The factual brochure was titled “The Quokka. Rottnest Island Western Australia.” and the identification brochure was titled “People And The Quokka. Rottnest Island Western Australia”. Since tourists were not given a copy of both, the difference mainly served the purpose of differentiation by the research assistants. Furthermore, the identification brochure title was part of the many subtle differences in wording to promote identification.

An opening statement followed the title, welcoming tourists to the island, with a greeting hoping that they enjoy their visit, and a brief description of the topic of the
brochure. The introduction was the same for both brochures. See Appendix A and B for the identification brochure and factual brochure respectively.

The information used in both brochures was developed from the current brochure supplied by the RIA to tourists. Entitled “The Quokka”, the brochure concentrated upon scientific information with respect to the quokka's life cycle, physiology, habitat and eating habits. It also included some history of the quokka reflecting the migratory nature of the marsupial, and reasons for its decline on the mainland.

To make the information more readable and meaningful to the tourists, the information was simplified by removing scientific jargon. For example, “They eat a wide variety of ground vegetation such as Carpobrotus, Rhagodia, Scaevola and Arthocnemum”, was replaced by “Quokkas are herbivores and they eat several types of grass and wattle”. For further ease of reading, information pertaining to the historical significance of the quokka to Rottnest, the quokkas' physical characteristics such as height and weight, and issues concerning the general health and diseases experienced by quokkas were also edited. The remaining information then formed the basis of the factual information brochure.

Each item of factual information was transformed to generate a sense of identification for the second brochure. This was achieved by the simple exchange of words that, whilst they did not alter the information, they changed the way in which the information was conveyed to the reader. The idea was to create a sense of identification as subtle as possible without actually anthropomorphising the quokka. For example words like “inhabit” were substituted with “live” and “gestation period” with “pregnancy cycle”. Quokkas were also described in terms of human traits such as "caring for their infants" rather than "suckling the single young". "Suffering" was also used in the identification information to describe a quokka's life during hot summers to create a sense of empathy for them as opposed to the quokka's "decline in numbers" over the summer months. The
idea that quokkas live in families rather than groups, was also used to develop a sense of identification among readers.

The identification brochure was then given to a sample of students for verbal comment. The appropriate length of the brochure for tourists was an issue that led to the brochure being shortened again. Information such as “Copper has been found to be responsible for how often quokkas breed” and “Its nearest relatives seem to be the forest wallabies and tree kangaroos of eastern Australia...” was also deleted. Students also indicated that the brochures should include a picture or photograph of a quokka. Both brochures contained an identical sketch of a female quokka and its young in the pouch with the caption “Please look after me!” It was included in the centre of the brochure, based on the premise that a stimulus that is visually appealing, added to the written information would better convey the need to protect the quokka, irrespective of the motivation - whether instrumental or identification based.

The same closing paragraphs used in the identification brochure, concerning the protection of the quokkas were also included in the factual brochure. It was important that the brochures be the same in all other respects besides the factual versus identification manipulation.

2.2.2 Behavioural Checklist

The behavioural checklist comprised four behaviour items that could occur at the quokka observation stop (see appendix C). These were a) feeding the quokkas "junk food", b) feeding the quokkas natural food, c) following / chasing quokkas, and d) walking over quokka habitat (vegetation). Each behaviour was recorded as frequency responses indicating how many environmentally inappropriate behaviours occurred on a given tour, whether or not by the same individual. These were defined with criteria for scoring as followed:
Feeding quokkas "junk food"

"Junk food" was defined as foods which were not naturally occurring in the quokkas environment, not necessarily food which humans would describe as "junk". This primarily consisted of foods the tourists had brought with them on the bus, such as bread, fruit, biscuits, crackers, and drinks other than water such as juice or soft drink. Water was not included in this category since quokkas do seek and drink water.

Raters were told that for a behaviour to count as "feeding quokkas junk food" tourists must approach a quokka and feed them by hand. One point would be given to any behaviour of this type. If a person was feeding one quokka and other quokkas approached this would still only count as one point since the behaviour only occurred once despite the number of quokkas being fed. If an individual approached and fed a group of quokkas, this would still only count as one point. If an individual, having fed a quokka or group of quokkas, disengaged from feeding, "moved away" from those quokkas and approached other or the same quokkas again and began feeding, this constituted another behaviour point. Moving away was defined as the point where an individual, after crouching or bending down to feed the quokkas, stands up or stands up and walks away from the site of feeding.

Feeding quokkas "natural food"

Natural foods included foods which occur naturally on the island. These included various types of grasses, plant life, foliage and also water. The same criteria as "feeding quokkas junk food" applied to behaviour scoring in this category.

Chasing / following quokkas

One behaviour score was allocated to this category each time any tourist:

1. followed a quokka moving around but only on the road;
2. followed a quokka that moved off the road and into the bush;
3. followed a quokka that moved around in the bush;
4. followed a quokka that moved from the bush onto the road; or
5. followed a quokka that crossed from one side of the road to the other. If a tourist followed the same quokka across all these situations, then only one point would be scored.

*Walking over vegetation*

Physical boundaries were marked for researchers at the quokka observation site. The boundary was defined as an imaginary line drawn between two bushes running parallel to the road side on one side of the road and a distinct line of vegetation on the other. Once individuals had passed beyond the physical boundary, one behaviour point was recorded. Once past that point, another behaviour point was not recorded until an individual crossed back over the boundary toward or onto the road and passed back through the boundary on either side of the road. The physical boundary was determined by the point beyond the road side where vegetation was growing. There was a strip on both sides of the road where individuals could stand between the boundary and the road side. This consisted of sand or gravel and was not counted in the behaviour criteria.

The behaviour items were developed after consultation with the RIA Education and Community Relations Manager to determine the most pressing issues of environmental protection in relation to tourism. Where tourists are concerned, the RIA perceives the most pressing problems as protecting the quokka, and protecting the vegetation which is the quokka's natural habitat. Observations of tourist's behaviour toward quokkas at the quokka stop were conducted prior to the development of the checklist. These behaviours were then categorised as either direct interaction with quokkas or interaction with the environment. Interaction with quokkas included feeding, chasing or following quokkas, and interaction with the environment was denoted by walking over vegetation.

Due to ethical and logistical constraints, behavioural information was recorded for each bus group only; individuals' behaviours were not identified. Recording individual behaviour and then asking people whether they would perform that behaviour may have
led to a number of ethical implications compromising the integrity of the participants if for example, a tourist was seen feeding and chasing quokkas and subsequently denied these behaviours in the questionnaire. Furthermore, to record and identify each participant's behaviour on every bus at the quokka stop was logistically difficult without the use of several raters. Moreover it would have been likely that the raters would have become obvious to the participants.

2.2.3 The Questionnaire

Based on the aims of the study, the review of the literature, and consultation with the RIA, the questionnaire was divided into four scales. Two of these dealt specifically with the degree of instrumental and identification motivation of tourists. The third scale dealt with the type of value orientation among tourists, and the final section established the demographics of the sample.

The identification questions were based on issues of perceived similarity (Opotow, 1994), Naess’ (1994) notion of “one-ness” and taking another’s interests as ones own, and issues of empathy outlined by Hills (1995). The scale comprised nine questions which attempted to address every possible interaction with quokkas and the island's natural environment. Items were stated in terms of "I", for example "I feel protective of quokkas' interests".

The salient question behind these items was not so much whether tourists wanted to protect quokkas or not, but rather the extent to which they valued them for their own sake as opposed to an instrumental motivation such as personal gratification. The scale was constructed to focus upon issues dealing with the protection and care of quokkas, and concern for their safety in terms of perceived similarity and empathy such as “If I saw someone teasing a quokka, it would greatly upset me”. Items were scored on a five point likert scale (1 - strongly agree to 5 - strongly disagree).
The instrumental motivation scale was based upon issues of self interest. The six questions focussed upon people's enjoyment and well being. Again items addressed motivations underlying why people would want to protect quokkas, in this case for their own self interest. Items focussed on motivations for protecting quokkas such as the enjoyment they afford people and the value quokkas have to the island, for example, "I would feed the quokkas if it meant getting a better photo of them". The same rating scale was used.

The third scale, value orientation, was developed based on the tripartite classification of values outlined by Stern and Dietz (1994). These items focussed on general statements dealing with the way people perceive the natural world ought to be or should be. Items diverged from statements specific to quokkas and Rottnest Island and concentrated on more global issues. For example, "Environmental issues ought to be ignored when jobs are at stake".

Egoistic value items focussed upon issues of environment versus “me”, such as whether local crime should be a priority over the protection of wildlife and the environment. Social altruistic value items addressed the environment versus humanity issue where employment, economic gain, and tourism become the focus. Biospheric value items included items emphasising the intrinsic value of the environment, such as protecting the environment for its own sake. The scale comprised six items scored on the same five point rating as the instrumental and identification scales.

The demographic questions were the final set of items. They comprised four items: the tourists length of stay, their age, place of residence (which also established if they were an overseas, interstate or intrastate visitor), and then sex. They were presented in a multiple choice and open answer format.

Each scale of the questionnaire was initially piloted on members of the general public and refined in terms of grammar and order of questions. For example instrumental orientation items were followed by identification items, followed by value orientation
items, and finally by the demographic items. The questionnaire was then piloted on tourists participating in the Rottnest Island bus tours.

The final questionnaire comprised 27 questions. Questions one to 21 were answered on a five point response Likert scale (1 - strongly agree to 5 - strongly disagree) and included measures of instrumental motivation, identification motivation and value orientation. Questions 22 and 23 were used as screening criteria for whether participants had received and read the information brochures ("Did you receive a brochure on the quokka?", Yes or No; and "Did you read the information brochure on the quokka?", Yes or No). The data of those who answered no were disregarded. Questions 24 to 27 dealt with demographics of age, sex, intended length of stay, and home postcode / country of residence. The questionnaire was administered under the auspices of the Rottnest Island Authority and Edith Cowan University. The full questionnaire is shown in appendix D. Each questionnaire was accompanied by a cover letter explaining the study and ethical issues relating to participation. Participants were told that participation was entirely voluntary, and that they may decide not to participate at any time. Furthermore they were asked not to place their name or any identification on the questionnaire so that anonymity and confidentiality could be assured.

2.3 Rater Training and Inter-Rater Agreement

Raters recording behaviour were given detailed instructions on the criteria of environmentally irresponsible behaviour to be recorded on the behavioural checklist. Raters were also shown the quokka observation stop at which time the physical boundaries were marked. On the left side of the road, a distinct strip of vegetation sufficed as the boundary marker, while on the right side an imaginary line drawn between two bushes parallel to the roadside became the boundary. These boundaries were used as criteria to determine if behaviours, such as walking over vegetation, were to be recorded. Physical boundaries were necessary since there existed on both sides of the road an area
between the bitumen and vegetation which mainly comprised of sand and therefore could not be considered vegetation. Mock observations were made with two separate tours each with two bus loads. The behaviours and the rating criteria outlined above were explained to raters on the first tour. Inter-rater agreement was determined by each rater recording the behaviour of the second tour group at the quokka stop. Since this data was not to be used in the analysis, and for ease of observation and recording, only the behaviour of females was recorded. Behaviour scores for each criteria on both bus loads of the second tour were then examined to determine the rate of agreement. On the first set of observation, rater agreement ranged from 70% agreement to 90% across the four behaviour criteria. After further instruction, 100% agreement was reached on the second bus load of tourists across all the behaviour criteria except for chasing or following quokkas, where the scores of one rater differed. The rater, whose observations did not agree with the criteria, was again instructed in the behaviour criteria until the criteria were clearly understood.

2.4 Procedure

The island tours operated twice a day with two buses on each of these tours. Each tour was randomly assigned to an information condition (identification, factual or none). Brochures were distributed and read by participants for about ten minutes before tourists boarded the bus. On some occasions tourists were late and were given the brochure to read as they boarded. On these occasions however, tourists had at least 15 minutes to read the brochures before reaching the quokka stop.

Two researchers, acting as tourists (different from those distributing the information brochures) then boarded each of the buses. Although there were two buses on each tour, there was a substantial delay between them so that the two buses did not meet at the quokka observation stop.
Bus drivers were briefed on the study before they began the tour. They were asked not to draw any attention to the researchers and also not to say anything regarding the protection or feeding of quokkas. The bus drivers did, however, speak to the tourists about the historical significance and physical characteristics of quokkas.

When each bus stopped at the quokka observation point tourists disembarked and interacted with the quokkas. Researchers remained near the bus (one at the front of the bus and one at the rear) and recorded behaviours. Each researcher was responsible for recording the environmentally inappropriate behaviours of people on both sides of the bus but while one only recorded the behaviour of males, the other recorded the behaviour of females. Discretion was of great importance and researchers pretended to observe the behaviour of quokkas rather than the behaviour of the tourists. If researchers were approached by tourists they explained that they were observing quokkas as part of a university study.

The frequency of a behaviour rather than the number of people performing a behaviour was recorded. Ultimately it was the frequency of behaviour that was most important, rather than simply the number of people exhibiting the behaviour. Behaviour frequency was a function of both the number of people performing it and the number of times they performed it, both of which might be influenced by motivational information. Furthermore, raters were also told to be aware of individual tourists inflating the frequency of behaviours recorded for any bus tour. For example, one person from a particular bus may continually walk over vegetation and/or feed quokkas inflating the behaviour score for that bus load of tourists. Raters were told that while these behaviours were still to be recorded, they should, however, be marked, noting that they were performed by one person alone.

Tourists observed and interacted with the quokkas after which they continued on the tour of the island. Once they had boarded the bus again for the return journey after the final stop at West End (approximately one and a half hours after the observation stop),
participants were asked to complete the questionnaire. Using the public address system on the bus, research assistants explained that, while participation was entirely voluntary, their cooperation would greatly assist efforts of the Rottnest Island Authority to protect the quokkas. Tourists were also asked that each questionnaire should be completed by one person only and not be a shared exercise.

Questionnaires were distributed and completed while the bus was returning to the point of origin which took about 30 minutes. There was an average response rate of 75% on each bus. Once questionnaires had been returned, participants were debriefed about the study and thanked on behalf of the researcher and the Rottnest Island Authority. They were then told that they could help themselves to refreshments provided by the researcher when the bus reached its destination.

Questionnaires and behavioural checklists were then collated at which time the procedure was repeated for the second tour of the day.
CHAPTER 3

RESULTS

3.1 Questionnaire Data

3.1.1 Data Screening

Questionnaires were collated according to each information condition. Screening of questionnaires comprised four stages. First, questionnaires which had been completed by more than one person were excluded from the data. Even though participants were asked to complete questionnaires individually it was obvious to raters that some participants were collectively contributing to item answers. Such questionnaires were marked by researchers on the bus at the time of data collection. Four questionnaires (1.4% of the total sample) were excluded. Secondly, three questionnaires (1.1% of the total sample) which were incomplete were also excluded from the sample. An unforeseen problem was that participants inadvertently neglected to complete the second page of the questionnaire which was positioned on the reverse side of the first page. Fortunately most questionnaires were checked by researchers as they were returned. Participants who failed to complete the second page were asked to do so.

Data of participants who responded "no" to having read an information brochure and who were allocated to either the identification or factual information condition were also removed from the sample. Eight questionnaires (2.9% of the total sample) were excluded. All respondents in these conditions had received a brochure. Those who did not read them indicated that they would read the brochure later for a variety of reasons including wanting to enjoy the tour.

Questionnaires with erratic responses were also removed from the sample. On two occasions after having agreed to complete the questionnaire, participants did not complete
the questionnaire correctly. One participant had finished the questionnaire in less than one minute and had circled “one” to all rating scales and neglected to complete the demographic data, the other gave a variety of answers but had also finished in an unrealistic length of time. These instances were noted on the respective questionnaires by raters at the time of collection and the data were not included in the sample. A further 17 questionnaires were excluded from the analysis due to missing data, leaving a sample of 236 participants.

Individual scores for instrumental motivation items, identification motivation items, and value expressive items from the questionnaire were added to give a composite score for each respective variable. The composite scores were tested for normality. While the identification score was found to be normal, the instrumental composite score was found to be negatively skewed for each information condition. Whilst egoistic and social altruistic values were normal, biospheric values were found to be positively skewed. In view of large cell sizes, lack of normality was not deemed to pose a problem for subsequent ANOVAs.

There were no univariate outliers as indicated by z-scores greater than 3.00 on instrumental composite scores or for value expressive composite scores. A univariate outlier was found for the factual information condition on identification composite scores as indicated by a z-score greater than 3.00. The score for this participant was changed to be one unit greater than the next most extreme score as suggested by Tabachnick and Fidell (1989, p.70). An examination of this participant's data indicated that his scores on instrumental motivation and value expressive motivation did not greatly differ from other participants in the factual information group. There was no reason, therefore, to conclude that he did not belong in that population.

Inter-item correlations showed that one instrumental motivation item (i.e., "Quokkas are valuable as a way of attracting tourism") on the questionnaire did not correlate as strongly as other others items, r(239)=.20, p<.001, with the instrumental composite score and was subsequently left out of the analysis.
A reliability analysis on the remaining instrumental items (five items), produced a Cronbach's alpha reliability coefficient of .85, confirming the reliability of these items. A reliability analysis on identification scores showed a Cronbach's Alpha of .76, a Mahalanobis' distance on instrumental, identification and value expressive scores indicated that there were no multivariate outliers. An alpha level of .05 was set for all analysis.

3.1.2 Value Expressive Motivation

A Pearson Product Moment Correlations were performed on the value expressive categories (Biospheric, Social Altruistic, and Egoistic), with instrumental and identification motivations (see Table 3.1). A low negative correlation was found between biospheric values and instrumental motivation, \( r(251) = -0.15, p < .05 \), indicating that those who had higher instrumental motivations tended to have lower biospheric value expressive motivations. A strong positive correlation was observed between biospheric values and identification motivation, \( r(240) = 0.65, p < .001 \), suggesting that participants who reported high identification motivations tended to have higher levels of biospheric values.

Correlations between social altruistic values and instrumental and identification motivations were not shown to be significant (\( p > .05 \)). Similarly correlations between egoistic values and instrumental and identification motivations were also not significant (\( p > .05 \)).

Correlations within value expressive motivations indicated that social altruistic values tended to be negatively correlated with biospheric values, \( r(250) = -0.21, p < .001 \), and positively correlated with egoistic values, \( r(246) = 0.35, p < .001 \). This suggests that participants who rated higher on social altruistic values tended to also rate higher on egoistic value motivations and lower on biospheric value motivations.
Identification and Behaviour

Table 3.1

Correlations of value expressive categories with instrumental and identification motivations.

<table>
<thead>
<tr>
<th>Value Expressive Motivation</th>
<th>Biospheric</th>
<th>Social Altruistic</th>
<th>Egoistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biospheric</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Altruistic</td>
<td>-.21**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egoistic</td>
<td>-.05</td>
<td>.35**</td>
<td></td>
</tr>
<tr>
<td>Instrumental</td>
<td>-.15*</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>Identification</td>
<td>.65**</td>
<td>-.12</td>
<td>-.03</td>
</tr>
</tbody>
</table>

Note:  * p<.05
      ** p<.01

Univariate ANOVAs showed no significant differences between information condition on social altruistic values, $F(2,243)=0.24$, $p=.78$ nor on egoistic values, $F(2,243)=0.07$, $p=.93$. However, a significant difference was revealed on biospheric values as a function of information condition, $F(2,243)=3.63$, $p=.02$. Thus biospheric values were used as a covariate for subsequent analysis of identification and instrumental motivations as a function of information. A Tukey's post-hoc comparison indicated that the mean biospheric values score was lower in the identification condition ($M=5.38$) than in the control condition ($M=6.25$). The factual condition ($M=6.17$) was midway between these two extremes, but did not differ significantly from either. A lower score indicated stronger endorsement of biospheric values. Descriptive statistics are shown in Table 3.2.
Table 3.2

Value expressive motivations as a function of information condition.

<table>
<thead>
<tr>
<th>Information Type</th>
<th>Biospheric</th>
<th>Social Altruistic</th>
<th>Egoistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Identification</td>
<td>81</td>
<td>5.38</td>
<td>1.69</td>
</tr>
<tr>
<td>Factual</td>
<td>76</td>
<td>6.17</td>
<td>2.95</td>
</tr>
<tr>
<td>Control</td>
<td>79</td>
<td>6.25</td>
<td>2.04</td>
</tr>
</tbody>
</table>

Note: Lower means indicate higher value expressive motivation.

3.1.3 Instrumental and Identification Motivations

A One-way MANCOVA was performed on instrumental and identification motivations (DV’s) with information condition (identification, factual, and control) as the independent variable and biospheric value motivations as a covariate. Tests for homogeneity of regression for both DV’s were not significant suggesting that the relationship between the DV’s (instrumental and identification motivation) and the covariate (biospheric values) was the same across all information groups. With the use of Wilk’s criterion, there was a significant effect for information condition on the combined DV’s, $F(4,462)=2.79$, $p=.02$. Univariate ANCOVAs, however, showed that instrumental motivation was not significantly different across information groups, $F(2,232)=2.04$, $p=.13$; but that identification motivation was significantly different, $F(2,232)=4.78$, $p=.009$. A Tukey’s HSD post-hoc comparison indicated that the mean identification motivation was greater in the identification condition ($M=13.70^*$) than in the control

* Lower means indicate higher identification motivation. Means are adjusted for the covariate.
condition ($M=15.02^*$) and the factual condition ($M=15.08^*$). Descriptive statistics are shown in Tables 3.3 and 3.4.

A one-way ANOVA without using biospheric values as a covariate showed that instrumental motivations did differ across information groups, $F(2, 251) = 4.44, p = .01$. A Tukey's Honestly Significant Difference (HSD) post hoc analysis revealed that participants in the identification information condition reported significantly less instrumental motivation than participants in the control information condition, without controlling for the effect of biospheric values. These results would indicate that differences found on reported instrumental motivations can be explained by differences in biospheric value motivations.

Table 3.3

Instrumental motivation as a function of information condition.

<table>
<thead>
<tr>
<th>Information Condition</th>
<th>N</th>
<th>Observed Means</th>
<th>SD</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>81</td>
<td>23.66</td>
<td>4.21</td>
<td>23.51</td>
</tr>
<tr>
<td>Factual</td>
<td>76</td>
<td>20.44</td>
<td>4.82</td>
<td>22.54</td>
</tr>
<tr>
<td>Control</td>
<td>79</td>
<td>22.00</td>
<td>4.85</td>
<td>22.05</td>
</tr>
<tr>
<td>TOTAL</td>
<td>236</td>
<td>22.71</td>
<td>4.67</td>
<td></td>
</tr>
</tbody>
</table>

Note: Lower means indicate greater instrumental motivation. Possible range of scores 5 to 25.
Table 3.4

Identification motivation as a function of information condition.

<table>
<thead>
<tr>
<th>Information Condition</th>
<th>N</th>
<th>Observed Means</th>
<th>SD</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>81</td>
<td>13.02</td>
<td>3.66</td>
<td>13.70</td>
</tr>
<tr>
<td>Factual</td>
<td>76</td>
<td>15.52</td>
<td>5.06</td>
<td>15.08</td>
</tr>
<tr>
<td>Control</td>
<td>79</td>
<td>15.26</td>
<td>3.85</td>
<td>15.02</td>
</tr>
<tr>
<td>TOTAL</td>
<td>236</td>
<td>14.58</td>
<td>4.35</td>
<td></td>
</tr>
</tbody>
</table>

Note: Lower means indicate higher identification motivation. Possible range of scores 5 to 45.

3.2 Behavioural Data

3.2.1 Data Screening

Behavioural checklists were collated according to the information condition that tourists were given on the tour. There were no missing data on any checklist and all behavioural observation data were entered into the analysis as a proportion of the people on each bus tour. Each checklist was checked for any notes observers had made at the time of data collection. In one instance an observer noted that one male tourist was consistently walking over vegetation which inflated the score for that bus. These scores were counted as one behaviour score. On other occasions observers noted that some tourists had chosen to remain on the bus at the quokka stop. When asked why tourists remained on the bus, most stated that they had either already seen the quokkas (previously on another tour or at another place on the island) or that they were elderly and felt they could not continually disembark from the bus. The number and gender of the tourists who disembarked at the quokka stop were recorded on the behaviour checklists. A grand total
of 376 (82.8%) people disembarked at the quokka stop out of a possible 454 people participating in the tours. A total of 153 males (40.7% of the 376 people) disembarked. Of those 53 (34.6% of total males) were in the identification condition, 61 (39.9%) in the factual condition and 39 (25.5%) in the control condition. A total of 223 females (59.3% of the 376 people) disembarked from the bus. Of those 93 (41.7% of total females) were in the identification condition, 85 (38.1%) in the factual condition and 45 (20.2%) in the control condition.

For the behavioural data each bus tour constituted the unit of analysis (i.e., the "subject"), and the score for each bus on each behaviour item was the number of observations for that item divided by the number of tourists on the tour (i.e., a proportion to take into account differing numbers of people on each tour). For example, instances of 10 behaviours were divided by 50 people to yield a score of .20 for that bus on that behaviour. There were a total of 30 "subjects".

3.2.2 Behaviour as a Function of Information

No univariate outliers were found as indicated by z-scores greater than 3.00 on each of the behavioural criteria for each information condition. A Mahalanobis distance at alpha .001 showed no multivariate outliers

A One-way MANOVA was performed on the behavioural criteria (DV's: proportion feeding junk food, proportion feeding natural food, proportion following quokkas, and proportion walking over vegetation) using information condition (identification, factual and control) as the independent variable. With the use of the Wilk's criterion, there was no significant difference between information condition on the combined DV's, $F(8,46)=1.15, p=.373$. Results indicated that the number of behaviours was not significantly affected by the type of information people received. Table 3.5 displays descriptive statistics for the behavioural criteria. It should be noted that the power of the study was weak due to ceiling effects (relatively few behaviours), a small effect size and, a small sample size.
Table 3.5

Statistics of behaviour criteria as a function of information condition.

<table>
<thead>
<tr>
<th>Information Condition</th>
<th>N</th>
<th>Feeding Junk Food</th>
<th>Feeding Natural Food</th>
<th>Following Quokkas</th>
<th>Walking Over Vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Identification</td>
<td>8</td>
<td>0.04</td>
<td>0.49</td>
<td>0.04</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td>(7)</td>
<td>(13)</td>
<td>(82)</td>
<td></td>
</tr>
<tr>
<td>Factual</td>
<td>12</td>
<td>0.08</td>
<td>0.08</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(18)</td>
<td>(0)</td>
<td>(9)</td>
<td>(84)</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>10</td>
<td>0.08</td>
<td>0.13</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(19)</td>
<td>(0)</td>
<td>(10)</td>
<td>(72)</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lower means indicate lower incidence of behaviour as a proportion of tourists. Figures in parenthesis indicate actual behaviour scores in each condition (ie., number of incidences of the behaviour).
CHAPTER 4

DISCUSSION

This study examined the effect on self-reported identification and instrumental motivations, and on behaviour, of different types of information, specifically factual information and information designed to produce feelings of identification with quokkas. Results indicated that different information formats yielded differences in the self-reported motivational bases of behaviour toward the Rottnest Island quokkas and their environment. Tourists, given the identification information brochure, reported stronger identification motivations than those given either the factual information brochure or no information. Self-reported instrumental motivations also differed between groups. Those given the identification brochure reported less instrumental motivation than tourists in the no information group. However, this result was explained by differences in biospheric values among tourists, as group differences diminished when biospheric values were used as a covariate.

Behavioural observations indicated that there were no significant differences in behaviour for busloads of tourists exposed to the different kinds of information formats. That is, the behaviour of tourists toward quokkas and the environment was not affected by the manipulation.

4.1 The Role of Value Expressive Motivations

Values are assumed to be durable aspects of an individual that should not be affected by an information manipulation. Tourist's values were assessed to identify any
differences in values across information groups, as the literature suggests that values may affect the level and type of information an individual may wish to accept (Gigliotti, 1990). Moreover, values are likely to play a role in how information is used to influence identification and instrumental motivations, especially where environmental behaviour is concerned. It was therefore necessary to ascertain whether value orientation differed across information groups. In this event any differences on self-reported motivations may be attributable to differences in value orientations and not the information manipulation.

Results indicated that biospheric value expressive motivations differed between the identification information group and control group, with the identification information group having higher biospheric value motivations. Statistical control of this variable was achieved by treating it as a covariate. Differences in self-reported identification motivation persisted with and without this covariate, however, instrumental differences without the covariate disappeared when it was included. One can only speculate why the identification group scored higher on biospheric values than other groups. It may have been due to chance in which case using biospheric values as a covariate would be appropriate. On the other hand, identification motivations may be linked to biospheric value expressive motivations in such a way that the identification information given to tourists led to their biospheric values becoming more salient in this particular situation. This may further explain why participants who displayed stronger identification motivations were likely to have a high level of biospheric expressive motivations. This problem could have been avoided if values had been measured prior to tourist’s receiving the information brochure.

4.2 The Effects of Information on Identification and Instrumental Motivations

In the present study, the two types of the same information on quokkas, factual scientific information versus identification information, had differing effects on the self-reported motivations of tourists on Rottnest Island. Using statements such as "quokkas are herbivores" versus "quokkas are vegetarians" elicited different responses. Results
showed that tourists who received the identification information brochures, reported higher levels of identification motivation toward the protection of quokkas than either the tourists who received the factual scientific information or those who received no information brochures. Given that the differences found in the tourist's value orientations had already been accounted for, this finding may be attributed to the subtle difference between the information brochures that encouraged tourists to identify with the quokkas. We may conclude that different wording of information leads to differences in self-reported motivations. Moreover, although this result cannot confirm whether tourists actually identified with quokkas, it would suggest that tourists would be more likely to protect quokkas out of a genuine concern having read the identification brochure. Given that brochures containing such factual information are so widely used, this in itself is an important finding.

Opotow (1994) noted that the development of perceived similarity between people and animals was more likely to lead to protective behaviour. The identification information brochures in this study used perceived similarity between humans and quokkas to establish a sense of identification, which according to Naess (1984) would encourage the interest or interests of another being reacted to as our own. That is, it was hypothesised that people would be more inclined to want to protect quokkas if they felt a sense of identification with them. Results concur that perceived similarity may be an effective tool in developing an identification motivation base. The present study utilised perceived similarity with the quokka's "social" skills, eating habits and life-style that were likened to human qualities. Consistent with Opotow (1994) who found that perceived similarity led to the inclusion in the scope of justice of the Bombadier beetle, the present study found that the use of perceived similarity led to higher self-reported identification motivations.

The literature further indicates that if one strongly identifies with animals, then it is probable that instrumental motivations will be weakened. Hills (1993) found that animal
rights supporters tended to have a strong identification base and a weak instrumental base as compared with farmers. Hills (1991) also found that among farmers, animals that elicited high instrumental motivations (animals that provided some satisfaction with economic return), were associated with reduced levels of empathic emotion. Furthermore, those animals that afforded no instrumental value were associated with heightened empathy. It is logical to assume that if one genuinely identifies strongly with quokkas, then self-interested motivations are likely to be reduced in favour of motivations of genuine concern to protect quokkas. Such a relationship was replicated in this study with identification and instrumental motivations showing an inverse relationship. Instrumental and identification motivations were shown to have a moderately strong negative correlation.

Self-reported motivations indicated that instrumental motivations were significantly lower than identification motivations in the identification information group, but only when not taking into account the value orientations of these tourists. Having accounted for the higher biospheric values found among tourists in the identification condition, it was found that higher identification motivations did not lead to lower levels of instrumental motivation, although the same pattern persisted.

Part of the explanation for this result may lie with the demographic characteristics of tourists, and the situational factors presented to tourists on the island bus tours. The demographic data indicated that 73.7% of tourists were visiting the island for the day. Furthermore, over 58% of tourists were from either other states in Australia or from overseas. Given the short period of interaction with the island and its natural environment (less than eight hours); that most tourists would not be visiting the island at any regular intervals; and that most have traveled hundreds if not thousands of kilometres; it might be expected that tourists, despite a heightened level of identification motivation, would express a substantial instrumental motivation base.

It is possible that, despite having expressed higher levels of identification
motivation and having had the adverse effects of feeding quokkas explained, tourists would still feed them once faced with the temptation. This may be attributed to the short term interaction with quokkas (leading tourists to gain optimal satisfaction from the experience in the time available) and the inability for tourists to observe the adverse long term effects of feeding them. It is also likely that most tourists would never see the quokkas again contributing to an overwhelming need to obtain maximum personal satisfaction despite any level of identification motivation.

Although the results indicated differences in motivation, they were not as salient as expected. Firstly, this may have been due to the prominence of instrumental motives. Since tourists are likely to have high levels of instrumental desires to protect quokkas, their self reported identification motivations may have been overshadowed by these desires. Secondly, the manipulation (the identification information brochure) did not directly address the issue of reducing instrumental motivations. For example, tourists were not directly asked to put aside desires such as searching for the best position to obtain a better photograph of a quokka (which would require tourists to walk over vegetation or even feed the quokkas). A direct statement of association between typical tourist behaviour and the harmful effects on quokkas may have contributed to this end. Thirdly, the analysis itself may have not been strong enough to detect any subtle differences in the level of instrumental motivation across all three information groups.

4.3 The Effects of Information on Environmental Behaviour

The second research question concerned whether tourists, when given different kinds of information would exhibit any differences in their behaviour toward quokkas. Results indicated that despite self-reported increases in identification motivation in the identification information group, there were no differences in behaviour exhibited by tourists across any information groups. That is, a self-reported identification motivation base in the identification information group, did not lead to a difference in environmental
behaviour toward the quokkas or the environment compared to the factual information or control groups.

Behavioural observations revealed that tourists were just as likely to feed quokkas or walk over vegetation regardless of the type of information they had been given. What needs to be noted however is the frequency of behaviours that occurred. Descriptive statistics showed that in the identification condition for example, quokkas were only fed junk food in four instances per 100 people, compared to eight in the factual group and eight in the control group over the entire study. Although no significant differences were found across these groups for feeding quokkas junk food, this may have been a function of floor effects; a generally low level of occurrence of the target behavior.

Of interest is the trend where only tourists in the identification group were recorded as having fed the quokkas natural food. Natural food was defined as foods that occur naturally on the island. This included various types of grasses, plant life, foliage and also water. Tourists in this information group were seen to feed quokkas water that was readily available to all tourists on the bus. One may only speculate as to why they chose to give the quokkas water, if it were not by chance. It may have been the case that while they were still motivated by instrumental reasons (feeding the quokka to receive some kind of personal satisfaction) tourists felt that they identified with the quokkas hardships in the summer season. They did not wish to harm them having learnt, from the information brochure, the importance of water to quokkas in the summer months. Moreover this trend can be further seen by the combination of both feeding criteria. Tourists in the identification group fed quokkas less junk food (being harmful to them) and more natural food (being beneficial to them) than those in either the factual or control groups.

Descriptive statistics also indicated floor effects with "following / chasing quokkas". Interesting though was that reverse differences, though not significant, were found. There were a higher proportion of instances of people following or chasing quokkas in the identification information group (9) as compared to the factual group (5)
and the control group (3). A similar paradox was found with "walking over vegetation", where there were 52 instances per 100 people in the identification group seen to walk on vegetation compared to 42 in the factual group and 44 in the control group. However, given that these figures were not found to be statistically significant, there is insubstantial evidence to draw any consistent conclusions.

4.4 The Theoretical and Practical Implications

The aim of this research was to assess if identification could be used as a motivator to promote friendly environmental behaviour toward quokkas and their environment. Attempts in the present study were unsuccessful in affecting behaviour despite self-report measures indicating that a change in behaviour would occur. A problem that has persisted in environmental education for many years, the question of why people say one thing in self-report assessments and behave in a different way, has become apparent in the present study.

It should be emphasised that the population in this study was tourists who are unlikely to want to protect the environment based exclusively on a genuine concern for the environment. Instead, tourists are more likely to have strong instrumental motivations to experience and receive optimal satisfaction from an island resort. Given the trend that emerged where tourists in the identification group more often fed quokkas natural food and less often fed them junk food that other groups, an identification motivation base could still prove successful in promoting environmentally friendly behaviour.

Previous research has successfully used information to promote environmentally friendly behaviour (Lansana, 1992; Winett & Kagel, 1984; Bettman & Kakkar, 1977). However, on close examination, most information techniques used in the past particularly by government agencies, have used instrumental incentives to motivate such behaviour and as already pointed out, when these incentives cease, so do the desired behaviours (De Young, et al. 1993). The challenge here was to use reasoning other than instrumental
motives to promote environmental behaviour.

Whether it is possible for tourists to protect the environment for its own sake remains unanswered. A valid approach may be to generate a concern for the environment based on both a genuine concern for the environment and instrumental motivations. De Young, et al. (1993) found that a combination of two methods using information techniques, one based on a rationale of genuine concern for the environment and the other on an economic rationale, yielded greater self-report behaviour change with respect to source reduction behaviour, than either one of the methods on their own.

Winett and Kagel (1984) have stated that the use of information techniques in the past has been flawed by problems other than the intervention techniques. A common problem has been that people simply do not read the brochures. The response slips returned by participants in the present study ensured that most of the brochures were actually read. We can infer that the brochures were presented in a sufficiently attractive and interesting style so that tourists would read the brochures. However, how much attention was actually paid to the information remains unknown. A further problem could have been that tourists did not fully understanding the material they were presented with. For example, individuals may not have understood the term "vegetation" used in the brochures. Both information brochures asked tourists to avoid walking over vegetation. Vegetation was described as the quokkas food plant, but not explained in terms of its appearance. What might have been seen a common bush, may have been one on which the quokka's livelihood depends. Moreover the same plant would have been counted as vegetation in the behavioural criteria of this study.

Assume that the tourists who received the information brochures also understood the message conveyed. It is also necessary to consider whether the information given was accepted or selectively ignored or entirely discounted. Information that is perceived as irrelevant to one's own behaviour will certainly not be acted upon, let alone remembered. Gigliotti (1990) has argued that people exposed to various forms of information have
selectively chosen the messages they wish to believe, instead of altering their behaviour toward the environment. The messages that are either accepted or rejected have been shown to depend upon the values held by that individual. Results indicated that in the identification information group, there was a tendency for individuals to score higher on biospheric value expressive motivations. It is likely then, that since the identification information was consistent with the values held by most of the tourists in the identification information group, the information was accepted rather than discounted.

Having argued that in the identification information group, tourists should have accepted the message conveyed, what is still not clear is why this has not had the desired effect upon behaviour. Vining and Ebreo (1990) argue that it may be a case of cognitive dissonance. They have argued that even if information is read, understood, favourably received, congruent with an individual's current value systems, but not congruent with current behaviour patterns, then individuals must decide whether to change the behaviour to be consistent with the values held, or ignore the information and continue with the same behaviour. For example, tourists may have understood that walking over vegetation was harmful to quokkas, but once in contact with them they decided to walk over vegetation to enhance their experience. Moreover, Vining and Ebreo (1990) suggest that it may be a case of individuals not remembering information, or remembering less information directly as a result of this incongruence.

Furthermore when looking at the behavioural data we must take into consideration the sample size. If differences existed in the way people behaved toward quokkas as a result of self-reported identification motivation, perhaps they were only slight and not evident because of the small sample of bus tours. Moreover, the MANOVA used on the behavioural data may not have been powerful enough to detect any differences in the present sample size.
4.5 Summary and Conclusions

The manipulation resulted in a difference in the self-reported motivations of tourists toward protecting the Rottnest Island quokkas and their environment. The tourists who were given the identification information reported higher identification motivations to protect the Rottnest Island quokka than those who received either the factual information or those who received no information at all. Based on the model of motivational bases of attitudes developed by Hills (1993), one would expect an individual who has strong identification motivations toward the quokka, to display a genuine concern for its well-being and behaviour indicative of this concern. The present study however, did not find clear evidence to support this hypothesis. While a self-reported identification base did develop, instrumental motivations were not weakened when values were accounted for. Furthermore this did not lead to any significant change in the behaviour patterns.

The relationship between value expressive motivations, identification and instrumental motivations was illustrated in the present study. Values influenced the way identification information affected identification motivations. Since biospheric values differed across the information groups, it was necessary to control for their effects. Evidently the role of value expressive motivations should not be overlooked.

The role of instrumental motivations among tourists has been outlined where tourism is heavily based around self enjoyment and self satisfaction. Even the most dedicated ecotourists may have a significant level of instrumental motivations. Instrumental motivations should thus be recognised and incorporated into any educational or environmental strategy aimed at protecting the environment. Strategies used to educate tourists could not only employ the effective manipulation of instrumental motives, such as economic incentives to preserve the environment, but further develop an identification base in an aim to promote an intrinsic valuing of the environment and its fauna.

The use of different information formats has been shown to offer some potential.
Tour operators across Australia have tended to either give a quick "show and tell" presentation or have attempted to play the "teacher" which has been shown to be unsuitable when dealing with tourists (Oliver, 1991). Moreover, tour operators have taken on multiple roles as well as the educator. Tourists need to be educated by people specifically trained to perform such tasks.

Also, most tourists to the island are likely to remain only a short period of time, often one day, suggesting that any educational technique employed must be effective, simple and brief. The development of information stands at a quokka enclosure, for example, could focus upon conveying identification based information similar to that used in the present study. With an attempt to foster the symbiotic relationship between the environment and ecotourism, information should incorporate clear statements as to why the quokkas and the natural environment should be preserved for its own sake and as a resort island for future generations of tourists.
REFERENCES


APPENDIX A

Identification Information Brochure
Welcome to Rottnest Island. We hope you will enjoy exploring and learning about the unique beauty of Rottnest on your tour of the island. The following information will help you understand more about the Quokka of Rottnest and how we can help it survive.

We would appreciate you telling us what you thought of this brochure by completing the two questions attached.
Other than humans, the quokka is the only mammal that lives on Rottnest Island. It is a marsupial that at the time of European settlement was found abundantly on the mainland.

However, mainland quokkas have become extinct over the past fifty years. Quokkas are curious and friendly toward people and originally had few natural enemies. They stood little chance against predators and competitors such as the fox and rabbit introduced by people. Quokka sport hunting contributed to their extinction.

It is estimated that about 10,000 quokkas live on Rottnest Island in a "normal" year, but many suffer and die from the extreme heat and lack of water during summers.

Quokkas need to be able to shelter under dense shrubs, especially when the summer temperatures reach the high 30's. Quokkas are resourceful and soon learn how and where to find shelter. They gather in social groups and share resources, but may be forced to fight for water and sheltered spots if these become scarce.

Quokkas are vegetarians, living on the grasses and wattles that grow naturally on the island. However, their food plants mainly grow during winter and decline in both water and nitrogen content as the summer progresses, making summer particularly difficult for them. By March or April quokkas can become anaemic, and may die from malnutrition.

Quokkas go through a short pregnancy period of one month during autumn and do not mate again after weaning in the spring.

Please Look After Me!

After birth, the infant remains in the pouch and close to its parents until it is between four and six months old. After becoming independent of their parents, young quokkas go their own way. Until then, the parent quokkas raise, suckle and care for their infants.

Quokkas live in family groups of 25 to 150 where males and females form strong bonds with complex patterns of communication. Male and female quokkas usually live and die together within a relatively small home range and can enjoy a life of up to 10 years.

People, however, can harm quokkas without realising it. Feeding quokkas seems to be the biggest problem that tourists pose. Quokkas' intake of water largely comes from what they eat. Feeding them dry crackers or junk food can lead to dehydration. Quokkas can become dependent on junk food and won't feed on foods which give them the necessary minerals and vitamins to survive.

Also, tourists often walk over vegetation which destroys the quokkas' food plants on which their livelihood depends.

So remember two points during your stay on the island. It is important that you:
1. do not feed the quokkas, and
2. avoid walking over their vegetation.

Enjoy the experience of meeting these unique mammals, but keep in mind that the survival of the quokka largely depends on our actions.
APPENDIX B

Factual Information Brochure
Welcome to Rottnest Island. We hope you will enjoy exploring, and learning about the unique beauty of Rottnest on your tour of the island. The following information will help you understand more about the Quokka of Rottnest and how we can help it survive.

We would appreciate you telling us what you thought of this brochure by completing the two questions attached.

Source Rottnest Island The Quokka Rottnest Island Authority
The quokka is recognised as a marsupial, but differs from other small wallabies in that it has a short stumpy tail, distinct teeth, skull structure and blood proteins.

At the time of European settlement the mainland was highly populated by the quokka. Their decline can be attributed to the introduction of predators and competitors such as the fox and the rabbit. Both quokka shooting and habitat destruction have also added to the decline on the mainland.

It is estimated that about 10,000 quokkas inhabit Rottnest Island in a "normal" year, however populations can severely decline during summers of extreme heat and low water supplies.

Quokkas congregate under dense shrubs for shelter, especially when the summer temperatures reach the high 30's. Animals will sometimes fight for these sheltered spots and water since both are in short supply.

Quokkas are herbivores and they eat several types of grass and wattle. The quokka's food plants mainly grow during winter and decline in both water and nitrogen content as the summer progresses. By March or April, quokkas become anaemic and death is often a result.

Quokkas have a single short breeding season and do not mate again after weaning in the spring.

PLEASE LOOK AFTER ME!

Females enter oestrus in late summer and give birth after a gestation period of just under a month. After birth, the single young is suckled in the pouch and remains there until August or September.

Male and female quokkas live in groups of 25 to 150. They live within a relatively fixed area and have a life span of around 10 years.

People, however, can harm Quokkas without realising it. Feeding seems to be the biggest problem that tourists pose. Quokkas' intake of water largely comes from what they eat. Feeding them dry crackers or junk food can lead to dehydration.

Quokkas can become dependent on junk food and won't eat on foods which give them the necessary minerals and vitamins to survive.

Also, tourists often walk over vegetation which destroys the Quokkas' food plants on which their livelihood depends.

So remember two points during your stay on the island. It is important that you:
1. do not feed the quokkas, and
2. avoid walking on their vegetation.

Enjoy the experience of meeting these unique mammals, but keep in mind that the survival of the quokka largely depends on our actions.
APPENDIX C

Behavioural Checklist
BEHAVIOURAL CHECKLIST

TOUR TIME: 11.30 am 1.30 pm

BUS LOAD: FIRST SECOND THIRD

DAY / DATE:

CONDITION: IDENTIFICATION FACTUAL NONE

NUMBER OF PEOPLE ON TOUR: females: males:

GENDER: MALE FEMALE

Each behaviour should only be recorded once under one category.

FREQUENCY OF BEHAVIOUR

<table>
<thead>
<tr>
<th>FEEDING QUOKKAS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHASING/ FOLLOWING QUOKKAS</td>
<td></td>
</tr>
<tr>
<td>WALKING OVER VEGETATION</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

Questionnaire
The purpose of this research is to investigate the effect of information on people's behaviour toward wildlife and the natural environment. Results will assist in the efforts of the Rottnest Island Authority to better protect its fragile natural environment and its wildlife.

The research is part of my studies for a Master of Environmental Psychology degree at Edith Cowan University and is conducted in conjunction with the Rottnest Island Authority.

If you wish to participate, would you please complete the attached questionnaire which is part of this research. It should take no more than 10 minutes to complete.

Please be assured your participation is entirely voluntary, and you may decide not to participate at any time.

Please **DO NOT** place your name or any identification on this questionnaire so that anonymity and confidentiality can be assured.

If you wish to participate please answer each question carefully as instructed.

There are no right or wrong answers.

Thank you for your time and effort.

Steve Sertis (Researcher).

Any queries should be addressed to

Steve Sertis,
Please answer each question as indicated and try not to spend too long on any one item.

Indicate to what extent you agree or disagree with the following statements by circling the appropriate number where:

1 - Strongly Agree  2 - Agree  3 - Unsure  4 - Disagree  5 - Strongly Disagree

1. I would feed the quokkas if it meant getting a better photo of them.
   
2. I would feed the quokkas if it meant getting a better look at them.

3. If it meant getting a better photo of the quokka, I would follow it over island vegetation.

4. If it meant getting a better look at the quokka, I would follow it over island vegetation.

5. I enjoy chasing quokkas, especially when they run off into the bush.

6. Quokkas are valuable as a way of attracting tourism.

7. I wouldn't feed the quokkas because it harms them.

8. I think it is important to protect and care for quokkas.

9. I feel protective of quokkas' interests.

10. I think quokkas have as much right to Rottnest as people do.
11. I would defend a quokka if it was being attacked. 1 2 3 4 5

12. I think the well-being of the quokkas is as important as the well-being of visitors to Rottnest. 1 2 3 4 5

13. If I saw someone teasing a quokka, it would greatly upset me. 1 2 3 4 5

14. In the interests of their safety, I wouldn't approach quokkas unless they came up to me. 1 2 3 4 5

15. I would not feed the quokkas even though other people may enjoy doing it. 1 2 3 4 5

16. Protecting the natural environment is more important than economic gain. 1 2 3 4 5

17. There ought to be stronger laws that protect wildlife from human irresponsibility. 1 2 3 4 5

18. Everyone ought to help protect the environment for the sake of the planet. 1 2 3 4 5

19. We ought to be worried more about things like local crime which directly affect me rather than protecting wildlife, and the environment. 1 2 3 4 5

20. Environmental issues ought to be ignored when jobs are at stake. 1 2 3 4 5

21. I think quokkas are important for their own sake, not just for tourism. 1 2 3 4 5

22. Did you receive a brochure on the quokka? a) YES (go to question 23) b) NO (go to question 24)
23. Did you read the information brochure on the quokka? a) YES b) NO

24. Please indicate your age by circling your age group.
   a) under 18 b) 18 to 35 c) 36 to 55 d) above 56

25. Please indicate your intended length of stay by circling the appropriate answer.
   a) 1 day b) 2 - 7 days c) 8 to 14 days d) over 14 days

26. Please give your home post code or state your home country if not Australia:

27. Please indicate your gender by circling the appropriate answer:
   a) MALE b) FEMALE

Thankyou for your participation.