# INTERPRETING GREEN CONSUMER BEHAVIOUR: AN EXPLORATORY EXAMINATION OF CARDIFF CONSUMERS

By

Zuha Rosufila Abu Hasan

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*Consumer Behaviour Analysis Research Group*
*Marketing and Strategy Section of Cardiff Business School*
*Cardiff University*

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# ABSTRACT

Despite the popularity of consumers' environmental behaviour choices, little research has been forthcoming which analyzes green behaviour across different situations in a systematic way. A particularly relevant stream of research to explain the situational effect on consumer environmental behaviour is the Behavioural Perspective Model (BPM). A key insight of the BPM is of the anticipated benefit consumers acquire and the impact of the environment that surrounds consumer choice. The aim of the research is to interpret consumer environmental behaviour across different situations in a systematic way by using the BPM. Due to the exploratory nature of the study, a mixed method approach was used among Cardiff consumers. The first study involved standardized open-ended interviews (N=30). Panel experts were also invited to take part in the BPM Contingency Definition Test. The second studies were conducted via survey (N=200), which provided data on 1,600 consumer situations. The findings from the consumers' verbal responses to descriptions of eight consumer environmental situations confirm the predictions raised by the BPM interpretation of consumer choice. Mehrabian and Russell's affective (Pleasure, Arousal, Dominance) and behavioural variables (Approach and Avoidance) showed significant main effects. The one-way ANOVA and Tukey's HSD analysis provide support for the patterns of the affective and behavioural variables for the BPM contingencies categories. Furthermore, the actual differences in the variables means scores of the groups were large (eta squared = between 0.1 and 0.4). The discriminant analysis justified the predicted capability of the BPM. Two-way interaction effects between affective variables were also identified. In summary, this study shows that the application of the model is not only empirically limited to familiar themes of consumer research but also applicable to different consumer environmental behaviours.

**Keywords**

Green consumer, consumer environmental behaviour, Behavioural Perspective Model (BPM), consumer situation, affective response.

# DEDICATION

**To my beautiful parents, who taught me the importance of working hard and having fun**

**To my siblings, thank you for lending me your ears when I needed you the most**

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*'I don't think we're going to save anything if we go around talking about saving plants and animals only; we've got to translate that into what's in it for us'*

(Jim Fowler)

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# LIST OF ABBREVIATIONS

| Number | Acronym | |
|---|---|---|
| 1 | ANOVA | Analysis of Variance |
| 2 | BPM | Behavioural Perspective Model |
| 3 | CCs | Contingency Categories |
| 4 | CFA | Confirmatory Factor Analysis |
| 5 | CFCs | Chlorofluorocarbons |
| 6 | $CO_2$ | Carbon Dioxide |
| 7 | CS | Conditioned Stimulus |
| 8 | DA | Discriminant Analysis |
| 9 | Defra | Department of the Environment and Rural Affairs |
| 10 | EFA | Exploratory Factor Analysis |
| 11 | FA | Factor Analysis |
| 12 | GDP | Gross Domestic Product |
| 13 | GLM | General Linear Model |
| 14 | HSD | Honestly Significant Difference |
| 15 | IPCC | Intergovernmental Panel of Climate Change |
| 16 | KMO | Kaiser-Meyer-Olkin |
| 17 | MANOVA | Multiple Analysis of Variance |
| 18 | MDA | Multiple Discriminant Analysis |
| 19 | NEP | New Environmental Paradigm |
| 20 | PAD | Pleasure, Arousal , Dominance |
| 21 | PCA | Principal Component Analysis |
| 22 | Qual | Qualitative |
| 23 | Quant | Quantitative |
| 24 | R | Response |
| 25 | RRR | Rich Response Repertoire |
| 26 | $S^D$ | Discriminative stimuli |
| 27 | $S^R$ | Rewarded or Reinforced |
| 28 | TRA | Theory of Reasoned Action |
| 29 | UK | United Kingdom |
| 30 | UN | United Nation |
| 31 | US | Unconditioned Stimulus |
| 32 | VIF | Variance Inflation Factor |
| 33 | WRAP | Waste & Resource Action Programme |

# CHAPTER ONE

## INTRODUCTION AND BACKGROUND TO THE RESEARCH

### 1.1 Introduction

> "The only geniuses produced by the chaos of society are those who do something about it. Chaos breeds geniuses. It offers a man something to be genius about" (Skinner, 2005, p. 116).

Environmental awareness has increased over the last decade yet environmental degradation continues. The latest environmental issue is climate change (Russell, 2009, New Scientist, 2010). The effects of climate change are now reverberating in the United Kingdom and around the world (Randall, 2005, Head, 2008, Brassington, 2008, Goldsmith, 2009). Evidence of environmental degradation is appearing everywhere. Extreme weather conditions, high pollution, lack of natural resources, health deterioration and the mysterious death of flora and fauna are all signs that Earth is crying out for help. However, in rich societies, people's continued consumption of their natural resources and a deteriorating climate have conjured up a sense of Armageddon. This is supported by research (Dunlap, 1997, cited in Bhate, 2001) that shows that public concern regarding environmental issues has increased in the last few years but has had limited impact.

However, a new frontier has emerged at the intersection of consumer behaviour and the environment. Environmental sustainability is no longer described as 'the purview of boutique eco-brands, compliance with regulations or securing positive press coverage' (Environmental Defence

Fund, 2008, p. 2). It is a way towards cost savings, creating new green consumer markets, and helping marketers to secure a competitive advantage in their business. It can be said that green is going through a huge transition from an insoluble problem to the lowest cost way to live (Friedman, 2009).

At present, the widespread fears about environmental issues caused by scientific findings, the media and natural disasters have driven consumers to think twice about their behaviour. Feelings of guilt have started to emerge among them and thus they would like to save the planet by changing what they do and buy (de Vries et al., 2002, Randall, 2005). Consumers need to get their groove back by taking the lead to tackle their environmental problems through environmentally friendly behaviour (Khaneka, 2006, Nash and Lewis, 2006, de Steiguer, 2006). Environmentally friendly behaviour is defined as 'personal lifestyle choices that minimise impact on the environment and help ensure consumption of resources is sustainable at a social level' (Hounsham, 2006, p. 16).

This behaviour can also be defined by its impact-oriented definition (Stern, 2000). This is where behaviour is described as 'the extent to which it changes the structure of ecosystem or the biosphere itself' (Stern, 2000, p. 408). If people would like to have a balance between lifestyle and environment, they have to treat lifestyle as a sense of inner wholeness. Hence, there must be an equal balance between human behaviour and patterns of consumption with natural resources. A fully environmental behaviour can cover a broad range of

behaviours, such as minimizing the use of private transportation, reusing waste, using less energy or cutting water consumption.

A number of studies have been conducted in relation to environmental issues and green consumer behaviour (Fransson and Gärling, 1999, Dunlap et al., 2000, Verplanken, 2002, Bartels, 2002, Young et al., 2010). However, little research has been forthcoming that analyzes consumer environmental behaviour across different situations in a systematic way (Foxall, 1994b, Jackson, 2005). This thesis deals with the interpretation of consumers' environmental behaviour responses to different consumer situations and the patterns of reinforcement which those setting indicate as probable. A particularly relevant stream of research to explain the mechanism behind this situational effect on consumers' environmental behaviour choices is the Behavioural Perspective Model (BPM).

In summary, the present research seeks to develop a constructive theoretical framework to analyze environmental behaviour across different situations in a systematic way by reference to the BPM, illustrates procedures for environmental behaviour studies, and provides insights relevant to green marketing.

## 1.2 Research Background

Despite intensive green consumer research, our understanding of how green consumers make daily decisions and act is still limited (Wagner, 2003). This is because environmentally friendly behaviour is a complex phenomenon (Stern, 2000). In addition, the field of consumer environmentally friendly behaviour

covers a lot of ground from identifying needs to the use or disposal of products, services and experience (Peattie, 1992, Peattie, 2001, Hounsham, 2006, Hailes, 2007). It is also important for marketers and policy makers to study consumer environmental behaviour and its consequences. This is because marketers can only make profits if they really understand their consumers. At the same time, policy makers are able to provide quality services and welfare towards consumers. Thus, it is vital to have a good understanding of green consumer behaviour.

In order to understand consumer environmentally friendly behaviour, much attention has been given to green consumer research. There is a wide range of green consumer research that has been conducted from cultural, personal, social and psychological perspectives (Berkowitz and Lutterman, 1968, Anderson Jr and Cunningham, 1972, Balderjahn, 1988, Ellen, 1994, Ottman, 1998, Laroche et al., 2001, Mostafa, 2007, Young et al., 2010). However, it is up to the green researcher to decide on which approach to embark on, bearing in mind the justification for choosing it.

A consumer behaviour study can be done either through the traditional approach or a complex and scientific approach. The traditional approach employs a comprehensive model of consumer choice. The process begins with identifying the consumer need and ends with the consumer post-choice evaluation. This approach can be described as an elaboration of rational decision (East et al., 2008). However, the problem with this approach is that it is difficult to find satisfactory measurement (Ehrenberg, 1988, cited in East et

al., 2008). The comprehensive approach also has the tendency to overstate the rationality of choice (East et al., 2008).

Another potential approach is the reinforcement approach whereby consumer choice is controlled by factors in the environment (Foxall, 1994b, Jackson, 2005). This is where the consumer choice or behaviour is learned in response to the rewards or costs in the consumer's environment (Bandura, 1977, Dunbar, 1996, Foxall, 2002, Skinner, 2005). For example, people have the tendency to change their recycling behaviour if the reward outweighs the punishment (Tucker, 1999, Bekin et al., 2007). Controls on behaviour have been examined in learning theory.

Learning generally arises from consumer experience. This is where learning can be stated as any changes in behaviour arising from experience (Kotler et al., 2005). There are two different perspectives of learning: cognitive learning and behavioural learning (Foxall et al., 1998). Cognitive learning views learning as a mental activity that emerges in the forms of verbal learning, social learning, and informational processing (Wagner, 2003, Jackson, 2005). It can be said that cognitive learning is like the comprehensive models of consumer behaviour. This type of learning perspective forms a major challenge for marketers in terms of capturing or retaining their consumers.

Behavioural learning describes learning as 'largely unconscious changes in overt and verbal behaviour' (Foxall et al., 1998, p. 76). This type of learning can be divided into classical conditioning and operant conditioning. The

classical conditioning model explains why consumers learn to form beliefs through a process of association (Bierley et al., 1985, Allen and Madden, 1985, Shimp et al., 1991). For example, pairing conditioned stimulus such as a brand name (e.g., Toyota Prius) with an unconditioned stimulus (e.g., car) will cause consumers to feel the same feeling about the brand name (e.g., pride in saving the environment). However, this approach needs to understand the motivation behind consumer behaviour (DiClemente and Hantula, 2003).

Operant conditioning explains behaviour in terms of the rate at which behaviour is performed in relation to the consequences that are likely to follow from that behaviour (Foxall, 2002). This behaviour approach focuses more on the connection between stimulus, response and reinforcement (Kunkel and Berry, 1968, Foxall, 2002). Learning is faster if the reinforcement schedule is continuous but reinforcers will lose their effects if they are used too frequently (East et al., 2008).

Another important perspective to predict consumer behaviour research is the consumer environment or situation. One of the most significant influences on consumer behaviour is the place where the behaviour takes place (Kotler, 1973, Kotler et al., 2005). Consumer place or atmosphere cause specific emotional effects in the buyer which can enhance their behaviour probability (Kotler, 1973, Turley and Milliman, 2000). This is where atmosphere is capable of influencing consumer behaviour either intrinsically or extrinsically

(Schultz et al., 1995, Ellen and Bone, 1998, Turley and Milliman, 2000, Jackson, 2005, Jang and Namkung, 2009) .

The situation in which consumer behaviour takes place can be defined as 'all those factors particular to a time and place of observation, which do not follow from a personal (intra-individual) and stimulus (object or choice alternative) attributes' (Belk, 1974, p. 157). These situations may be physical surroundings (e.g., location, sound or material), social surroundings (e.g., store staff, other consumers), temporal perspective (e.g., short term promotions, store opening and closing hour), task definition (e.g., consumer roles), and antecedent states (e.g., access to credit may lead to higher expenditures) (Belk, 1975, Foxall et al., 1998).

In the past four decades, researchers have recognized the influence of physical stimuli on consumer behaviour (Mehrabian and Russell, 1974, Turley and Milliman, 2000, Jang and Namkung, 2009). However, there is also 'a surprising lack of empirical or theoretically based framework of the role of physical stimuli in consumer behaviour research' (Bitner, 1992, cited in Turley and Milliman, 2000, p. 193). Thus, it is not impossible to find out that some of the consumer behaviour studies indicate that consumer decisions seldom reflect their behaviour (Corraliza and Berenguer, 2000, Peattie, 2001, Foxall and Yani-de-Soriano, 2005, Jackson, 2005, Mostafa, 2007, Young et al., 2010). This could be because some of the consumer researchers have neglected the influence of environmental situations and preferred to concentrate more on cognitive perspectives (Foxall et al., 1998). Additionally,

the research using consumer situation has shown mixed findings (Mehrabian and Russell, 1974, Belk, 1974, Lutz and Kakkar, 1975, Russell and Mehrabian, 1978, Donovan and Rossiter, 1982). This could be because the previous research has lacked a theoretical understanding of consumer situations (Foxall, 1994b) .

Thus, the BPM leaps in as the potential mechanism to interpret consumer behaviour in systematic consumer situations (Foxall, 1993a). Past research has shown encouraging findings (Foxall, 1997a, Foxall and Greenley, 2000, Yani-de-Soriano et al., 2002, Xiao and Nicholson, 2009). The BPM has been tested on general purchasing and consumption, but not empirically in a consumer environmental behaviour study. Hence, it is important for the present research to assess whether the BPM is able to explain consumer environmental behaviour across different situations.

## 1.3 Research Problem

The quest to understand green consumer behaviour has become more challenging and interesting over the years. There have been numerous attempts to really check consumer environmental knowledge, attitudes towards environmental quality and environmentally friendly behaviour (Dunlap and Scarce, 1991, Chan and Lau, 2000, Bhate, 2001, Laroche et al., 2001, Diamantopoulos et al., 2003, Jackson, 2005, Young et al., 2010). The main idea is to produce a comprehensive profile and understanding of the green consumer. There is also a link between environmental knowledge and attitude among consumers (Lomborg, 2001, Cordano et al., 2011). However, there is uncertainty surrounding actual green consumer behaviour. Findings have

shown the inconsistent profiles and behaviours of green consumers (Tanner, 1999, Peattie, 2001, Hartmann, 2006, McDonald and Oates, 2006). Moreover, it is not always possible to find the relationship between attitude, knowledge and behaviour (Hines et al., 1986, Scott and Willis, 1994, Schultz et al., 1995, cited in Tanner, 1999). For example, there is an 'attitude- behaviour gap' or 'value – action gap', where consumers are struggling to translate their environmental concern into environmentally friendly behaviour (Corraliza and Berenguer, 2000, Young et al., 2010).

Past and present researchers have used different kinds of approaches in the quest to understand consumer environmentally friendly behaviour. The starting point for the consumer environmental behaviour study is consumer psychology. Consumer psychology is the study of how consumer thoughts, beliefs, feelings and perceptions influence how people behave (Cherry, 2011). However, consumer psychology has been dominated by non-behavioural thinking which has focused more on the cognitive approach rather than the behavioural (Foxall, 1998). It also does not grasp the significant study of consumer behaviour in relation to behaviour setting and learning history.

Fishbein and Ajzen's Theory of Reasoned Action (TRA) is claimed to be applicable for predicting consumer behaviour (Malhotra and McCort, 2001, Cordano et al., 2011). Fishbein argued that behaviour can be predicted from attitudes toward the act, personal and social normative beliefs and motivation to comply with these norms (Foxall et al., 1998, p. 109). However, this theory does little to clarify the situations associated with attitude-behaviour (Foxall

and Yani-de-Soriano, 2005, Mostafa, 2007). Research findings concerning environmentally friendly behaviour fail to find a connection between behaviour intention and target behaviour (Kollmus and Agyeman, 2002, Mostafa, 2007). In addition, the empirical studies based on the TRA are limited to only questionnaire surveys and interviews instead of evaluating consumers' actual behaviour (Jackson, 2005).

Consumer environmental behaviour study can also be conducted using the cognitive approach. The cognitive approach is where consumers examine information which later assists them in their decision making behaviour (Wagner, 2003). Cognition in the form of knowledge is considered one of the important factors for environmentally friendly behaviour. It has been stated (Carlsson and Jensen, 2006) that the ability to take environmental action is dependent on a number of factors such as knowledge, commitment, vision, experience and social skills. However, knowledge does not necessarily lead to environmental action (Kollmus and Agyeman, 2002). Perhaps consumers know too much and this has made them highly sceptical about environmental practices (Peattie, 2001, Jackson, 2005).

Another approach to interpret consumer environmentally friendly behaviour is the applied behaviour analysis. This approach assesses how demand for products or services which impact the environment is controlled by the consequences of consumer behaviour (Schultz et al., 1995, Bechtel, 1997, Dietz et al., 2009). The theory derives from operant psychology. However, the

empirical findings of applied behaviour analysis lack systematic organization and theory based generalisation (Foxall, 1994b).

Researchers have also recognized the influence of physical stimuli on consumer behaviour. The reason is that situational influences may account for 20 to 45 per cent of consumer behaviour and for 30 to 50 per cent of interactions between individuals and situations (Argyle, 1976, cited in Foxall et al., 1998). In addition, the relationship between behavioural intentions and behaviour may be influenced by unexpected situations. Thus, any investigation of consumer behaviour that ignores situational effects is likely to provide unreliable results (Belk, 1974). Previous findings have verified the influence of situational effects upon consumer behaviour (Mehrabian and Russell, 1974, Lutz and Kakkar, 1975, Young et al., 2010). However, the research also lacks a framework of analysis that allows the situational influences on consumer choice to be identified in an organized way (Foxall, 1998).

It is also important to understand the role of emotion in consumer behaviour. This is because consumers also use their emotional perspectives and may choose either to approach or avoid their behaviour of choice (Kaufman, 1999, Jackson, 2005, Jang and Namkung, 2009). Emotion also has a number of functions such as 'eliciting autonomic responses, motivation for action, communication, social bonding, influencing cognitive evaluations of events or memories, and triggering the recall of the memories' (Rolls, 2000, pp. 179-181).

Past researchers have neglected to describe behaviour in terms of emotions due to misconceived notions of the nature of emotion such as that it is irrational and has an insignificant impact on actions (Zhu and Thagard, 2002). Thus, most of the psychological studies have been dominated by perception, learning, thinking and personality (Jenkins et al., 1998b). The study of consumer environmental behaviour has also ignored the role of emotion (Carrus et al., 2008). However, emotions have recently become a subject of consumer behaviour research (Mesken et al., 2007, Carrus et al., 2008, Meneses, 2010). For example, some studies have been conducted in relation to reward and emotion (Rolls, 2000). This is where emotion is defined as 'states elicited by rewards and punishments, including changes in rewards and punishments' (Rolls, 2000, p. 178).

Along similar lines, Mehrabian and Russell proposed the theory that physical or social stimuli in the environment directly affect the emotional state of an individual, thereby influencing people's behaviours (Mehrabian and Russell 1974). Pleasure, Arousal and Dominance (PAD) are the three emotional response variables that summarize the qualities of environments. The framework argues that it can map any emotional response to any environment (Babin and Darden, 1995, Takahashi, 1995, cited in Wasserman et al., 2000). Many studies have used the Mehrabian and Russell measurement scales with mixed findings (Lutz and Kakkar, 1975, Russell and Pratt, 1980, Donovan and Rossiter, 1982, Yalch and Spangenberg, 1988, cited in Turley and Milliman, 2000). The inability of previous research to relate PAD to approach-avoidance consumer behaviour is due to: (1) researchers failing to deal adequately with

consumer behaviour setting and hence contributing towards mixed findings, and (2) previous research lacking a coherent theoretical framework to guide their descriptions of consumer situation (Foxall and Greenley, 1998).

Based on the above point and the importance of consumer situations along with emotion, the present study interprets consumer environmental behaviour across different consumer situations by using the BPM. A key insight of the BPM is that of the anticipated benefit consumers acquire and the impact on the environment that surrounds consumer choice (Foxall, 1993a, Foxall and Greenley, 1998). This is where consumer response behaviour can be predicted from two elements of situational influence: (1) the behaviour setting and (2) the pattern of utilitarian and informational reinforcement signalled from the setting and consumer's learning history (Foxall et al., 2006). This research is important because little study has been forthcoming which analyzes green behaviour across different situations in a systematic way (Foxall, 1994b, Jackson, 2005). Next, there is also the growing interest of green consumer research designed for attaining an accurate picture of the green consumer (Büttner and Grübler, 1995, Straughan and Roberts, 1999, Barr and Gilg, 2006, Bekin et al., 2007). It is important to understand green consumers as they are the driving force behind green marketing (Peattie, 1992, Grant, 2007, Belz and Peattie, 2009). Finally, no similar research has been conducted before which analyzes green behaviour using the BPM.

The problem addressed in this research is whether or not the BPM can be applied to interpret consumer environmental behaviour across different

situations in a systematic way. The findings of the empirical research conducted in Cardiff suggest that the BPM is capable of predicting consumers' behaviour from their verbally reported affective reactions to a wide range of consumer environmental situations. It also shows that the affective and behavioural variables can be predicted from the scope of the setting in which they take place and the type of reinforcement signalled as probable by the setting. The implications of these findings are that the application of the model is not limited to familiar themes of consumer behaviour but can be extended to complex consumer behaviour such as environmentally friendly behaviour. The results therefore broaden the scope of application of the model and the results it has generated.

## 1.4 Research Purpose, Questions and Objectives

The main purpose of this study is to interpret consumer environmental behaviour across different situations in a systematic way by using the BPM. The research questions which underpin the main theme and provide direction to this study are:

Q1. What is the consumer's current environmental behaviour?

Q2. What reinforces consumers' environmental behaviour choices?

Q3. How do consumers feel about specific descriptions of consumer environmental situations?

Q4. Is the BPM able to explain consumer environmental behaviour?

These questions provide the central focus of the present study. Research objectives are needed in order to answer the above questions. These state

what the researcher must do and serve as guidelines for carrying out the research (Burns and Bush, 2006). In this study, the research objectives were as follows:

1) **To examine the consumer's current environmental behaviour.**

The consumer's current environmental behaviour was examined through a series of face-to-face standardized open-ended interviews. Of particular interest, for example, were domestic water and electricity consumption, private transportation patterns and waste disposal practices. For example, questions were asked with regard to the types of behaviour consumers liked or disliked to do. Later, this information was used to form consumer environmental situations for the survey.

2) **To understand what reinforces consumers' environmental behaviour choices.**

This was to find out the main reason behind the consumer's approach or avoidance of environmentally friendly behaviour. Data were collected through the standardized open-ended interviews. The information assisted the researcher to develop consumer environmental situations.

3) **To identify any knowledge and influences on consumer environmental behaviour.**

Consumers were asked a series of open-ended questions about their environmental knowledge and influences. The information assisted the researcher to understand more about the nature of the selected respondents. Additionally, the findings supported the researcher in the formation of consumer environmental situations.

4) **To ascertain how far judges allocate the 16 descriptions of consumer situations among the eight contingency categories of the BPM model.**

Prior to the survey, a range of 16 consumer environmental situations were tested among panel experts of the BPM. The findings helped the researcher to choose the most reliable and workable consumer environmental situations to be used for the survey. Analysis of the inter judge reliability was conducted using the percent agreement. The best eight of the consumer environmental situations were used in the present study.

5) **To measure consumer verbalised emotional responses to descriptions of eight consumer environmental situations.**

Face-to-face and self-administered surveys were conducted among Cardiff consumers. Questions were asked in terms of their feelings about and responses to eight consumer environmental situations. Eighteen pairs of adjectives from Mehrabian and Russell's PAD scales and six items of Approach/ Avoidance were used for each of the consumer situations.

6) **To find out whether the Behavioural Perspective Model (BPM) is able to explain consumer environmentally friendly behaviour.**

Survey data were used to find out the applicability of the BPM in the study of consumer environmental behaviour. Analyses using SPSS were conducted in order to find out the reliability and validity of measurement scales, hypotheses testing, validity of the BPM model, and the interaction effect of affective variables.

## 1.5 Research Hypotheses

There were nine research hypotheses that needed to be tested in the study of Cardiff consumers' environmental behaviour. These hypotheses were based on the relationship between emotions and the patterns of contingency with which they were associated as defined by the BPM. Table 1.1 summarizes the research hypotheses of the BPM Contingencies with affective and behavioural variables.

Table 1.1: Research Hypotheses

| | |
|---|---|
| H1 | Affective variables of Pleasure, Dominance and Arousal will each have a positive relationship with Approach. |
| H2 | Affective variables of Pleasure, Arousal and Dominance will each have a negative relationship with Avoidance. |
| H3 | Affective variables of Pleasure, Arousal and Dominance will each have a positive relationship with Aminusa, the net difference between Approach and Avoidance. |
| H4 | Pleasure will be higher for responses associated with consumer situations maintained by high levels of utilitarian reinforcement than for those maintained by low levels of utilitarian reinforcement. |
| H5 | Arousal will be higher for responses associated with consumer situations maintained by high levels of informational reinforcement than for those maintained by low levels of informational reinforcement. |
| H6 | Dominance will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H7 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations maintained by Accomplishment and Hedonism rather than for those maintained by Accumulation and Maintenance. |
| H8 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H9 | Aminusa (Approach- Avoidance) will be determined by the attitude variables Pleasure, Arousal and Dominance. |

First, three hypotheses of H1, H2, and H3 were evaluated in order to assess the relationship between affective and behavioural variables by using the correlation analysis. Second, these hypotheses (H1, H2 and H3) were also examined in relation to the impact of the relationship between variables using the standard multiple regression analysis. Third, H4 to H8 were assessed in order to identify the patterns of the variables by using the one-way ANOVAs.

The validity of the model was also tested using the multiple discriminant analysis. Finally, H9 was evaluated in order to assess the Aminusa (Approach-Avoidance) means by the attitude variables Pleasure, Arousal and Dominance (PAD). The standard multiple regression analyses were conducted to test H9. Overall, the analyses provided support for the hypotheses of H1 to H9.

## 1.6 Justification for the Research

This section deals with the research justification of the present study. There are different reasons to perform consumer environmental behaviour research such as:

### a. A missing link in the environmental behaviour research.

A number of studies have been conducted in relation to environmental issues, attitudinal studies and green consumer behaviour, along with the associated demographic variables and their socioeconomic contexts (van Houwelingen and van Raaij, 1989, Tucker, 1999, Chan and Lau, 2000, Laroche et al., 2001, Diamantopoulos et al., 2003, Young et al., 2010, Cordano et al., 2011). However, researchers have not been able to understand green consumer behaviour due to inconclusive findings of green research (Tanner, 1999, Peattie, 2001, Hartmann, 2006, Rex and Baumann, 2007). There were many questions left to answer. What reinforces consumers' green behaviour choices in different situations? How do they feel about specific descriptions of consumer environmental situations? Is it possible to interpret consumer environmental behaviour across different situations in a systematic way? Thus, the present research attempts to interpret Cardiff consumers'

environmental behaviour across different situations in a systematic way by using the BPM.

**b. The growing importance of consumer environmental behaviour research and environmental concerns.**

Consumer environmental behaviour research became a topic of interest among researchers as early the 1970's. Afterwards it faced a dramatic decline in the academic world. However, the present has shown a renewed interest in green behaviour due to world climate change (Randall, 2005, Sutcliffe et al., 2008, Brassington, 2008). A number of studies have been conducted in relation to environmental issues, consumer knowledge, attitudes towards environmental quality and environmentally sensitive behaviour (Straughan and Roberts, 1999, Diamantopoulos et al., 2003, Coad et al., 2009).

The dramatic increase in environmental awareness over recent decades has also resulted in the emergence of green consumerism (Peattie, 1992, Schlegelmich et al., 1996 , Gilg et al., 2005). People are tuned into the daily pillaging of the environment, which naturally creates a sense of guilt (Minhinnick, 1994). Consumers have begun to do something novel: they have begun to protect the environment. They are motivated to express their environmental behaviour by turning out their lights, doing recycling or turning down their thermostats (Semlyen, 2003, Hounsham, 2006, Khaneka, 2006). The more consumers exhibit a high degree of environmental concern, the more government and enterprises will be strongly motivated to adopt green behaviour across the whole country (Conners et al., 2007, Vaze, 2009). In order to have a better understanding of the environmental movement of a

country, the present study examined consumer environmental consciousness in terms of environmental behaviour and the role of emotion in consumer actions. It is important to understand green consumers as they are the driving force behind green marketing.

In summary, the quest to understand consumer environmental behaviour has become more challenging and interesting over the years. Previous research has been conducted to understand consumer environmental behaviour from cognitive, psychology, personality and attitudes to behaviour perspectives (Ellen, 1994, Laroche et al., 1996, Lomborg, 2001, Truffer et al., 2001, Said et al., 2003, Jackson, 2005, Young et al., 2010). However, no similar research has been conducted before to interpret consumer environmentally friendly behaviour across different situations in a systematic ways by using the BPM.

**c. The potential contribution of the research findings.**

The interpretation of consumer environmentally friendly behaviour across different situations via the BPM helps to further understanding of theoretical, methodological and practitioner perspectives. The present findings support the view that the model provides a valid framework for the interpretation of consumers' environmental behaviour. The application of the model is not only empirically limited to familiar themes of consumer research but also applicable to different consumer environmental behaviours.

This study also points out that the PAD scales are reliable. The various combinations of PAD scales may adequately influence consumer behaviour

study. The validity of Dominance as an emotional descriptor of environments is strong and should be included in the three dimensional PAD model.

In terms of research methodology, the present study used mixed method research. A justification of the methodology and rationale for the choice of Cardiff as a context for the study is explained. These procedures should be valuable for any researchers who are interested in doing future research related to consumer environmental behaviour and the BPM model.

The present study has shown that PAD is a valid emotional dimension and mediates Approach-Avoidance behaviour. Thus, findings from the present study might prove valuable for practitioners in terms of understanding consumer environmental behaviour. Marketers can take action to design, promote and sell environmental solutions that need to be seen in relation to the audience by encouraging approach behaviour strategies (Foxall, 1994b, Grant, 2007, Rex and Baumann, 2007). For example, marketers can employ utilitarian and information reinforcement such as feedback, consumer deals, rewards, and contests. The findings of the present research may also assist the government to understand consumer environmental behaviour and the development of green marketing. The government can modify consumer behaviour by giving them feedback (informational reinforcement) and incentives (utilitarian reinforcement).

## 1.7 Research Methodology

Due to the exploratory nature of the study, a mixed method approach was used among Cardiff consumers. The first study involved standardized open-

ended interviews which were conducted among 15 green and 15 non-green consumers. The main leads from the interviews included the most and likely current behaviour (i.e., domestic water and electricity consumption, private transportation patterns, and waste disposal practices), anticipated the utilitarian and informational benefits or vice versa and provided information about feelings, environmental knowledge and influences, and background. Transcripts were analyzed using content analysis and coding processes. This information formed the basis of the consumer environmental situations and quantitative instrument items for the larger scale stage of the research.

Panel experts were also invited to take part in the BPM Contingency Definition Test. The purpose of this study was to ascertain how far the judges were able to allocate the consumer situations developed by the researcher among the eight contingency categories specified by the BPM model. Three series of study were conducted among panel experts. Analysis for inter judge reliability was conducted by using the percent agreement. As a result, eight out of sixteen proposed environmental situations were chosen to be used for the survey. These were consumer environmental situations for a hybrid car, being carless, using an energy star laptop, loft insulation grant, waste reward, food waste disposal, reusing water bottles, and fixing dripping taps. The findings from the panel experts helped to produce a reliable consumer environmental situations framework to be used for the survey.

The other studies were conducted via face-to-face and self-administered surveys. Quantitative research of 100 green and 100 non-green consumers

provided data on 1,600 consumer situations. Forty consumers were used as the pre-test sample. The formulation of the questionnaire and consumer situations were based on the findings from a preliminary study of Cardiff consumers' environmental behaviour via standardized open-ended interviews, the findings from the panel experts, and an extensive review of the literature in the areas of consumer behaviour, specifically the Behavioural Perspective Model, green consumer behaviour and Mehrabian and Russell's (1974) approach to environmental psychology, which assesses the emotional responses of individuals to descriptions of physical and social environments. Data collected was analyzed in order to test the research hypotheses of the affective and behavioural variables as well the validity of the BPM. However, before undertaking the testing of the hypotheses, the dimensionality and reliability of the affective scales needed to be dealt with.

## 1.8 Structure of the Thesis and Order of the Presentation

This thesis is structured into 8 chapters. Chapter 1 describes an overview of the thesis and order of presentation. This chapter addresses the research problem, nine hypotheses of the present research and justification for the research. A summary of the research methodology is also presented. Finally, Chapter 1 ends with an overview of the thesis structure.

Chapter 2 describes the interplay between environment and consumer behaviour: specifically, on how environmental concerns and green behaviour start. In addition, Chapter 2 also focuses on a broad range of green behaviour which includes private transportation, domestic electricity, domestic water and waste disposal. A review of the current environmental scenario in the UK and

Cardiff is also included. Additionally, a review of the extant literature in relation to the context and nature of green consumer behaviour is also presented. This includes the research gap in green consumer studies. Chapter 2 ends with a description of influences on environmentally friendly behaviour.

Chapter 3 present the literature review of a theoretical model for present research which is the BPM. Here significant attention is devoted to explaining the BPM model. Chapter 3 begins with an explanation of consumer behaviour as operant response. This is where an overview of consumer behaviour and the operant interpretation are discussed. Second, the behavioural model revolution is discussed from the time of Watson till the design of the BPM. Finally, the outline of the BPM is stated in terms of the consumer situation, the scope of the setting, the consequence of behaviour, the contingency categories, verbal responses, and the advantages and limitations of the BPM.

Chapter 4 presents discussion of the literature on consumer emotion. Specifically, this chapter draws on Mehrabian and Russell's theory of emotional responses which is used in the present study. Chapter 5 builds upon the research objectives and literature review presented in Chapters 1, 2, 3 and 4. Here, comprehensive discussion of the design and methodological approach adopted in order to test the nine hypotheses of interest is presented. First, a justification of radical behaviourism philosophy is presented. Second, divergent approaches to research design are considered. The rationale for the use of research design and sequential mixed method are also provided. Third, the sample and sampling procedures are described. This

includes the choice of the Cardiff consumers: green and non-green members. A justification of snowball and self-selecting sampling are stated. Fourth, a preliminary study of Cardiff consumers' environmental behaviour via standardized interviews is discussed. Fifth, the instruments used are presented: Mehrabian and Russell's (1974) measurement scales, the development of the consumer environmental situations, the design of the survey questionnaire, and the pre-testing of the questionnaire. Sixth, the survey design and data collection are discussed. Finally, any ethical issues are considered. The chapter concludes with a summary and the procedure used for data preparation.

Chapter 6 is data analysis and results. Descriptive analyses were used early in the analysis process to describe the general pattern of responses and as a way to portray the characteristic respondent. The next stage involved manipulating the data into a variety of different types of analysis and testing the hypotheses. Prior to conducting specific statistical analysis, it was also important to check that the data were reliable, valid and representative for the current study.

Chapter 7 provides an intensive discussion of the research findings in the context of some further analysis. The findings from the Cardiff study are discussed and compared between the three sub-studies of green member, non-green member and a combination of the green and non-green member. This was done to find out whether the findings were consistent or if there were differences between them. The third sub-study of green and non-green

member was put together from the two groups mentioned above. The reason was to know whether the combination of a larger sample size and mixture of feedback may have affected the findings. The present findings conducted in Cardiff were also compared with the results of previous applications of the model in England and Venezuela. Although this study has different consumer situations compared to the England and Venezuela studies, the measurement scales are all the same. Thus, there can be discussion to find out any similarity or comparison between them.

Finally, Chapter 8 concludes the thesis with the research overview and a summary of the main research findings. This chapter also illustrates the contributions of the present study and meaningful guidance for future research is also included. Furthermore, the limitations of the research are discussed and Chapter 8 ends with the study's conclusion.

## 1.9 Conclusion

This chapter focuses on providing an overview of the thesis. The research background and problem are discussed in relation to previous and current consumer behaviour research. This is to justify the importance of the present study of consumer environmental behaviour. Hypotheses are presented in order to test the practicability and validity of the BPM in the study of Cardiff consumers' environmental behaviour.

In summary, this research is important in the field of consumer environmental behaviour study. The more practitioners or researchers understand this unique consumer, the better will be the impact on society and the

environment. Consumers as a whole should remember that they only have one planet to live on. They should protect and preserve their only home for future generations. This is because they have reached a stage where the effects of their life on earth can no longer be externalized, socialized, ignored or confined.

Consumers need a balance between consumption and protecting the environment. How are they going to achieve this? This is where green or environmentally friendly behaviour steps in as the saviour. Green behaviour is not about 205 easy ways to go green or a marketing fad. It is not just a licence to feel good without doing well (Friedman, 2009). It is about what people do to preserve their environment. It is not about being an ace recycler; it is a state of mind that can be liberating, empowering, cost effective and a lot of fun (Constantino, 2009). The next chapter will discuss the importance of environmental issues and green behaviour.

# CHAPTER TWO

## ENVIRONMENTAL REVOLUTION AND BEHAVIOUR

### 2.1 Introduction

In recent years, the state of the environment has been one of the most important issues facing society. There is a wide range of environmental concerns, from nuclear effects and climate change to the quality of the food that is eaten. Pressure groups likewise have been campaigning vigorously for the environment. In addition, numerous regulations and laws for the protection of the environment have been passed and treated with the same seriousness as more traditional governmental interests such as the economy.

However, the high level of public concern has not always been evident. Findings from the Social Research Report 2007 show that 46% of UK's people thought that environmental issues (e.g., climate change) were mainly caused by people. However, this does not translate into changes in their behaviour. These data were collected by Ipsos MORI which is one the largest market research organisations in the United Kingdom (Vaze, 2009). Another survey carried out for the BBC in 2004 found that although a majority of Britons admitted that there are connections between environmental problems and human activities, 43% didn't expect this to have much effect on them personally (Randall, 2005).

It is likely that some people see the environment as a bolt-on extra to human society and that there's another thing to worry about and a much more urgent issue to consider. On the other hand, people who value wildlife, have a little

understanding of the environment (Randall, 2005). Only few people seem to understand the real meaning of the environment towards mankind. As natural disaster strikes, people have linked it to the bad consequences of human behaviour (Johnson, 2006).

The truth is the world is in trouble. The United Nation (UN) audit of the planet's health in 2005 stated that for over the past fifty years, people have changed ecosystems more rapidly than in human history (Goldsmith, 2009). As a result, the natural environment is suffering irreversible loss of its flora and fauna. This chapter explores more of the background to this environmental change and associated behaviours.

## 2.2 The Environment: Why on Earth Bother?

From the late1980's to a new millennium, the planet sent powerful signals to people and politicians, which few could ignore. There was an alarmingly large hole in the ozone layer which was identified above Antarctica, droughts in China and Australia, the effect of Hurricane Katrina in America, the powerful earthquakes in Haiti, the constant increase in world temperature and the most destructive Indian Ocean tsunami in 2004. The latest environmental issue is climate change. Scientists and politicians have responded to these signals via international conferences, new policies and innovation. A survey, conducted by *New Scientist* magazine among 70 members of the InterAcademy Panel, shows that climate change, water, energy and pollution are among the most pressing concerns for humanity either at a national or global level (New Scientist, 2010). The InterAcademy Panel is the global network of the world's science academies.

In the United States of America, President Obama in his inaugural speech acknowledged the importance of preserving the environment and the effect of global warming (Russell, 2009). While in the United Kingdom, the environmental concerns have moved from side-line political debate into the mainstream of government (Simms and Smith, 2008). Margaret Thatcher, for instance, was one of the first world leaders to respond to environmental issues by pushing environmentalism to the top of the political, business and economic agendas (Friends of the Earth, 1990). It can be concluded that more people are interested in the environment. This is due to several reasons such as:

- **Population Overload**

Humans evolved in Africa about 150 thousand years ago. During that time, the human population was not very big and impressive compared to other living animals. Humans could have been described as a very young species. According to Janine Benyus who is an American natural sciences expert, humans came very late in the earth calendar - the equivalent of arriving 15 minutes before midnight on December 31 (Conners et al., 2007). It can be said that during those times, the human population was outnumbered by other species.

Today, humans have scattered around the planet and are slowly colonizing in a powerful group. In fact, the human population increased after the agricultural and industrial revolutions. The increase in population has also partly been caused by the fall in the number of deaths from diseases (Ponting, 1993). According to Thom Hartmann, author of the 'Last Hours of Ancient

Sunlight', the human population start to reach 1 billion of people after the Industrial Revolution (Conners et al., 2007). Then, it increased to 2 billion in the 1930's and 3 billion in the 1960's. It can be said that it will take 30 years or less to reach another billion. The amazing increase of the human population has had a big impact on the environment and climate change. The real problem is that the consumer uses too many resources within a short period of times. Consumers have an insatiable appetite for consumption. Consumption can be categorised in terms of the areas of consumption which have the greatest environmental impact: food and beverages, private transportation, housing, including heating and hot water, electrical appliances and structural work (European Environment Agency, 2007).

The consumer uses up virgin resources and those in the developed world use more of them than those in the developing world (Feldman and Marks, 2009). Some measures should be taken to control the rate of population growth. The magnitude of environmental impacts comes not just from the size of the population but also from people's behaviour (Engelman, 2009). Hence, the world needs improvement in terms of slower population growth and reduction in fossil fuel consumption.

- **Global Warming**

It's impossible to pick up a newspaper today without seeing any issue of global warming. The effect of global warming has created extremes of weather and even an ice crack the size of London. The first ice crack started to appear in the 1970s and now it has reached breaking point. People can't ignore the fact global warming and climate changes are here. Global warming

is the product of the burning of fossil fuels which produce energy. The biggest culprit is industrial energy and more than 40 per cent of the emissions come from heating, cooking and cars (Khaneka, 2006). Findings from the Transport Statistics of Great Britain show that from 1952 to 2006, most of the emission growth was through the use of cars and planes (Vaze, 2009).

As global warming increases in the earth's atmosphere, people have to face many environmental problems. For example, the deaths of many living creatures and the thriving of pests like mosquitoes in the warmer climate (Head, 2008). Additionally, global warming encourages tropical cyclones and sea levels to rise. This could lead to many more health problems such as cholera and malaria. It can be said that as the airs become more polluted by people's behaviour of burning fuel, the more the earth suffers.

This unpredictable phenomenon has also cost a lot to the government, society and especially insurers. Tony Blair has described climate change as 'the greatest long-term threat to earth' (Goldsmith, 2009, p. 2). In 1995, the Intergovernmental Panel of Climate Change (IPCC) also pointed out people's activities as the source of climate change (Rhisiart, 2004). Hence, people need to slow down their activities either at the industrial or individual level. The government must take a proactive stance to combat global warming and climate change. The government under the UK Climate Bill has set the ambitious target of reducing carbon emissions by 60 per cent by 2050 (Brassington, 2008). In summary, people need to heal their attitude and relationship towards the environment.

- **Pollution**

Ecosystems around the world have now been affected to varying degrees by pollution of various types. It can be said that pollution is a sign of incomplete consumption and it has a long history. The community who has the most impact on pollution is the lower income community. There are different kinds of pollution taking place as human life changes from one generation to another. For thousands of years the chief problem was human excrement and the challenge of obtaining unpolluted water supplies (Ponting, 1993). However, today new pollution has arisen at a rapid rate due to the development of new technologies and industrial production.

The new pollution has come from the internal combustion engine, power stations and even chlorofluorocarbons (CFCs). These chemicals eat into the beneficial ozone layer in the upper atmosphere (Press Association, 2010). The burning of fossil fuels has also contributed towards acid rain. The first acid rain was identified as early as the 1850s. Acid rain was identified in Manchester, which was one of the centres of British industrialization, and has become a worldwide problem (Ponting, 1993).

Wales also has bitter experience of the climate irregularity that is thought to be caused by pollution (Minhinnick, 1994). Another impact of air pollution can be on health, ranging from headache or drowsiness to much more serious health problems. The UK government has taken action to counter this problem. In 1990, David Trippier who was the Minister for the Environment stated that the UK was leading the world to save the ozone layer (Friends of the Earth, 1990). However, there's nothing much that has improved since

then. Today, the failure to reduce levels of pollution has also put the UK citizen at health risk and the possibilities of multimillion pound fines from Brussels for missing air quality targets (Press Association, 2010).

- **The End Of The Oil Age**

Oil has been a human addiction since its first discovery. People want more of it, abundant and limitless, in order to feel powerful. What people don't realise is that oil comes at a cost, whether financial, social or environmental. Today people live in a world that is awash with oil and gas. In fact, the whole of Western society runs on oil. The world consumes more than 80 million barrels of oil a day which has resulted in the increase of $CO_2$ (Hailes, 2007).

People are so dependent on oil for transportation, manufacturing, water supply and even food production. In the UK, people use far more oil then they need, particularly for the transportation (Friends of the Earth, 1990). However, people can't rely on oil for a long time. They need a new renewable energy source to replace it or consume less oil. This is because if oil suddenly disappeared from the face of the planet, people would be plunged into a new dark age.

In summary, there is no doubt that people should be more concerned about environmental issues. This is because the burden that people's lifestyles place upon the environment is felt in many ways. The more pertinent question is, can they still fix environmental problems? Probably, yes, though it won't be easy and hence people will need to act very quickly.

## 2.3 Environmental Concern: How does it start?

Nature is seen as a resource. This leads to an idea of limitless growth and expansion of nature resources. Consumers will use virgin resources to satisfy their needs and wants. The negative effects come later in the form of waste and pollution which are the main global environmental concerns. However, at present, it can be seen that there has been an increase in environmental awareness in society. This section illustrates the rise of environmental concerns and is completed with the environmental scenario in Cardiff and the UK.

### 2.3.1 The Rise of Environmental Concerns

Environmental issues have surfaced throughout human history, from ancient times through to the present under some of the labels like public health, conservation, occupational disease, preservation of nature, air and water pollution (Kovarick, 2008). Professor Bill Kovarik has presented an interesting timeline of environmental issues and activists from ancient time till the present. For example, the enlightenment period saw the new technologies create new pollution and Thomas Malthus predicted that resource will run out as population explode. Between 1920s to present, there is a big growth of environmental concerns related to oil, nuclear pollution and global climate change (Kovarick, 2008).

It can be said that the first big emergence of environmental concern came with the steam engine and the industrial revolution. The process began in the late 1700s when Britain, Europe and North America began to shift their largely agricultural and trading societies to manufacturing (Friedman, 2009). In

England, the Industrial Revolution began around 1733 with the opening of the first cotton mill. This was a period of major changes in agriculture, manufacturing and transportation, all of which had a radical effect on society as a whole (Head, 2008). Although the Industrial Revolution did have its good side, it also started dramatic changes in the environment, such as the greenhouse effect. It was not until the late 1960s that the impact on the environment was widely questioned. The years onward displayed growing concern for the environment. Table 2.1 summarizes the environmental concerns from the 1970's till the late 1980's.

Table 2.1: The Rise of Environmental Concerns

| | |
|---|---|
| Early 1970's | Growing environmentalist alarm about the impact of consumption on natural resources. Concept of responsible consumption emerged plus greater social responsibility among businesses and for societal marketing. For example, Friends of the Earth was incorporated in 1971. |
| Mid 1970's to mid 1980's | Evidence and apathy (lack of interest) which underlined the urgent need to tackle the growing problems of environmental degradation. Despite this, concern for the environment slipped down the business and political agenda because of:<br>▪ the anti growth attitude of many environmentalists not being attractive to other parties,<br>▪ economic recession causing priorities to change. For example, oil price rises created more urgent demands for renewed growth, and<br>▪ many pollution problems improving due to tougher emissions controls and the slowing of economic growth. |
| Late 1980's | The environment re-emerged as a key issue in response to the impact of major environmental disasters, increasing awareness of general environmental decline, the ending of the cold war (threat of nuclear war), the intervention of personalities (Prince Charles as champion of environmental causes), and green political issues (e.g., in 1982 and 1983 poll results from Gallup showed that half the British thought environmental issues more important and a third of voters were willing to change their vote on environmental grounds). |

(Peattie, 1992, pp. 19-22)

Today, in the 21st century, people are still suffering from environmental problems. One of the main causes is the industrial civilization which has

produced a lot of damage. The effect of industrial activity is too much and people indirectly make nature pay for it. In addition, the economic losses from natural disasters such as extreme weather-related events keep increasing at an alarming rate. It is also predicted that by 2065, this damage will outstrip our global assets (Goldsmith, 2009).

The rise of environmental issues has encouraged people to think more about their life and environment. Green or environmental thinking is not new (Constantino, 2009). In 1854, Henry David Thoreau published 'Walden', which is one of the earliest pieces of literature to address sustainable living (Thoreau, 1968). This was follow by B.F. Skinner in 1948 with 'Walden Two', which is a science fiction novel based upon the self sufficient community posited by behavioural psychology (Skinner, 2005). Later, Helen and Scott Nearing, in 1954, produced 'Living the Good Life', which kick-started the modern sustainable living movement (Nearing and Nearing, 1990). In 1981, Elgin promoted 18 ways of life characterized as voluntary simplicity. This is where a person simplified their life by practising environmental ethics in a practical ways such as recycling, holistic health care, buying products that are less polluting and others (Bechtel, 1997).

In the academic world, the study of environmental issues became a topic of interest among researchers as early as the early 1970's. Afterwards it faced a dramatic decline in the academic world. However, the present shows a renewed interest in green issues due to world climate change. A number of studies have been conducted in relation to environmental issues and

consumer environmental behaviour (Dunlap and Scarce, 1991, Chan and Lau, 2000, Bhate, 2001, Laroche et al., 2001, Kollmus and Agyeman, 2002, Thøgersen and Ölander, 2003, Thøgersen, 2006, Gronhoj, 2006, van den Bergh, 2008, Steg and Vlek, 2009).

In summary, environmental concern is not about specific issues such as whales or children. This is about people as human inhabitants of earth. This is where human and society live together in harmony without disturbing the environment or creating toxic assets in the financial world (Friedman, 2009). Question arises whether people's current lifestyles are leading towards environmentally friendly behaviour. The present study explores Cardiff consumers' environmental behaviour.

### 2.3.2 Environmental Scenario in the UK and Cardiff

The last decade has witnessed the European Union (EU) developing a range of initiatives for sustainable development among its members including the United Kingdom. According to the European Commission, in 2002 the EU adopted a 'Strategy for Sustainable Development' that sought to connect policy development and implementation with the principle of sustainability (Agyeman and Evans, 2006). This is where the economic, social and environmental effects of all policies must be taken into account in decision making. In terms of levels of compliance, this varies across the EU states. As a consequence the Aarhus convention was adopted as the basic rules to promote citizens' involvement in environmental issues and environmental law enforcement.

The UK government's Sustainable Development Unit, which is under the Department for Environmental, Food, and Rural Affairs (Defra), established an Environmental Democracy Unit to facilitate the Aarhus Convention (Agyeman and Evans, 2006). The UK government also set up the Sustainable Development Commission to review the government environmental and social strategy, identify policy gaps, and propose recommendations. In general, UK sustainable development is strongly guided by EU policy.

However, little activity has been conducted at the regional and local levels. According to Christie and Jarvis 2001, UK politicians were reluctant to take a lead on environmental issues and utilize concept of sustainable development (Agyeman and Evans, 2006). Thus, three decades of green politics, global environmental movements and public awareness of the ecological crisis have failed to encourage sufficient numbers of individuals to become environmental (Barry, 2006). Therefore, it is suggested that the state needs to take more action and create enhanced conditions for a green society. Action can be taken in terms of energy, water, waste disposal and private transportation consumption.

First is energy consumption and production. The UK can't totally depend on its nine oil and coal fired power plants as well its four ageing nuclear power plants. The countries need to invest in renewable energy in order to avoid any energy gap and regular blackouts. Over the last few years, UK businesses and government have worked together to develop onshore and offshore wind farms (Goldsmith, 2009). It is hoped that by 2020, more than a quarter of the

UK's energy supply will come from offshore wind, wave and tidal power (Mullins, 2010). However, the UK is still lagging behind other countries in its renewable energy technologies.

The UK government also pledged to make all new houses carbon neutral from 2016 by promoting energy efficient eco homes through insulation schemes and renewable energy systems (Douglas, 2010). It is hoped that every individual can play their part in controlling energy usage. However, despite efficiency improvements, individual households in the UK are responsible for 6 tonnes of $CO_2$ from the energy they use for heat and light. This is due to increased heating allowing households to heat more rooms then they actually require and to higher temperatures (European Environment Agency, 2007). In addition, people usually move house far more frequently and the cost of installing domestic energy standards is high. Consumers also face problems with the energy efficient label systems operating in the UK. For example, the United States/ European Union governments' Energy Star, which is the oldest energy label, has problems with the key information often missing from the database (Vaze, 2009).

Next is the water issue, whereby UK consumers have acted as if water was an infinite resource. They have wasted it without a thought and used it carelessly. It can be said that they take it for granted and now consumers are paying the price. There will be a time that consumers might suffer a shortage of water due to unpredictable weather (Goldsmith, 2009). For example, in 2006, the UK experienced some of the extreme droughts and heat waves

which can eventually affect consumer water storage. Ian Barke, the Environment Agency Head of Water, stated that despite the perception of England and Wales as wet countries, the national water resources are in extreme distress due to the density of the population (Babelgum, 2009). The nations have less water per person in comparison to many Mediterranean countries. The impact of climate change and population has also contributed to further problems with water resources. Thus, consumers need to treat their water with respect.

Waste is the main cause of environmental problems. In 2006, the WWF produced a report related to world resources. The report stated if everyone on earth consumed the same resources as the UK's citizens, consumer would need three planets to support them (Goldsmith, 2009). This is due to consumerism and high economic growth. With the growth of economy, waste is causing ecological mayhem. Every hour, the UK throws away rubbish enough to fill up the Albert Hall to the ceiling (Goldsmith, 2009). Every year, about 10.3 million tonnes are produced where 1,500,000 tonnes come from domestic waste (Watson, 1994). These create a big problem which causes groundwater pollution, resources depletion, and climate change. In order to overcome this problem, the UK government has taken the step to introduce recycling. The UK government has also developed a notion of the Waste Hierarchy which is 'reduce- reuse- recycle – incinerate- landfill'. This is the sequence of actions people should take in order to reduce the amount of waste (Vaze, 2009).

Transportation is another major concern for the environment. Over the last century, the UK society has developed a sense of car dependency and cars have become a popular consumer good. The effect of cars influences the development of new housing areas and new roads which could destroy the countryside and local communities. It can be said that the existence of car was supposed to make things much better, but it often turns out the other way around. In 1970, just over half of UK households owned a car and by 2000 almost three quarters had at least one car while the rest owned more than one car (Hillman, 2004). This scenario affected public transport whereby it has been estimated that for each additional car purchased, 300 fewer journeys are made by public transport. Traffic is notoriously slow, producing an estimated 121.2 million tonnes of carbon emissions and being responsible for three quarters of Britain's fossil fuel use (Goldsmith, 2009). A UK government forecast suggested that by the year 2025 there would be an increase in road traffic of between 85 and 140 per cent (Francis, 1994).

Hence, in 2000, the government produced 'Transport 2010: The 10 –Year Plan' which aimed to increase public transportation usage and reduce road congestion. They even spent massive public subsidies to improve public transport by building new roads or new public transportation services. However, that policy had little overall impact in comparison to the increase in car use (Withrington, 2009). This is because consumers will still choose the car as the principal and preferred way of meeting their travel requirements. As soon as the consumer is able to afford private transportation, he or she has

generally found its qualities far preferable (Hillman, 2004, European Environment Agency, 2007, Vaze, 2009).

Nevertheless, lower emission cars such as electric and hybrid cars are already a common sight in cities. The UK government have even taken the initiatives to promote these types of cars by offering road tax reduction and excluding them from the congestion charge. For example, all new cars (e.g., Toyota Prius) which are under the tax band are eligible for free annual road tax and exempted from the congestion charge.

How about Wales, and Cardiff as a city? The most prominent form of political action to take place in Wales has been motivated by environmental concerns (Minhinnick, 1994). These range from the development of wind power to other environmental issues such as pollution and toxic waste. The national newspapers of Wales and other media have often illustrated environmental issues in their news coverage. How fair is Cardiff in relation to these issues? How fair is the Cardiff resident's sustainable consumption or behaviour?

Waste has been recognised as Wales' biggest environmental problem in that around 23 million tonnes of waste are produced each year (Cohen, 2004). It is also the common environmental problem faced by the UK's policy makers. The local authorities in Wales, such as Cardiff, have been using the recycling and landfill methods of waste management. According to the 'Reducing Cardiff's Ecological Footprint' report, it was estimated that Cardiff's municipal waste would have an average yearly increase in the region of 6% (Collins et

al., 2005). This would create a problem in terms of waste management for landfill.

The city needs to tackle the problem through recycling and the reuse of materials. The council has a large recycling facility and runs door-to-door collections of recyclable waste. Cardiff Council also runs kerbside recycling collection services and has introduced a system of using food as well as garden waste as compost. Cardiff should be among the champions of recycling because from May 1990, Cardiff was the second city after Sheffield to provide a recycling practice under the Friends of the Earth recycling project (Friends of the Earth, 1990). This is where the council runs door-to-door collections of recyclable waste.

Domestic energy is consumed at the household level in the form of electricity, gas, coal, oil and other renewable sources. In 2001, Cardiff residents consumed more energy than the average Welsh and UK resident (Collins et al., 2005). There are number of possible reasons contributing to high energy usage such as an increase in domestic property, a higher proportion of single person households and an increase in the number of electrical appliances (Collins et al., 2005). Cardiff Council has recognized the importance of conserving domestic energy. They have been working with different institutions to promote renewable energy as well as a scheme to improve home insulation.

Like most other cities in the UK, there is a significant growth of private cars in Cardiff. These have growth creating positive impacts and negative ones. The high mobility of people and goods symbolize a key element of successful Cardiff development. But people were blind to the true costs of using cars upon their society and the environment, such as the cost of air pollution. Cars also represent the fastest growing source of greenhouse gas emissions. It has been said (Francis, 1994) that central Cardiff was suffering levels of ground ozone pollution higher than the level given by the World Health Organization. This shows how serious the effect of private transportation emissions is to the society. In order to meet this challenge, Cardiff Council has developed transportation plans and strategies such as the Cardiff Local Transport Plan. The aim is to reassess and re-focus the transport strategy in Cardiff by shifting use to public transport, walking and cycling (Cardiff Council, 2009).

Overall, environmental issues in Cardiff and Wales as a whole are generally the same as they are in the rest of the UK. The difference is in terms of mechanism of control. Some of the more progressive environmental planning guidance has been implemented in England while in Wales it has been delayed (Watson, 1994). Despite this, there is still hope for our environment through people's commitment to protecting it. This is supported by the fact that green consumer activity in the UK has steadily risen since 1999, from recycling through to opting for public transport instead of the car (Clark, 2009).

## 2.4 Green Movement

Many people have accused the green or environmental movement of being too unrealistic and utopian, promoting an ideal lifestyle which cannot really be

put into practice. However, many green movements have risen to prove that it is important to stand up for one's beliefs. The green movement is defined as 'any organisation or individual which involved in presenting, developing, implementing, making decisions or promoting on environmental issues and green behaviours' (Hounsham, 2006, p. 15).

Television is the greatest ally for the environmental movement's education. This medium helps people to understand the types of pollution and the effects they have on culture, self- image and consumerism. Television programmes such as the Green Channel have played vital roles in bringing matters of the environment to the public. This is where people get to know about the green lifestyle and green figures such as Al Gore, Jonathon Porritt, Michael Reynolds and Edward Goldsmith. Below are some of the examples of the green movement.

First, community is part of the green movement whereby a collective action made by each individual fronts the nation's green battles. If people want to reduce emissions, they have to work as a group rather than micromanage their own lives (Shepard, 2009). This is because the impact of collective action is much bigger than the impact of individual action. Additionally, people can empower themselves to promote a sustainability through the concept and practice of local community lifestyle. The reason is that people make most decisions about their behaviour and consumption within their social community. Individuals who are collectively comprised of social community

can help to improve the global environment by changing their individual behaviour (Maser, 1997).

One of the best examples is the small town of Modbury in Devon which has become the first town in the UK to stop the use of plastic carrier bags. This campaign was initiated by a local activist Rebecca Hosking (Head, 2008). The success of this project is dependent on the support given by everyone at Modbury. This shows how far people can make a difference if they really put effort into it. All of this is good news; however, for such actions to make a real difference, they would need to be taken seriously by everyone. It can be said that environmentally friendly behaviour will have succeeded when green is the standard and not an option for living. Another example is the success of the 'Transition Towns' movement which is based on a 12 step guide to a fossil fuel free economy. Currently, there are 400 towns in Britain that have signed up to it and are involved with green activities (Hounsham, 2006).

Second is the membership of registered environmental groups. During the last twenty years, there has also been an explosion of membership of various environmental bodies in the UK. In the end of the 1980s, the green groups in the UK grew dramatically with a combined membership of over 5 million (Peattie, 1992). One of the well known environmental organizations is Friends of the Earth. In 1971, there were approximately 1,000 members of Friends of the Earth in Great Britain (Minhinnick, 1994). Two decades later, these figures had risen to 112,000 in England and Wales. This shows how far people who

are not supporters of any political party are willing to commit themselves in the act of saving the environment.

Finally, world leaders are also doing their part to tackle environmental problems. Important environmental summits have been organized on the world stage. At the 1992 UN Earth Summit in Rio, leaders acknowledged the threat of global warming. Next was the Kyoto protocol, which aims to cut down the emissions of six greenhouse gases around the world. The 1997 Kyoto's treaty bound by law the world's 37 richest countries to cut their emissions by 5.2% from 1990 levels by 2012 (Knight, 2009). The latest summit was at Copenhagen, where the leaders of the world had to agree on how to stop environmental damage. Although some of the treaty's targets have not been fully met, this shows what nations are prepared to do to support the environment.

Are green movements and all incremental improvements enough to solve environmental problems? In reality, green movements may not totally solve environmental problems. Green movements are only part of a partial environmental solution. It is important to tackle the root of the problem, which is human behaviour.

## 2.5 Environmentally Friendly Behaviour

In today's modern globalized world, growth has become the objective of corporations and governments. These practitioners deplete nature resources in order to fulfil their goals. To what extent does each person contribute towards the depletion? According to the United Nation Environmental

programme, people are making extinct 50 to 55 thousand species a year because of their enormous activities on earth (Conners et al., 2007). Why has so little been done both at an individual and collective level?

The reason is that people are in denial about the environmental situation (Randall, 2005). This is where they refuse to believe the evidence of environmental degradation, or more subtly, believe the threat is exaggerated. They have even managed to come up with excuses for not taking action. Ten of the most common excuses are doubt about the environmental situation, technology being able to halt the problem, blaming other parties, devaluing the argument, dissociating themselves from the problem, helplessness, justifying their inaction by citing other world concerns, seeking reassurance for their unecological lifestyles, and concentrating only on positive evidence of progress instead of contradictory evidence (Hillman, 2004). Can people become the object of change?

There is still hope because past and present research has found that there are many citizens who appear to exhibit environmentally friendly behaviour (Leopord, 1970, Shetzer et al., 1991, cited in Nash and Lewis, 2006). People who are committed to green behaviour are those people who believe in the relationship between human and ecological systems. They have a clearer picture of the state of the planet and increasingly want an everyday green lifestyle. They can support sustainability through their environmentally friendly behaviour via their everyday actions by changing light bulbs, recycling or changing their shopping lists (Khaneka, 2006). It has been stated that a

greener future resides in recognizing that daily lifestyles are affecting the environment (Nash and Lewis, 2006). Thoreau, Gandhi, Skinner, Garrett Hardin, E.F. Schumachers, and Elgin all promoted environmentally friendly behaviour, leading to an increase in environmental consciousness (de Steiguer, 2006). What are environmentally friendly behaviours?

Environmentally friendly behaviours are defined as 'personal lifestyle choices that minimise impact on the environment and help ensure consumption of resources is sustainable at a social level' (Hounsham, 2006, p. 16). If people would like to have a balance between lifestyle and environment, they have to treat lifestyle as a sense of inner wholeness. There must be an equal balance between consumer behaviour and pattern of consumption with natural resources. A fully environmentally friendly behaviour can cover a broad range of behaviour such as minimizing the use of private transportation, reusing waste, using less energy or cutting water consumption.

### 2.5.1 Private Transportation

Transport activity can be seen as a key feature of modern society. In the early days, travel was limited to horse and buggy. Everything such as food markets, general stores and others were within walking distance. However, with the advent of automobiles and post World War 2, the demand for transportation kept increasing (Withrington, 2009). The development of private transport has displaced other modes of transport, especially the non-motorized such as walking and cycling (Hillman, 2004).

Today, there are still a large number of people who drive large, inefficient vehicles when a smaller vehicle would satisfy their needs. One of the reasons behind this is that cars are status symbols (European Environment Agency, 2007). As cars became more popular and affordable, society quickly began to shape itself around their existence (Goldsmith, 2009). This attitude is one of the main barriers to reducing car consumption (Withrington, 2009). The car culture needs to be challenged. The reason is that a car-based lifestyle could produce a lot of consequences such as road congestion, reduce revenues to public transport, and further decline of walking and cycling (Hillman, 2004).

People need to have the choice not to drive or to drive efficiently. There are many green choices for transportation such as car sharing schemes, using greener cars, minimising use of cars, doing without a car, using public transport and walking or cycling as a means of transport rather than just a form of recreation (Semlyen, 2003). These types of transportation have many undisputed advantages, such as walking and cycling being good for health, protecting the environment, generating zero-emissions, and saving money. The government can also make the effort to reverse negative perceptions of more sustainable transport through properly integrated town planning and investment in infrastructure with the aim to reduce car consumption (European Environment Agency, 2007).

### 2.5.2 Domestic Electricity

Electricity has been generated for homes and businesses since 1881, with the first power plants being run on water and coal (Head, 2008). Since then, humans rely helplessly on a regular supply of electricity. They are creating

increasingly energy-intensive societies due to social changes, ownership levels of equipment and new technologies (Hillman, 2004). Britain's energy consumption in Gross Domestic Product (GDP) is higher than in most European countries (Khaneka, 2006). Running a home generates more $CO_2$ than running a car.

Today, power plants are run mainly on coal, nuclear energy, petroleum, and natural gas and less on eco- friendly supplies such as wind power, solar energy or on tidal harnesses. At present, the government thinks that people want energy and assure the demand will be met by building more power stations. People are asking for energy services for their appliances, boilers, light bulbs and so on. Hence, the government should focus on improving the demand side on the energy efficiency of the hardware, which has less impact on the environment (Friends of the Earth, 1990). People can also do their part by using low energy lighting, switching off appliances fully, turning down heating, home insulation and choosing green energy. Stern, who has summarized energy research in the 1970s and 1980s, has suggested that there is a potential for great savings if most people choose more energy efficient technology and practise low direct energy consumption (Bechtel, 1997).

### 2.5.3 Domestic Water

Water is a precious commodity because only 1% of the world's water is available for use. If oil has dominated the global political stage, then the next half-century will belong to water. There is an overwhelming demand for water around the globe. Some countries have to face water scarcity and end up as

environmental refugees. People waste too much water through leakage, evaporation and contamination.

There are many ways that water can be polluted and surprisingly industrial dumping only causes about 10 per cent of the contamination. The main contributors to this contamination are farmers and consumers. Farmers use chemical pesticides and fertilizers which later pollute the water supply. Consumers can make a real mess of the water supply by flushing unnecessary items down the toilet or using chemical cleaning products. It can be said that consumers also consume a lot of water. For example, the recommended basic water supply per person per day is 50 litres. But the average British citizen uses 200 litres a day (Khaneka, 2006).

Consumers need to control their water usage in order to avoid losing their clean water reservations. If people continue to use water in a totally undisciplined manner, they are speeding up the usage of their water supply and water catchments in each bioregion (Maser, 1997). Most people do not realize how serious the water shortage problem is. The water shortage issue is getting worse and worse. In fact, it is predicted that future wars will be fought over water rather than oil (Khaneka, 2006). Consumers can help to protect water supplies by cutting down on water consumption, cutting waste and reusing grey water.

### 2.5.4 Waste Disposal

The problem with the world today is that consumers create a lot of rubbish. This is because consumers have been raised with the ease of a disposal

attitude which is to throw things in the bin and forget about them. This creates major problems at landfills sites, such as lack of dumping space, dangerous substances in terms of methane gas and also pollution from incineration processes.

Today, every household in the UK produces more than a tonne of waste annually, where almost 80% ends in landfill sites. One of the major culprits of waste is plastic carrier bags. UK shoppers use eight billion carrier bags a year (134 per person) and plastic bags constitute a third of all plastic waste (Global Ideas Bank, 2005). Ironically, plastic bags need about 20 to 1000 years to degrade and thousands of animals are killed by them. The best way to alleviate these problems is through reusing, reducing and recycling.

The environmental impacts of waste can be decoupled through public authorities' laws and regulations as well as market based instruments (e.g., plastic use-based charges). Cities in the UK, Germany and other European countries have introduced plastic bag charges. One of the successful plastic charges campaigns is in Ireland. This is where within 5 months of the campaign beginning; the use of plastic bags had fallen by over 90%.

The UK government also encourages people to do recycling in order to combat the waste issue. However, the recycling level is still low compared to other European countries. Only 12% of Britain recycles in comparison to Austria, where it is more than 60% (Khaneka, 2006). A survey by the Waste & Resource Action Programme (WRAP) also showed that on average the

British each throw away a third of the food they buy and this often ends up in a landfill site (Vaze, 2009). It can be said that achieving a reduction in waste generated by consumers is a much more complicated task. This requires alteration in consumer habits and lifestyles (European Environment Agency, 2007).

However, people can make a difference if they really work together to counter the waste problem. For example, the residents of Curitiba, Brazil, may be the happiest in the world due the city's efforts to build a city based on sustainability. This is where poor families can buy bus tickets by doing recycling, street children were adopted, street garden is taken care of by the public and there is an efficient city transport system (Global Ideas Bank, 2005). In the UK, people can do their part by refusing excessive packaging, reusing packaging and other items, minimising waste, recycling, composting, and disposing properly of unwanted goods.

## 2.6 Green Consumers

Over the past years, the world has witnessed the increase of environmental awareness that has resulted in the emergence of the green consumer. They have created a new phenomenon and demand environmentally friendly products or services. The scenario has been mentioned (Lawrence, 1993, cited in Schlegelmich et al., 1996) which describes the market growth rate of green products in the USA estimated in billions of dollar and still increasing by the year 1997. The rest of the world also experiencing the same condition. Marketers have had to change their marketing perspective from conventional

marketing to green marketing with compliance more towards the green consumer.

The emergence of the green consumer has opened doors to study more about their behaviour. There have been many studies conducted to find characteristics of environmentally conscious consumers but less on classifying consumers in terms of their level of green purchasing behaviour (Schlegelmich et al., 1996 ). Furthermore, the present green research focused more on the consumer marketplace (Berger, 1991, cited in Laroche et al., 1996). The majority of studies have been conducted under objectivism orientation by using self-report measurements of socio-demographic, personality and psychographic variables.

Past and current research has made a lot of effort to establish a picture of green consumers. But the picture is not yet clear in that findings show inconsistent profiles and behaviours of green consumers (McDonald and Oates, 2006). In fact, it is difficult to come up with an ultimate definition of the green consumer. However, green consumers share the following traits: 'a concern for life on earth and future generations; desire to develop sustainable alternative; a desire to move away from the values of excessive consumption and emphasis on quality of life' (Peattie, 1992, pp. 117-128). Although the findings of consumer environmental behaviour are inconclusive, it is important to understand their nature. Table 2.2 shows an example of the nature of the green consumer.

Table 2.2: The Nature of Green Consumer

| | |
|---|---|
| Inconsistent | The same person may behave as a green consumer in one market and act differently in another market. This is due to their own behavioural attributes (e.g., loyalty, interest, information seekers etc.), the profile of a given green products or services and the availability of potential green substitutes. |
| Confused | They are unsure what is green and what is not in the market-place. |
| Cut across existing market segment | Their concern regarding the environment cuts across traditional segments in most markets. These existing segments are usually based on the socio-economic, geodemograhic, and psychographic traits of customers. |
| Women are greener | Women are typically greener than men. |
| Children make a difference | Families are more interested in the environment than adults without children. |
| More sophisticated | They are better informed, more able to differentiate the genuine green article, and skeptical about green claims. |

(Peattie, 1992, pp. 118-119)

It is also important to understand green consumers by examining their differences in terms of how they perceive and respond to the environmental agenda. This can be done through market segmentation so as to assist marketers especially to cope better with satisfying the need of the profitable green consumer. Despite the inconsistencies revealed by green research, there have been numerous attempts to develop green consumer typologies.

First, segmentation of the green consumer can be done through shades of green. There are four shades of green: *green activists, green thinkers, green consumer base*, and *generally concerned* (Peattie, 1992). *Green activists* represent 5 to 15 per cent of the population. They are supporters of environmental organizations. *Green thinkers* are consumers that seek out new ways to help the environment. They represent up to 30% of the population. The *green consumer base* includes people who have changed their consuming behaviour and represent 45 to 60%. The *generally concerned* is the highest of the population (90%) which claims to be concerned about green issues.

Next is the psychographic typology which was developed by Ogilvy and Mather (Rex and Baumann, 2007). This is where green consumers are segmented based on their consumer behaviour, demographic and psychographics (Peattie, 1992). *Activists* represent 16% of the population. They are usually aware of green issues, concerned for children, vote conservative, and biased slightly towards upmarket consumers. *Realists* (34%) are the youngest group, biased toward those with young children, vote labour, and perceive conflict between profit and environmental protection. *Complacents* (28%) are upmarket consumers with older children. They are optimistic, support right-wing political parties and are not very aware of green issues. *Alienateds* represents 22% of the population. They are usually less educated, downmarket consumers with young families or are senior citizens. This group of consumers are unaware of green issues, pessimistic and vote for left-wing political parties (Peattie, 1992).

Finally, a more sophisticated segmentation is based on the motivators of and barriers to green consumption behaviour. This segmentation has been developed by the British Market Research Bureau for the UK Government's Department of the Environment and Rural Affairs (Defra). There are seven groups involved: *greens, consumer with a conscience, wastage focused, currently constrained, basic contributors, long-term restricted,* and *disinterested* (Belz and Peattie, 2009). The *greens* group is well educated about environmental issues and are driven by a belief that sustainability issues are critical. The *consumer with a conscience* group is motivated by environmental and social concerns. On the other hand, the w*astage focused*

*group* is concerned about waste, but lack awareness of other issues and behaviours. The *currently constrained group* prefers to be greener, but doesn't think that there is much the individual can do. The *basic contributors* are those people who are skeptical about behaviour change and are driven by a desire to conform with social norms. The *long-term restricted* group prefer to address their life priorities before they consider environmental issues. The last group is *disinterested*, who have no interest in changing their behaviour. However, they are aware of environmental problems (Belz and Peattie, 2009).

It is difficult to change and maintain consumer environmental behaviour choices (Jackson, 2005). For this reason, it is vital to understand the motivation behind green consumer choices. There are many reasons that encourage consumers to purchase green products or services and adopt green behaviour. First, consumers are driven by the increased awareness of green issues, as mentioned in sub-sections 2.4 and 2.5. Second, there are many levels of information that have been made available to help green consumers make their important decisions. Third is a shift in values from focusing totally on consumption to conservation and environmental concern. Finally, there is increased promotional environmental activity among non-profit organizations.

There is also a rapid expanding body of research related to consumer behaviour and the environment. Below is a description of green consumer behaviour from the demographic, knowledge, attitudes, values, and consumers' behaviours points of views.

### 2.6.1 Consumers' Demographic Characteristics

Research to identify the green consumer from a demographic perspective has been conducted since the early 1970s. Early findings described people who had a strong environmental conscience as usually female, pre-middle aged, of high level education and of above average socioeconomic status (Berkowitz and Lutterman, 1968, Anderson Jr and Cunningham, 1972, Ottman, 1998, Laroche et al., 2001). However, other findings showed that the green consumer was less educated, older than average and had lower income than average socioeconomic grade (Balderjahn, 1988). Additionally, findings regarding consumers who were willing to pay more for green products found that the green consumer was mostly female, a homeowner, married, middle aged, working more than 30 hours a week, less educated, and with at least one child at home (Laroche et al., 2001).

The findings from these studies have been generally inconclusive and inconsistent. Additionally, the results attempting to link environmental concern and purchasing to socio-demographic factors have proved inconclusive (Peattie, 2001). However, researchers, particular from market research companies, still continue to define green consumer segments primarily in demographic terms given that this is what was accessible (Faiers et al., 2007). Questions arose whether demographics should be included in the study of environmentally friendly behaviour. This is because so far there is a lack of extensive research which has been conducted upon certain socio-demographic groups in relation to green consumer behaviour (Wagner, 2003).

Therefore, it is not easy to confirm a strong socio-demographic relationship with green behaviour.

### 2.6.2 Consumers' Knowledge

In the study of consumer behaviour, knowledge is a characteristic that influences all phases of the decision making process. Findings (Vining and Ebreo, 1990, Chan, 1999, cited in Laroche et al., 2001) show that knowledge is a significant contributor towards environmentally friendly behaviour. Other findings also support the relationship between knowledge and behaviour (Ellen, 1994, Young et al., 2010). Rational explanations have also demonstrated that knowledge helps consumers towards environmental behaviour choices. This perspective assumes that increasing knowledge about environment will lead to reasoned response towards green behaviour (Belz and Peattie, 2009). Alternatively, over-knowledge will also lead to consumers being sceptical about the environmental practices (Jackson, 2005).

However, knowledge does not necessarily lead to environmental action (Kollmus and Agyeman, 2002). Findings from past and current research show that the relationship between knowledge and green consumer behaviour are contradictory (Laroche et al., 2001, Said et al., 2003). This is where the practices of environmentally friendly behaviour were not in concert with the level of knowledge. This could be because consumers tend to be highly sceptical about green claims or are confused by different environmental

claims (Peattie, 2001). Therefore, they opted not to proceed with environmentally friendly behaviour. It has been argued that:

> The oldest and simplest models of pro environmental behaviour were based on a linear progression of environmental knowledge leading to environmental awareness and concern (environmental attitudes), which in turn was thought to lead to pro-environmental behaviour. These rationalist models assumed that educating people about environmental issues would automatically result in more pro-environmental behaviour… These models from the early 70s were soon proven to be wrong. Research showed that in most cases, increases in knowledge and awareness did not lead to pro-environmental behaviour. Yet today, most environmental NGOs still base their communication campaign and strategies on the simplistic assumption that more knowledge will lead to more enlightened behaviour (Kollmus and Agyeman, 2002, p. 241).

Despite this, knowledge is still considered as one of the important factors for environmental behaviour. The ability to perform environmental behaviour is dependent on a number of factors such as knowledge, commitment, vision, experience and social skills (Carlsson and Jensen, 2006). The consumer needs knowledge in order to understand more about environmental problems, their effects and the range of possible solutions (Young et al., 2010). How can knowledge of green behaviour be transformed among wider society?

A common answer is through education and distribution of information. This is where government, for example, conducts societal marketing by giving sufficient information and consequences of consumer actions along with green strategies. However, social marketing programmes have been critiqued because 'they largely consist of informational and do not usually use integrated marketing' (Foxall, 1994b, p. 29). Social marketing uses the strategy of providing information about the economic advantages of conservation which assumes consumer will act rationally. Yet, this kind of

learning will not be truly effective because people learn more through practice rather than pedagogy (Horton, 2005).

### 2.6.3 Consumers' Attitudes

An attitude is generally understood to refer to the way people feel, their views, beliefs, or behaviours towards an object, idea, and other marketing stimuli (Foxall et al., 1998). Consumer attitudes are important, especially to marketers, because they allow marketers to understand consumers' intentions and behaviours toward their products or services. Thus, many attitudinal studies have been conducted in the consumer environment.

Research on consumers' attitudes regarding environmental issues has been conducted over the past decades. Findings show that attitudes act as a key determinant of green behaviour (Roberts, 1996, Laroche et al., 2001). However, other findings have reported that largely people are concerned about environmental issues but they are struggling to transmit this into their behaviour (Lomborg, 2001, Truffer et al., 2001, Randall, 2005, Vaze, 2009, Young et al., 2010).

This has encouraged researchers to study the 'attitude- behaviour gap'. However, this approach might be problematic because attitudes can only be considered a reliable prediction of behaviour if there is only a focus on the specific environmentally friendly behaviour (Wagner, 2003).

One of the widely used attitudes model is the Fishbein and Ajzen's Theory of Reasoned Action (TRA). The model shows a direct interaction between the attitude toward a specific behaviour and subjective norms. This interaction will create behavioural intentions in which one decides whether the target behaviour will take place (Foxall et al., 1998). One of the reasons researchers have used the TRA is due to its adaptability to new studies (Cordano et al., 2011). However, some research findings of green behaviour fail to find a connection between behaviour intention and target behaviour (Mostafa, 2007, Kollmus and Agyeman, 2002). It could be there is a lack of a strong relationship between attitudes, intentions and the behaviour of consumer environmental impacting consumption (Foxall, 1994b). Moreover, it is argued that the TRA does not explain affective or emotional behaviour due to issue of affective reasoning which is considered as a separate component of the TRA process (Fitzmaurice, 2005). In addition, this model also does not address the role of habit; moreover, empirical work is limited to only questionnaire surveys or interviews instead of measuring consumer actual behaviour (Jackson, 2005).

Hence, it is important to study actual behaviour because intention to perform environmentally friendly behaviour does not really portray actual behaviour (Davies et al., 2002, cited in DiClemente and Hantula, 2003). This can be seen in the study of recycling behaviour among UK Cornwall NHS staff which discovered that what staff claimed they were doing environmentally was contradicted by their actual behaviour (Tudor et al., 2007).

Recent studies also show that attitudes of green consumers are sometimes unpredictable. Green consumers sometimes take the moral high ground and easily slide down. This is based on the new research conducted by Nina Mazar and Chen-Bo Zhong from the University of Toronto in Canada which stated that green consumers are more likely to behave selfishly, cheat and steal afterwards (Aldhous, 2010). Their research is based on an online stores simulation between two groups of students, one group representing green and the other conventional consumers. However, it's unclear how far the morality of green shoppers makes them feel it is permitted to cheat. In addition, this research could explain the inconsistent behaviour of green consumers in terms of reducing their carbon footprint.

### 2.6.4 Consumers' Values

Human values can be defined as desirable goals, varying in importance, that serve as a guiding principle in people's lives (Schwartz, 1994). It can be assumed that 'values are beliefs that people hold and guide their behaviour' (Faiers et al., 2007, p. 4384). Consumers can be persuaded to choose environmentally friendly behaviour if they are exposed to environmental values. This is where education plays important roles in channelling and developing environmental values to influence green behaviour (Young et al., 2010). For example, recycling produces minimum individual reward and if people learn how to do it, they would be expected to be driven by strong values.

Environmental values might also emerge from a different point of view (Laroche et al., 1996). For example, the new green movement focuses more on ‘the non material values such as conservation, caring and the community’ (Peattie, 1992, p. 23). These values are also related to the demand for quality of life, a backlash against the disposable trash culture (cultural by-products of modernism with the downfall of our society) and the rise of stewardship as a societal value.

Values can be a strong motivation of consumer environmental behaviour and may vary across cultures (Kluckhohn, 1951, Rokeach, 1973, cited in Bhate, 2001, pp. 170-171). A study of Canadian culture on pro-environmental knowledge, attitudes and behaviour showed that there are two major values which can influence consumer behaviour: Individualism and Collectivism (Laroche et al., 1996). This is where when predicting social behaviour, the cultural dimension of Collectivism focuses more on norms rather than attitudes. In contrast, Individualism concentrates more on attitudes rather than norms (Triandis, 1993, Laroche et al., 1996). A different exploratory study of consumer environmental behaviour across three countries proposed that human commitment towards the environment may be a function of Broad and Individuals factors (Bhate, 2001). Broad factors such as a country’s economy and development pattern may have an impact on the advancement of consumer environmental behaviour, while Individual factors focus more on consumer cognitive style for innovative and adaptive decision making as well as levels of involvement. Empirical findings from this research support this statement.

The study of consumer environmental values can also be conducted through the ecological value theory. The ecological value theory suggests that environmental behaviour flows directly from the biospheric and individual moral or altruistic value. A number of studies have been carried out to explore the relationship between values and environmental behaviour. The most well-known study is biospheric value orientation in the context of the New Environmental Paradigm (NEP) (Dunlap et al., 2000). This paradigm contained a set of values which pay respect to natural limits and preserving the environment (Jackson, 2005). The NEP scale has been widely used to examine pro-environmental orientation in many countries such as Brazil and Norway (Vikan et al., 2007).

Nevertheless, the ecological value theory has three limitations. First, having environmental values does not necessarily lead to environmental behaviour. Second, this theory has the tendency to overlook the influence of situational variables in the relationship between value orientation and environmental behaviour. Finally, the strength of individual environmental values might be unstable across different situations (Jackson, 2005).

Overall, people need to set their environmental values and know the stakes involved in violating them. This idea has been supported by Garreth Hardin who wrote in 'The Tragedy of the Commons' that the problems can be only solved by a change in human values or ideas of morality (Kingsolver, 2010).

### 2.6.5 Consumers' Behaviours

Consumers are capable of changing their behaviour due to responses towards new social environment and technologies. How about changes towards more environmentally friendly behaviour? How can consumers change their normal practices in a way coherent with the environment? It can be said that the task of achieving behavioural changes is very complex. This is because consumer choices of behaviour are influenced by social factors, habit, intentions, emotion and moral (Jackson, 2005). In spite of this, there is a way to persuade consumers towards pro-environmental behaviour through various forms of modelling.

According to social learning theory, consumers may seek advice from a social network for their behavioural change (Faiers et al., 2007). This could be in the form of trial and error or observation from a social network. The school of psychology known as behaviourism argued that behaviour can be learnt via trial and error. This is where people learn what to do or not to do by experiencing the reinforcement of their own behaviour (Dunbar, 1996, Foxall et al., 1998, Jackson, 2005). Learning from reinforcement or response consequence indeed can help people to choose which behaviour to adopt or avoid in their social and physical environment (Bandura, 1977). Famous leading behaviourists Skinner and Pavlov used reinforcement technique to change behaviour (Foxall et al., 1998). Previous research has used applied behaviour analysis to study the consumer environmental behaviour.

Applied behaviour analysis is derived from Skinner's operant response whereby the rate of behaviour is influenced by its environmental

consequences (Foxall, 1994b, Skinner, 2005). This is where consumer behaviour is controlled by the consequences of the consumers' own behaviour. The consequences could be either positive or negative (Foxall, 1994b). The model relies on antecedents which are prompts and consequences such as incentives and feedback. Past research has been conducted in terms of information, prompts, consequence and feedback of consumer environmental behaviour in relation to energy consumption (Stern and Gardner, 1981, van Houwelingen and van Raaij, 1989, Dietz et al., 2009). The general conclusion is that information by itself is not sufficient to cause change in consumer environmental behaviours (Stern and Gardner, 1981). Prompts are more effective if they are specific (Stern and Gardner, 1981). Consequence procedures such as rebates, recognition and others have produced some degree of success among samples (McClelland and Belsten, 1979, Winett et al., 1979, cited in Bechtel, 1997). The most successful energy conservation is in the form of feedback. This is where consumers receive information quickly about how successful they have been in saving energy (Bechtel, 1997).

The applied behaviour analysis needs to systematically expose the strong links between consumer environmental behaviour and its consequences. Regular and repeated performance is necessary in order to develop identities and practices (Butler, 1990, cited in Horton, 2006). It can be said that this approach can be linked to the Rich Response Repertoire (RRR). The RRR is the concept of developing many responses to a situation and it is the only way behaviour can be inherited (Bechtel, 1997). Skinner's belief is apropos here

whereby he sees the collection of responses adaptation to the new environment as self rewarding. However, the empirical findings of applied behaviour analysis lack systematic organization and theory based generalisation (Foxall, 1994b).

Another way to study environmental behaviour is the Behavioural Perspective Model (BPM). According to the BPM, consumer choice of behaviour will be influenced by the consumer behaviour setting and reinforcement consequences (Foxall, 1994b, DiClemente and Hantula, 2003, Foxall et al., 2006). Utilitarian and informational reinforcement will help consumers to approach the behaviour while aversive reinforcement leads to avoidance of the behaviour. The model has been useful in analysis of typical consumer behaviour. However, no study has been conducted in relation to consumer environmental behaviour.

In summary, the social learning theory is practical for studying environmentally friendly behaviour. It has been stated that this theory is a powerful avenue of behaviour change and it can be used as a way to promote desirable consumer pro-environmental behaviour (Jackson, 2005).

## 2.7 Influences in Environmentally Friendly Behaviour

There are many factors which can influence people to choose environmentally friendly behaviour. First is the media which is the source of communication used by policy makers and the green movement to communicate ideas about sustainability within individual communities. There are many wildlife programmes, news reports of environmental disasters, and

programmes on sustainable lifestyle that are taking place to promote environmental awareness. The Internet also provides everything anyone could possibly want to know about environmental issues and sustainability development.

Second is the influence of family members. This is where influence, better known as socialization influence, can be passed down from one adult to another (Moschis, 1987, cited in Gronhoj, 2006). This influence might develop a positive or negative green behaviour. These influences can be transmitted through direct or indirect communication. The research findings show that waste management and organic food were identified as having high positive influences between parents and children (Gronhoj, 2006).

Third, people may become more aware of environmentally friendly behaviour through interest or involvement in green networks (Peattie, 2004). Involvement in green networks, such as group and campaign, exposes individuals to the green cultural world (Horton, 2005). Only through such involvement do people actually learn how to talk and practice culturally specific behaviours which later produce green identities. Green networking can be done through intermingling and informal social interactions. Basically there are three interminglings involved; green meetings of local networks, green gatherings and interaction mediated by information technologies such as e-mail (Horton, 2005). On the other hand, the opportunity to form friendships with other fellow cultural members can also be done through informal social interaction such as group bicycle rides, walks or even green

holidays. In conclusion, these networks allow members to dwell in, replenish and reaffirm their elective and collective green identities.

Finally, the policy maker also has the ability to promote environmentally friendly behaviour and other green issues. This can be done through public information campaigns as well as political campaigning (Peattie, 2004). For example, governmental green policy emerged from the first Earth Summit and encouraged society towards green behaviour such as switching off lights, conserving water, increasing recycling rates, insulating homes, and reducing carbon emissions. The assumption behind government intervention is that progress towards sustainability is achievable through changes in everyday personal behaviours (Horton, 2005). It can be said that government programmes might assist people to be more aware of environmental problems and be disciplined into green behaviours. One of the common government tools is through fiscal sticks and carrots which if properly imposed will encourage the public to choose their own green behaviour (Horton, 2005).

Question arises whether government sticks and carrots schemes are able to change people's behaviour and attitudes into sustainable behaviours. This is because on the surface these schemes may perhaps be successful in terms of behaviour changing rather than attitude altering. Thus, it is practically important for government to think of aiming to alter attitudes and change behaviour which are keys to achieving the objective of sustainable behaviour. Environmentally friendly behaviour needs to be a norm and not just another choice.

## 2.8 Conclusion

It appears that regardless of values, religious beliefs or cultures, human abuse of the environment has been universal (Bechtel, 1997). Many people believe that their environmental actions are too small to make a difference to counter any environmental problems. In reality, not many people are committed to green behaviour. A number of studies have been conducted in relation to environmental issues and green consumer behaviour. However, little research has been forthcoming to analyse consumer environmental behaviour across different situations in a systematic way. This is where the Behavioural Perspective Model (BPM) will be used to study and interpret consumer behaviour in systematic consumer situations. The next chapter will explore the BPM in detail.

# CHAPTER THREE

## THE BEHAVIOURAL PERSPECTIVE MODEL

### 3.1 Introduction

The present study is concerned with the interpretation of consumers' environmental behaviour across different situations in a systematic way. A particularly relevant stream of research to explain the mechanism behind this situational effect on consumers' environmental behaviour choices is the Behavioural Perspective Model (BPM). This chapter deals with the theoretical foundations upon which the research is based. It is organised into three main sections. First, consumer behaviour as operant response is described in terms of an overview of consumer behaviour and the operant interpretation. Second is the behavioural model revolution. Finally, the outline of the BPM is stated.

### 3.2 Consumer Behaviour as Operant Response

In the study of consumer behaviour, researchers have developed many theoretical orientations. Mainly, studies have focused on direct and indirect measurements of consumer behaviour in terms of goods, experiences and services (Belk, 1974, Foxall, 1993a, Foxall, 2003, Banerjeea and Solomon, 2003, McDonald and Oates, 2006). However, some of the consumer behaviour studies lack theoretical coherence (Foxall and Greenley, 1998). Nevertheless, in recent years there have been many attempts made by researchers to develop a more systematic theory of behaviour regarding consumer consumption (DiClemente and Hantula, 2003). This sub-section illustrates an overview of consumer behaviour research and its operant

interpretation. The objective of this overview is to evaluate the theory and illustrate the importance of other disciplines which are relevant to the present study.

### 3.2.1 An Overview of Consumer Behaviour

The study of consumer behaviour helps to explain how people behave and how they are motivated by instinct and culture. Consumer behaviour can be defined as 'those activities directly involved in obtaining, consuming, and disposing of products and services, including the decision processes that precede and follow these actions' (Engel et al., 1995, p. 4). This is where consumers go through the process of recognizing needs, finding ways to solve these needs, making purchase decisions, interpreting information, making plans and implementing these plans (Schiffman and Kanuk, 1983, Engel et al., 1995, Foxall et al., 1998).

Each consumer has a different way to choose their products or services and even behave differently in behaviour settings. Hence, it is a challenge for the researcher to interpret consumer behaviour. In fact, the dynamic nature of the consumer, which is constantly changing, indicates that the researcher should often retest his or her theories and findings in order to avoid overgeneralisations. Some of the factors contributing to consumer behaviour can be grouped into five categories, as in Table 3.1.

Table 3.1: Factors Affecting Consumer Behaviour

| | |
|---|---|
| Demographic | Age, sex, nationality or socio-economic status. |
| Personal and psychological | Level of education, lifestyle, motivation, values, beliefs, attitudes, personal circumstances. |
| Socio cultural | Family influence, peer group influence, national or local cultural norms, status and role within society. |
| General | Economic climate, security of employment, political stability, climate, weather and season. |
| Informational | The amount and nature of the information the consumer will have gathered about a particular company and its product. |

(Peattie, 1992, pp. 116-117)

The study of consumer behaviour can be conducted through consumer psychology. Consumer psychology is the study of how consumer thoughts, beliefs, feelings and perceptions influence how people behave (Cherry, 2011). However, consumer psychology has been dominated by nonbehavioural thinking which has focused more on a cognitive approach rather than behavioural (Foxall, 1998). It also does not grasp the significant study of consumer behaviour in relation to behaviour setting and learning history. On the other hand, the Behavioural Perspective Model (BPM) is able to predict consumer behaviour via the intersection between the behaviour setting and the pattern of reinforcement signalled from the consumer's learning history (Foxall et al., 2006).

Evolutionary psychology is another branch of psychology which focuses on the study of human behaviour through evolutionary theory (Cosmides and Tooby, 1994, Cosmides and Tooby, 2000). Human behaviour is thought to be the result of a long process of evolution and which can be inherited. Previous studies have consistently found that the fact that humans prefer a natural rather than human made environment is a product of evolution (Kaplan, 1972,

1987, Appleton, 1975, Balling and Falk, 1982, cited in Bechtel, 1997). It can be said that some human characteristics and behaviours may be developed through natural selection and are passed on from one generation through genes. This is in accordance with Darwin's theory of natural selection, which states that not all species will survive; only those species' best suited to the new circumstances will survive (McLeod, 2007).

This means that over many generations the genetic make-up of a species changes in ways that make it increasingly well adapted to its environment (McLeod, 2007). These genes also produce adaptive behaviours or characteristics which increase the ability of an individual to survive and reproduce. Can genetic heritage really influence human behaviour? This issue continues to be argued up to the present time because some academics have claimed there was no evidence for gene control and vice versa (Bechtel, 1997). Overall, the foundational of areas of research in evolutionary psychology can be divided into the following: survival, cultural evolution, perception, learning, and language to motivation (Cosmides and Tooby, 2000). However, the empirical findings lack systematic organization and have not been integrated into an appropriate model of consumer behaviour.

When it comes to study consumer behaviour, it is also important to take into consideration situational influences. This is because any investigation of consumer behaviour that ignores situational effects is likely to provide unreliable results (Belk, 1974). Situations may account for 20 to 45 per cent of consumer behaviour and interactions between individuals and situations for

30 to 50 per cent (Argyle, 1976, cited in Foxall et al., 1998). Some of the complex behaviour studies such as counterfeit buying behaviour have neglected the effect of situational effects (Eisend and Schuchert-Gulermany, 2006, cited in Xiao & Nicholson, 2009). On the other hand, a number of studies have verified the influence of situational effects upon consumer behaviour (Lutz and Kakkar, 1975, Russell and Mehrabian, 1978, Donovan and Rossiter, 1982). However, the issue of situational influence is that it lacks a framework of analysis that allows the situational influences on consumer choice to be identified in an organized way (Foxall, 1998). Thus, the BPM is the potential mechanism to interpret consumer behaviour in systematic consumer situations (Foxall, 1993a).

### 3.2.2 Operant Interpretation

Radical behaviourism is capable of making an important contribution to the interpretation of consumer behaviour (Foxall, 1998). It is a philosophy developed by B.F. Skinner. The interpretation of consumer behaviour can be done through a reconstruction of the environmental causes of observed behaviour (Skinner, 1987). There are three levels of interpretive analysis which fall under radical behaviourism: operant class, contingency category, and consumer situation. Table 3.2 shows the three levels of interpretive analysis.

Table 3.2: Three Level of Interpretive Analysis

| Level of Analysis | Environmental Stimuli | Behaviour Units |
|---|---|---|
| Operant Class | Pattern of Reinforcement | Operant equifinality class |
| Contingency Category | Schedule of Reinforcement (e.g. single, dominant) | Accomplishment, Hedonism/Pleasure, Accumulation and Maintenance |
| | Pattern of Reinforcement, behaviour setting scope | General pattern of behaviour appropriate to closed/ open setting, subset of operant equifinality class |
| Consumer Situation | Pattern of reinforcement, relative strength of immediate reinforcement and punishment (e.g. schedule, delay, quantity) | Approach, Escape, Avoidance, and responses including browsing, purchase, saving, buying, leaving the behaviour setting |
| | Personal learning history | |
| | Behavioural setting scope | |
| | State variable (e.g. mood, ability to pay) | |

(Foxall, 2010a, p. 96)

The operant class categories describe consumer behaviour as belonging to the one of four operant equifinality classes (e.g. Accomplishment, Hedonism/Pleasure, Accumulation, and Maintenance) and one of the eight contingency classes. Equifinality is where all member of a particular class of behaviour produce a similar pattern of consequences (Foxall, 2010a). The analysis of operant class can be done through the pattern of reinforcement. For example, consumer behaviour influenced by relatively low levels of utilitarian and informational reinforcement can be categorized as Maintenance.

The second level of analysis is the contingency category. This is where consumer behaviour can be allocated according to schedule of reinforcement, pattern of reinforcement and behaviour setting. A detailed version of contingency category is presented in sub-section 3.4.5.

Finally, the consumer situation is the most detailed level of analysis which relates specific consumer responses such as browsing, evaluating and purchasing using the elements of the consumer situation (Foxall, 2010a). Consumer behaviour could be approach, avoidance or escape (consumers free themselves from a currently aversive setting). The assessment of the consumer situation can be done through the pattern of reinforcement, the strength of reinforcement and punishment, consumer learning history, the behavioural setting, and the immediate state variables. Overall, the three levels of interpretive analysis can be examined by using the BPM mechanism. What is the BPM? How has the model evolved? Sub-section 3.3 will discuss the BPM in detail.

### 3.3 Behavioural Model Revolution

Consumer behaviour has usually been studied through cognitive perspectives, either in the study of consumer psychology or economics (Foxall, 2003). Cognitive science emerged strongly in the 1960s and this approach has dominated psychology ever since (Mandler, 1985, Baars, 1986, Dennett, 1987, cited in Foxall, 2010a). The study of consumer choice has also been viewed via a cognitive approach. However, the cognitive approach produces mixed findings (Kollmus and Agyeman, 2002, Said et al., 2003, Jackson, 2005). For example, evidence of the limitations of the cognitive approach can be seen in the study of the Howard-Sheth model. The Howard-Sheth theory of buyer behaviour is a sophisticated integration of the various social, psychological, and marketing influences on consumer choice (Farley and Ring, 1970). The theory comprises four sets of variables: inputs (stimuli that initiate the purchase process), perceptual construct, learning construct,

and outputs which are an act of purchase (Bennett and Mandell, 1969, Farley and Ring, 1970, Foxall, 1990). However, this model have been criticised due to 'for being untestable and lacking specificity in their variables' (Jackson, 2005, p. 22).

There is another view of consumer behaviour research which relates to its consequences. The applied behaviour analysis stresses that important causes of behaviour are to be found in their environmental consequences (Schultz et al., 1995, Bechtel, 1997, Dietz et al., 2009). However, the empirical findings of applied behaviour lack systematic organisation and have not been integrated into an appropriate model of consumer behaviour (Foxall, 1994b). This is where the BPM emerged as an integrative device which is capable of interpreting consumer behaviour in consistent terms via the scope of the consumer behaviour setting and the pattern of reinforcement signalled from the consumer learning history (Foxall, 1993a). Overall, this sub-section describes the behavioural model revolution from the time of Watson until the development of the BPM.

### 3.3.1 Behaviourism

Behaviourism, also called the learning perspective, is a philosophy of psychology based on the proposition that all things which organisms do should be treated as behaviours (Burghardt, 1973, Wheldall, 1975). One of its main influences is John B. Watson, who rejected introspective methods and sought to restrict psychology to experimental method. In the beginning, John B. Watson believed that consumers' present needs can be manipulated through behavioural techniques to condition emotional responses (Skinner,

1987, DiClemente and Hantula, 2003). Watson, the founder of behaviourism believes that the environment influences human behaviour rather than genetics, as was claimed by Darwin. According to Ekman, Watson claimed that we only consider what is learned in order to understand human behaviour (Darwin, 1998). It can be said that Watson believed nurture rather than nature to play a role in all human behaviour.

However, no empirical research was conducted until the 1960s, when Lindsley conducted a laboratory experiment to study the operant theory of consumer behaviour. The next decade, the 1970s, brought movement of operant based application into socially important consumer behaviour such as recycling, gas and energy conservation. Although this research showed interesting relationships between applied behavioural techniques and consumer behaviour, it raised certain issues. The overall effectiveness of this approach in the real market might be impractical due to marketers being focused more on increased consumption rather than de-consumption. In addition, these 'intervention studies may have concealed complementary theoretical analysis and development' (DiClementa and Hantula, 2003, p. 593).

### 3.3.2 Classical Conditioning

In the 1980's, researchers investigated the use of classical conditioning procedures in consumer behavioural research. These procedures adopt indirect measures of consumer behaviour which are generally in relation to preference or attitudes. The process occurs when the conditioned stimulus

(e.g. product) is paired with the unconditioned stimulus (e.g. pleasant stimulus) which at the end produces consumer preferences (Bierley et al., 1985, Stuart et al., 1987). For example, Nord and Peter in 1980 described the frequent pairing of famous sportscasters' excited voices with certain products as possibly developing positive feelings about that product (DiClemente and Hantula, 2003).

Classical conditioning has been acknowledged in the literature review of consumer behaviour as a means for interpreting advertising effects (Schiffman and Kanuk, 1983, Allen and Madden, 1985, Engel et al., 1995). This process works well when people serve as subjects (Bierley et al., 1985). Various studies have been conducted by using the classical conditioning approach (Bierley et al., 1985, Stuart et al., 1987). Results show validity between a product and its positive effect. However, there are some studies which have produced mixed results of product selection or purchase (Allen and Madden, 1985, Kellaris and Cox, 1989). These studies may have experienced the risk of obtaining pseudoconditioned responses. A pseudoconditioned response is a behaviour that occurs without depending on a predictive relation between the conditioned stimulus (CS) and unconditioned stimulus (US). Hence, it is suggested that classical conditioning procedures should be trialled several times, should present the CS before the US, and should include the proper control procedure (Bierley et al., 1985).

As summary, consumer behaviour researchers prefer to choose classical conditioning because the operational time is shorter than for operant

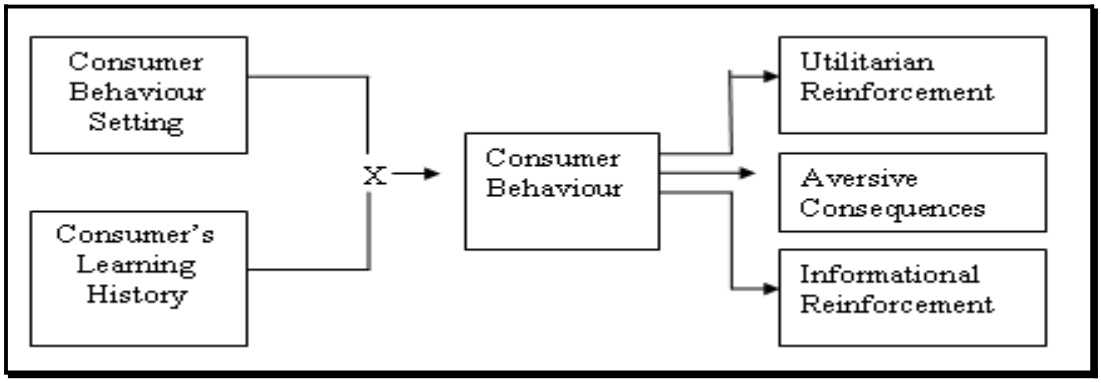
conditioning studies (DiClemente and Hantula, 2003). In addition, classical conditioning is more easily coordinated with existing literature. However, this theory needs to understand the motivation behind consumer behaviour.

### 3.3.3 The Behavioural Perspective Model (BPM)

The Behavioural Perspective Model (BPM) comes in as a comprehensive consumer behaviour model. BPM is the model which can be used to study and interpret consumer behaviour in systematic consumer situations (Foxall, 1993). This model is an elaboration of Skinner's original three terms contingency which may be amenable to neo-Darwinian analysis (Nicholson and Xiao, 2010). The three term contingency consists of a discriminative stimuli ($S^D$) that marks the occasion on which a particular response (R) is likely to be rewarded or reinforced ($S^R$) (Foxall, 2010b).

The BPM interprets consumer behaviour via the intersection that occurs between antecedent events of consumer behaviour setting and individual learning history, with the function of product and information consequences that could be reinforcing or punishing (Foxall, 1994a, Foxall et al., 1998, Foxall and Greenley, 2000, Yani-de-Soriano et al., 2002, Xiao and Nicholson, 2009, Foxall, 2011). Figure 3.1 summarizes the Behavioural Perspective Model.

Figure 3.1: Summative Behavioural Perspective Model




(Foxall et al., 1998, Foxall, 1999, Foxall, 2011)

The core of the BPM is the concept of consumer situation which situates consumer behaviour at the intersection between the consumer behaviour setting and the pattern of reinforcement which receives its meaning from the consumer's learning history (Foxall, 1993a, Foxall, 1997b, Foxall, 2010a). The BPM uses the Pleasure, Arousal, and Dominance (PAD) scale develop by Mehrabian and Russell (1974) to explore the utilitarian and informational reinforcement as well as open or closed behaviour setting. This model has been highly successful in studies of other areas of consumer behaviour (Foxall and Greenley, 1999, Yani-de-Soriano et al., 2002). The BPM is explained in detail in sub-section 3.4.

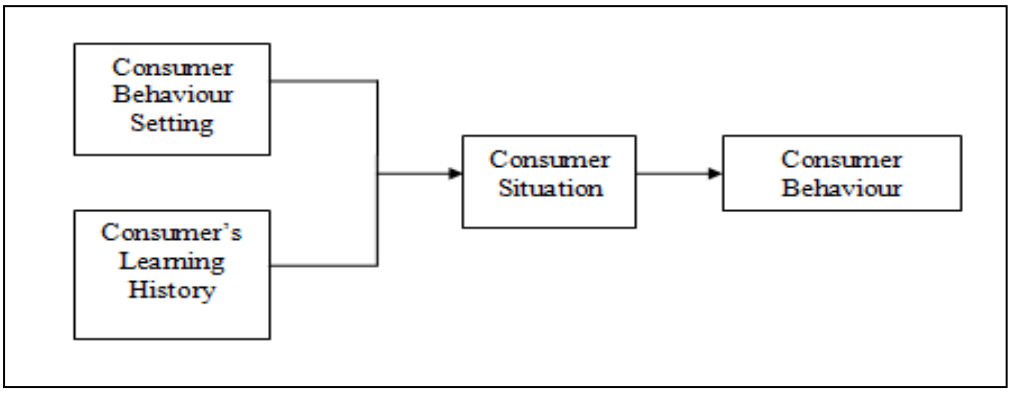
## 3.4 Outline of the BPM

This sub-section explores the outline of the BPM in terms of: (1) the consumer situation, (2) the scope of the setting, (3) the consequences of behaviour, (4) the operant classification of consumer behaviour, (5) the contingency categories, (6) verbal responses, and (7) the advantages and limitations of the BPM.

### 3.4.1 The Consumer Situation

The BPM explains that consumer situation can be defined as the intersection of an individual's learning history and behaviour setting which locates consumer behaviour in space and time (Foxall and Greenley, 2000). Figure 3.2 shows the consumer situation.

Figure 3.2: The Consumer Situation




(Foxall, 1999)

A consumer behaviour setting consists of the discriminative stimuli that signal the probable outcomes of approach and avoidance responses by their intersection with the consumer's learning history of reinforcement consequences. There are four kinds of discriminative stimuli: physical, social, temporal and regulatory (Foxall, 1998).

The consumer situation induces or inhibits particular consumer behaviour. This is where the stimuli that enter into the consumer situation induce the consumer to discriminate their behaviour. Thus, it can be said that the consumer situation represents the prediction of behaviour (Foxall, 1997a, Foxall, 2011). Previous research has verified that in many cases, the

consumer situation is able to predict consumer behaviour (Foxall, 1997a, Yani-de-Soriano et al., 2002, Xiao and Nicholson, 2009).

It is believed that the consumer situation is able to challenge the dominating cognitive approach of consumer behaviour research. This is because practitioners' misuse of the term behavioural whereby they relate it only to psychological factors rather than see it as an adjective derived from behaviour (Foxall, 1998). An extensive review of the cognitive consumer research showed that the information processing approach to consumer behaviour has been increasingly criticized due to mixed findings about the theory (Foxall, 1990).

### 3.4.2 The Scope of the Setting

The BPM proceeds much more deeply into the scope of the consumer behaviour setting. Behaviour setting is natural and the units have a life of their own. People could always go to the place and see the behaviour because each of the behaviour patterns was tied to places such as the shopping store, the streets, the bank, the airports and others (Bechtel, 1997).

A consumer behaviour setting consists of the discriminative stimuli which induce or inhibit consumer behaviour. These discriminative stimuli could be in the form of physical (point of sale advertising, product array), social (others shoppers, salesperson), temporal (business hours, duration special promotion) or regulatory (self and other rules) (Foxall, 2010a, Foxall, 2011). Discriminative stimuli provide a degree of control over consumer choice. The power of the consumer behaviour setting depends on the learning history of

the pattern of reinforcement (Foxall and Greenley, 2000, Foxall et al., 2006). The idea of the consumer behaviour is derived from the work of Schwartz and Lacey in 1998, who studied animal experiments in a closed setting. However, the consumer behaviour setting is different in terms of locus of control and the prescribed behaviour programme (Foxall, 1999).

The settings in which consumer behaviour occurs form a continuum from closed to open. An open setting is controlled by the consumer while a closed setting reflects how far persons (for example, sellers etc.) other than the consumer can control the setting in which consumption takes place (Foxall and Greenley, 1998). Behaviour in an open setting is usually positively reinforced as the consumers have more freedom to determine their personal rules and choices of behaviour as well as consumption: for example, staying at a luxury hotel where consumers have more freedom to select the type of hotel and are free to behave in a variety of ways. In the closed setting, consumers have to conform with a programme of behaviour that is appropriate to the operation of the setting. If they ignore the prescribed behaviour programme, they will experience a negative reinforcement.

The importance of consumer behaviour setting has been acknowledged in the study of consumer behaviour. Researchers such as Olshavsky, Granbois and Robertson have drawn the conclusion that situational variables, groups pressure, and the physical arrangement of in store display influence consumer choice at the point of sale (Foxall, 1990).

### 3.4.3 The Consequences of Behaviour

The discriminative stimuli which compose the consumer behaviour setting signal three kinds of behaviourally contingent consequences: utilitarian reinforcement, informational reinforcement, and aversive consequences. Utilitarian reinforcement consists of tangible functional and economic benefits which are derived from purchase, ownership and consumption (Foxall and Greenley, 2000). They are identified as incentives which include prizes, money and the feelings that stem from personal recognition of an overall achievement (Foxall, 1994b). It can be said that incentives lead directly to utilitarian and personal gain such as pleasure, fun and positive emotional outcomes.

Informational reinforcement consists of the performance feedback which indicates how well the consumer is doing. It is different from utilitarian reinforcement in that it does not provide the consumer with direct utilitarian satisfactions. The feedback is largely symbolic, conveyed verbally, and often confers social status (Foxall, 1994b). An example of informational reinforcement consists of data on the amount of water one has saved and the amount of recycling collected.

Utilitarian and informational reinforcement may also decrease the rate of consumer behaviour. This is referred to as aversive consequences. It is also possible to have the combination of utilitarian and informational reinforcement in consumer behaviour (Foxall, 1994b, Foxall, 1999, Foxall, 2007). In summary, the pattern of reinforcement can be assigned to one or other four operant classes of consumer behaviour, as described in sub-section 3.4.4.

### 3.4.4 The Operant Classification of Consumer Behaviour

Consumer behaviour can be classified according to the nature of its consequences, which is based on the pattern of utilitarian and informational reinforcement. It also involves the schedule of reinforcement whereby the frequency with which responses are followed reinforces. A continuous reinforcement is when a response is reinforced every time it occurs. However, when less than every response is reinforced, the behaviour takes longer to learn (Foxall, 2010a). Table 3.3 shows the schedule of reinforcement which can be used to describe the classes of consumer behaviour.

Table 3.3: The Schedule of Reinforcement

| | |
|---|---|
| Fixed Interval | Reinforcement when a given period of time has elapsed for a response made after the period. |
| Variable Interval | The period of time that must elapse before a response is reinforced varies from reinforcement to reinforcement. |
| Fixed Ratio | Reinforcement when a specific number of responses have been performed. |
| Variable Ratio | A different number of responses are required to produce reinforcement on each occasion. |

(Foxall, 2010a, p. 73)

An operant classification of consumer behaviour represents a set of responses which have group consumer similarities or dissimilarities in relation to their associated product and information reinforcement. There are four classes of consumer behaviour: Accomplishment, Accumulation, Hedonism/Pleasure, and Maintenance. Table 3.4 shows the four operant classifications of consumer behaviour by level of utilitarian and informational reinforcement.

Table 3.4: Operant Classification of Consumer Behaviour

| Utilitarian / Information | High Utilitarian Reinforcement | Low Utilitarian Reinforcement |
|---|---|---|
| High Informational Reinforcement | Accomplishment | Accumulation |
| Low Informational Reinforcement | Hedonism/Pleasure | Maintenance |

(Foxall, 1997b, Foxall, 2007)

First, Accomplishment suggests consumers receive the highest informational reinforcement for their behaviour. These are activities related to consumer personal achievement, such as driving a sports car which consumers can afford to pay for or shopping at Harrods. Many of the behaviours designated in this category are dependent on the degree of the openness and closeness of the behaviour setting. These behaviours are apparently maintained on a variable ratio schedule and are determined in the context of open/ closed setting.

Second, Hedonism/Pleasure indicates consumer behaviour which involves high utilitarian but low informational reinforcement: for example, activities involving increasing one's pleasure or decreasing pain, such as taking aspirin for a headache. These behaviours are apparently maintained on a variable interval ratio schedule and are determined in the context of open/ closed setting.

Third, Accumulation represents a low level of utilitarian reinforcement but high level of informational reinforcement, such as saving and collecting or token-based consumption. These behaviours are apparently maintained on a fixed ratio schedule and are determined in the context of open/ closed setting.

Finally, Maintenance is behaviour which is low in both utilitarian and informational reinforcement. This group is usually related to consumer activities that are mandatory or routine which one must perform as a citizen. These behaviours are apparently maintained on a fixed interval schedule and are determined in the context of open/ closed setting.

### 3.4.5 The Contingency Categories

The four classes of consumer behaviour are subdivided according to the open and closed setting. Thus, the eight contingency matrixes emerge from the combination of utilitarian (high-low), informational (high-low) and behaviour setting (open-closed). Table 3.5 shows the eight contingency matrixes of consumer behaviour setting and operant classification of consumer behaviour.

Table 3.5: Descriptions of the BPM Contingency Matrix

| CB Setting / Operant Conditioning | Closed | Open |
|---|---|---|
| **ACCOMPLISHMENT**<br>(high utilitarian,<br>high informational) | Contingency Category 2<br>**FULFILMENT**<br>*(e.g. training course, green scheme, hobby course, DIY etc.).*<br><br>Personal fulfilment means doing things that bring positive enjoyment/benefits and allow feedback on how well you are doing in the circumstances. Having signed up/joined up for the activity or scheme, you are unlikely to leave until the session is over. | Contingency Category 1<br>**STATUS CONSUMPTION**<br>*(e.g. shopping at Harrods, staying at Exclusive Eco Hotels )*<br><br>Status consumption means buying/consuming products or services that bring a high level of benefit/enjoyment and which show one's social status. You have plenty of choice about what you buy and where and when you do so. |
| **HEDONISM/ PLEASURE**<br>(high utilitarian,<br>low informational) | Contingency Category 4<br>**INESCAPABLE PLEASURE**<br>*(e.g. taking aspirin for headache, being serenaded in a restaurant.)*<br><br>Inescapable pleasure means experiencing pleasurable activities/ products/ services that cannot be avoided. | Contingency Category 3<br>**POPULAR PLEASURE**<br>*(e.g. at a party, watching green channel, etc.).*<br><br>Popular pleasure means experiencing pleasurable activities/ products/services that one enjoys and wants to experience, and over which one has plenty of choice. |
| **ACCUMULATION**<br>(low utilitarian,<br>high informational) | Contingency Category 6<br>**TOKEN-BASED CONSUMPTION**<br>*(e.g. accumulating air miles as a result of buying/using something else, loyalty points)*<br><br>Token-based consumption is making serial consumption to obtain free rewards, gifts or points exchangeable for products/services /monetary gain. Having joined the activity/plan, you are likely to stick with it rather than joining another or not bothering with any. | Contingency Category 5<br>**SAVING AND COLLECTING**<br>*(e.g. saving up for something, collecting ornaments for the home)*<br><br>Saving and collecting is also serial accumulation but you feel under less compulsion to go on with the practice. You do not have to be loyal to a specific plan or store. |
| **MAINTENANCE**<br>(low utilitarian,<br>low informational) | Contingency Category 8<br>**MANDATORY CONSUMPTION**<br>*(e.g. paying taxes for enforced consumption, filling in the forms for a passport)*<br><br>Mandatory consumption is paying/doing something for functional goods or services that are forced upon you. | Contingency Category 7<br>**ROUTINE CONSUMPTION / PURCHASING**<br>*(e.g. supermarket shopping, buying or making a sandwich for lunch)*<br><br>Routine consumption is just that: getting the things, like food or water, which you need to stay alive or feel comfortable. |

(Foxall, 1994b, Foxall, 1999, Foxall, 2010a)

First, in Accomplishment there are two contingencies categories (CCs): Status Consumption (CC1) and Fulfilment (CC2). In an open setting, it is represented by Status Consumption such as conspicuous consumption. There are many

means by which the reinforcers may be obtained. Marketers have little control over the consumer setting and the consumer has many alternatives to being in the situation. In a more closed setting, Fulfilment consists of personal achievements such as the completion of a training course. This is where only a few means are available of obtaining the reinforcers. Marketers have more control over the consumer setting and the consumer has a few sets of contingencies to choose.

Second is Hedonism/Pleasure, whereby there are two contingencies categories involved: Popular Pleasure/ Entertainment (CC3) and Inescapable Pleasure/ Entertainment (CC4). In an open setting, it is represented by Popular Pleasure such as watching popular TV. There are many means by which the reinforcers may be obtained. Marketers have little control over the consumer setting and the consumer has many alternatives to being in the situation. In a more closed setting, it consists of Inescapable Pleasure such as in-flight movie. It is difficult to escape from the consumer setting. The setting is closed by physiological factors beyond the control of the individual. The consumer has very limited contingencies to choose from.

Third, Accumulation represents two contingencies categories (CCs): Saving and Collecting (CC5) and Token-Based Consumption (CC6). In an open setting, it is represented by Saving and Collecting, such as collecting magazines. There are several salient reinforcers and highly specific tasks that need not be undertaken. Marketers have little control over consumer setting and the decision process is under consumer control. In a more closed setting,

it consists of Token-Based Consumption such as loyalty rewards. This is where very specific tasks are required and the whole behaviour is rule governed. Marketers have more control over the consumer setting and there is no alternative to being in the situation.

Finally Maintenance represents two contingencies categories (CCs): Routine Consumption/ Purchasing (CC7) and Mandatory Consumption (CC8). In an open setting, it is represented by Routine Consumption/ Purchasing, such as making food to eat. There are many means available to the reinforcers but the reinforcers are small. In order to obtain the reinforcers, tasks have to be performed. Marketers have little control over the consumer setting and the decision process is under consumer control. In a more closed setting, it consists of Mandatory Consumption such as obtaining a passport in order to travel. This is where purchase or consumption may be compulsory and there are only a few means available to the reinforcers. Marketers have significant control over the consumer setting and there is no alternative if the other reinforcers are to be obtained.

### 3.4.6 Verbal Responses

The test of the BPM can be done through the prediction of consumers' verbal responses to descriptions of consumer situations. These consumer situations are developed from the eight contingency categories as shown in Table 3.4 of sub-section 3.4.5. Mehrabian and Russell's affective measures of verbal response are used as psychometric measures of the consumers' verbal behaviours (Foxall and Greenley, 2000).

The explanation of verbal behaviour via thought and responses/ speech is of importance to radical behaviourism. Radical behaviourism also categorizes the use of language as representative of behaviour (Foxall et al., 1998). Additionally, Skinner in his book *Verbal Behaviour* has proposed that the spoken or written word should be recognized as forms of behaviour (Chance, 1999). Verbal behaviour is to be understood in terms of the functional relationship between it and an event in the environment, particularly its consequences. It can be concluded that the idea of verbal responses could affect consumer behaviour.

In the case of the BPM, verbal behaviours are expected to arise in response to the interaction between verbal descriptions of situated consumer behaviour and the respondent's history of reinforcement or punishment in similar situations. Previous research that linked a consumer's verbal behaviour his or her emotional reaction to consumer situations has supported the BPM prediction of consumer behaviour (Foxall and Yani-de-Soriano, 2005, Foxall, 2007).

### 3.4.7 The Strengths and Limitations of the BPM

The BPM has its own strengths and limitations. First, it is claimed that the model is competent to explain different consumer situations in consistent terms. The model provides an interpretation of consumer behaviour in terms of the critical evaluation of modern behaviour analysis. It is claimed that no scientific paradigm taken alone can provide a comprehensive explanation of consumer behaviour as compared to the BPM (Foxall, 2010a).

Second, it produces a mixture of knowledge with other relevant disciplines and has a direct relationship with environmental psychology. The BPM demonstrates the application of environmental psychology via the Mehrabian and Russell model in consumer behaviour study. Environmental psychology is a branch of psychology whose particular area of interest is the impact of the physical environment on emotional responses and behaviour (Mehrabian and Russell, 1974).

Third, the BPM allows consumers to remain, explore, browse and socialize (purchase) verbally in terms of their emotional reactions within the consumer situation setting. The Mehrabian and Russell PAD scales facilitate consumers giving their verbal responses towards verbal descriptions of situated consumer behaviour (Foxall and Greenley, 2000). The verbal reports of Pleasure can be associated with the utilitarian reinforcement of consumer situations. Furthermore, Dominance is associated with the closed and open behaviour setting. Finally, there is Arousal, as a measure of the informational reinforcement of consumer situations (Foxall and Greenley, 1998).

Fourth, the four operant classifications of consumer behaviour can be used to communicate new products (DiClemente and Hantula, 2003). For example, the Accomplishment category for initiators stage, Hedonism/Pleasure for early imitators, Accumulation for later imitators and Maintenance for adopters (Nicholson and Xiao, 2010).

Finally, the BPM has two contributions to marketing science. First, it provides a means of conceptualizing situational influences on consumer behaviour. This is because no conceptual framework has yet emerged in the effect of situational variables. Second, the BPM suggests a new understanding of marketing strategy. It can be said that no model of purchase and consumption has emerged which includes both empirical principles of consumer behaviour and relevance to marketing management. The strength of the BPM comes from its clarification of consumer behaviour (Foxall, 2010a).

There are some limitations of the BPM. First, the research relies on the verbal measures of Pleasure, Arousal and Dominance being appropriate responses to the reinforcement signalled by elements of the consumer behaviour setting and to the scope of setting (Foxall, 1997a). Further research needs to be conducted in order to find out the consistency of verbal responses with the actual behaviour. Second, the verbal responses to described situations are consistent with more overt consumer behaviour in actual situations. Thus, additional theoretical work should be done to clarify the role of consumers' learning histories in relation to verbal responses (Foxall, 1997a).

### 3.5 Conclusion

In summary, the present study deals with the prediction of consumers' environmental behavioural responses within the scope of the behaviour settings in which they take place and the pattern of reinforcement. A particularly relevant stream of research to explain the situational effect on green consumer behaviour is the Behavioural Perspective Model (BPM). A key insight of the BPM regards the anticipated benefit consumers acquire and

the impact of the environment that surrounds the consumer's choice. The present study employs the Mehrabian and Russell (1974) measurement scales as the form of responses to the given descriptions of consumer environmental situations. In the context of the BPM, the Mehrabian and Russell scales are assumed to be functions of consumer behaviour setting (Foxall, 1997a). Details of the scales are discussed in Chapter 4.

# CHAPTER FOUR

## THE ASCRIPTION OF EMOTION

### 4.1 Introduction

Ordinary people know a great deal about emotion. This is because emotions have a big impact on people and society as a whole. They can alter people's thinking and behaviour, they are part of their social role and they play a role in moral development. In fact, there has been rapid growth in research and theory about emotion that has occurred in the last decade. However, this research has had mixed results and only a few widely replicated findings exist (Ekman and Davidson, 1994). This chapter presents discussion of the literature in relation to consumer emotion. Specifically, this chapter draws on Mehrabian and Russell's theory of emotional responses, which is used in the present study.

### 4.2 An Overview of Emotions

In the last 2300 years, it has been self evident that to understand emotions, one must understand them as kinds of thought that affect us strongly. It was stated by Aristotle that emotions are all those feelings that affect human judgements which arise from events (Jenkins et al., 1998a). Researchers have adopted Aristotle's idea in the study of emotions. At present, modern research on emotions was initiated by Darwin, James and Freud (Parrott, 2001).

Darwin founded emotional studies based on his observation of emotional expressions in natural settings. James focussed physiological changes in the body by using an electronic device, while Freud offered the method of

listening to what people said about their emotional lives. Darwin was one of the first scientists to ask 'why' about emotional expression. His research has not had the influence it deserves due to several reasons. First, he wrote about animal expression according to what humans feel and think. Second, the study of human emotion is reliant on anecdotal rather than systematic data. Third, his research relied on the controversial idea of gene inheritance. Fourth, he did not explain emotional expressions in terms of their communicative value. Finally, he insisted that emotion is the product of evolution, which was completely incompatible with the reigning dogmas (Ekman, cited in Darwin, 1998). However, today there has been an interest in Darwinian Theory. Most scientists have claimed that emotions are both the product of evolution and of what people have learned.

The role of emotion in relation to consumer behaviour is very important. Emotion integrates human experience, planned action and even decision making. For example, the studies of interplay between rational thought and feelings in purchasing decision show that emotions over- rule cognition almost every time (Goleman, 2009). Additionally, emotions have been shown to play an important role in complaining, service failures, product attributes, advertising and consumer satisfaction (Erevelles, 1998, Laros and Steenkamp, 2005). Despite this, emotions have only recently become a subject of intense research (Cosmides and Tooby, 2000, Zhu and Thagard, 2002, Allen et al., 2005, Foxall, 2011). This is because past researchers were reluctant to describe behaviour in terms of emotions due to misconceived notions of the nature of emotion (Zhu and Thagard, 2002). They only

described behaviour and remained silent on the topic of emotion. In fact, thinking, planning and feeling were all banned from scientific study (Ekman, cited in Darwin, 1998). Most of the psychological studies were dominated by perception, learning, thinking and personality (Jenkins et al., 1998b). The study of consumer environmental behaviour also ignored the role of emotion (Carrus et al., 2008).

However, all that has changed. Emotions have entered the research stage in different disciplines. There is a growing body of consumer research studies on emotions evoked by marketing stimuli, products and brands (Laros and Steenkamp, 2005). Research on emotion is now one of the most active areas of psychological research. It seems that researchers have realized that one of the most obvious points about emotions is that they cause behaviour. Several typologies of emotion have been employed in consumer research. Table 4.1 shows an overview of consumer research using emotions as a main variable, as summarized by Laros & Steenkamp (2005).

Table 4.1: Overview of Consumer Research Using Emotions as a Main Variable

| Reference of Consumer Research | Emotion Measure Used | Resulting Structure |
|---|---|---|
| Edell and Burke (1987) | Edell and Burke (1987) | Upbeat, Negative and Warm |
| Holbrook and Batra (1987) | Holbrook and Batra (1987) | Pleasure, Arousal and Dominance |
| Westbrook (1987) | Izard (1977) | Positive and Negative Affect |
| Olney et al. (1991) | Mehrabian and Russell (1974) | Pleasure and Arousal |
| Hollbrook and Gardner (1993) | Russell et. al. (1989) | Pleasure and Arousal |
| Mano and Oliver (1993) | Watson et al. (1988); Mano (1991) | Upbeat, Negative and Warm, Positive and Negative |
| Derbaix (1995) | Derbaix (1995) | Positive and Negative Affect |
| Nyer (1997) | Shaver et al. (1987) | Anger, Joy/Satisfaction, and Sadness |
| Richins (1997) | Richins (1997) | Anger, Discontent, Worry, Sadness, Fear, Shame, Envy, Loneliness, Romantic Love, Love, Peacefulness, Contentment, Optimism, Joy, Excitement, and Surprise |
| Dube and Morgan (1998) | Watson et al. (1988) | Positive and Negative Affect |
| Philips and Baumgartner (2002) | Edell and Burke (1987) | Positive and Negative Affect |
| Ruth et al. (2002) | Shaver et al. (1987) | Love, Happiness, Pride, Gratitude, Fear, Anger, Sadness, Guilt, Uneasiness, and Embarrassment |
| Smith and Bolton (2002) | Smith and Bolton (2002) | Anger, Discontent, Disappointment, Self-Pity, and Anxiety |

(Laros and Steenkamp, 2005, p. 1438)

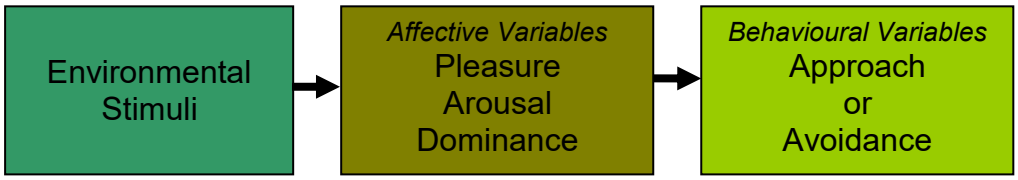
This overview shows there is widespread use of emotion in consumer research. However, the present study has employed the Pleasure, Arousal and Dominance (PAD) scales developed by Mehrabian and Russell. This approach is relevant to the present study because the study focuses on the discriminative stimuli (e.g. social and psychological) which influence consumer emotional states and behaviours within a specific consumer situation.

## 4.3 Mehrabian and Russell's Approach

A person's behaviour in an environment is influenced by the emotions that are elicited from his or her environment. The relationship between emotion and environment has been acknowledged in environmental psychology. Environmental psychology is an interdisciplinary field which is focused on the impact between humans and their surroundings (Kollmus and Agyeman, 2002). However, this field lacks a conceptual framework to study a particular behaviour. As a result, previous research in environmental psychology has involved heterogeneous contents and methods (Mehrabian and Russell, 1974).

Mehrabian and Russell have developed a better framework to describe the relationship between consumer behaviour and environment. They propose a three dimensional view of emotion which consists of Pleasure, Arousal and Dominance (PAD). The PAD model was used to (a) select a comprehensive and balanced set of everyday situation-activity combinations, and (b) obtain the relationship between emotional responses to specific situations (Mehrabian and Russell, 1974). The framework argues that it can map any emotional responses to any environment (Babin and Darden, 1995, Takahashi, 1995, cited in Wasserman et al., 2000). Findings from the previous studies of emotions and environment support this statement (Mehrabian and Russell, 1974, Russell and Mehrabian, 1978, Foxall, 1997a, Wasserman et al., 2000, Yani-de-Soriano et al., 2002, Yani-de-Soriano and Foxall, 2006, Jang and Namkung, 2009). Figure 4.1 shows the framework of Mehrabian and Russell's approach to environmental psychology.

Figure 4.1: Mehrabian and Russell's Approach to Environmental Psychology




(Stimuli) (Orthogonal) (Response)

(Mehrabian and Russell, 1974, Yani-de-Soriano, 2000)

Mehrabian and Russell summarized that Pleasure, Arousal, and Dominance capture the emotion-eliciting qualities of environments and mediate approach-avoidance behaviours such as physical approach, work performance and social interaction (Mehrabian and Russell, 1974, Foxall, 2011). The psychometrics of PAD were conceptualised as independent (orthogonal) (Yani-de-Soriano, 2000). However, this is not consistent with the hypothesized independence of the three dimensions of emotional response since dimensions that are independent across stimuli exhibit linear or curvilinear relations within particular sets of stimuli (Mehrabian and Russell, 1974).

These PAD dimensions are measured using the questionnaire based self reports of respondents' verbal responses to description of consumer situations (Mehrabian and Russell, 1974, Russell and Mehrabian, 1978, Foxall, 2011). Semantic differential scales are used, whereby PAD is measured along a single dimension (Mehrabian and Russell, 1974). For example, pleasure - displeasure is a feeling state measured as a continuum ranging from extreme happiness to extreme unhappiness. Arousal – unaroused is a feeling ranging from wide awake to sleepy. The dominance-

submissive dimension ranges from extreme feelings of being influenced and controlled to feelings of independence and mastery.

Mehrabian argued that the selections of PAD are based on their multi-model effects, reports of physiological reactions to such intermodal stimulation, and the findings of work using the semantic differential method of verbal scaling (Foxall, 2011). Six pairs of adjectives were used to measure each one of Pleasure, Arousal, and Dominance, as shown in Table 4.2.

Table 4.2: Mehrabian and Russell Semantic Differential Measurement of Emotional State

| Semantic differential measures of emotional state | Scale |
|---|---|
| • **Pleasure** (happy-unhappy, pleased-annoyed, satisfied-unsatisfied, contented-melancholic, hopeful-despairing, relaxed-bored)<br>• **Arousal** (stimulated-relaxed, excited-calm, frenzied-sluggish, jittery-dull, wide awake-sleepy, aroused-unaroused)<br>• **Dominance** (controlling-controlled, influential-influenced, in control-cared for, important-awed, dominant-submissive, autonomous-guided) | Nine points scales (e.g., extremely happy to extremely unhappy). |

(Mehrabian and Russell, 1974, Foxall, 1997b)

These three responses mediate more overt consumer such as avoidance or approach. The behavioural variable of approach and avoidance represent the dependent variable of the model. Approach and avoidance responses are measured using a seven-point scale to rate the following four dimensions, as shown in Table 4.3.

Table 4.3: Four Dimensions of Approach-Avoidance Behavioural Responses

| | |
|---|---|
| Desire to stay | ➢ How much time would you like to spend in this situation?<br>➢ How much would you try to leave or get out of this situation? |
| Desire to explore the situation | ➢ Once in this situation, how much would you enjoy exploring around?<br>➢ How much would you try to avoid looking around or exploring this situation? |
| Desire to work in the situation | ➢ To what extent is this situation a good opportunity to think out some difficult task you have been working on?<br>➢ How much would you dislike having to work in this situation? |
| Desire to affiliate in the situation | ➢ To what extent in this situation would you feel friendly and talkative to a stranger who happens to be near you?<br>➢ Is this a situation in which you might try to avoid other people, avoid having to talk to them? |

(Mehrabian and Russell, 1974)

Mehrabian and Russell tested their theory via three extensive questionnaire experiments among undergraduates student (Mehrabian and Russell, 1974). Respondents were presented with a varied set of verbally described situations and were asked to report their emotional response to each situation. The first experiment was to explore their responses to consumer situations. The second experiment was to provide a further check on the grouping of their responses to everyday consumer situations. Finally, the third experiment was to cross validate the results obtained in experiments 1 and 2. There were three major hypotheses: '(1) the first hypothesis was the all behaviours (e.g., work performance, affiliation, exploration) are inter-correlated and can all be subsumed under the generic concept of Approach-Avoidance, (2) the second hypothesis was that approach to a situation is a direct correlate of the pleasure situation, and (3) the third hypothesis was that approach to a situation is an inverted-U-shaped function of the arousing quality of the situation' (Mehrabian and Russell, 1974, p. 137).

The findings show that: (1) all behaviours are inter-correlated and can all be subsumed under the concept of Approach-Avoidance, (2) there is a strong connection between behavioural variables with Pleasure, and (3) mixed findings where data for desire to work, stay and explore the situation were consistent except the desire to affiliate provided the weakest support for hypothesis 3 (Mehrabian and Russell, 1974). The results also show that PAD affective variables were independent. There is also an interaction effect between Pleasure and Arousal in determining Approach –Avoidance behaviours.

### 4.4 Research Application of the Mehrabian and Russell's Approach

There has been much research which has been conducted using the Mehrabian and Russell measurement scales. It has produced interesting mixed findings. In one study, researchers failed to find evidence that feelings of Dominance differ in each consumer setting. It has been said (Lutz and Kakkar, 1975) that they were disappointed with the findings between PAD and consumer behaviour. They argued that the consumer situation is not a powerful predictor of consumer behaviour. However, the next study found a positive association between Pleasure and Arousal but not Dominance (Donovan and Rossiter, 1982). Another version of Mehrabian and Russell's approach also eliminates the Dominance variable (Russell and Pratt, 1980). The reason for the poor results is due to the selection of consumer situation used in the study being severely limited and arbitrarily selected (Foxall and Greenley, 1998). The study of atmospheric effects on shopping behaviour also showed that musical conditions in department stores had 'significant

effects on Arousal but not on Dominance and Pleasure' (Yalch and Spangenberg, 1988, cited in Turley and Milliman, 2000, p. 200).

However, an English and Venezuelan study of consumer behavioural responses to descriptions of ranges of consumer situations constructed by reference to the BPM found distinct support for the PAD (Foxall, 1997a, Yani-de-Soriano et al., 2002). The study used Mehrabian and Russell's (1974) scales of the measurement of affective (PAD) responses without modification. Each affective variable was measured on six items in terms of which the environment in question was rated on a nine-point scale. Three of each PAD six items were inverted in their direction in order to minimize bias and all the items were presented in a random order. The findings of Mehrabian and Russell's PAD showed significant main effects for each one of Approach, Avoidance and Aminusa (Foxall, 1997a, Yani-de-Soriano et al., 2002).

A pattern of PAD confirmed the predictions made by the BPM. Furthermore, Pleasure and Arousal discriminate between operant classes of consumer behaviour (Foxall, 1997a, Yani-de-Soriano et al., 2002). Dominance also discriminates between the eight contingency categories of consumer behaviour. The findings also showed that there is an interaction effect between Pleasure and Arousal in determining Approach –Avoidance behaviours (Foxall, 1997a, Yani-de-Soriano et al., 2002). These studies confirm the predictions raised by the BPM interpretation of consumer behaviour and the applicability of PAD scales as measurement scales (Foxall, 1997a, Yani-de-Soriano et al., 2002). Table 4.4 shows the BPM eight

contingency categories which provide a framework for a systematic investigation of Mehrabian and Russell's approach to the environmental psychology of consumer behaviour.

Table 4.4: The BPM Contingency Category Matrix with PAD

| CB SETTING / OPERANT CONDITIONING | CLOSED | OPEN |
|---|---|---|
| **ACCOMPLISHMENT** (high utilitarian, high informational) | **CC2 FULFILMENT** **+P +A -D** | **CC1 STATUS CONSUMPTION** **+P +A +D** |
| **HEDONISM/PLEASURE** (high utilitarian, low informational) | **CC4 INESCAPABLE PLEASURE** **+P -A -D** | **CC3 POPULAR PLEASURE** **+P -A +D** |
| **ACCUMULATION** (low utilitarian, high informational) | **CC6 TOKEN-BASED CONSUMPTION** **-P +A -D** | **CC5 SAVING AND COLLECTION** **-P +A +D** |
| **MAINTENANCE** (low utilitarian, low informational) | **CC8 MANDATORY CONSUMPTION** **-P -A -D** | **CC7 ROUTINE CONSUMPTION / PURCHASING** **-P -A +D** |

(Foxall and Greenley, 1998, p. 787)

The BPM Contingency Category Matrix with PAD illustrates that the verbal report of pleasure can be expected to be associated with utilitarian reinforcement. Utilitarian reinforcement consists of the benefit and satisfaction of using the product or services. The Arousal items are used as the measure of the informational rate. The informational rate offers different levels of information and these determine responses (Mehrabian and Russell, 1974). Hence, it is practical to use Arousal as the measure of consumer informational

reinforcement. Finally, Dominance is expected to represent the consumer closed and open behaviour setting.

The Approach-Avoidance measurement is assessed in relation to the structure of the situation in which it occurs and the pattern of reinforcement (Foxall, 1994a, Foxall, 1997a, Yani-de-Soriano, 2000). These behavioural variables are measured by means of six of Mehrabian and Russell's eight statements and they are presented in a random order. This includes the desire to stay, desire to explore the situation, and desire to affiliate in the situation. The present study of consumer environmental behaviour used a similar research procedure.

In conclusion, the inability of previous research to relate PAD to Approach-Avoidance of consumer behaviour is due to: (1) researchers failing to deal adequately with the consumer behaviour setting and hence contribute towards mixed findings, and (2) previous research's lack of a coherent theoretical framework to guide descriptions of the consumer situation (Foxall and Greenley, 1998). This is where the BPM emerged as the model that was competent to explain consumer behaviour in the situated consumer behaviour setting. The Mehrabian and Russell measurement scales are used to vindicate the predictive capability of the BPM. Additionally, this is model able to provide a theoretically justified array of consumer settings for empirical evaluation.

## 4.5 Conclusion

This chapter provides a literature review of the Mehrabian and Russell measurement scale which is used for the present study. The justification and procedure stated in the chapter helped the researcher to evaluate consumer affective and behavioural responses. The next chapter discusses the methodological process of the present research.

# CHAPTER FIVE

## RESEARCH METHODOLOGY

### 5.1 Introduction

The present chapter explores the design and methodological approach adopted in order to test the nine hypotheses of interest. This chapter is organized into seven main sections. First, a justification of the research philosophy is presented. Second, divergent approaches to research design are considered. The rationale for the use of research design and mixed method are also provided. Third, the sample and sampling procedures are described. This includes a choice of the Cardiff consumers, green and non-green members. Fourth, a preliminary study of Cardiff consumers' environmental behaviour via standardized interviews is discussed. Fifth, the instrument used is presented, divided into: Mehrabian and Russell's (1974) measurement scales, the development of the consumer environmental situations, the design of the survey questionnaire, and pre-testing of the questionnaire. Sixth, the survey design and data collection are discussed. Finally, any ethical issues are considered. The chapter concludes with a summary and the procedure for data preparation.

### 5.2 Research Philosophy

When undertaking research, it is important to consider research philosophy. Research philosophy helps to clarify the research design and also provides guidance on the research strategy which relates to the nature of the knowledge and how the knowledge is developed (Saunders et al., 2009). Additionally, philosophy is able to provide a map of the pattern of existing

knowledge and refine the research methods which researchers use (Benton and Craib, 2001).

Good research relies heavily on the research paradigm, the context of the study and the nature of the research questions. A paradigm is a framework within which theories are built, that fundamentally influences how we see the world, determines perspective and shapes understanding of how things are connected (Voce, 2004). The basic beliefs that define a particular research paradigm may be summarized as ontological, epistemological, and methodological assumptions (Guba and Lincoln, 2008).

Epistemology and ontology are both branches of philosophy that try to explain the existence of something. Epistemology refers to the nature of knowing or construction of knowledge which answers the question of 'how' and 'what'. Ontology refers to the philosophy of reality, meaning the study of how something exists (Krauss, 2005). The methodology identifies the particular practises used to attain knowledge of either.

The present study employs radical behaviourism philosophy. This is where behaviour is held to be determined by its environmental consequences rather than by intrapersonal mental events and processes. Table 5.1 shows the basic beliefs of radical behaviourism.

Table 5.1: Basic Beliefs of Radical Behaviourism

| Item | Radical Behaviourism |
|---|---|
| Ontology | ➢ Behaviour as the subject matter and is neither an indication nor a confirmation of the existence of mental activity.<br>➢ The locus of behavioural control is to be found solely within the environment.<br>➢ Stimulus control of operant behaviour.<br>➢ It is possible to provide a comprehensive explanation of behaviour without departing from the material realm. |
| Methodology | ➢ Theory that is empirically based and leading to sound interventions to solve practical problems.<br>➢ Functional analysis occurs when a change in an independent variable results in a change in a dependent variable. Thus, this analysis is concerned to establish three basic facts of observation, the circumstances under which behaviour occurs and reliably varies being its controlling variables.<br>➢ Identifying and describing the contingent relationship between a response and its reinforcing and punishing consequences are the essence of functional analysis.<br>➢ Radical behaviourism relies on functional relationship.<br>➢ Operant behaviour in human can be divided into contingency shaped by direct contact with the environment, and rules governed by verbal descriptions of contingencies.<br>➢ The outcome of its ontology and methodology is based on the selection of behaviour by the environment on which it operates. |

(Foxall, 2010a, pp. 53-56)

The ontology of radical behaviourism is intended to demonstrate that the current behaviour is a function of the environmental consequences and its controlling variables are to be found in the extrapersonal environment. This is where, the methodology of radical behaviourism is supposed to contribute to the prediction and control of consumer behaviour rather than its understanding (Foxall, 2010a).

The main advantage of radical behaviourism is that this paradigm is capable of illustrating the relationship between science and interpretation and increasing understanding of consumer behaviour. For example, four classes of consumer behaviour (Accomplishment, Hedonism, Accumulation and Maintenance) identified by the BPM model are analyzed using the interpretive method (Foxall, 1994a). Although the interpretive method often involves using

qualitative data, there are ways of using quantitative data to interpret consumer behaviour. The present study used quantitative data to interpret consumer environmental behaviour. In conclusion, a research design was selected for the present study following the radical behaviourism philosophy.

## 5.3 Research Design

A research design provides a framework for the collection and analysis of data (Bryman, 2004, Kroll and Neri, 2009). The choice of the most appropriate design depends on the objectives of the research. Additionally, a research design should be congruent with the methodology chosen for the study (Halcomb et al., 2009). Research designs are classified into three traditional categories - exploratory, descriptive and causal.

Exploratory research is undertaken to gain background information, to define terms, to establish research priorities, and to clarify problems and hypotheses (Burns and Bush, 2006). A variety of methods are available to conduct exploratory research. These include secondary data analysis, experience survey, case analysis, focus groups and projective techniques. There are many advantages of exploratory research. First, this type of research is fast if the study uses secondary data analysis. Second, it is inexpensive as compared with the primary data collection. Finally, it may help in designing the proper descriptive or causal research study (Burns and Bush, 2006).

Descriptive analysis is undertaken to describe and measure marketing phenomena such as questions of who, what, where, when, and how. This type of research is also valuable for hypothesis testing. Most commonly,

descriptive research is cross –sectional in nature. Here, data collection occurs at one single period in time and is often described as snapshots of the population (Burns and Bush, 2006). Longitudinal studies, by contrast, repeatedly measure the same sample units of a population over a period of time.

The difference between causal and both exploratory and descriptive research designs is the former model is concerned with determining the cause and effect relationship between variables (Burns and Bush, 2006). Causal relationships are determined by the use of experiments. An experiment is defined as manipulating an independent variable in order to see the affect of a dependent variable.

Given the structural nature of the research problem and context of interest, the descriptive approach was most suitable for the present study. Additionally, this approach is important for hypotheses testing purposes. There is also a need for preliminary exploratory research because as to date no study has empirically examined Cardiff consumers' environmental behaviour using the BPM. The exploratory research is able to act as a means of elaborating on the constructs of interest and their proposed relationships prior to descriptive research. In summary, the present study used a combination of both exploratory and descriptive research designs.

In order to achieve the aims and objectives of the present study as outlined in Chapter 1, the collection of data through mixed methods was deemed most

appropriate. Mixed methods are a research tool which collects both qualitative and quantitative data in one study and integrates these data at some stage of the research process (Halcomb et al., 2009). Qualitative and quantitative data can be collected either sequentially or concurrently. In sequential studies, one data collection method follows after the other, while, in concurrent studies, both data are collected at the same time. It is important to consider whether one of the methods will have priority or be more used than the other in the study. Table 5.2 shows the various combinations of implementation and priority of mixed method design.

Table 5.2: Mixed Method Design Matrix

| Priority | Implementation Sequence | |
|---|---|---|
| | **Concurrent** | **Sequential** |
| Equal Status | QUAL + QUANT | QUANT → QUAL<br>QUAL → QUANT |
| Dominant Status | QUAL + quant<br>QUANT + qual | QUAL → quant<br>qual → QUANT<br><br>QUANT → qual<br>quant → QUAL |

(Kroll and Neri, 2009)

The present study employed mixed methods along with a combination of exploratory and descriptive research designs. The mixed methods adopted were sequential with greater priority for quantitative elements (qual → QUANT). The purpose of the mixed methods was to develop a research instrument. Qualitative data was collected to explore research problem and then assist in the formation of quantitative instrument items. The exploratory research design was used to collect the qualitative data through face-to-face standardized open-ended interviews. In the descriptive research

designs, the quantitative data was collected through face-to-face and self-administered survey. Details of both methods are discussed in sub-sections 5.5 and 5.7.

## 5.4 Sample and the Sampling Procedure

This section describes the sample and the sampling procedure for the survey data collection. A sample is a subset of the population that represents the entire group (Burns and Bush, 2006). There are two reasons a sample is more desirable than a census. First, a sample is cheaper than a census as the process involves a smaller population size. Second, it is difficult to analyse the huge amounts of data generated by a census. There is a lot of process to consider in just handling the questionnaires or responses and transferring these responses to computer.

The appropriate sample size is influenced by the purpose of conducting the survey. If the sample size is too small, then it is possible to overlook important research findings. But if it is too large, the researcher could waste valuable time and resources. The classic example is the famous study of *'The Expression of the Emotions in Man and Animals'* by Charles Darwin, which has been criticized for not having systematic data. Ekman claimed that the amount of behaviour observed was too small, reported without much information about the full context of the study in which it occurred and without checking for the possible bias of the person making the observation (Darwin, 1998).

Sampling methodologies are classified under two general categories: probability and nonprobability sampling. In the former, the researcher knows the exact possibility of selecting each member of the population, but with nonprobability sampling, the chance of being included in the sample is not known. There are pros and cons to both methods of sampling. A probability sample is the only type of sample where the results can be generalized from the sample of the population. It also allows the researcher to specify the sampling error. There are four probability sampling methods: simple random sampling, systematic sampling, cluster sampling and stratified sampling (Burns and Bush, 2006).

Nonprobability samples tend to be less complicated, less time consuming and can be more easily administered than probability samples. However, nonprobability does not allow the study's findings to be generalized and the researcher must limit the findings to the person or elements sampled (Fairfax County Department of Systems Management for Human Services, 2003). The four common types of nonprobability samples are convenience sampling, quota sampling, self-selecting sampling (judgement sampling) and snowball sampling (referral sampling) (Burns and Bush, 2006).

The present study consisted of 207 consumers, recruited by snowball and self-selecting sampling. Although the present study adopted different consumer situations, it seemed rational to base the sample size on previous English and Venezuelan studies. For example, although, the number of Cardiff consumer situations used is eight, the sample size is almost the same

number as that used in the Venezuelan study which used 32 consumer situations. This shows that the present sample size more or less represents the characteristics of a population. Table 5.3 shows the sample size and consumer situations in the Venezuelan, English and Cardiff studies.

Table 5.3: Sample Size and Consumer Situations in Venezuelan, English and Cardiff Studies

| Item | Study of Venezuelan* | Study of English** | Study of Cardiff |
|---|---|---|---|
| Sample size | 260 | 570 | 207 |
| Consumer situations | 16 | 32 | 8 |
| Valid cases | 2,032 | 4,488 | 1,600 |
| Unusable questionnaires | 6 | 9 | 7 |

*(Yani-de-Soriano et al., 2002)
**(Foxall, 1997a)

The Cardiff sample was divided into two sub-studies of green and non-green members with 100 consumers each. The third sub-study of green and non-green members was put together from the two groups mentioned above. The reason was to know whether the combination of a larger sample size and mixture of feedback would affect the findings. Green membership was used as representative of the green consumer. It has been described that green members tend to incorporate their environmental concerns and commitment with their personal preferences (Melucci, 1989, cited in Horton, 2005, pp. 129-133). In other words, people can empower themselves to promote a sustainable lifestyle through the concept and practice of local community (Maser, 1997, Peattie, 2004).

People believe that they can make a difference by joining green clubs which empower them to act on specific environmental issues (Little, 2009). Only

through such involvement do they actually learn how to talk and practise culturally specific behaviours which later produce green identities. These people would do or partially consider environment in their consumption. According to a survey by “Which?”, the largest consumer body in the UK, 90% out of 2,450 members had considered green issues in relation to their consumption and were prepared to pay a premium for greener products or services (Peattie, 2004). Research findings also show that the biggest predictor of willingness to pay a high price for renewable energy is membership of environmental groups instead of education and income (Ottman, 1998).

This is not to say that green members are perfectly green or living an idyllic green lifestyle; however, they are potentially useful models for green behaviour study. There is good reason for choosing these samples. They are elective, whereby they choose to learn and respond towards environmental risks and choose to incorporate green behaviour into their lifestyle. In addition, the influence of green consumers’ membership had grown dramatically by the end of the decade. Through better understanding the conditions for their green behaviour, there is a chance that those conditions can be widely instituted, for the sake of the planet and its people. The present findings from a preliminary study of Cardiff consumers’ environmental behaviour reveal that most green members are aware and knowledgeable about the effect of their behaviour towards the environment. They are also able to explain the proper ways of practising environmental behaviour and are motivated to save the environment. It was also important to include a control group of non-green members in order to explore distinctive characteristics between both samples.

Consumers had to be the people who were responsible for making decisions about their consumption of domestic electricity, water, waste disposal and private transportation. In order to choose the appropriate non-green member, the researcher had to conduct an informal interview prior to the survey. This was where respondents were asked about their behaviour with regards to private transportation, energy, water and waste disposal. For example, some of the respondent admitted that they did recycling due to obligation and would discontinue if no facilities were provided. Some of the non-members also mentioned that they like to take a shower instead of a bath due to the convenience. However, when they were asked about the duration of their shower, they mentioned more than five minutes and disliked the idea of using a water saving device. This showed that their commitment to perform environmentally friendly behaviour was not consistent when compared to the green members. Findings from the preliminary study of Cardiff consumers' environmental behaviour also support this statement. Details of the preliminary study are discussed in sub-section 5.5.

Survey data were gathered at some 54 points in Cardiff. The population of interest was Cardiff consumers, defined as follows: males and females in approximately 1:2 ratio and aged 20 to 60+. The female ratio is higher than male because many more females worked in green groups than males did. In addition, the number of women who live in Cardiff is slightly greater than the number of men (Cardiff Council, 2007).

Respondents had to be the people who were responsible for making decisions about the consumption of domestic electricity, water, waste disposal and private transportation. Minors were excluded from the survey as they would not be suitable for the issue under investigation. The sample also covered diverse age groups, ethnicity, gender, socio-economic groups and green and non-green consumers. As a small token of appreciation, respondents were offered entry to a modest prize draw. This was subject to respondents' willingness to enter the draw.

Respondents were selected from the researcher's network of green societies, groups of similar parties, community centres, clubs and friends who were contacted personally by the researcher. Face-to-face and self-administered surveys were conducted either at group gatherings, community centres or respondents' residences in Cardiff. After each respondent had completed their survey, the researcher then asked them to recommend people to contact who would be willing to participate.

It was important to have one or more key people because they also acted as gatekeeper in helping the researcher to gain access to prospective respondents. This technique was also applied in the Venezuelan study (Yani-de-Soriano, 2000). The researcher also did voluntary work for green groups or non-green member events in order to gain more information about the target sample. Tables 5.4 and 5.5 show the database for groups and location points of green as well as non-green members.

Table 5.4: Database for Groups of Green Members

| Number | Groups | Number | Groups |
|---|---|---|---|
| 1 | BTCV | 14 | Friends of Pedal Power |
| 2 | Action Group | 15 | Friends of the Earth |
| 3 | Atlantic Wharf Girls | 16 | Greenpeace |
| 4 | Buddhist SGI UK (Environmental) | 17 | Keep Wales Tidy |
| 5 | Canton Community Gardens | 18 | Park Crescent Youth Group |
| 6 | Cardiff Conservation Volunteers | 19 | People and Planet |
| 7 | Cardiff Cycling Campaign | 20 | Riverside Community Garden Project |
| 8 | Cardiff Organic Gardeners | 21 | South Splott Community |
| 9 | Cardiff River Group | 22 | Student Action For Refugees |
| 10 | Cardiff Transition Project | 23 | Sustrans Cymru |
| 11 | Charities | 24 | UNA Exchange |
| 12 | Cynnal Cymru- Sustain Wales | 25 | Wildfowl and Wetland Trust |
| 13 | Environmental Wales | 26 | Work related (e.g. Shared Earth) |

Table 5.5: Database for Location of Non-Green Members

| Number | Location | Number | Location |
|---|---|---|---|
| 1 | Bambeans | 15 | Grangetown Communities First |
| 2 | Bingo Castle | 16 | Health Check Event at Butetown Community Centre |
| 3 | British Heart Foundation | 17 | Heath Hospital |
| 4 | Cancer Research | 18 | Huggard Centre |
| 5 | Canton Health Community Centre | 19 | Kidney Wales Foundation |
| 6 | Cardiff central library | 20 | Mandy Pool |
| 7 | Cardiff Information Centre | 21 | Park Place |
| 8 | Cardiff National Museum | 22 | Postgraduate office student union (Cardiff University) |
| 9 | Cathays Communities Centre | 23 | Race Equality First |
| 10 | Chapter | 24 | Riverside neighbourhood |
| 11 | City Church | 25 | Salvation Army (Grangetown) |
| 12 | City Road neighbourhood | 26 | South Riverside Communities First |
| 13 | Column Drive | 27 | The Friary Centre |
| 14 | Fairwater Community Centre | 28 | Women Well Being Event (Channel View) |

Cardiff was chosen because it is the capital of the country and therefore it was thought to be representative of Wales' consumers. In addition, Cardiff has the largest population compared to any other city in Wales. According to Census 2001, Cardiff ranked as the 14$^{th}$ largest settlement in the United Kingdom and the 21$^{st}$ largest urban area. The city has more than 65% of its 321,000

population aged between 20 and 60+ years old (Cardiff Council, 2007). It also has diverse ethnicity due to its trading past, immigration and foreign students.

There are many reasons to expect that living in Cardiff might actually reduce an individual's carbon footprint. Researchers such as Kenworthy, Satterthwaite and Lee have claimed that cities can provide the ideal launch pads for future green initiatives and may also cut down car use and carbon footprints (Barley, 2010). This is because cities concentrate people together, which mean it is easier for local authorities to run an environmental programme. Environmentally friendly programmes are already in place and advertised in Cardiff. These range from the development of wind power to other environmental issues such as pollution and toxic waste. Cardiff should be among the champions of recycling because since May 1990, Cardiff is the second city after Sheffield to provide a recycling practice under the Friends of the Earth recycling project (Friends of the Earth, 1990). This is where the council runs door to door collections of recyclable waste. Cardiff Council has also recognized the importance of domestic energy conservation. They have been working with different institutions to promote renewable energy and have introduced a scheme to improve home insulation. Moreover, Wales has become the first government in the world committed to cutting greenhouse gases by 3% a year.

Self-selecting and snowball samples were used for the present research. In self-selecting sampling, the researcher employs his or her judgement or that of some other key person to identify who will be in the sample. Snowball

sampling requires respondents to provide the names of prospective respondents (Burns and Bush, 2006). Both nonprobability samples are most appropriate when there is a limited sample frame and certain issues arise such as the shifting population. In the case of green members, the sample frame might experience an issue of shifting population due to the inconsistent nature of the green consumer (Peattie, 1992). A drawback to this methodology is that the degree and direction of error introduced by the researcher cannot be measured and statistics that measure the precision of the estimates cannot be calculated (Fairfax County Department of Systems Management for Human Services, 2003).

In summary, a total of 207 questionnaires in both sub-studies were obtained. Seven questionnaires, five from non-green members and two from green members, were unusable due to response set bias. They ticked the same space all through the page with little concern for what they were being asked to answer. The same issue happened with the England and Venezuela studies (Foxall, 1997a, Yani-de-Soriano et al., 2002). The Cardiff respondents rated each of eight consumer environmental situations derived from the BPM using the Mehrabian and Russell model to measure their affective and behavioural responses. Therefore, 1600 valid cases were obtained from both sub-studies. This total number of cases makes up a reasonably large sample size.

## 5.5 A Preliminary Study of Cardiff Consumers' Environmental Behaviour

This section describes the preliminary findings of Cardiff consumers' environmental behaviour. Due to the exploratory nature of the study, a series of face-to-face standardized open-ended interviews were conducted in order to generate more information about consumer environmental situations. An interview is a form of conversation used by a researcher to gather data for his or her research. The most employed qualitative methods are interviews in the form of in-depth, semi-structured and unstructured (Hanson and Grimmer, 2007). Interviews fall under phenomenology whereby epistemologically, it has been argued, data on human awareness consciousness and experience can be developed by interacting, listening and gaining assess to respondents (Mason, 1996). There are various strengths and limitations of using interview.

First, interviewers have the ability to explore and ask many questions which at the end generate rich data. In addition, researchers are able to capture the depth, complexity and roundness of responses regarding subjects of interest. As a result, researchers are able to tap the conscious reasons of respondents (Burns and Bush, 2006). The study of cognitive anthropology for complex green consumer problem-solving behaviour supported this statement. This was where the semi-structured in-depth interviews were able to help the researcher to understand and profile green consumers based on how they process problem-solving behaviour (Tadajewski and Wagner-Tsukamoto, 2006).

Second, qualitative interviews tend to be a more flexible process and interviews can be done more than one time. Re-interviewing is not uncommon because the interviewer might obtain better information from a second interview and avoid the risk of intruding too much in interviewees' lives. Interviews contribute towards research findings in the sense that the researcher will get more solid information and greater breadth of coverage to reconstruct people and situations.

Some limitations of qualitative interviews are that they lack structure in process whereby if they are given by an untrained interviewer they may well be a disaster. This is because interviewees are not given a set of responses and they might give unnecessary responses. Thus, interviews should be handled by experienced interviewers who are able to understand the subject matter. Interviews can be time consuming and expensive. Analyzing and interpreting qualitative data is time consuming because researchers are dealing with subjective texts that need an in-depth understanding. It was argued that it is a challenge to interpret interviews due 'to the sequential nature of data gathering masking an overview of consensus' (Greenbaum, 1998, cited in Stokes and Bergin, 2006, pp. 28-29). Furthermore, a lot of money has to be invested in order to train interviewers' in conducting the interviews.

The present study used the standardized open-ended interviews. This type of interview uses the exact wording and sequence of questions which are determined in advance. All interviewees are asked the same basic questions

in the same order (Patton, 2002). The strengths of the interviews are: increasing comparability of responses, reducing interviewer effects and bias, permitting evaluation users to see and review the instrumentation used in the evaluation, and facilitating organization of data. A drawback of this method is that there is little flexibility to change the direction of questionnaires, and they may limit the naturalness of the questions as well as the answers.

Interviews were conducted mainly in the Cardiff area among 15 green members and 15 non-green members. A control group of non-green members were adopted in order to explore distinctive characteristics between both samples. The aim was to examine consumer current behaviour and to understand what reinforces consumers' environmental behaviour choices. Apart from that, the study wanted to explore consumer feelings about specific consumer environmental situations, as well as to identify any influences in consumer current behaviour. Prior to interviews, questionnaires were reviewed by a supervisor and an ethics committee. The present findings were then used to assist in the formation of quantitative instrument items for the larger scale stage of the research (quantitative survey). A copy of the questionnaire is included as Appendix 1.

Transcripts collected were analyzed using content analysis and coding processes. Content analysis is an approach to the analysis of documents and texts that seeks quality content in terms of predetermined categories and in a systematic and replicable manner (Bryman, 2004). The methods used in content analysis studies are counts of words, subject, and themes

(Gottschalk, 1995). In the process of doing content analysis, it is important to design a reliable coding schedule and coding manual.

For both green and non-green consumers the ratio of males to female was 1:1. Modest reimbursement - £10 in cash - was given to respondents. Respondents were told that they are being paid for their time and not being paid for their responses. They also had to sign a research participant payment verification form in order to get their cash reimbursement. The main leads from the interviews included the most and likely current behaviour (i.e., domestic water and electricity consumption, private transportation patterns and waste disposal practices), and anticipated the utilitarian and informational benefits or vice versa, feelings, environmental knowledge and influences, and background. The questionnaires were divided into three parts. Part 1 was about consumer current behaviour, Part 2 was about their environmental knowledge and influences, and finally Part 3 related to their awareness and feelings about specific consumer environmental situations.

**Part one** of the interviews was about consumer current behaviour. A selection of standardized open-ended questionnaires was used as guidance. Tables 5.6 and 5.7 show the current behaviour of green and non-green members.

Table 5.6: Sub-study of Green Members: Current Behaviour

| Waste Disposal | Respondent | | Domestic Water | Respondent | |
|---|---|---|---|---|---|
| | Total | % | | Total | % |
| Recycling | 15 | 100 | Shower Instead Of Bath | 11 | 73 |
| Reusable Bags | 10 | 67 | Water Conservation | 7 | 47 |
| Donate Cloth | 7 | 47 | Water Meter | 4 | 27 |
| Home Composting | 6 | 40 | Brush And Rinse Teeth With A Glass Of Water | 3 | 20 |
| Reuse Packaging | 4 | 27 | Washing With A Fully Loaded Laundry | 3 | 20 |
| Recycle Old Clothes | 1 | 7 | Use Water Container To Water Plant | 2 | 13 |
| Bring Own Cutlery | 1 | 7 | Discreet Use Of Dishwasher | 2 | 13 |
| | | | Save Rainwater | 1 | 7 |
| | | | Use A Bucket Of Water To Take A Bath | 1 | 7 |
| | | | Reusable Bottle | 1 | 7 |
| | | | Dual Flush Toilet | 1 | 7 |
| **Transportation** | **Respondent** | | **Domestic Energy** | **Respondent** | |
| | **Total** | **%** | | **Total** | **%** |
| Walking | 13 | 87 | Energy Saving Lights | 12 | 80 |
| Train | 10 | 67 | Switch Off The Lights | 8 | 53 |
| Bus | 8 | 53 | Reduce Heater Consumption | 6 | 40 |
| Cycling | 7 | 47 | Use LCD Television | 3 | 20 |
| Second Hand Car | 5 | 33 | Switch Off Electrical Appliances Instead Of Leaving In Standby Mode | 3 | 20 |
| Car Sharing | 3 | 20 | Install Loft Insulation | 2 | 13 |
| Use Car For A Long Distance Journey Or Holiday | 3 | 20 | Use Energy Saving Appliances | 1 | 7 |
| Taxi | 1 | 7 | Watch Less Television | 1 | 7 |
| | | | Use Solar Cooker | 1 | 7 |
| | | | Use More Blanket To Keep Warm | 1 | 7 |

Table 5.6 shows that the majority of green members like to do recycling (100%), walking (87%), showering instead of bathing (73%), and using energy saving lights (80%). The main reasons for adopting this behaviour was for environmental benefit, saving money and its being part of who they are. This is described by one of the green respondents thus:

“If you don’t support environmentally friendly behaviour now, it will turn into a very serious problem. The future generation would be at disadvantage in

terms of their quality of life as well as environment. That's our duty to protect it" (Respondent 1).

The findings of the sub-study of green members also show that most respondents are aware and knowledgeable about the effect of their behaviour. They were able to explain the proper ways of practising their green behaviour. For example; washing cans and tins before throwing them in the recycling bin, taking a 5 minutes shower instead of shower for 20 minutes, and determining to send their items to the right channel for reuse or recycling. They are supporters of government or non-government environmental campaign such as the wheelie bins campaign, home composting, clothes donation and food waste recycling campaigns.

Table 5.7: Sub-study of Non-Green Members: Current Behaviour

| Waste Disposal | Respondent | | Domestic Water | Respondent | |
|---|---|---|---|---|---|
| | Total | % | | Total | % |
| Recycling | 8 | 53 | Shower Instead Of Bath | 12 | 80 |
| Reuse Plastic Carrier Bags As Bin Liners | 3 | 20 | Don't See The Need For Water Conservation | 5 | 33 |
| Reusable Bags | 2 | 13 | Use Water Container To Water Plant | 3 | 20 |
| Home Composting | 2 | 13 | Using Water Moderately | 2 | 13 |
| Donate Clothes | 1 | 7 | Water Gadget | 1 | 7 |
| Donate Christmas Card To Charity | 1 | 7 | Brush And Rinse Teeth With A Glass Of Water | 1 | 7 |
| | | | Washing With A Fully Loaded Laundry | 1 | 7 |
| | | | Dishwasher | 1 | 7 |
| | | | Save Rainwater | 1 | 7 |
| | | | Taking A Bath | 1 | 7 |
| | | | Use A Bucket Of Water To Wash Car | 1 | 7 |
| | | | Dual Flush Toilet | 1 | 7 |
| **Transportation** | **Respondent** | | **Domestic Energy** | **Respondent** | |
| | **Total** | **%** | | **Total** | **%** |
| Walking | 11 | 73 | Energy Saving Lights | 6 | 40 |
| Car | 8 | 53 | Reduce Heater Consumption | 5 | 33 |
| Bus | 7 | 47 | Switch Off The Lights | 5 | 33 |
| Train | 5 | 33 | Loft Insulation (Build In By Developer) | 1 | 7 |
| Park And Ride Scheme | 3 | 20 | Floor Insulation (Build In By Developer) | 1 | 7 |
| Cycling | 2 | 13 | Don't See The Need For Energy Conservation | 1 | 7 |
| Flight | 2 | 13 | Energy Star Laptop | 1 | 7 |
| Car Sharing | 1 | 7 | | | |
| Taxi | 1 | 7 | | | |

Table 5.7 shows that majority of the non-green members liked to take a shower (80%), walk (73%), use their cars and recycle (53%) as well as use energy saving lights (40%). A number of non-green members also mentioned that they didn't see the need for water conservation (33%) and energy conservation (7%). The main reasons for adopting this kind of behaviour was convenience, saving money, and others (e.g. government rules and less tax).

The finding of the sub-study of non-green members also shows that the non-green members are less knowledgeable about the effect of their behaviour.

For example, when they were asked about the duration of their shower, they mentioned more than five minutes. In addition, their commitment to perform environmentally friendly behaviour was not consistent when compared to the green members. This is revealed in the statements made by non-green members' behaviour with regards to their current behaviour:

"I do recycled paper. Usually we get the green bags from the council. But now, the council didn't give us the green bags. I don't like to go to recycling centre" (Respondent 23).

"I don't mind to do recycling because I have the bin which is handy for me but I don't like the food caddy. My wife did it!" (Respondent 10).

"I'm not in the water meter now. When I drive to valley and I'm thinking that we don't have problem with water here. I just use whatever water that I want" (Respondent 10).

"I usually walk. But if given a choice, I will definitely use private car instead of public transport" (Respondent 2).

"I don't have a driving license. That's why, I've always walk and use bus" (Respondent 18).

Additionally, the findings show that most of the non-green members support government environmental campaign due to obligation or a sense of guilt. This was mentioned by one of the respondents.

“If I don’t do recycling I feel guilty. So I have a hard time to do it” (Respondent 17).

The present study also explores consumer unfavourable behaviour in relation to domestic water and electricity consumption, private transportation and waste disposal practices. Tables 5.8 and 5.9 present the type of unfavourable behaviour for Cardiff green and non-green members.

Table 5.8: Sub-study of Green Members: Unfavourable Behaviour

| **Waste Disposal** | **Respondent** | | **Domestic Water** | **Respondent** | |
|---|---|---|---|---|---|
| | **Total** | **%** | | **Total** | **%** |
| Use Food Caddy Disposal | 1 | 7 | Reuse Left Over Water | 1 | 7 |
| Dispose Food Waste In Black Bin | 1 | 7 | Use One Flush Toilet Instead Of Dual Flush Toilet | 1 | 7 |
| | | | Standard Water Charge | 1 | 7 |
| **Transportation** | **Respondent** | | **Domestic Energy** | **Respondent** | |
| | **Total** | **%** | | **Total** | **%** |
| Bus | 3 | 20 | Use The Energy Saving Lights | 2 | 13 |
| | | | Use Smart Meter | 1 | 7 |
| | | | Use Solar Lights | 1 | 7 |
| | | | Depend On The Heater Instead Of Cavity Wall Insulation | 1 | 7 |

Table 5.8 shows that a small number of green members dislike using energy saving lights (13%), the bus (20%), disposing of food waste in a black bin instead of using food caddy disposal (7%), using a heater instead of cavity wall insulation (7%), and using a one flush toilet (7%). This was due to issues such as lack of facilities, expense, inconvenience, lack of green knowledge,

an unreliable service provider providing green facilities, barriers with Victorian houses, and doubtful green producers. Below are statements made by green members in relation to their unfavourable current behaviour:

“I’m not against buses but I don’t like the fact that you have to depend on their time and exact fare” (Respondent 15).

“I know that energy saving light it’s good and can save money. However, the purpose of lights is that you can see everything. It really frustrated me because I don’t like dim light. It takes time to power up” (Respondent 13).

Table 5.9: Sub-study of Non-Green Members: Unfavourable Behaviour

| **Waste Disposal** | **Respondent** | | **Domestic Water** | **Respondent** | |
|---|---|---|---|---|---|
| | **Total** | **%** | | **Total** | **%** |
| Recycling | 7 | 47 | Use Water Meter | 3 | 20 |
| Reusable Bags | 5 | 33 | Use Dual Flush Toilet | 2 | 13 |
| Use Food Caddy Disposal | 1 | 7 | Save Bath Water For Garden | 1 | 7 |
| Home Composting | 1 | 7 | | | |
| **Transportation** | **Respondent** | | **Domestic Energy** | **Respondent** | |
| | **Total** | **%** | | **Total** | **%** |
| Bus | 5 | 33 | Switch On And Off Lights | 3 | 20 |
| Walking | 1 | 7 | Use The Energy Saving Lights | 3 | 20 |
| Train | 1 | 7 | Reduce Heater Consumption | 3 | 20 |
| Cycling | 1 | 7 | Switch On And Off Laptop | 3 | 20 |
| Car | 1 | 7 | | | |

Findings from Table 5.9 show that most non-green members dislike doing recycling (47%), using reusable bags (33%), using the bus (33%), using a water meter (20%), and switching on/off electrical appliances (20%). This was due to inconvenience, not knowing how to do it, old habits being hard to break, not having the time, not feeling that the individual can make much

difference, not believing that the local council are doing enough, expense, mess, and not wanting to be seen as different from friends or family.

**Part two** of the interviews related to environmental knowledge and influences. The findings show that all green members would like to join an environmental campaign and 93% believe that small changes in behaviour will impact on the environment. They had been influenced by the government and environmental charities. The findings also show that most of the green members are aware of environmental campaigns and penalties. Table 5.10 shows the example of environmental campaigns and penalties.

Table 5.10: Environmental Campaigns and Penalties

| Environmental Campaigns/ Initiatives | Environmental Rules/ Penalties |
|---|---|
| • Free loft insulation for old people<br>• Free energy saving bulbs<br>• Church organize fair trade<br>• Energy company promoting green energy<br>• TESCO collected unused plastic bags<br>• Wheelie bins<br>• Carbon footprint | • Mix waste inside recycling bags will not be collected<br>• Mix waste inside recycling bags will be fined<br>• Illegal to do fly tipping<br>• Call specialist to deal with electrical waste<br>• Any waste associated with the light bulb must use a separate waste container<br>• Charges for plastic bags |

Findings from the non-green members show that only 80% would join an environmental campaign and half (53%) don't belief that small changes in behaviour will impact on the environment. Most of the respondents were not aware of any environmental campaigns or penalties. They either ignored the campaigns or didn't know how to become involved. Below are statements made by non-green members in response to environmental campaigns:

“I don’t know much about environmental campaigns. I only know that they put up some poster or sign.  I just walk pass by” (Respondent 2).

“I don’t know much about environmental campaign. I want to learn more but I don’t know the right source” (Respondent 5).

Overall, 90% of the green members had heard about the green consumer as compared to non-green members (50%). Table 5.11 shows some of the green consumer definitions explained by respondents.

Table 5.11: Definition of Green Consumer

| |
|---|
| • Think about what they buy and the impact towards environment<br>• Green lifestyle<br>• Buy expensive green products<br>• Passionate about being green<br>• Conscientious with their behaviour and consumption<br>• Seek quality of life which is in balance with the environment |

**The final part** of the interviews was related to consumers’ awareness and feelings about specific consumer environmental situations. Respondents were given 16 hypothetical consumer environmental situations related to private transportation, waste disposal, water, and electricity. The findings show that a number of respondents were unable to give genuine responses to some of the 16 consumer environmental situations (e.g. Park & Ride Scheme, LCD Television, Earth Hour, recycling old inkjet cartridges and paying bills). This is because they were not familiar with the given situations, and were therefore unable to capture the exact consumer situations. Respondents were also verbally asked about whether they understood the PAD measurement scales.

They were provided with a show card of a list of PAD adjective words. The findings show that explanation was needed for some of the adjectives such as 'aroused- unaroused', 'important- awed', 'frenzied- sluggish', and 'controlling – controlled'.

In summary, the findings were used to develop consumer environmental situations for survey. In order to design a reliable and workable consumer situation, the present study: (1) had to reconstruct the description of consumer situations by expressing more on contingency categories and consequences of consumer behaviour, and (2) needed to develop consumer situations (stimuli) which were closer to the consumer environment.

## 5.6 The Instrument

This section described the instrument used. It is divided into four sub-sections: the Mehrabian and Russell measurement scales, selection of consumer environmental situations, designing the survey questionnaire, and pre-test.

### 5.6.1 The Mehrabian and Russell's Measurement Scales

Mehrabian and Russell's (1974) scales of the measurement of affective responses of Pleasure, Arousal, and Dominance (PAD) were used without modification. These three independent variables are constructed after the semantic differential approach (Foxall and Greenley, 1998, Yani-de-Soriano, 2000). Each affective variable was measured on six items in terms of which the environment in question was rated on a nine-point scale. The Pleasure (e.g., unsatisfied - satisfied) dimension ranged from extreme feelings of

dissatisfaction to extreme satisfaction. The Arousal (e.g., calm – excited) dimensions ranged from extreme feelings of calmness to extreme excitement. The Dominance (e.g., submission – dominance) dimension ranged from extreme feelings of lack of control upon one's environment to feelings of being extremely in control (Foxall et al., 2006).

Details of the PAD affective variables are described in sub-section 4.3 and 4.4 of Chapter 4. Three of each PAD six items were inverted in their direction in order to minimize bias and all the items were presented in a random order. A list of the reverse adjectives of Mehrabian and Russell's PAD scales is shown in Table 5.21 of sub-section 5.9.

The behavioural variables of Approach-Avoidance were measured by Mehrabian and Russell's scales (1974) as a single, bi-dimensional construct. The Approach-Avoidance measurement was assessed in relation to the structure of the situation in which it occurred and the pattern of reinforcement (Foxall, 1994a, Foxall, 1997a, Yani-de-Soriano, 2000). These behavioural variables were measured by means of six of Mehrabian and Russell's eight questions and they were presented in a random order. The other two questions related to desire to work in the situation were discarded due to their being irrelevant for the present study.

Details of the behavioural variables are described in sub-section 4.3 and 4.4 of Chapter 4. Approach and Avoidance responses were scored from 0 (minimal approach tendency/ minimal tendency to avoid) to 7 (maximal

approach tendency/ maximal tendency to avoid). Aminusa scores were measured as the mean difference between approach and avoidance for each person (Foxall, 1997a).

### 5.6.2 Selection of Consumer Environmental Situations

This sub-section aims to develop consumer environmental situations to be used for the present survey. The consumer situations were the stimuli presented to the respondents which they were asked to rate according to their affective and behavioural responses. A particularly relevant stream of research to explain the situational effect on consumer environmental behaviour is the BPM. This framework claimed that the consumer situation can be defined as the intersection of the consumer's learning history and behaviour setting (Foxall and Greenley, 1998). This is where the description of consumer situation will lead to greater interpretation of behaviour setting where a respondent can draw his/her learning history and react to a situation that has been experienced (actually / vicariously).

The BPM also suggests four classes of consumer behaviour, which are Accomplishment, Accumulation, Hedonism/Pleasure and Maintenance, which is based on the levels of utilitarian and informational reinforcement. By adding the dimension of closed and open setting to the four classes of consumer behaviour, the model expands to the eight contingencies that may control consumer behaviour. In the present study, the BPM was applied to the development of consumer environmental situations for private transportation, domestic energy, waste disposal practices, and domestic consumption of water. An earlier study of environmental-impacting consumer behaviour used

the BPM to classify private transportation as Accomplishment, domestic energy as Hedonism/Pleasure, waste disposal as Accumulation, and domestic water as Maintenance (Foxall, 1994b, Foxall et al., 2006). The study is conceptual and no empirical data collection has been conducted before. These classes are based on the levels of utilitarian and informational reinforcement.

The usage of private transportation falls into Accomplishment, which is maintained by high utilitarian (e.g., speed) and informational (e.g., travel time) reinforcement. Domestic energy is classed as Hedonism/Pleasure due to the high level of utilitarian reinforcement but less informational reinforcement. However, social approval may follow if consumers choose to share these resources in the company of others (Foxall, 1994b). Waste disposal is classed as Accumulation but the 'problem is actually manifested in the opposite of accumulation in the form of disposal' (Foxall, 1994b, p. 44). The utilitarian level of reinforcement is low which is other than convenience but its informational level is high (e.g. conspicuous consumption). In the case of domestic water consumption, the levels of utilitarian and informational reinforcements are low. This is because they are related to the consumer's state of deprivation, as domestic water is basic human needs (Foxall, 2002). Thus, domestic water is classed as Maintenance.

Prior to the survey, a range of 16 consumer environmental situations was tested in order to choose the most reliable and workable stimuli. Panel experts were invited to take part in the BPM Contingency Definition Test

(Foxall, 1999). The purpose of this test is to ascertain how far judges are able to allocate the consumer situations developed by researcher among the eight contingency categories specified by the BPM model. Three series of studies were conducted among the panel experts.

Analysis for the inter judge reliability was conducted by using the percent agreement. Percentage agreement was defined as the percentage of raters giving similar scores compared to the total number of raters. The appropriate minimum acceptable level of reliability for the percentage agreement (index of concordance) is 70% (Richmond, 2007). However, it has been argued that regardless of the number of judges used, items which score no better than 50% agreement are candidates for exclusion (Hair et al., 1998). Since, the goal is to get higher inter judge reliability scores, this study adopted the minimum percentage agreement of 70%.

A series of face-to-face standardized interviews, as mentioned in sub-section 5.5, were also conducted to assess the consensual validity of the consumer environmental situations of the BPM. Table 5.12 shows the potential items for consumer environmental situations of the present study. In summary, the best eight consumer environmental situations were considered to be used for the study.

Table 5.12: Potential Items for Consumer Environmental Behaviour Situations

| Private transportation | Waste Disposal |
|---|---|
| • Toyota Prius / Hybrid Car<br>• Biodiesel Fuel<br>• Second Hand Car/ Fuel Efficient Second Hand Car<br>• Park & Ride Scheme<br>• Car Sharing<br>• Carless (replaced car usage with other modes of transportation or car sharing)<br>• Private transport carbon footprint plan<br>• Car Clubs Scheme (pay-as-you-drive) | • Recycled Christmas Decorations<br>• Green (Kerbside) Club<br>• Recycled Old Inkjet Cartridges<br>• Reused Plastic Packaging<br>• Donated Clothes<br>• Food Waste Disposal<br>• DIY Home Compost<br>• Waste Rebate/ Waste Reward<br>• Green Clubcard Points<br>• Recycled Carrier Bag |
| **Domestic electricity** | **Domestic water** |
| • LCD television<br>• Central heating<br>• Listening to solar/wind up radio<br>• Energy star laptop<br>• Install loft/ cavity insulation<br>• Earth hour<br>• Energy saving bulbs<br>• Cycle mobile phone recharges<br>• Used renewable energy<br>• Switch off appliances rather standby<br>• Energy efficient appliances | • Taking a shower<br>• Drinking tap water<br>• Refilling and reusing water bottles<br>• Paying a water meter standing charge<br>• Fitting a water meter<br>• Fixing dripping taps<br>• Watering the yard in the morning<br>• Turning off the tap while brush teeth<br>• Installing a low flow showerhead<br>• Fitting water efficient devices<br>• Harvesting rainwater<br>• Reusing grey water<br>• Fitting a device in the cistern to reduce the amount of water used. |

### a. Consumer Environmental Behaviour Situations (First Series)

The study employed 4 academics (2 PhD students and 2 lecturers) who were presented with one form of the BPM Contingency Matrix and sixteen consumer environmental behaviour situations. Although the number of judges was small, they were potential users of the model for analytical purposes (Foxall, 1999). Panel experts were requested to allocate each of the consumer situations shown in Table 5.13 (but presented as a randomised list rather than in the structured form shown in the Table 5.13), among the BPM contingency category matrix. Table 5.14 shows the inter judge reliability scores for the first series.

Table 5.13: Consumer Environmental Behaviour Situations (First Series)

| Operant Conditioning | CC | Consumer Situation | Description |
|---|---|---|---|
| Status Consumption | 1 | Toyota Prius | You are driving a brand new Toyota Prius hybrid car around your neighbourhood. It is not crowded at all and there is no trouble in moving along. |
| | | Biodiesel fuel | You are at the petrol station to refill your car up with fuel. You choose biodiesel fuel instead of petrol diesel. You also have a car sticker to show off your biodiesel consumption- 'Biodiesel-this car is a vegetarian'. |
| Fulfilment | 2 | Park & Ride Scheme | You are on the way to do your shopping trip in the compact city centre. You park your car at a convenient location and get a bus into the city centre. The cost is just £3 per car (which includes bus travel) |
| | | Car sharing | You are driving to and from work on your usual roadway. It is not crowded at all and there is no trouble in moving along. You have a permanent passenger with you who is your colleague. It is part of a car sharing arrangement with your colleague undertaking the same journey. |
| Popular Pleasure/ Entertainment | 3 | Central Heating | You are preparing yourself to get in bed. Although it is very cold outside, it is warm here inside because of central heating. You're programming it to turn itself off 30 minutes before you go to sleep and on 30 minutes before you get up. You also have enough bed clothing to keep cosy during winter nights. |
| | | Listening to solar/wind-up radios | You are at the kitchen listening to music from your solar/ wind-up radio. |
| Inescapable Pleasure/ Entertainment | 4 | Energy saving bulbs | You are reading an interesting book on the couch in your living room. The only light comes from an energy saving light bulb in the ceiling. |
| | | Cycle mobile phone rechargers | While cycling with your friend, you're charging your mobile phone through cycle mobile phone rechargers. |
| Saving and collecting | 5 | Recycle Christmas decorations | You are saving wrapping paper, leaflets, and Christmas cards and have made zero waste crackers out of loo roll tubes for Christmas decorations (as you do every year). |
| | | Green (Kerbside) Club | You are checking how much you have paid into a Green (Kerbside) club to which you belong. |
| Token based consumption | 6 | DIY home compost | You are checking how much soil you have accumulated from your DIY home worm compost bin (soil which can be sold or used as fertiliser). |
| | | Waste rebate | You are sorting your waste into white bio-bag, green recycling bag and black bag (as you do every day). You understand that the government offer a rebate on waste council tax for those |

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|---|---|---|---|
| | | | who recycle more. |
| Routine purchasing | 7 | Taking shower | You are taking your daily shower instead of bath in your home |
| | | Washing face | Imagine you are in the toilet. Getting ready to wash your face. You are putting a plug in the basin and running the tap water to fill half the sink. Then, you start washing your face. |
| Mandatory consumption | 8 | Paying water meter charge | You are comparing the standing charge with what you must actually pay for your water meter consumption. A standing charge is a fixed amount you pay for every day you connected to the water network. |
| | | Water meter forms | You are filling in the application forms to install a water meter in your home. You are making sure the forms have been completed and posted with the enclosed cheque. |

Table 5.14: Inter Judge Reliability Scores (First Series)

| CC | Behaviour Setting | Consumer Situation | % of agreement | Index of concordance |
|---|---|---|---|---|
| 1 | Open | **Toyota Prius** | **75%** | **0.75** |
| | | Biodiesel fuel | 50% | 0.5 |
| 2 | Closed | Park & Ride Scheme | 0 | 0 |
| | | Car sharing | 0 | 0 |
| 3 | Open | Central Heating | 0 | 0 |
| | | Listening to solar/wind-up radios | 25% | 0.25 |
| 4 | Closed | Energy saving bulbs | 0 | 0 |
| | | Cycle mobile phone rechargers | 0 | 0 |
| 5 | Open | Recycle Christmas decorations | 50% | 0.5 |
| | | Green (Kerbside) Club | 25% | 0.25 |
| 6 | Closed | DIY home compost | 25% | 0.25 |
| | | **Waste rebate** | **75%** | **0.75** |
| 7 | Open | **Taking shower** | **75%** | **0.75** |
| | | Washing face | 25% | 0.25 |
| 8 | Closed | **Paying water meter standing charge** | **75%** | **0.75** |
| | | Water meter forms | 25% | 0.25 |

**Note:** Consumer situations in 'bold' represent the acceptable level of inter judge reliability index.

The findings show that only 4 consumer situations (Toyota Prius, waste rebate, taking shower, paying water meter standing charge) produced inter judge reliability scores more than the minimum acceptable level of reliability for the percentage agreement (index of concordance). This study founds respondents' levels of consistency for each consumer situation were not as

high as predicted. This was due to unfamiliar consumer situations such as Green (Kerbside) Club and cycle mobile phone recharges. Panel experts also had difficulty interpreting consumer environmental behaviour situations due to the inadequate descriptions of consumer behaviour setting. Only 4 consumer situations could be accepted for this study. It was therefore felt better to reconstruct new consumer situations.

**b. Consumer Environmental Behaviour Situations (Second Series)**

The study employed 4 academics (2 PhD students and 2 lecturers) who were presented with two forms of the BPM Contingency Matrix and sixteen new consumer environmental situations. They were requested to allocate each of the consumer situations shown in Table 5.15 (but presented as a randomised list rather than in the structured form shown in the Table 5.15), among the BPM contingency category matrix. In addition, they were provided with the simplified descriptions of the eight meanings of the contingency categories. Informal interviews were also conducted among respondents in order to obtain their view open BPM Contingency Definition Test. Table 5.16 shows the inter judge reliability scores for the second series.

Table 5.15: Consumer Environmental Behaviour Situations (Second Series)

| Operant Conditioning | CC | Consumer Situation | Description |
|---|---|---|---|
| Status Consumption | 1 | Toyota Prius | You are showing off your brand new Toyota Prius hybrid car to your relatives and friends. |
| | | Biodiesel Fuel | You are at the petrol station to refill your car with fuel. You choose an expensive biodiesel fuel instead of petrol diesel. You can well afford to do this. You also have a car sticker to show off your biodiesel consumption- 'Biodiesel-this car is a vegetarian'. |
| Fulfilment | 2 | Park & Ride Scheme | You are taking part in a park & ride scheme which has been introduced by the local council. This involves parking your car at a convenient location and getting a bus into the city centre. The cost is just £3 per car (which includes bus travel). |
| | | Car Sharing | You have signed up for the car sharing scheme which has been organized by your company. This involves travelling to and from work with another member of staff. |
| Popular Pleasure/ Entertainment | 3 | Energy Saving Bulbs | You are replacing the bulbs in your house with energy saving ones. You believe it's worth the aesthetic compromise, that they produce the same amount of light and use less electricity. |
| | | LCD Television | You are switching your old television with a brand new LCD television. You presume that LCD television will give you the most pleasing image, connection flexibility and be far more energy efficient than a plasma television. |
| Inescapable Pleasure/ Entertainment | 4 | Install Loft Insulation | You are installing loft insulation in order to comply with the UK government's home energy saving programme. You are thinking about how much warmer your house will be and how much money you can save on heating costs. |
| | | Install Cavity Wall Insulation | You are installing cavity wall insulation aided by a government cavity wall insulation grant. You are thinking that the better insulated your home, the less energy you need to keep it warm and the more money you'll save. |
| Saving and collecting | 5 | Recycle Christmas Decorations | You are saving and collecting wrapping paper, leaflets, Christmas cards as well as having made zero waste crackers out of loo roll tubes for Christmas decorations. |
| | | Reuse Plastic Packaging | You are saving butter or ice cream tubs which can be used for storage and planting seeds. |

| | | | |
|---|---|---|---|
| Token based consumption | 6 | DIY Home Compost | You are checking how much soil you have accumulated from your DIY home worm compost bin (as you do on a regular basis). Soil can be sold or used as fertiliser. Your goal is to use this soil for your plants or garden. |
| | | Waste Rebate | You are sorting your waste into white bio-bag, green recycling bag and black bag because they confer a waste rebate (as you do every day). You understand that the government offers rebates (an amount paid as reward) on waste council tax for those who recycled more. |
| Routine purchasing | 7 | Taking a shower | You are taking your daily shower instead of bath in your home. |
| | | Drinking Tap Water | You are drinking tap water instead of bottled water in your home, as you do every day. |
| Mandatory consumption | 8 | Paying Water Meter Standing Charge | You are comparing the water meter standing charge with what you must pay for your water consumption. The standing charge is the fixed amount you pay for every day you are connected to the water network. |
| | | Water Meter Form | You are filling in the application form for a water meter. You are making sure the form has been completed and posted with the enclosed cheque. You need to follow this procedure before you can install a water meter in your home. |

Table 5.16: Inter Judge Reliability Scores (Second Series)

| CC | Behaviour Setting | Consumer Situation | % of agreement | Index of concordance |
|---|---|---|---|---|
| 1 | Open | **Toyota Prius** | **75%** | **0.75** |
| | | Biodiesel Fuel | 50% | 0.50 |
| 2 | Closed | Park & Ride Scheme | 0% | 0 |
| | | Car Sharing | 25% | 0.25 |
| 3 | Open | Energy Saving Bulbs | 25% | 0.25 |
| | | **LCD Television** | **75%** | **0.75** |
| 4 | Closed | Install Loft Insulation | 0% | 0 |
| | | Install Cavity Wall Insulation | 50% | 0.50 |
| 5 | Open | Recycle Christmas Decorations | 50% | 0.50 |
| | | **Reuse Plastic Packaging** | **100%** | **1** |
| 6 | Closed | DIY Home Compost | 25% | 0.25 |
| | | **Waste Rebate** | **75%** | **0.75** |
| 7 | Open | **Taking shower** | **75%** | **0.75** |
| | | **Drinking Tap Water** | **100%** | **1** |
| 8 | Closed | Paying Water Meter Standing Charge | 50% | 0.50 |
| | | Water Meter Form | 25% | 0.25 |

**Note:** Consumer situations in 'bold' represent the acceptable level of inter judge reliability index.

The findings show that 6 consumer situations (Toyota Prius, LCD Television, reuse plastic packaging, waste rebate, taking shower, drinking tap water) produced inter judge reliability scores more than the minimum acceptable level of reliability for the percentage agreement (index of concordance). The second study has shown that the respondents' levels of consistency for each consumer situation were not as high as predicted. The judges misallocated some of the situated consumer behaviour among the BPM contingency categories. For example, Biodiesel Fuel was allocated to Saving and Collecting instead of Status Consumption because they relate with the future impact of this behaviour. Installing loft insulation was allocated to Mandatory Consumption instead of Inescapable Pleasure/ Entertainment because of the word 'comply'. There was the possibility of respondents not being able to capture the exact consumer situations within the given contingency categories. However, this study produced better results in comparison with study 1. Thus, it is better to reconstruct consumer situations by expressing more on contingency categories and the consequences of their behaviour.

**c. Consumer Environmental Behaviour Situations (Third Series)**

A series of face-to-face standardized open-ended interviews were conducted among 15 green and 15 non-green consumers. Respondents were given 16 hypothetical consumer environmental situations, as shown in Table 5.17. The aim was to explore their awareness and feelings about specific consumer environmental situations. Analysis of the interviews was conducted by using content analysis.

Table 5.17: Consumer Environmental Behaviours Situations (Third Series)

| Operant Conditioning | CC | Consumer Situation | Description |
|---|---|---|---|
| Status Consumption | 1 | Toyota Prius | You are showing off your brand new Toyota Prius hybrid car to your relatives and friends. |
| | | Second Hand Car | You are opting to buy a second hand car. You choose a model with low fuel consumption, a good safety rating and a reputation for reliability and longevity. |
| Fulfilment | 2 | Park & Ride Scheme | You are taking part in a Park & Ride scheme which has been introduced by the city council. This involves parking your car at a convenient location and getting a bus into the city centre. Park & Ride schemes like this are something you have done several times before. The cost is just £3 per car which is significantly less than many multi-storey car parks in the city centre. You also avoid queuing in traffic, experience less stress, save time and at the same time help the environment. |
| | | Car Sharing | You have signed up for the car-sharing scheme which has been organized by your local community. This involves finding someone to share your commute or a one-off journey. You are thinking how much this scheme can make a positive contribution towards reducing congestion and pollution with enjoyment. |
| Popular Pleasure/ Entertainment | 3 | Energy Star Laptop | You are opting to own an energy star laptop instead of desktop. You believe it's capable of meeting your needs, worth the aesthetic compromise, reliable multimedia performance, and even more energy efficient. |
| | | LCD Television | You are switching your old television for a LCD television. You presume that LCD television will give you the most pleasing image, connection flexibility and be far more energy efficient than a plasma television. |
| Inescapable Pleasure/ Entertainment | 4 | Earth Hour | You are turning off your non-essential lights and other electrical appliances for one hour on the last Saturday of March in order to fulfil with the Welsh government's energy saving programme. You are thinking about an opportunity to be a part of this historic occasion, enjoying the moment, and saving energy and Earth. |
| | | Install Cavity Wall Insulation | You are installing cavity wall insulation aided by a government cavity wall insulation grant. You are thinking that by having the insulation, you will be able to turn thermostat down a few degrees without being cold. You can also save your money on heating costs. |

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|---|---|---|---|
| Saving and collecting | 5 | Recycled Old Inkjet Cartridges | You are saving your old inkjet cartridges for recycling. You understand that you can post your old cartridge for FREE to business providers such as TESCO or BOOTS. They also offer a donation to charity for each inkjet cartridge that you recycled. |
| | | Reuse Plastic Packaging | You are saving butter or ice cream tubs which can be used either for storage or refill. |
| Token based consumption | 6 | Green Clubcard Points | You are accumulating 'green clubcard points' by every time you use recycled carrier bags at a given supermarket (points that are exchangeable for vouchers). |
| | | Waste Rebate | You are sorting your waste into white bio-bag, green recycling bag and black bag (as you do every day). You understand that the government offers waste rebate (an amount paid as reward) on waste council tax and extra recycling bag for those who recycled more. |
| Routine purchasing | 7 | Taking a Shower | You are taking a daily shower instead of a bath in your home. |
| | | Drinking Tap Water | You are drinking tap water instead of bottled water in your home, as you do every day. |
| Mandatory consumption | 8 | Fitting a Water Meter | Imagine you are planning to install a water meter for your home. You must contact your water company to arrange a home survey to check there are no practical limitations and no unreasonable costs to fit a meter (the company will not install a meter if it is technically impossible). You have to go through this survey before a meter can be fitted for your home. |
| | | Paying Water Bill | You are comparing your estimated water metered bill with what you must actually pay for your current water consumption. Your present bill is based on the standard metered charges or standard unmeasured charges (Rateable Value charge or Uniform Service charge). |

The findings show that a number of respondents were unable to give genuine responses to some of the 16 consumer environmental situations (e.g. Park & Ride Scheme, LCD Television, Earth Hour, recycled old inkjet cartridge and paying water bill). This is because they were not familiar with the given situations, and were therefore unable to capture the exact consumer situations. The findings also helped the researcher to develop consumer

environmental situations which are closer to the consumer environment. In order to develop a reliable and workable consumer situation, the present study needed to: (1) reconstruct the description of consumer situations by expressing more on contingency categories and consequences of consumer behaviour, and (2) test the new consumer environmental situations with the panel experts.

**d. Consumer Environmental Behaviour Situations (Fourth Series)**

In the new procedure, 5 academics (3 PhD students and 2 lecturers) were presented with two forms of the BPM Contingency Matrix and sixteen new consumer environmental behaviour situations. Their task was to allocate each of the consumer situations shown in Table 5.18 (but presented as a randomised list rather than in the structured form shown in the Table 5.18), one situation to each category. In addition, they were provided with the simplified descriptions of the eight meanings of the contingency categories. Table 5.19 shows the inter judge reliability scores for the fourth series.

Table 5.18: Consumer Environmental Behaviour Situations (Fourth Series)

| Operant Conditioning | CC | Consumer Situation | Description |
|---|---|---|---|
| Status Consumption | 1 | Hybrid Car | You are driving a brand new Toyota Prius **hybrid car** in the city with your relatives or friends. The hybrid system combines battery and petrol power so that, at low speeds, the car will run silently only on battery power. It also has the hybrid system indicator, which gives you real-time information about your driving technique. You can also show your relatives or friends exactly how the car is being powered at any point in time. With carbon emissions of just 89g/km, you pay no road tax and are exempted from congestion tax. The car is drinking more than you expected and it's cool to be green. |
| | | Fuel Efficient Second Hand Car | You are opting to buy a **second hand car**. You choose a model with **low fuel consumption**, a low carbon emission, a good safety rating and a reputation for reliability and longevity. Buying this car may give you a warm glow to meet your travel needs and minimise the environmental impacts for a lot less money. |
| Fulfilment | 2 | Carless | You are on a **mission to cut down your driving** steadily to 50% less than your normal miles per year. In order to **achieve this mission**, you **must plan and consolidate** your trips either by walking, cycling, public transport, sharing a lift or reducing the amount of total car trips you make. You understand that being carless can help you to get fit, increase your quality of life, reduce pollution, save money and allow you to be an example to your family or friends. |
| | | Car Sharing | You have teamed up with your friends or colleagues for a regular **car share**. This could be sharing a car either to work, for one–off trips, commuting or shopping. You need to **follow a roster of car share**. It involves the drivers' rotation, destination and times of departure and arrival so one car can take more people rather than more cars being on the road. Car sharing is the quickest ways to halve your fuel bill and cut driving stress levels; it lessens congestion, parking problems, pollution and builds relationships with like-minded people. Car sharing also projects an image of who you are as a person who cares about society and preserving the environment. |
| Popular Pleasure/ Entertainment | 3 | Energy Star Laptop | You are using an **energy star laptop**. You spend a lot of time doing your work, entertainment or internet communication with your laptop. It uses 70% less electricity than computers without this designation. If left inactive, your laptop will enter a sleep mode. You can awaken your laptop in a matter of seconds by simply hitting a key on the keyboard or moving the mouse. The best part of your laptop is that not only can it save energy, but it also helps the equipment to run cooler and last longer. |
| | | Heating control | It is winter and the temperature is quite cold. You have central heating on in your house. You plan to go out for a while but don't want to get back to a |

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| | | | cold house. You are opting to use a **heating control** so that the heating comes on a little time before you return home. First, you set the thermostat at 18°C. Then you dig out the instructions for the central heating programmer. Finally, you set the heating to go off 15 before you leave home and come on 15 minutes before you reach home. The house will be nice and warm for your arrival. The heating control also helps you to manage your central heating more effectively and save your bill. |
| Inescapable Pleasure/ Entertainment | 4 | Loft Insulation Grant | You are planning to install loft insulation aided by a government grant. The government has offered you at least 50% off or a free **loft insulation grant**. This means that you can install loft insulation professionally at a cheaper cost or even for free when compared with doing it yourself. However, you **can only use the insulation material of their choice**. You are thinking that by having the insulation, you will able to turn the thermostat down a few degrees without being cold. You believe this is the easiest way to reduce your expensive energy bills at less/no cost and to save the environment. |
| | | Energy Saving Bulbs | The government has phased out all traditional lightbulbs in order to improve energy efficiency. The move aims to force consumers to fit energy saving bulbs. You have replaced all the light bulbs in your home with **energy saving** ones. After using them for a while, you start to realize what a difference it makes in comparison to the traditional lightbulbs. You have no problem with the light. You believe that each **energy-saving bulb** can reduce your electricity bill and last longer than conventional ones. |
| Saving and collecting | 5 | Donate Clothes | You are cleaning out your wardrobe. You have decided to pick one wardrobe to organize at a time. You begin at one end of the wardrobe and work toward the other. You throw all outdated and unwanted clothes into two boxes. One box is for clothes you will throw away and one box is for **clothes** you would like to **put aside for donation**. Later on, you can take them to a charity shop, church or community organization such as the Salvation Army where they can be resold or reused for a worthy cause. |
| | | Food Waste Disposal | You are cleaning up your kitchen after cooking or a big meal. You are **saving** all your raw or cooked **food waste** in the kitchen caddy **instead of throwing it away inside the black bags**. You only use the biodegradable bags to line your kitchen caddy. When the bag starts to get full, you tie it and put it in your green wheeled bin or white bio-bag. Later, your food waste will be **collected** by the council for **composting**. Although you are under less compulsion to do this, you are thinking this is the easiest way to support the council food waste composting campaign. Your act will also help to reduce the amount of waste going to landfill. |
| Token based consumption | 6 | Green Clubcard | You are a member of Tesco Clubcard. Tesco now offers a '**green clubcard points**' for every **reusable** |

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|---|---|---|---|
| | | Points | **bag or 'bags for life'** you put your shopping in (one point per bag). The cardholders are also entitled to receive points for not using a carrier bag. These points are stored and built up. Later the cardholder can use them to obtain discounted trips, magazines or shopping vouchers. You make a point to re-use bags whenever you do shopping in store. You also check how many green points you have accumulated from the Clubcard quarterly statement. At the end, you are thinking how much these small changes can help the environment and you as a consumer. |
| | | Waste Reward | Imagine that your local council promotes a **waste reward** (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need **to follow their waste guidelines** before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chance you will have to get your waste reward. |
| Routine purchasing | 7 | Quick Shower | It is early in the morning and you are in the process of **preparing** yourself to take a quick shower instead of a bath, just as you do everyday. |
| | | Refilling and Reusing Water Bottles | You are **refilling and reusing** plastic or glass water bottles with tap water for drinking, as you do every day. |
| Mandatory consumption | 8 | Water Meter and Form Survey | You would like to apply for a water meter. You receive a water meter pack from the water company. The pack includes an **application form** which you have to complete and return to them. You also have to go through a **free home survey** to check there are no practical limitations to fitting a meter. You must do this before a meter can be fitted for your home. |
| | | Fix Dripping Taps | You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must **repair or replace** your taps soon by DIY (Do It Yourself) or call a plumber. You must **fix the problem** before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. |

Table 5.19: Inter Judge Reliability Scores (Fourth Series)

| CC | Behaviour Setting | Consumer Situation | % of agreement | Index of concordance |
|---|---|---|---|---|
| 1 | Open | **Hybrid car** | **80%** | **0.80** |
| | | **Fuel efficient second hand car** | **80%** | **0.80** |
| 2 | Closed | Car sharing | 60% | 0.6 |
| | | **Carless** | **80%** | **0.80** |
| 3 | Open | **Energy star laptop** | **80%** | **0.80** |
| | | Heating control | 60% | 0.6 |
| 4 | Closed | Energy saving bulbs | 60% | 0.6 |
| | | **Loft insulation grant** | **100%** | **1** |
| 5 | Open | **Donate clothes** | **80%** | **0.80** |
| | | **Food waste disposal** | **100%** | **1** |
| 6 | Closed | **Waste reward** | **100%** | **1** |
| | | **Green clubcard points** | **100%** | **1** |
| 7 | Open | **Quick shower** | **100%** | **1** |
| | | **Refilling and Reusing Water Bottles** | **100%** | **1** |
| 8 | Closed | **Water Meter Form and Survey** | **80%** | **0.80** |
| | | **Fix dripping taps** | **100%** | **1** |

**Note:** Consumer situations in bold represent the acceptable level of inter judge reliability index.

The findings show that 13 out of 16 consumer situations (hybrid car, fuel efficient second hand car, carless, energy star laptop, loft insulation grant, donating clothes, food waste disposal, waste reward, green clubcard points, quick shower, refilling and reusing water bottles, water meter form and survey, fix dripping taps) produced inter judge reliability scores more than the minimum acceptable level of reliability for the percentage agreement (index of concordance). The fourth study shows that the respondents' levels of consistency for each consumer situation are between moderate to high, as predicted.

As a result, eight out of sixteen proposed environmental situations were chosen to be used for the survey. These are consumer environmental situations for hybrid car, being carless, energy star laptop, loft insulation grant, waste reward, food waste disposal, reusing water bottles and fixing dripping

taps. The main reason is that the inter judge reliability scores for this selected consumer situations were high. Table 5.20 shows the final selection of consumer environmental situations.

Table 5.20: The Eight Descriptions of Consumer Environmental Situations

| Operant Conditioning | CC | Consumer Situation | Description |
|---|---|---|---|
| Status Consumption | 1 | Hybrid Car | You are driving a brand new Toyota Prius **hybrid car** in the city with your relatives or friends. The hybrid system combines battery and petrol power so that, at low speeds, the car will run silently only on battery power. It also has the hybrid system indicator, which gives you real-time information about your driving technique. You can also show your relatives or friends exactly how the car is being powered at any point in time. With carbon emissions of just 89g/km, you pay no road tax and are exempted from congestion tax. The car is drinking more than you expected and it's cool to be green. |
| Fulfilment | 2 | Carless | You are on a **mission to cut down your driving** steadily to 50% less than your normal miles per year. In order to **achieve this mission**, you **must plan and consolidate** your trips either by walking, cycling, public transport, sharing a lift or reducing the amount of total car trips you make. You understand that being carless can help you to get fit, increase your quality of life, reduce pollution, save money and allow you to be an example to your family or friends. |
| Popular Pleasure/ Entertainment | 3 | Energy Star Laptop | You are using an **energy star laptop**. You spend a lot of time doing your work, entertainment or internet communication with your laptop. It uses 70% less electricity than computers without this designation. If left inactive, your laptop will enter a sleep mode. You can awaken your laptop in a matter of seconds by simply hitting a key on the keyboard or moving the mouse. The best part of your laptop is that not only can it save energy, but it also helps the equipment to run cooler and last longer. |
| Inescapable Pleasure/ Entertainment | 4 | Loft Insulation Grant | You are planning to install loft insulation aided by a government grant. The government has offered you at least 50% off or a free **loft insulation grant**. This means that you can install loft insulation professionally at a cheaper or even for free when compared with doing it yourself. However, you **can only use the insulation material of their choice**. You are thinking that by having the insulation, you will be able to turn the thermostat down a few degrees without being cold. You believe this is the easiest way to reduce your expensive energy bills at less/no cost and to save the environment. |

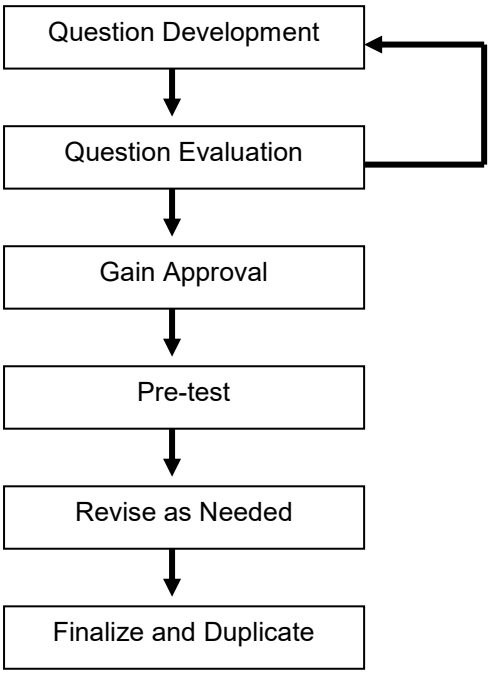
| | | | |
|---|---|---|---|
| Saving and collecting | 5 | Food Waste Disposal | You are cleaning up your kitchen after cooking or a big meal. You are **saving** all your raw or cooked **food waste** in the kitchen caddy **instead of throwing it away inside the black bags**. You only use the biodegradable bags to line your kitchen caddy. When the bag starts to get full, you tie it and put it in your green wheeled bin or white bio-bag. Later, your food waste will be **collected** by the council for **composting**. Although you are under less compulsion to do this, you are thinking this is the easiest way to support the council food waste composting campaign. Your act will also help to reduce the amount of waste going to landfill. |
| Token based consumption | 6 | Waste Reward | Imagine that your local council promote a **waste reward** (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need **to follow their waste guidelines** before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chances you will get your waste reward. |
| Routine purchasing | 7 | Refilling and Reusing Water Bottles | You are **refilling and reusing** plastic or glass water bottles with tap water for drinking, as you do every day. |
| Mandatory consumption | 8 | Fix Dripping Taps | You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must **repair or replace** your taps soon by DIY (Do It Yourself) or call a plumber. You must **fix the problem** before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. |

### 5.6.3 Designing the Survey Questionnaire

A questionnaire was the vehicle used by the researcher to: (1) translate the research objectives into specific questions, (2) standardize the feedback by respondents, (3) keep respondents motivated throughout the interview, (4) serve as permanent records of the research, (5) speed up the process of data analysis, and (6) serve as the quality control of any feedback given by the respondents (Burns and Bush, 2006). The questionnaire is indeed a very

important ingredient in the research process. Hence, it is important to have a good questionnaire design. Figure 5.1 shows the flowchart in the questionnaire design process.

Figure 5.1: Flowchart in the Questionnaire Design Process




The aim of the study was to examine consumers' environmental behaviour responses from the behaviour setting in which they took place and the pattern of reinforcement which those settings indicated. Apart from that, the study wanted to measure consumer emotional responses to descriptions of eight consumer situations. The first step in the questionnaire design is the question development. The formation of the questionnaire and consumer situations is based on the (1) findings from a preliminary study of Cardiff Consumers' Environmental Behaviour via standardized open-ended interviews, (2) findings from panel experts and (3) extensive literature review in the areas of consumer behaviour, specifically the Behavioural Perspective Model, green

consumer behaviour and Mehrabian and Russell's (1974) approach to environmental psychology, which assesses the emotional responses of individuals to descriptions of physical and social environments.

The organization of the questionnaire normally involves the introduction and question flow which focus on placing the questions developed into a logical sequence to ease respondent participation (Burns and Bush, 2006). The present questionnaire is divided into two sections:

a. **Section A**: Brief introduction, purpose and instruction of the questionnaire. It also includes the questionnaire and emotional responses that the respondents were required to fill and
b. **Section B**: Questionnaire in relation to the respondents' background.

The next step was to evaluate the questionnaire. The questions should be focused, brief, simple, and crystal clear (Burns and Bush, 2006). In addition, the question should not be leading, loaded, double-barrelled, or overstated. The present questionnaires went through the evaluation process through a panel of experts consisting of the supervisor, research ethics committee members and also a questionnaire design workshop. Approval was given by the panel experts to proceed with the survey questionnaire.

The next stage was to do a pre-test among selected respondents. This was to identify potential problems with the survey design. Details are discussed in sub-section 5.6.4. Following the pre-test, revisions were made based on the

pre-test results. Finally, the questionnaire was finalized and was ready to be tested among the actual consumers' survey.

### 5.6.4 Pre-test

Pretesting or conducting a pilot study is like a rehearsal before the actual survey. It helps researchers to find any difficulties that might emerge in wording, instructions, administration or measurement scales. Two pre-test were conducted with samples similar to those of the proposed main sample in order to validate the measurement scales. This was to know whether each of the samples had in fact understood the adjective words and the scales used in the present research. The first pre-test of the PAD scales was conducted during the preliminary interviews. Respondents were verbally asked about whether they understood the PAD measurement scales. They were provided with a show card of a list of PAD adjective words. The first pre-test was only conducted to evaluate PAD measurement scales and did not represent the final survey of the questionnaire. The findings show that explanation was needed for some of the adjectives such as 'aroused- unaroused', 'important-awed', and 'frenzied- sluggish'.

The second pre-test was conducted among 20 green and 20 non-green consumers. This involved a complete set of survey questionnaire. They were asked verbally to comment on the layout of the survey, completion time, measurement scales and wording, instruction as well as any misinterpretation of questions. The findings show that most of the respondents had no problem with the instructions and the misinterpretation of questions. Elders' responses suggested a bigger font sizes. The average completion time was within 20

minutes. Explanation was needed for some of the adjectives, such as ‘aroused- unaroused’, ‘important- awed’, and ‘controlling – controlled’. Thus, the present study used verbal explanation in order to clarify some of the adjectives. A list of adjective words with explanation is also provided on the last page of the survey questionnaire.

## 5.7 Survey Design and Data Collection

The study of consumer environmental behaviour was conducted through survey. The survey approach was found to be the most appropriate method to examine consumers’ environmental behaviour responses from the behaviour setting in which they took place and the pattern of reinforcement which those settings indicated. It was also capable of testing the research hypotheses. Key advantages of surveys include standardization, ease of administration, ability to tap the unseen, suitability for tabulation and statistical analysis, and sensitivity to subgroup differences (Burns and Bush, 2006). There are four basic survey modes: (1) person-administered surveys, (2) computer-assisted surveys, (3) self-administered surveys, and (4) mixed-mode or hybrid.

The present study used face-to-face and self-administered survey. A face-to-face survey is one in which the researcher reads questions to the respondent and records his or her answers. This type of survey offers feedback, rapport, adaptability and quality control of respondents. They also have higher feedback as compared to the telephone or mail surveys, they permit a variety of techniques to be used in the data collection (e.g. ‘show card’) and they overcome poor ability to read the language (Burns and Bush, 2006). For example, one of the respondents had a vision problem and he was interested

in participating in the survey. Hence, the best method to conduct a survey is through face- to-face. This type of survey also helps the researcher to avoid any uncompleted questionnaires. However, there are drawback of using face-to-face survey such as human error, slowness, cost, and fear of interview evaluation. Interview evaluation is the presence of another person who may create uneasiness.

A self-administered survey is where the respondent completes the survey on his or her own. This type of survey has three important advantages: reduced cost, respondent control, and no interviewer evaluation apprehension. The present study used this type of survey in order to avoid respondents giving hasty feedback. Additionally, some of the respondents requested to answer on their own. The drawbacks of self-administered surveys are lack of respondent control, lack of monitoring, and high questionnaire requirements.

As overall, the present study used survey for data collection. Previous studies of Venezuelan and English consumers also used survey (Yani-de-Soriano, 2000, Foxall, 2010a). There were many procedures involved in data collections. First, respondents were contacted directly by the researcher either through face-to-face meeting, telephone, and e-mail or contact person who acted as a gatekeeper. A short informal interview was conducted in order to screen suitable respondents for the present study. This is to ensure that respondents are people who were responsible for making decisions about their consumption of domestic electricity, water, waste disposal and private

transportation. In addition, informal interview help researcher to choose the potential green and non-green member.

Second, a brief description of the research was given to the respondents in order to get them interested in participating in the research. Third, an appointment was made and the questionnaire was completed via face-to-face or self-administered. Respondents were encouraged to feel free to ask any questions of the researcher. Fourth, as a token of appreciation, respondents were offered the opportunity to enter a lucky draw. Finally, they were asked to suggest any people who were interested in participating in the research.

Due to the length of the questionnaire, it took from 19 to 40 minutes to complete a questionnaire. However, only seven questionnaires out of 207 were discarded due to response set bias (3%). Respondents were willing to participate because they had never come across this type of questionnaire. Additionally, some of the respondents were interested to know more about the findings.

## 5.8 Ethical Issues

Discussion about ethical issues is very important in any social science research. The present study was also faced with ethical issues. In the qualitative interviews and survey questionnaires, the first ethical issue was the invasion of privacy. It is common to see that respondents refuse to answer certain questions which they do not wish to make public. For example, questions about income, age, specific beliefs or even their actual environmental behaviour. Thus, the researcher has the duty to respect

respondent's privacy and anonymity. This can be done by assuring respondents that they have the right to not answer the questions and information given will be treated as confidential and anonymous.

The next ethical issue was maintaining the confidentiality of records. This means the researcher had to be extra careful when dealing with the identities of respondents. Research findings should be clear of any individual identification. In order to overcome the confidentiality issue, respondents were informed that the published findings would not have any individual identifier.

Finally, the issue of informed consent is frequently debated within social research ethics. This is where respondents are not fully informed about the research process as well as not given the opportunity to refuse to participate. Thus, the researcher had to provide as much information as might be needed by respondents. This information would help respondents to make an informed decision as to whether or not they wished to participate in this study of consumer environmental behaviour.

In the standardized open-ended interviews, the informed consents were informed at the beginning of the interviews with reference to the purpose of the research and the ethics concerns. Respondents had to sign the consent form provided in Appendix 1. Details of the ethics form for the qualitative interviews are provided in Appendix 1.

For the survey questionnaires, respondents were not asked to give their consent directly by signing a consent form. However, consent was given once the respondents completed the questionnaires and returned it to the researcher. Furthermore, respondents were not required to provide contact details except for those who would like to enter a prize draw. Any information given will be treated as confidential and anonymous. Details of the ethics form for the survey questionnaires are shown in Appendix 2. In summary, respondents were invited to contact the researcher regarding research issues or asking for additional information.

## 5.9 Conclusion

The present study used mixed method research in order to explore and examine consumer environmental behaviour across different situations by using the BPM model. A preliminary study of Cardiff consumers' environmental behaviour via standardized interviews was conducted in order to explore their current environmental behaviour, feelings and reinforcement. Survey data were collected and analysed to assess whether consumer feedback can be predicted from their affective reactions to specific consumer environmental situations. A justification of the methodology and the rationale for the choice of Cardiff as a context for the study is explained.

Several steps to transform the data had to be taken before proceeding with quantitative data analysis in Chapter 6. Data preparation involves entering the data into the computer, checking data accuracy, transforming the data and developing a database to be used for a comprehensive data analysis. In this study, the quantitative data came from the face-to-face and self-administered

survey. These raw data were computed using a standard SPSS version 18 statistical program.

There were several steps that had to be taken before proceeding with the data analysis. First, it was necessary to reverse the coding in the summated scale before analyzing the data by using the SPSS's transform data. Table 5.21 shows the reverse adjectives of Mehrabian and Russell's PAD Scales.

Table 5.21: Reverse Adjectives of Mehrabian and Russell's PAD Scales

| Before reverse | | | After reverse | | |
|---|---|---|---|---|---|
| Guided | 1 ←→ 9 | Autonomous | Autonomous | 1 ←→ 9 | Guided |
| Bored | 1 ←→ 9 | Relaxed | Relaxed | 1 ←→ 9 | Bored |
| Unsatisfied | 1 ←→ 9 | Satisfied | Satisfied | 1 ←→ 9 | Unsatisfied |
| Unhappy | 1 ←→ 9 | Happy | Happy | 1 ←→ 9 | Unhappy |
| Sluggish | 1 ←→ 9 | Frenzied | Frenzied | 1 ←→ 9 | Sluggish |
| Unaroused | 1 ←→ 9 | Aroused | Aroused | 1 ←→ 9 | Unaroused |
| Controlled | 1 ←→ 9 | Controlling | Controlling | 1 ←→ 9 | Controlled |
| Relaxed | 1 ←→ 9 | Stimulated | Stimulated | 1 ←→ 9 | Relaxed |
| Cared for | 1 ←→ 9 | In-control | In-control | 1 ←→ 9 | Cared for |

Second, new variables had to be created for PAD variables. The 18 items were presented in random order in the questionnaire, so it was necessary to group them into three (six items each), according to the variable they were measuring. The values of the items in each group were added together, in order to obtain the independent variables (Yani-de-Soriano, 2000) .

Third, a similar procedure was followed with the dependent variables of Approach and Avoidance. The 6 items were grouped into two (three items each), according to the variable they were evaluating. Finally, Aminusa was

created by computing Approach minus Avoidance, to obtain a composite measure (Foxall, 1997a, Yani-de-Soriano, 2000). The analysis of quantitative data is presented in Chapter 6.

# CHAPTER SIX

## DATA ANALYSIS AND RESULTS

### 6.1 Introduction

This chapter presents the research findings obtained from the empirical survey of Cardiff consumers' environmental behaviour based on the Behavioural Perspective Model (BPM). Analyses were conducted for the green and non-green member as well as the combination of both samples. The idea was to find out whether there were any differences between the three groups of sample. Descriptive analyses were used early in the analysis process to describe the general pattern of responses and as a way to portray the characteristic respondent (Burns and Bush, 2006).

The next stage involved manipulating the data into a variety of different types of analysis and to test the hypotheses. Prior to conducting specific statistical analysis, it was also important to check that the data are reliable, valid and representative for the current study. An extended discussion and the interpretation of the findings will be given in Chapter 7.

This chapter is divided into eight sections. The first section describes an overview of Chapter 6 and order of presentation. The second section presents a description of the characteristics of the consumers who answered the survey. In studies involving the human, it is useful to collect information of the sample such as the sample's socio-demographic profile and any other relevant background information. This is to help the researcher to understand the characteristics of the current sample and to address specific questions

(Pallant, 2007). The statistical concepts of mean, percentage and cumulative percentage were used for the study.

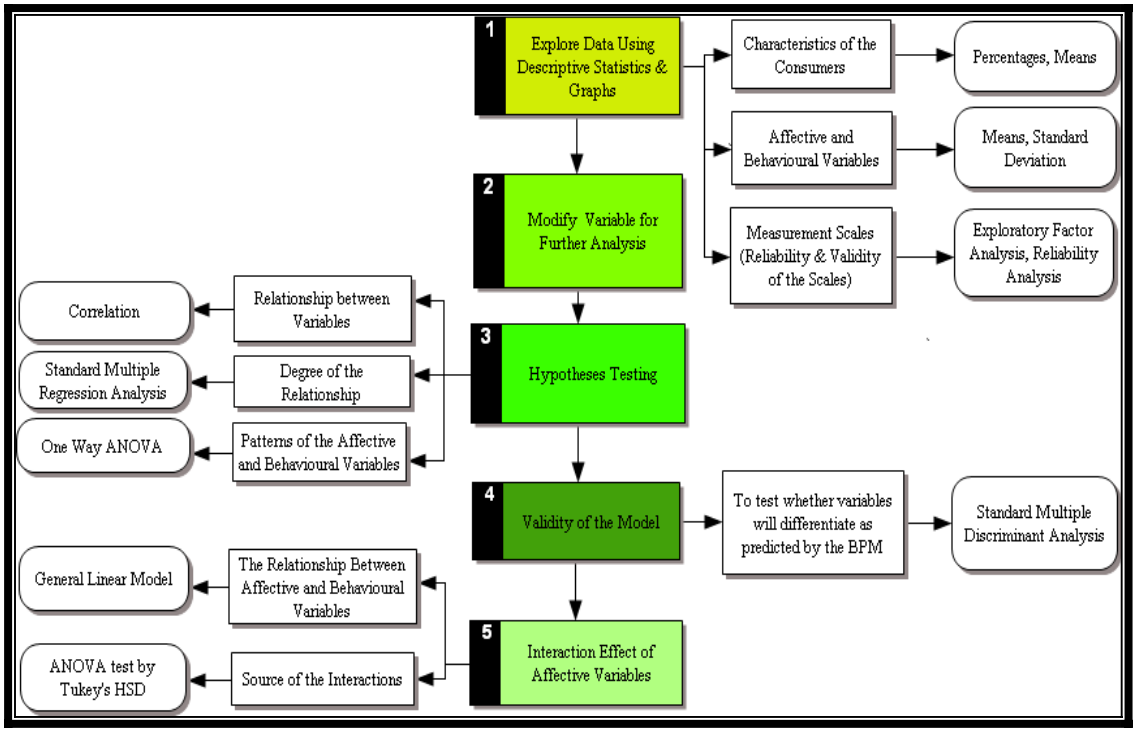
The third section presents the descriptive statistics of the variables. The variables of Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa are each calculated using means and standard deviations. The fourth section deals with the psychometric properties of the measurement scales. Analyses were conducted upon the dimensionality and reliability of the scales used in the study.

The fifth section deals with the testing of the nine research hypotheses. This includes the relationship between variables, the degree of the relationship, the patterns of the variables and the Aminusa means by the attitude variables of PAD. The sixth section is concerned with the validity of the model using the multiple discriminant analysis. This is to test whether affective and behavioural variables will differentiate among classes of the BPM. The seventh section shows the interaction effect of affective variables. Analyses were conducted in order to find out the relationship between variables and the source of the interactions. Finally, the last section includes the data analysis's conclusion.

Overall, there were a number of stages in the process of setting up a data file and analysing the data. The SPSS version 18 and its related literature were used to conduct analysis of the study (Hair et al., 1998, Bryman, 2004, Burns and Bush, 2006, Pallant, 2007). The analyses were conducted for three sub-

studies: sub-study of green members, sub-study of non-green members, and sub-study of green and non-green members. The results of each one are presented in separate tables. Figure 6.1 shows the flow chart of data analysis process which outlines the main statistical analyses used in the current research.

Figure 6.1: Flow Chart of Data Analysis Process




## 6.2 Characteristics of the Sample

This section presents the respondent's profile and other relevant background information. First, demographic characteristics of the respondents are shown in Tables 6.1, 6.2, 6.3 and 6.4. Second, the distributions of the respondent's involvement in environmental related groups or campaigns are shown in Table 6.5. Finally, the respondent's small changes in behaviour impacting on the environment are presented in Figures 6.2 and 6.3.

Table 6.1: Sub-study of Green Members: Demographic Characteristics of Respondents by Age, Ethnicity, Gender, Education and Occupation (n=100)

| Characteristics | % | Cum. % |
|---|---|---|
| **AGE (Mean 31-40)** | | |
| 20-30 | 42 | 42 |
| 31-40 | 22 | 64 |
| 41-50 | 16 | 80 |
| 51-60 | 15 | 95 |
| 60+ | 5 | 100 |
| **ETHNIC** | | |
| White | 85 | 85 |
| Mixed | 5 | 90 |
| Asian or Asian British | 7 | 97 |
| Black or Black British | 2 | 99 |
| Chinese or Chinese British | 1 | 100 |
| **GENDER** | | |
| Male | 34 | 34 |
| Female | 65 | 99 |
| Transgender | 1 | 100 |
| **EDUCATION** | | |
| High school or equivalent | 25 | 25 |
| Vocational or Technical School | 3 | 28 |
| College Graduate | 7 | 35 |
| Professional Degree | 10 | 45 |
| Bachelor Degree | 35 | 80 |
| Master | 14 | 94 |
| PhD | 5 | 99 |
| Other | 1 | 100 |
| **OCCUPATION** | | |
| Managers/ Executives | 19 | 19 |
| Professionals | 28 | 47 |
| Clerks | 8 | 55 |
| Technicians | 4 | 59 |
| Labourers | 3 | 62 |
| Self-employed | 4 | 66 |
| Others | 34 | 100 |

Table 6.2: Sub-study of Green Members: Demographic Characteristics of Respondents by Income, Household Size, Current Resident and Ownership of Private Transportation (n=100)

| Characteristics | % | Cum. % |
|---|---|---|
| **ANNUAL INCOME (N=96) (Mean= £10,000-£20,000)** | | |
| Less than £10,000 | 33 | 33 |
| £10,000- £20,000 | 30 | 64 |
| £20,001- £30,000 | 25 | 89 |
| £30,001- £40,000 | 7 | 96 |
| £40.001- £50,000 | 3 | 99 |
| More than £50,000 | 1 | 100 |
| **HOUSEHOLD SIZE** | | |
| 1 person | 24 | 24 |
| 2 person | 36 | 60 |
| More than 2 person | 40 | 100 |
| **CURRENT RESIDENT** | | |
| My own house | 40 | 40 |
| My parents' house | 12 | 52 |
| Privately rented | 34 | 86 |
| Rented from the council or housing association | 11 | 97 |
| Property owned by friends | 1 | 98 |
| Other property owned by me or my family | 1 | 99 |
| Other | 1 | 100 |
| **PRIVATE TRANSPORTATION** | | |
| Yes | 61 | 61 |
| No | 39 | 100 |
| **CHILDREN LIVING TOGETHER** | | |
| Yes | 23 | 23 |
| No | 77 | 100 |

Table 6.3: Sub-study of Non-Green Members: Demographic Characteristics of Respondents by Age, Ethnicity, Gender, Education and Occupation (n=100)

| Characteristics | % | Cum. % |
|---|---|---|
| **AGE (Mean = 31-40)** | | |
| 20-30 | 46 | 46 |
| 31-40 | 26 | 72 |
| 41-50 | 13 | 85 |
| 51-60 | 9 | 94 |
| 60+ | 6 | 100 |
| **ETHNIC** | | |
| White | 72 | 85 |
| Mixed | 1 | 90 |
| Asian or Asian British | 24 | 97 |
| Chinese or Chinese British | 1 | 99 |
| Other | 2 | 100 |
| **GENDER** | | |
| Male | 38 | 38 |
| Female | 61 | 99 |
| Transgender | 1 | 100 |
| **EDUCATION** | | |
| High school or equivalent | 22 | 22 |
| Vocational or Technical School | 7 | 29 |
| College Graduate | 16 | 45 |
| Professional Degree | 8 | 53 |
| Bachelor Degree | 21 | 74 |
| Master | 18 | 92 |
| PhD | 4 | 96 |
| Other | 4 | 100 |
| **OCCUPATION** | | |
| Managers/ Executives | 9 | 9 |
| Professionals | 21 | 30 |
| Clerks | 5 | 35 |
| Technicians | 4 | 39 |
| Labourers | 3 | 42 |
| Self-employed | 3 | 45 |
| Others | 55 | 100 |

Table 6.4: Sub-study of Non-Green Members: Demographic Characteristics of Respondents by Income, Household Size, Current Resident and Ownership of Private Transportation (n=100)

| Characteristics | % | Cum. % |
|---|---|---|
| **ANNUAL INCOME (N=98) (Mean= £10,000-£20,000)** | | |
| Less than £10,000 | 42 | 42 |
| £10,000- £20,000 | 29 | 70 |
| £20,001- £30,000 | 15 | 86 |
| £30,001- £40,000 | 7 | 93 |
| £40.001- £50,000 | 1 | 94 |
| More than £50,000 | 6 | 100 |
| **HOUSEHOLD SIZE** | | |
| 1 person | 19 | 19 |
| 2 person | 18 | 37 |
| More than 2 person | 63 | 100 |
| **CURRENT RESIDENT** | | |
| My own house | 29 | 29 |
| My parents' house | 6 | 35 |
| Privately rented | 34 | 69 |
| Rented from the council or housing association | 8 | 77 |
| Property owned by friends | 1 | 78 |
| Other property owned by me or my family | 2 | 80 |
| University/ college owned hall of resident | 15 | 95 |
| Privately owned hall of residence | 2 | 97 |
| Flat/ house owned by the university/ college | 2 | 99 |
| Other | 1 | 100 |
| **PRIVATE TRANSPORTATION** | | |
| Yes | 56 | 56 |
| No | 44 | 100 |
| **CHILDREN LIVING TOGETHER** | | |
| Yes | 33 | 33 |
| No | 67 | 100 |

For both sub-studies, the ratio of males to females was 1:2. The average respondent's age was between 31 and 40 years old and he or she typically held a bachelor degree and the majority of respondents were of white ethnicity. For the sub-study of green members, the three highest occupation categories were 'others' 34%, professional 28% and managers/executives

19%. The same categories also applied for the sub-study of non-green members whereby 'others' represent 55%, professionals 21% and managers/executives 9%. The nature of employment for the 'others' category were part-time workers, volunteers, government officials, students, housewives, pensioners and non-profit organisation workers.

The sub-studies also showed that the typical respondent's annual income was £10,000 to £20,000. This was due to employment with the non-profit organizations, volunteers and part-time workers. Six respondents opted not to mention their annual income. The largest household size for both sub-studies was more than 2 people, whereby they lived either with friends or family members. For both sub-studies, most of the respondents currently resided either at their own house or privately rented accommodation and owned private transportation. Finally, both sub-studies show that a minority of the respondents had children and were living together.

Table 6.5 shows the types of environmental related groups or campaign participated in by each of the green respondents. The people who were involved in these groups were basically those who were active members. They positioned themselves as the co-ordinator, project co-ordinator, group leaders, managers or even volunteers. They were also involved in more than one of the environmental groups or campaigns. For example, one of the female respondents was a co-ordinator for the South Splott Community and a member of the Environmental Agency as well as the School Eco-Club. One of the male respondents was a co-ordinator at Cynnal Cymru-Sustain Wales in

addition to acting as the chair of village transition group. Another female respondent also worked as a manager at Oxfam and a member of Riverside Community Garden as well as 'Freecycle'. Their commitment towards green activities had made them the winners of several green awards such as the South Splott Eco Club Local Heroes Awards 2010 and local green warrior and secured a nomination for the Wales Green List 2009/2010.

Table 6.5: Sub-study of Green Members: Types of Environmental Related Groups or Campaigns (n=100)

| Environmental Groups or Campaigns | % | Cum. % |
|---|---|---|
| BTCV | 1 | 1 |
| Action Group | 1 | 2 |
| Atlantic Wharf Girls | 1 | 3 |
| Buddhist SGI UK (Environmental) | 7 | 10 |
| Canton Community Gardens | 1 | 11 |
| Cardiff Conservation Volunteers | 3 | 14 |
| Cardiff Cycling Campaign | 2 | 16 |
| Cardiff Organic Gardeners | 1 | 17 |
| Cardiff River Group | 1 | 18 |
| Cardiff Transition Project | 6 | 24 |
| Charities | 27 | 51 |
| Cynnal Cymru- Sustain Wales | 4 | 55 |
| Environmental Wales | 2 | 57 |
| Friends of Pedal Power | 3 | 60 |
| Friends of the Earth | 3 | 63 |
| Greenpeace | 1 | 64 |
| Keep Wales Tidy | 7 | 71 |
| Park Crescent Youth Group | 1 | 72 |
| People and Planet | 2 | 74 |
| Riverside Community Garden Project | 8 | 82 |
| South Splott Community | 1 | 83 |
| Student Action For Refugees | 1 | 84 |
| Sustrans Cymru | 1 | 85 |
| UNA Exchange | 3 | 88 |
| Wildfowl and Wetland Trust | 1 | 89 |
| Work related | 11 | 100 |

Figures 6.2 and 6.3 describe people's agreement with the statement, "If you make small changes in your behaviour, it will impact the environment". The results for the sub-study of green members show that 95% of the respondents agree with the statement and 5% disagree with it. The sub-study of non-green members also produced the same results, whereby 91% agreed with the statement and 9% disagreed. Disagreeing respondents believed that changes by various parties instead of individuals would have more impact on the environment.

Figure 6.2: Sub-study of Green Members: Small Changes in Behaviour, Impacts on the Environment (n=100)

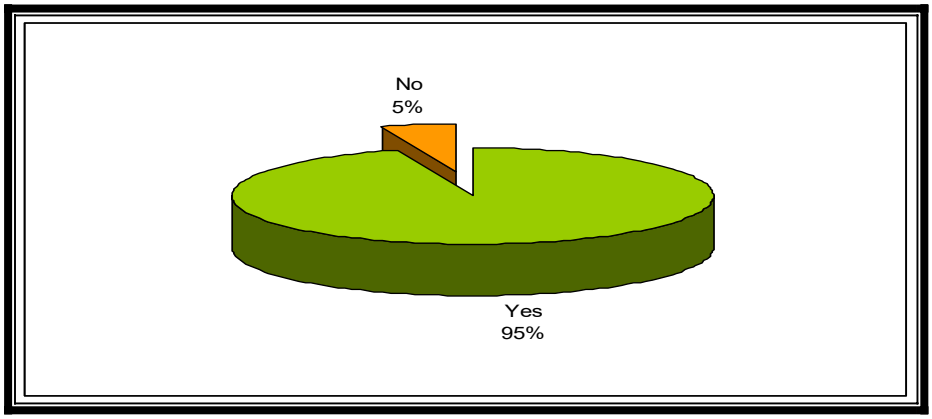
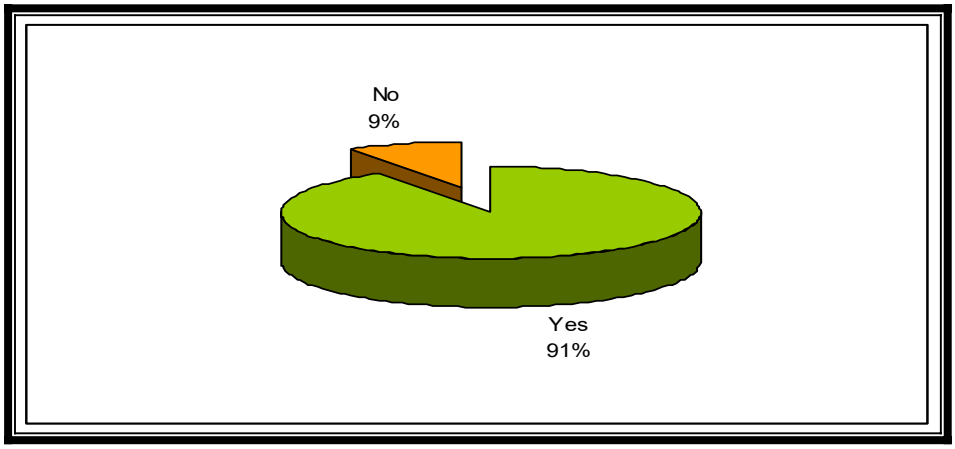



Figure 6.3: Sub-study of Non-Green Members: Small Changes in Behaviour, Impacts on the Environment (n=100)



## 6.3 Descriptive Statistics of the Variables

This section deals with the descriptive statistics of the variables used for the current study. The affective and behavioural variables were measured using the multivariate measurements also known as summated scales. This is where several individual variables are measured into a single composite measure. The objective is to avoid the use of only a single variable to represent a concept (Hair et al., 1998) A summated scale provides two specific benefits. First, it provides a means of overcoming measurement error by using multiple variables to reduce reliance on a single response. It can be said that multiple variables are able to reflect the true response more accurately than does a single response. Second, it has the ability to represent the multiple aspects of a concept in a single measure in order to obtain more well-rounded standpoints (Hair et al., 1998).

There are two stages involved in this process. First, each of the items for independent variables such as Pleasure, Arousal and Dominance, and of the dependent variables of Approach, Avoidance and Aminusa (the combined figure of Approach minus Avoidance) were calculated. Second, means and standard deviations of each variable were calculated for each of the eight contingency categories of the BPM. The eight consumer situations in the survey questionnaires signify the eight contingency categories. Results of means and standard deviations for each of the variables are shown in Tables 6.6, 6.7 and 6.8.

Table 6.6: Sub-study of Green Members: Means and Standard Deviations of Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa

| CC | Pleasure | Arousal | Dominance | Approach | Avoidance | A-A |
|---|---|---|---|---|---|---|
| 1 | 35.5 (9.99) | 31.9 (5.67) | 33.06 (6.85) | 10.89 (4.60) | 7.27 (4.89) | 3.62 (8.21) |
| 2 | 39.37 (9.21) | 33.62 (6.04) | 32.37 (8.63) | 13.31 (4.72) | 5.67 (4.50) | 7.64 (8.11) |
| 3 | 42.09 (7.71) | 29.77 (6.28) | 36.53 (7.94) | 12.65 (4.35) | 5.65 (4.14) | 7.0 (7.29) |
| 4 | 39.73 (8.24) | 29.57 (5.59) | 25.9 (7.60) | 11.65 (4.40) | 6.33 (4.45) | 5.32 (7.25) |
| 5 | 40.43 (9.35) | 32.25 (5.25) | 34.44 (7.97) | 11.99 (4.69) | 5.16 (4.27) | 6.83 (7.53) |
| 6 | 37.17 (8.95) | 33.46 (5.61) | 25.68 (8.97) | 10.99 (4.61) | 6.6 (5.06) | 4.39 (7.87) |
| 7 | 38.24 (9.07) | 26.5 (6.59) | 36.78 (7.18) | 11.25 (4.84) | 5.03 (4.94) | 6.22 (7.87) |
| 8 | 18.93 (6.88) | 28.5 (6.50) | 23.99 (7.77) | 6.53 (4.21) | 10.78 (3.93) | -4.25 (6.24) |

Table 6.7: Sub-study of Non-Green Members: Means and Standard Deviations of Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa

| CC | Pleasure | Arousal | Dominance | Approach | Avoidance | A-A |
|---|---|---|---|---|---|---|
| 1 | 36.03 (9.23) | 32.33 (6.56) | 35.05 (7.93) | 11.6 (4.49) | 6.48 (4.73) | 5.12 (7.83) |
| 2 | 38.42 (7.57) | 32.19 (5.25) | 31.5 (7.60) | 12.65 (4.03) | 6.55 (4.05) | 6.1 (7.09) |
| 3 | 42 (7.50) | 30.52 (6.07) | 37.78 (7.51) | 12.6 (3.96) | 5.24 (4.31) | 7.36 (7.06) |
| 4 | 39.52 (6.97) | 29.31 (5.84) | 26.39 (8.83) | 11.7 (4.12) | 5.97 (3.97) | 5.73 (6.80) |
| 5 | 39.15 (9.36) | 30.36 (5.67) | 35.48 (6.85) | 10.87 (5.00) | 6.12 (4.01) | 4.75 (7.14) |
| 6 | 34.61 (9.43) | 30.72 (6.26) | 25.11 (8.15) | 9.72 (4.80) | 6.88 (4.31) | 2.84 (7.76) |
| 7 | 37.65 (9.44) | 26.53 (6.61) | 38.43 (6.63) | 9.85 (4.89) | 6.07 (4.68) | 3.78 (7.03) |
| 8 | 18.70 (6.73) | 29.10 (6.88) | 24.77 (8.54) | 6.7 (4.19) | 11.15 (4.07) | -4.45 (6.71) |

Table 6.8: Sub-study of Green and Non-Green Members: Means and Standard Deviations of Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa

| CC | Pleasure | Arousal | Dominance | Approach | Avoidance | A-A |
|---|---|---|---|---|---|---|
| 1 | 35.77 (9.60) | 32.12 (6.12) | 34.06 (7.46) | 11.25 (4.55) | 6.88 (4.82) | 4.37 (8.04) |
| 2 | 38.90 (8.42) | 32.91 (5.69) | 31.94 (8.12) | 12.98 (4.39) | 6.11 (4.29) | 6.87 (7.64) |
| 3 | 42.05 (7.59) | 30.15 (6.17) | 37.16 (7.74) | 12.63 (4.15) | 5.45 (4.22) | 7.18 (7.16) |
| 4 | 39.63 (7.62) | 29.44 (5.70) | 26.15 (8.22) | 11.68 (4.25) | 6.15 (4.21) | 5.53 (7.01) |
| 5 | 39.79 (9.35) | 31.31 (5.53) | 34.96 (7.43) | 11.43 (4.87) | 5.64 (4.16) | 5.79 (7.39) |
| 6 | 35.89 (9.26) | 32.09 (6.09) | 25.40 (8.55) | 10.36 (4.74) | 6.74 (4.69) | 3.62 (7.84) |
| 7 | 37.95 (9.24) | 26.52 (6.58) | 37.61 (6.94) | 10.55 (4.90) | 5.55 (4.83) | 5.00 (7.54) |
| 8 | 18.82 (6.79) | 28.80 (6.68) | 24.38 (8.15) | 6.62 (4.19) | 10.97 (4.00) | -4.35 (6.47) |

## 6.4 Psychometric Properties of the Measurement Scales

Psychometrics is the branch of psychology that deals with the design, administration and interpretation of quantitative tests for the measurement of psychological variables (Guilford, 1954). It is primarily concerned with the construction and validation of measurement scales. This study has used summated scales to measure affective and behavioural variables. There are four basic issues to the construction of any summated scale: conceptual definition, dimensionality, reliability, and validity (Hair et al., 1998). It has been described that:

> The starting point for creating any summated scale is its conceptual definition. The conceptual definition specifies the theoretical basis for the summated scale by defining the concept being represented in terms applicable to the research context. … Dimensionality [focuses] on the items which are unidimensional meaning that they are strongly associated with each other and represent a single factor. …Reliability is an assessment of the degree of consistency between multiple measurements of a variable. …Validity is the extent to which a scale or set of measures accurately represent the concept of interest (Hair et al., 1998, pp. 117-118).

This section deals with the dimensionality and reliability of the scales used in the study.

### 6.4.1 Dimensionality of the Scales

One of the requirements for creating a summated scale is that the items are unidemensional. The appropriate statistical technique to make an empirical assessment of the dimensionality of the scales is the factor analysis (Hair et al., 1998). Factor analysis is the way to investigate whether factors might exist by analyzing the correlations between two or more variables (Brace et al., 2006). It simplifies the correlations and reveals the important information by a new, smaller set of variables. It can be said that factor analysis works as a tool of data reduction. Factor analysis is also used to identify and refine the constructs that underlie the observed variables (Pallant, 2007). The main difference between factor analysis and any other dependent techniques such as multivariate analysis of variance is in their purposes. Factor analysis is not designed for prediction purposes. This interdependent technique is used for identification of structure.

There are two main approaches to factor analysis: an exploratory one and a confirmatory one. Exploratory Factor Analysis (EFA) is often used to explore the possible interrelationships among a set of variables without imposing a preconceived structure on the outcome. Confirmatory Factor Analysis (CFA), on the other hand, is a more complex set of techniques used later in the research process to verify the factor structure and to test the hypotheses between observed variables (Pallant, 2007). Although Mehrabian and Russell's scale are well established, it is much more appropriate to use EFA.

This is because these scales have been applied in a different consumer behaviour setting than in Cardiff, Wales. Previous research has been conducted in England and Venezuela (Foxall, 1997a, Foxall, 1997b, Yani-de-Soriano et al., 2002, Yani-de-Soriano and Foxall, 2002).

Factor analysis encompasses a variety of different related techniques: Principal Component Analysis (PCA) and Factor Analysis (FA). These two sets of techniques are similar in many ways; however, they do differ in a number of ways. In PCA, the original variables are transformed into a smaller set and all of the variables are analyzed. In FA, factors are taken from a mathematical model and only the shared variance is analyzed (Tabachnick and Fidell, 1989). This study has used PCA instead of FA as PCA tends to be the most robust method. It has been stated (Stevens, 1996, cited in Pallant, 2007) that PCA is a simpler mathematical model and it avoids some of the potential problems with factor indeterminacy associated with factor analysis.

PCA also gives larger loadings than other methods (Cooper, 2002, cited in Brace et al., 2006). It can be concluded that PCA is the better choice for a simple and empirical summary of the data set (Tabachnick and Fidell, 1989). PCA and FA are two sets of techniques under factor analysis. In order to avoid confusion for this section, factor analysis is used as a general term to refer to the entire family of techniques while FA is one of the techniques in the group of factor analyses.

There are three main steps in conducting factor analysis. First, assessment of the suitability of the data for factor analysis is executed. A matrix of correlation

is generated for the entire affective variable combinations as well as the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity. These two measurements help to verify that the data set is suitable for factor analysis. The KMO value of 0.6 and above and the Bartlett's test of Sphericity should be significant ($p<0.05$) for the factor analysis to be considered appropriate (Pallant, 2007). The results of KMO and Bartlett's Test are shown in Tables 6.9, 6.10 and 6.11

Table 6.9: Sub-study of Green Members: KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .875 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 5054.800 |
| | df | 153 |
| | Sig. | p<0.001 |

Table 6.10: Sub-study of Non-Green Members: KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .880 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 5207.319 |
| | df | 153 |
| | Sig. | p<0.001 |

Table 6.11: Sub-study of Green and Non-Green Members: KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .885 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 10012.165 |
| | df | 153 |
| | Sig. | p<0.001 |

Prior to performing PCA, the suitability of data for factor analysis was assessed. The KMO value for all sub-studies exceeding the recommended value of 0.6 and Bartlett's Test of Sphericity reached statistical significance, therefore factor analysis was considered appropriate.

Second, a principal component analysis was performed to extract the factors from the correlation matrix. The aim was to determine the smallest number of factors that can be used to best represent the interrelations among variables (Pallant, 2007). Kaiser's criterion or eigenvalue rule of 1.0 or more was used to assist in the decision concerning the number of factors to maintain. The findings are shown in Tables 6.12, 6.13 and 6.14.

Table 6.12: Sub-study of Green Members: Total Variance Explained

| Compo-nent | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Varian-ce | Cumula-tive % | Total | % of Varian-ce | Cumula-tive % | Total | % of Variance | Cumula-tive % |
| 1 | 5.336 | 29.647 | 29.647 | 5.336 | 29.647 | 29.647 | 4.282 | 23.789 | 23.789 |
| 2 | 2.109 | 11.719 | 41.366 | 2.109 | 11.719 | 41.366 | 2.449 | 13.606 | 37.394 |
| 3 | 1.618 | 8.992 | 50.357 | 1.618 | 8.992 | 50.357 | 1.930 | 10.723 | 48.118 |
| 4 | 1.215 | 6.752 | 57.109 | 1.215 | 6.752 | 57.109 | 1.618 | 8.991 | 57.109 |
| 5 | .984 | 5.464 | 62.573 | | | | | | |
| 6 | .912 | 5.067 | 67.640 | | | | | | |
| 7 | .737 | 4.097 | 71.737 | | | | | | |
| 8 | .702 | 3.899 | 75.637 | | | | | | |
| 9 | .646 | 3.588 | 79.224 | | | | | | |
| 10 | .591 | 3.284 | 82.508 | | | | | | |
| 11 | .547 | 3.037 | 85.545 | | | | | | |
| 12 | .492 | 2.736 | 88.281 | | | | | | |
| 13 | .446 | 2.479 | 90.760 | | | | | | |
| 14 | .412 | 2.289 | 93.050 | | | | | | |
| 15 | .390 | 2.165 | 95.214 | | | | | | |
| 16 | .352 | 1.957 | 97.172 | | | | | | |
| 17 | .291 | 1.614 | 98.786 | | | | | | |
| 18 | .218 | 1.214 | 100.000 | | | | | | |

* Extraction Method: Principal Component Analysis

Table 6.13: Sub-study of Non-Green Members: Total Variance Explained

| Compo-nent | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumula-tive % | Total | % of Variance | Cumula-tive % | Total | % of Variance | Cumula-tive % |
| 1 | 5.366 | 29.811 | 29.811 | 5.366 | 29.811 | 29.811 | 4.276 | 23.757 | 23.757 |
| 2 | 2.096 | 11.647 | 41.458 | 2.096 | 11.647 | 41.458 | 2.836 | 15.758 | 39.515 |
| 3 | 1.906 | 10.586 | 52.044 | 1.906 | 10.586 | 52.044 | 1.961 | 10.897 | 50.412 |
| 4 | 1.167 | 6.483 | 58.527 | 1.167 | 6.483 | 58.527 | 1.461 | 8.115 | 58.527 |
| 5 | .871 | 4.840 | 63.368 | | | | | | |
| 6 | .820 | 4.555 | 67.922 | | | | | | |
| 7 | .753 | 4.183 | 72.105 | | | | | | |
| 8 | .739 | 4.104 | 76.210 | | | | | | |
| 9 | .614 | 3.410 | 79.619 | | | | | | |
| 10 | .553 | 3.074 | 82.693 | | | | | | |
| 11 | .508 | 2.824 | 85.517 | | | | | | |
| 12 | .492 | 2.733 | 88.250 | | | | | | |
| 13 | .457 | 2.540 | 90.790 | | | | | | |
| 14 | .413 | 2.297 | 93.087 | | | | | | |
| 15 | .382 | 2.124 | 95.212 | | | | | | |
| 16 | .348 | 1.933 | 97.144 | | | | | | |
| 17 | .272 | 1.514 | 98.658 | | | | | | |
| 18 | .242 | 1.342 | 100.000 | | | | | | |

* Extraction Method: Principal Component Analysis

Table 6.14: Sub-study of Green and Non-Green Members: Total Variance Explained

| Compo-nent | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumula-tive % | Total | % of Variance | Cumula-tive % | Total | % of Variance | Cumula-tive % |
| 1 | 5.322 | 29.569 | 29.569 | 5.322 | 29.569 | 29.569 | 4.283 | 23.797 | 23.797 |
| 2 | 2.091 | 11.619 | 41.188 | 2.091 | 11.619 | 41.188 | 2.702 | 15.010 | 38.807 |
| 3 | 1.757 | 9.761 | 50.949 | 1.757 | 9.761 | 50.949 | 1.811 | 10.058 | 48.866 |
| 4 | 1.174 | 6.521 | 57.470 | 1.174 | 6.521 | 57.470 | 1.549 | 8.604 | 57.470 |
| 5 | .928 | 5.154 | 62.624 | | | | | | |
| 6 | .830 | 4.614 | 67.237 | | | | | | |
| 7 | .733 | 4.073 | 71.310 | | | | | | |
| 8 | .721 | 4.006 | 75.316 | | | | | | |
| 9 | .647 | 3.596 | 78.912 | | | | | | |
| 10 | .588 | 3.266 | 82.178 | | | | | | |
| 11 | .536 | 2.979 | 85.157 | | | | | | |
| 12 | .491 | 2.726 | 87.884 | | | | | | |
| 13 | .462 | 2.569 | 90.453 | | | | | | |
| 14 | .420 | 2.332 | 92.785 | | | | | | |
| 15 | .393 | 2.183 | 94.968 | | | | | | |
| 16 | .378 | 2.099 | 97.067 | | | | | | |
| 17 | .293 | 1.627 | 98.694 | | | | | | |
| 18 | .235 | 1.306 | 100.000 | | | | | | |

* Extraction Method: Principal Component Analysis.

The eigenvalue for the sub-study of green members shows that only four components recorded eigenvalues above 1 (5.34, 2.11, 1.62 and 1.22). These four components explain a total of 57% of variance. The sub-study of non-green members shows four components recorded eigenvalues above 1 (5.37, 2.10, 1.91 and 1.17). These components explain 59% of the variance. The sub-study of green and non-green members also produced four components (5.32, 2.10, 1.76 and 1.17) and explained a total of 58% of the variance.

Finally, the factors were rotated to maximize the relationships between the variables and some of the factors. The Varimax method was used to minimise the number of variables that had high loadings on each other. This method also maintained independence among the factors. A factor loading is calculated in order to see the pattern of which variables are likely to be explained by which factor (Brace et al., 2006). Squared factor loadings indicate what percentage of the variance in an original variable is explained by a factor.

In order to test the unidemensionality, each summated scale should consist of items loading highly on a single factor. The cut-off point is statistically significant at 0.30 and above. Hair et al (1998) stated that more than 0.3 are considered to meet the minimal level, 0.4 are considered more important and the loadings that are more than 0.5 are practically important. The results of the factor analysis are shown in Tables 6.15, 6.16 and 6.17.

Table 6.15: Sub-study of Green Members: Rotated Component Matrix

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| | Pleasure | Dominance | Arousal |
| Bored-Relaxed | **0.7** | 0.2 | 0.2 |
| Unhappy- Happy | **0.8** | 0.1 | 0.1 |
| Unsatisfied-Satisfied | **0.9** | 0.2 | 0.0 |
| Annoyed- Pleased | **0.8** | 0.1 | 0.0 |
| Melancholic - Contented | **0.7** | 0.1 | 0.1 |
| Despairing - Hopeful | **0.8** | 0.1 | 0.2 |
| | | | |
| Unaroused-Aroused | **0.3** | 0.0 | **0.6** |
| Relaxed- Stimulated | -0.2 | 0.2 | **0.6** |
| Sluggish-Frenzied | 0.2 | 0.0 | **0.6** |
| Calm - Excited | -0.3 | -0.1 | **0.5** |
| Dull - Jittery | 0.1 | -0.2 | **0.6** |
| Sleepy - Wide-awake | 0.1 | 0.0 | **0.4** |
| | | | |
| Guided-Autonomous | 0.0 | **0.7** | 0.0 |
| Controlled- Controlling | 0.2 | **0.8** | 0.0 |
| Cared-for -In-control | **0.3** | **0.7** | 0.0 |
| Influenced - Influential | 0.2 | **0.6** | -0.1 |
| Awed - Important | 0.1 | 0.2 | 0.0 |
| Submissive- Dominant | 0.2 | **0.5** | 0.0 |
| Percent of Variance | 24 | 14 | 11 |

Table 6.16: Sub-study of Non-Green Members: Rotated Component Matrix

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| | Pleasure | Dominance | Arousal |
| Bored-Relaxed | **0.8** | 0.2 | 0.2 |
| Unhappy-Happy | **0.8** | 0.2 | 0.1 |
| Unsatisfied-Satisfied | **0.9** | 0.2 | 0.1 |
| Annoyed- Pleased | **0.9** | 0.1 | 0.0 |
| Melancholic - Contented | **0.7** | 0.1 | 0.0 |
| Despairing - Hopeful | **0.8** | 0.1 | 0.0 |
| | | | |
| Unaroused- Aroused | 0.2 | 0.0 | **0.7** |
| Relaxed-Stimulated | -0.1 | 0.0 | **0.7** |
| Sluggish-Frenzied | 0.1 | 0.0 | **0.7** |
| Calm - Excited | -0.3 | -0.1 | 0.1 |
| Dull - Jittery | 0.2 | 0.1 | **0.5** |
| Sleepy - Wide-awake | 0.2 | 0.1 | **0.4** |
| | | | |
| Guided-Autonomous | -0.1 | **0.6** | 0.0 |
| Controlled- Controlling | 0.2 | **0.8** | 0.1 |
| Cared-for - In-control | 0.2 | **0.7** | 0.2 |
| Influenced - Influential | 0.2 | **0.7** | -0.1 |
| Awed - Important | **0.3** | **0.4** | 0.0 |
| Submissive- Dominant | 0.2 | **0.7** | 0.0 |
| Percent of Variance | 24 | 16 | 11 |

Table 6.17: Sub-study of Green and Non-Green Members: Rotated Component Matrix

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| | Pleasure | Dominance | Arousal |
| Bored-Relaxed | **0.7** | 0.2 | 0.2 |
| Unhappy- Happy | **0.8** | 0.1 | 0.1 |
| Unsatisfied-Satisfied | **0.9** | 0.2 | 0.1 |
| Annoyed- Pleased | **0.8** | 0.1 | 0.0 |
| Melancholic - Contented | **0.7** | 0.1 | 0.0 |
| Despairing - Hopeful | **0.8** | 0.1 | 0.1 |
| | | | |
| Unaroused-Aroused | **0.3** | 0.0 | **0.6** |
| Relaxed- Stimulated | -0.2 | 0.1 | **0.7** |
| Sluggish-Frenzied | 0.2 | 0.0 | **0.6** |
| Calm - Excited | -0.3 | -0.1 | 0.2 |
| Dull - Jittery | 0.2 | 0.0 | **0.5** |
| Sleepy - Wide-awake | 0.2 | 0.0 | **0.3** |
| | | | |
| Guided-Autonomous | -0.1 | **0.7** | 0.0 |
| Controlled- Controlling | 0.2 | **0.8** | 0.1 |
| Cared-for -In-control | 0.2 | **0.7** | 0.1 |
| Influenced - Influential | 0.2 | **0.7** | -0.1 |
| Awed - Important | 0.2 | **0.3** | -0.1 |
| Submissive- Dominant | 0.2 | **0.6** | -0.1 |
| Percent of variance | 24 | 15 | 10 |

In all sub-studies the same factors emerged. Three out of four components were found reflecting the Mehrabian and Russell PAD scales. The components can be thought of as representing the scales: component 1- Pleasure; component 2- Dominance; component 3 - Arousal. Overall, factor 1 explains 24% of the variance in Pleasure; factor 2 explains between 14 to 16% of the variance in Dominance; and factor 3 accounts for between 10 and 11% of the variance in Arousal.

In the sub-study of green members, 6 items of Pleasure were identified as loading heavily (> 0.50). 5 out of 6 items for Dominance were also identified as loading heavily (≥ 0.50), and most of these items were in the range of 0.5 to 0.8. However, one of the items related to Dominance ‘awed- important’ did not produce accepted factor loading and scored only 0.2. This problem is

often expected and it is the job of the researcher to interpret whether to accept this item or not. One item related to Dominance ‘cared for-in-control’ also loaded on Pleasure (factor 1) at the accepted level of 0.30. All 6 items of Arousal (factor 3) were identified as loading heavily (≥ 0.40), and most of these items were in the range of 0.4 to 0.6. One item related to arousal ‘unaroused-aroused’ also loaded on Pleasure (factor 1) at the accepted level of 0.30.

In the sub-study of non-green members, 6 items of Pleasure and 6 items of Dominance were identified as loading heavily (> 0.40). One item related to Dominance ‘awed-important’, loaded on Pleasure (factor 1) at the accepted label of 0.30. 5 out of 6 items for Arousal were also identified as loading heavily (≥ 0.40), and most of these items were in the range of 0.4 to 0.7. However, one of the items related to Arousal ‘calm-excited’ did not produce accepted factor loading and scored only 0.1.

In the sub-study of green and non-green members, 6 items of Pleasure were identified as loading heavily (> 0.50), and most of these items were in the range of 0.7 to 0.9. Six items for Dominance were identified loading at the accepted level (≥ 0.30). 5 out of 6 items for Arousal were also identified loading at the accepted level (≥ 0.30), and in the range of 0.3 to 0.7. One item related to Arousal ‘unaroused-aroused’ also loaded on Pleasure (factor 1) at the accepted level of 0.30. However, one of the items related to Arousal ‘calm- excited’ did not produce accepted factor loading and score only 0.2.

As overall, a few items (4 out of 18) showed accepted loadings on factor 1. However, these items were assigned to factor 2 and 3 in view of their considerably higher loadings on this factor. Two items related to Arousal and Dominance loaded below the accepted level. First, in the sub-study of green members, 'awed- important' loaded 0.2 in factor 2. However, the same item loaded at the accepted level in the sub-study of non-green members (0.4) as well as the sub-study of green and non-green members (0.3). Second, 'calm-excited' loaded 0.1 on factor 3 for the sub-study of non-green members and 0.2 for the sub-study of green and non-green members. However, the same item loaded at the accepted level in the sub-study of green members (0.5). These two items were also accepted because the similar accepted results being obtained in sub-studies, thus validating those of the unaccepted results.

### 6.4.2 Reliability of the Scales

Reliability refers to the consistency of a measure or the correlation of an item, scale or instrument with a hypothetical one (Cherry, 2010). Reliability can be estimated in one of four ways: internal consistency, split-half reliability, test-retest reliability, and inter-rater reliability. In this study, the internal consistency was used to assess the scales. The rationale behind this test is that if items within a scale are intended to measure aspects of the same construct, then they should all be fairly strongly correlated with each other (Brace et al., 2006). It could be said that this form of reliability is used to judge the consistency of results across items on the same test (Cherry, 2010).

Cronbach's alpha was used to assess the internal consistency. It is the most common form of internal consistency reliability coefficient (Hair et al., 1998).

The cut off criteria can exceed 0.50 which follows the rule of thumb. A lenient cut-off of 0.60 or 0.70 is more common in exploratory research (Hair et al., 1998). Tables 6.18, 6.19 and 6.20 show the results for each sub-study.

Table 6.18: Sub-study of Green Members: Internal Consistency of the Affective and Behavioural Variables

| Variables | Number of items | Cronbach's alpha |
|---|---|---|
| Pleasure | 6 | 0.9 |
| Arousal | 6 | 0.6 |
| Dominance | 6 | 0.8 |
| Approach | 3 | 0.6 |
| Avoidance | 3 | 0.7 |

Table 6.19: Sub-study of Non-Green Members: Internal Consistency of the Affective and Behavioural Variables

| Variables | Number of items | Cronbach's alpha |
|---|---|---|
| Pleasure | 6 | 0.9 |
| Arousal | 6 | 0.6 |
| Dominance | 6 | 0.8 |
| Approach | 3 | 0.7 |
| Avoidance | 3 | 0.7 |

Table 6.20: Sub-study of Green and Non-Green Members: Internal Consistency of the Affective and Behavioural Variables

| Variables | Number of items | Cronbach's alpha |
|---|---|---|
| Pleasure | 6 | 0.9 |
| Arousal | 6 | 0.6 |
| Dominance | 6 | 0.8 |
| Approach | 3 | 0.6 |
| Avoidance | 3 | 0.7 |

In summary, all of the affective and behavioural variables have good internal consistency, with Cronbach's alpha coefficients reported between 0.6 and 0.9. This means that the scales used in the current study are reliable.

## 6.5 Hypotheses Testing

This section deals with hypotheses testing and results. A hypothesis test is a statistical procedure used to accept or reject the hypothesis based on sample information (Burns and Bush, 2006). Table 6.21 shows nine full statements of the research hypotheses. These hypotheses are based on the relationship between emotions and the patterns of contingency with which they are associated as defined by the BPM. Table 6.21 summarizes the research hypotheses of the BPM Contingencies with affective and behavioural variables.

Table 6.21: Hypotheses

| | |
|---|---|
| H1 | Affective variables of Pleasure, Dominance and Arousal will each have a positive relationship with Approach. |
| H2 | Affective variables of Pleasure, Arousal and Dominance will each have a negative relationship with Avoidance. |
| H3 | Affective variables of Pleasure, Arousal and Dominance will each have a positive relationship with Aminusa, the net difference between Approach and Avoidance. |
| H4 | Pleasure will be higher for responses associated with consumer situations maintained by high levels of utilitarian reinforcement than for those maintained by low levels of utilitarian reinforcement. |
| H5 | Arousal will be higher for responses associated with consumer situations maintained by high levels of informational reinforcement than for those maintained by low levels of informational reinforcement. |
| H6 | Dominance will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H7 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations maintained by Accomplishment and Hedonism rather than for those maintained by Accumulation and Maintenance. |
| H8 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H9 | Aminusa (Approach- Avoidance) will be determined by the attitude variables Pleasure, Arousal and Dominance. |

Table 6.22: The BPM Contingency Category Matrix with PAD and Approach / Avoidance Levels of Response (HIGHER/ lower)

| CB SETTING / OPERANT CONDITIONING | CLOSED | OPEN |
|---|---|---|
| **ACCOMPLISHMENT**<br>(high utilitarian,<br>high informational) | **CC2**<br>**FULFILMENT**<br><br>**PLEASURE**<br>**AROUSAL**<br>Dominance<br>**APPROACH**<br>Avoidance | **CC1**<br>**STATUS CONSUMPTION**<br><br>**PLEASURE**<br>**AROUSAL**<br>**DOMINANCE**<br>**APPROACH**<br>Avoidance |
| **HEDONISM/PLEASURE**<br>(high utilitarian,<br>low informational) | **CC4**<br>**INESCAPABLE PLEASURE**<br><br>**PLEASURE**<br>Arousal<br>Dominance<br>**APPROACH**<br>Avoidance | **CC3**<br>**POPULAR PLEASURE**<br><br>**PLEASURE**<br>Arousal<br>**DOMINANCE**<br>**APPROACH**<br>Avoidance |
| **ACCUMULATION**<br>(low utilitarian,<br>high informational) | **CC6**<br>**TOKEN-BASED CONSUMPTION**<br><br>Pleasure<br>**AROUSAL**<br>Dominance<br>Approach<br>**AVOIDANCE** | **CC5**<br>**SAVING AND COLLECTING**<br><br>Pleasure<br>**AROUSAL**<br>**DOMINANCE**<br>Approach<br>**AVOIDANCE** |
| **MAINTENANCE**<br>(low utilitarian,<br>low informational) | **CC8**<br>**MANDATORY CONSUMPTION**<br><br>Pleasure<br>Arousal<br>Dominance<br>Approach<br>**AVOIDANCE** | **CC7**<br>**ROUTINE CONSUMPTION / PURCHASING**<br><br>Pleasure<br>Arousal<br>**DOMINANCE**<br>Approach<br>**AVOIDANCE** |

(Foxall, 1997a, Foxall, 2011)

This section is organized into four major sub-studies. First, sub-section 6.5.1 shows the findings for three hypotheses: H1, H2, and H3 which assess the relationship between affective and behavioural variables by using correlation analysis. Second, sub-section 6.5.2 shows the results of H1, H2 and H3 for the degree of the relationship between variables using the standard multiple regression analysis. Third, sub-section 6.5.3 highlights the outcome for H4 to H8 which assess the patterns of the variables by using one-way ANOVAs.

Finally, sub-section 6.5.4 reveals the findings for H9 which assess the Aminusa (Approach-Avoidance) means by the attitude variables Pleasure, Arousal and Dominance. The standard multiple regression analyses were conducted to test H9.

### 6.5.1 The Relationship Between Affective and Behavioural Variables

This sub-section aims to test the relationship between affective and behavioural variables which involve three hypotheses: H1, H2 and H3. Pearson product-moment correlation (r) is used to describe the strength and direction of the linear relationship between variables (Pallant, 2007). It is designed for interval level (continuous) variables which is appropriate for use in the current study. A correlation of 0 indicates no relationship, a correlation of 1.0 indicates a perfect positive correlation and a correlation of -1.0 indicates a perfect negative correlation.

Preliminary analyses for correlation were conducted using scatterplot in order to check for violation of the assumptions of linearity and homoscedasticity. There are many ways to interpret preliminary analysis. First, if the data points spread all over the place, this suggests a very low correlation. If the points are neatly arranged in a narrow cigar shape, this suggests quite strong correlation.

Second, if there is a straight line through the main cluster of points, it means the Pearson correlation can be used and will not violate the linearity assumption. However, if a curved line is evidence of a curvilinear relationship then the Pearson correlation should not be used. Finally, if the shape is even

from one end to the other and then starts to narrow and become fatter, then this analysis violates the assumption of homoscedasticity. The homoscedasticity should show a fairly even cigar shape along its length. Figures 6.4, 6.5 and 6.6 show preliminary analyses of affective and behavioural variables for correlation. All of the preliminary analyses of variables for correlation show no violation of the assumptions of linearity and homoscedasticity.

Figure 6.4: Sub-study of Green Members: Preliminary Analysis of Affective and Behavioural Variables for Correlation

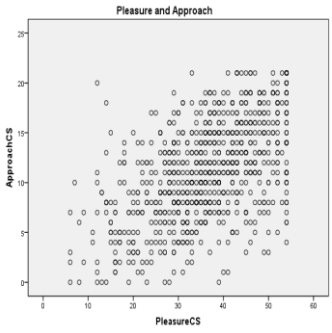
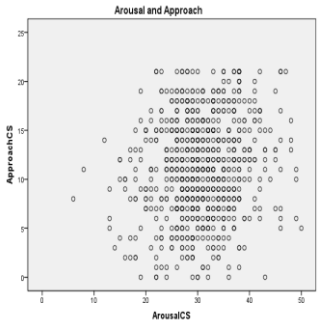
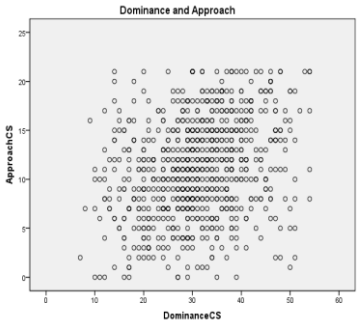
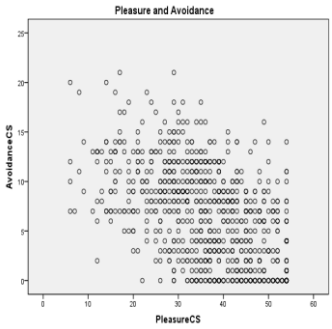
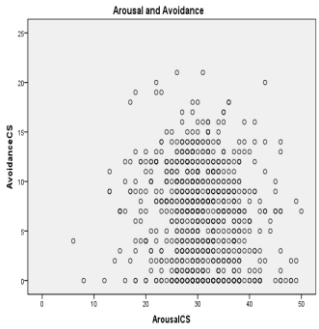
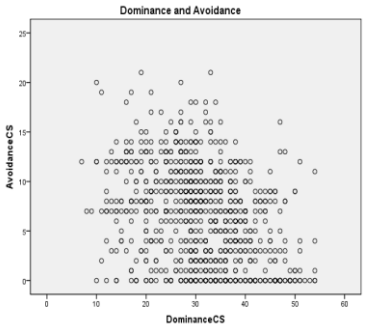
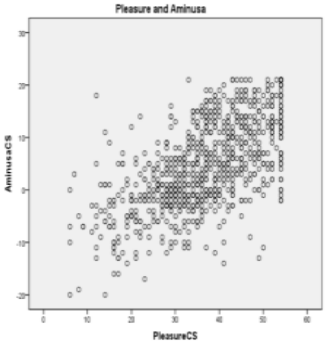
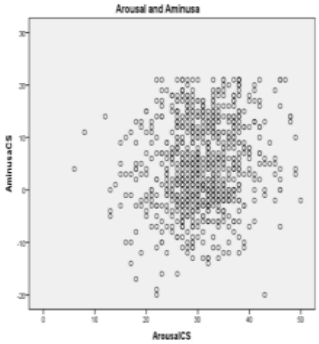
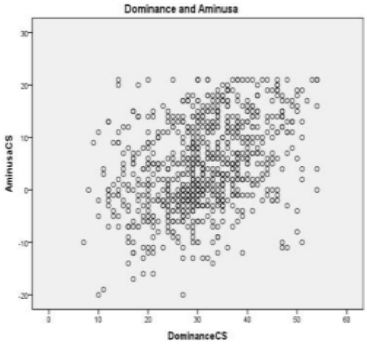
| **Pleasure vs. Approach vs. Avoidance vs. Aminusa** | **Arousal vs. Approach vs. Avoidance vs. Aminusa** | **Dominance vs. Approach vs. Avoidance vs. Aminusa** |
|---|---|---|
|   |   |   |
|   |   |   |
|   |   |   |

Figure 6.5: Sub-study of Non-Green Members: Preliminary Analysis of Affective and Behavioural Variables for Correlation

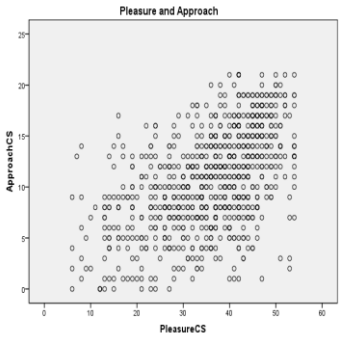
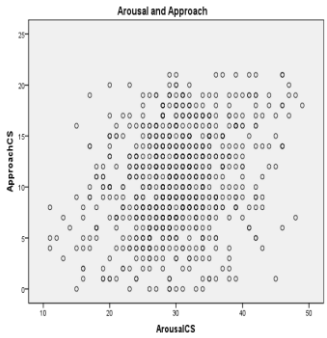
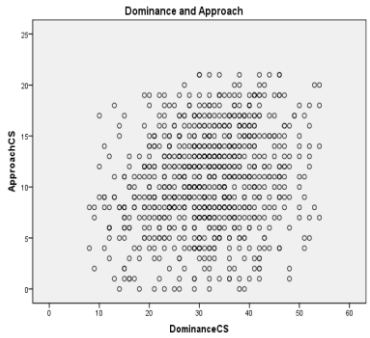
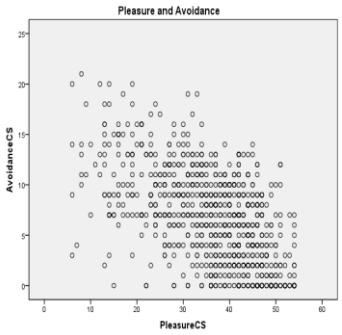
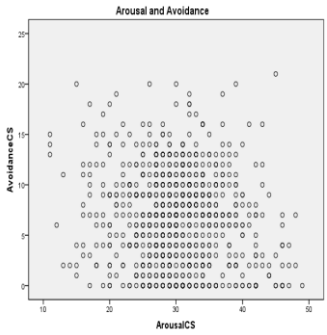
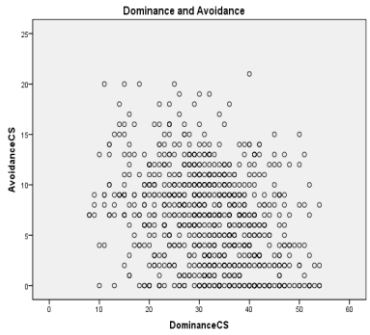
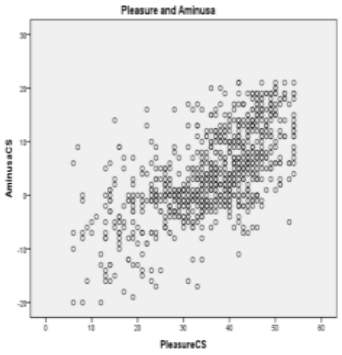
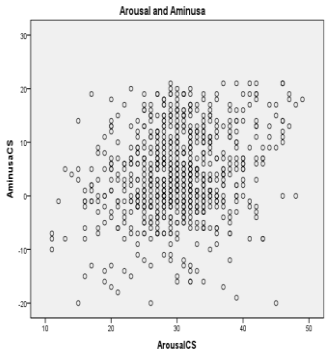
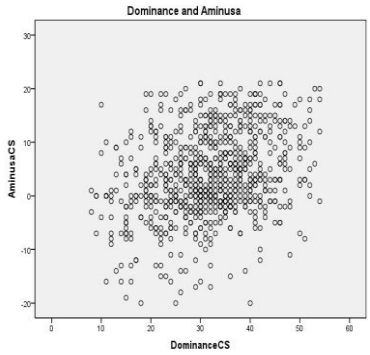
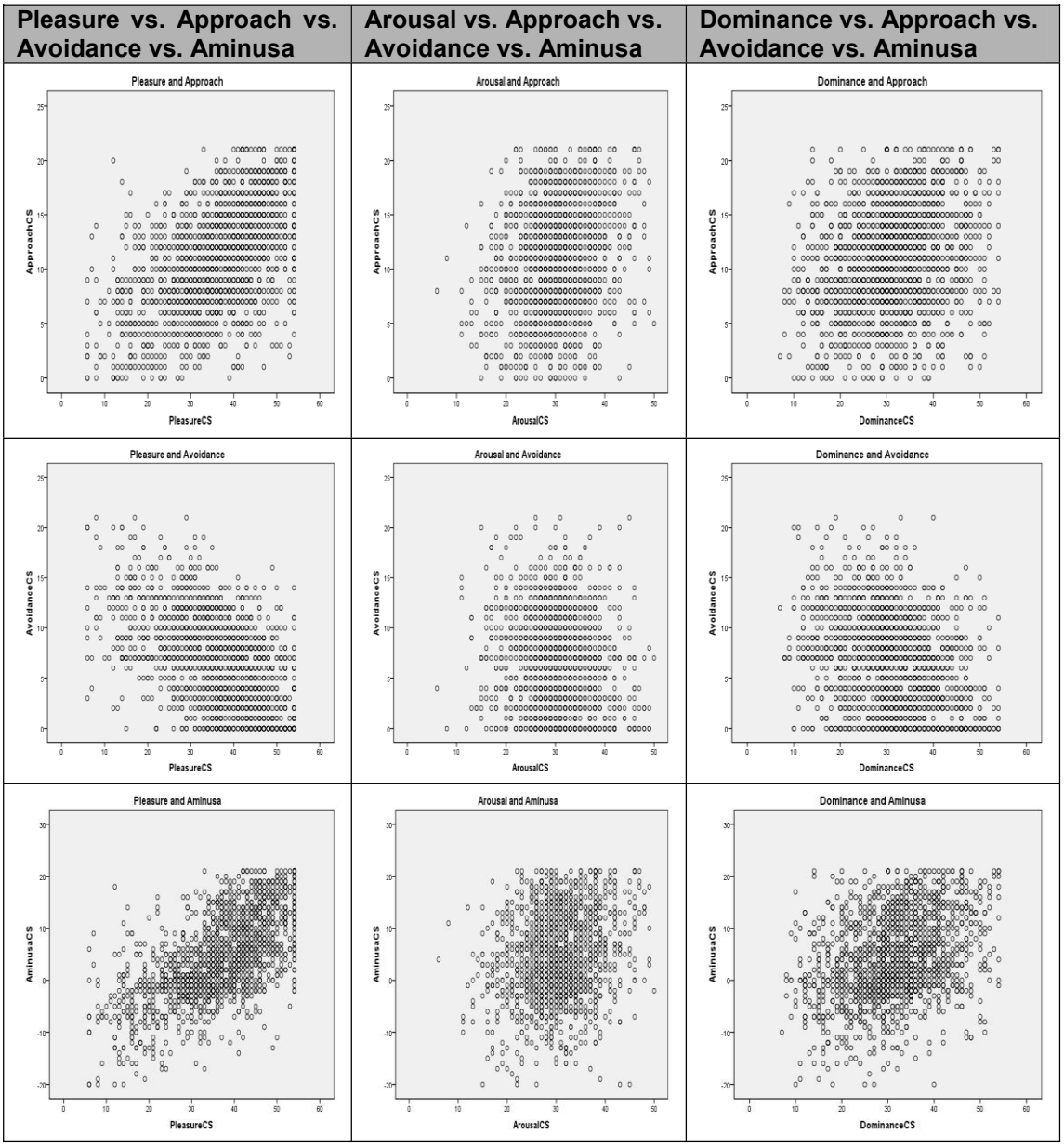
| **Pleasure vs. Approach vs. Avoidance vs. Aminusa** | **Arousal vs. Approach vs. Avoidance vs. Aminusa** | **Dominance vs. Approach vs. Avoidance vs. Aminusa** |
|---|---|---|
|   |   |   |
|   |   |   |
|   |   |   |

Figure 6.6: Sub-study of Green and Non-Green Members: Preliminary Analysis of Affective and Behavioural Variables for Correlation




Once the data have been checked for the distribution of scores on the scatterplot, the studies proceed with the Pearson Correlation analysis. One-tail tests of significance were executed because the specified direction of the relations between the variables is explicitly stated in the research hypotheses. The strength of the relationship can be interpreted as shown in Table 6.23.

Table 6.23: Interpretation of Pearson Correlation (r)

| r values | Strength of the relationship |
|---|---|
| 0 | No relationship |
| .10 to .29 or -.10 to -.29 | Small |
| .30 to .49 or .-30 to -.49 | Medium |
| .50 to 1.0 or -.50 to -1.0 | Large |

(Cohen, 1988, cited in Pallant, 2007, p. 126)

Tables 6.24, 6.25, and 6.26 present the matrix of Pearson's Correlation Coefficient among the affective and behavioural variables.

Table 6.24: Sub-study of Green Members: Pearson's Correlation Matrix (in N=800, one-tailed in all cases)

| | | Approach | Avoidance | Aminusa | Pleasure | Arousal | Dominance |
|---|---|---|---|---|---|---|---|
| Approach | r<br>Sig. | - | -.460**<br><0.001 | .857**<br><0.001 | .537**<br><0.001 | .157**<br><0.001 | .284**<br><0.001 |
| Avoidance | r<br>Sig. | | - | -.852**<br><0.001 | -.515**<br><0.001 | -.099*<br>.003 | -.331**<br><0.001 |
| Aminusa | r<br>Sig. | | | - | .616**<br><0.001 | .150**<br><0.001 | .360**<br><0.001 |
| Pleasure | r<br>Sig. | | | | - | .195**<br><0.001 | .428**<br><0.001 |
| Arousal | r<br>Sig. | | | | | - | .041<br>.125 |
| Dominance | r<br>Sig. | | | | | | - |

*. Correlation is significant at p< 0.01.
**. Correlation is significant at p< 0.001.

Table 6.25: Sub-study of Non-Green Members: Pearson's Correlation Matrix (in N=800, one-tailed in all cases)

| | | Approach | Avoidance | Aminusa | Pleasure | Arousal | Dominance |
|---|---|---|---|---|---|---|---|
| Approach | r<br>Sig. | - | -.428**<br><0.001 | .853**<br><0.001 | .518**<br><0.001 | .280**<br><0.001 | .216**<br><0.001 |
| Avoidance | r<br>Sig. | | - | -.837**<br><0.001 | -.555**<br><0.001 | -.108*<br>.001 | -.290**<br><0.001 |
| Aminusa | r<br>Sig. | | | - | .634**<br><0.001 | .232**<br><0.001 | .299**<br><0.001 |
| Pleasure | r<br>Sig. | | | | - | .211**<br><0.001 | .384**<br><0.001 |
| Arousal | r<br>Sig. | | | | | - | .147**<br><0.001 |
| Dominance | r<br>Sig. | | | | | | - |

*. Correlation is significant at p< 0.01.
**. Correlation is significant at p< 0.001.

Table 6.26: Sub-study of Green and Non-Green Members: Pearson's Correlation Matrix (in N=1600, one-tailed in all cases)

| | | Approach | Avoidance | Aminusa | Pleasure | Arousal | Dominance |
|---|---|---|---|---|---|---|---|
| Approach | r<br>Sig. | - | -.445**<br><0.001 | .855**<br><0.001 | .528**<br><0.001 | .219**<br><0.001 | .248**<br><0.001 |
| Avoidance | r<br>Sig. | | - | -.845**<br><0.001 | -.534**<br><0.001 | -.105**<br><0.001 | -.309**<br><0.001 |
| Aminusa | r<br>Sig. | | | - | .625**<br><0.001 | .191**<br><0.001 | .327**<br><0.001 |
| Pleasure | r<br>Sig. | | | | - | .204**<br><0.001 | .404**<br><0.001 |
| Arousal | r<br>Sig. | | | | | - | .092**<br><0.001 |
| Dominance | r<br>Sig. | | | | | | - |

**. Correlation is significant at p< 0.001.

In all sub- studies, the correlation between Approach and PAD is positive, the correlation between Avoidance and PAD is negative, and the correlation between Aminusa and PAD is positive. Pleasure shows the highest association with Approach, compared to Arousal and Dominance. Pleasure

also shows the highest association with Avoidance, compared to Arousal and Dominance. All coefficients of correlation between the affective and behavioural variables are highly significant ($p<0.01$ and $p<0.001$ one tailed) except for the correlation of Dominance and Arousal for the sub-study of green members.

In all sub-studies, the relationship between Pleasure and Arousal with Approach is stronger than Avoidance. The results also show that in all sub-studies, the relationship between Dominance and Avoidance is stronger than Approach. In all sub-studies, the correlations found between predictors (PAD) are moderate, which is less than 0.5. This is in the range of coefficient of collinearity level 1. Collinearity is described as 'the expression of the relationship between two (collinearity) or more (multicollinearity) independent variables' (Hair et al., 1998, p. 143). It could cause a loss in power for the predictors and it makes interpretation more difficult. However, a moderate level of collinearity is not serious and normally seen in behavioural studies in marketing (Mason and Perfeault(Jr.), 1991). Therefore, the inter-relations found are not sufficiently high to breach Mehrabian and Russell's assumptions of orthogonality (statistically independent) of the affective variables.

The analysis of relationship between variables provides support for H1, H2 and H3. These hypotheses are all accepted for all sub-studies. The findings also show that affective and behavioural variables are highly significant at $p< 0.01$ and $p< 0.001$.

### 6.5.2 The Degree of the Relationship Between Affective and Behavioural Variables

This section deals with the degree of the relationship between affective and behavioural variables. The aims of this research are: (1) to determine how well the independent variables collectively explain the variance in each of the dependent variables, and (2) to determine the relative importance of each of the independent variables in the prediction of each of the dependent variables. A model was built for each of the sub-studies using three independent variables (PAD) in order to assess the relationship with the three dependent variables of Approach, Avoidance and Aminusa. Multiple regression analysis was used to explore the relationship between one continuous dependent variable and a number of independent variables or predictors.

Multiple regression was employed as this analysis can identify how well a set of variables is able to predict a particular outcome. In addition, this analysis is able to provide information on which variable in a set of variables is the best predictor of an outcome. Multiple analyses also can be used to identify whether a particular predictor variable is still capable of predicting an outcome when the effects of another variable are controlled (Pallant, 2007).

In general, there are three types of multiple regression analysis. First, in standard multiple regression, all the independent variable are entered into the equation simultaneously. Second is the hierarchical multiple regression analysis that enters all the independent variables into the equation in the order specified by the researcher based on the theoretical grounds. Third is

the stepwise multiple regression in which the researcher provides SPSS with a list of independent variables and then allows the program to select which variables it will enter and in which order they go into the equation, based on a set of statistical criteria.

In this research, the standard multiple regression analysis was used to compute the multiple regression equation. It can be said that this analysis is the most commonly used multiple regression analysis (Pallant, 2007). The drawback of hierarchical methods is that the predictor variables are entered into the model by the order specified by the researcher. Thus, if the researcher has no reason to believe that one variable is likely to be more important than another, the researcher ought not use this method (Brace et al., 2006).

Although stepwise multiple regression has been used in many ecological and behavioural studies, the biases of this type of regression are well established within the statistical literature (Whittingham et al., 2006). The drawbacks include bias in parameter estimation that is carried out on the same data which can lead to biases in parameters, over fitting and incorrect significance tests. Another problem is that inconsistencies result among model selection algorithms (forwards selection, backward elimination or stepwise) which makes it difficult to interpret the quality of the selected model. This model also has a problem of inappropriate focus or reliance on a single best model. Although one model may be selected, other models may have a similarly good fit (Whittingham et al., 2006).

The first task before starting a multiple regression is to measure sample size and multicollinearity. There are different guidelines concerning the number of cases required for multiple regression. It has been said (Stevens, 1996, cited in Pallant, 2007, p. 148) that 'for social science research, about 15 subjects per predictor are needed for a reliable equation'. Authors (Tabachnick and Fidell, 2007, cited in Pallant, 2007, p. 148) stated a formula for calculating sample size whereby 'N>50 +8m, m is independent variables'. The current research has three independent variables; therefore, N should be more than 98 cases (N>98). It can be concluded that the current sample size did not violate the sample size required for multiple regression analysis.

Next is to assess multicollinearity, the presence of high correlations between independent variables, by inspecting a correlation matrix between independent variables. Findings from the previous Tables 6.24, 6.25 and 6.26 show that independent and dependent variables illustrate some relationship. Correlation between each of the independent variables is not too high (r< .7). SPSS also performs 'collinearity diagnostic' on variables which can pick up on problems with multicollinearity that may not be evident in the correlation matrix. The findings show that for all sub-studies, no tolerance value falls below 0.1 and no VIF (Variance Inflation Factor) exceeds 10. Thus, the current sub-studies have not violated the multicollinearity assumption.

In all sub-studies, all variables were executed using the standard multiple regression analysis. The standard regression coefficient or beta coefficient (β) is used to measure how strongly each predictor variable influences the

criterion variable. Adjusted $R^2$ is calculated which takes into account the number of predictor variables in the model and the number of observations that the model is based on (Brace et al., 2006). This Adjusted $R^2$ value indicates the percentage of the variance of the dependent (behavioural) variables that is explained by the independent (affective) variables. Tables 6.27, 6.28 and 6.29 show the results of standard multiple regression analyses for each sub-study.

Table 6.27: Sub-study of Green Members: Multiple Regression Analysis

| Model | $F_{3,800}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Approach =** | 111.35 | <0.001 | .29 | | | | |
| **P** | | | | .50 | <0.001 | .79 | 1.3 |
| **+** | | | | | | | |
| **A** | | | | .06 | .058 | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .07 | .035 | .82 | 1.2 |
| **Avoidance =** | 103.30 | <0.001 | .28 | | | | |
| **P** | | | | -.46 | <0.001 | .79 | 1.3 |
| **+** | | | | | | | |
| **A** | | | | **-.01** | **.879** | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | -.14 | <0.001 | .82 | 1.2 |
| **Aminusa =** | 171.13 | <0.001 | .39 | | | | |
| **P** | | | | .56 | <0.001 | .79 | 1.3 |
| **+** | | | | | | | |
| **A** | | | | **.04** | **.193** | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .12 | <0.001 | .82 | 1.2 |

Table 6.28: Sub-study of Non-Green Members: Multiple Regression Analysis

| Model | $F_{3,800}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Approach =** | 112.91 | <0.001 | .30 | | | | |
| **P** | | | | .48 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .18 | <0.001 | .95 | 1.1 |
| **+** | | | | | | | |
| **D** | | | | **.01** | **.837** | .85 | 1.2 |
| **Avoidance =** | 122.12 | <0.001 | .31 | | | | |
| **P** | | | | -.52 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | **.02** | **.608** | .95 | 1.1 |
| **+** | | | | | | | |
| **D** | | | | -.09 | .004 | .85 | 1.2 |
| **Aminusa =** | 188.25 | <0.001 | .41 | | | | |
| **P** | | | | .59 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .10 | <0.001 | .95 | 1.1 |
| **+** | | | | | | | |
| **D** | | | | .06 | .053 | .85 | 1.2 |

Table 6.29: Sub-study of Green and Non-Green Members: Multiple Regression Analysis

| Model | $F_{3,1600}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Approach =** | 221.07 | <0.001 | .29 | | | | |
| **P** | | | | .49 | <0.001 | .81 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .12 | <0.001 | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | **.04** | **.084** | .84 | 1.2 |
| **Avoidance =** | 223.77 | <0.001 | .30 | | | | |
| **P** | | | | -.49 | <0.001 | .81 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | **.01** | **.790** | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | -.11 | <0.001 | .84 | 1.2 |
| **Aminusa =** | 357.05 | <0.001 | .40 | | | | |
| **P** | | | | .58 | <0.001 | .81 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .07 | .001 | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .09 | <0.001 | .84 | 1.2 |

In the sub- study of green members, PAD collectively explains 29% of the variance in Approach, 28% of the variance in Avoidance and 39% of the variance in Aminusa. In the sub-study of non-green members, the Adjusted $R^2$

illustrates a larger percentage of variance in the behavioural variable than in the sub-study of green members. The findings explain 30% of the variance in Approach, 31% of variance in Avoidance and 41% of variance in Aminusa. For the sub-study of green and non-green members, the model explains 29% of the variance in Approach, 30% of the variance in Avoidance and 40% of the variance in Aminusa. These percentages are highly significant ($p<0.001$). As overall, Pleasure has the largest and strongest beta value. This means that Pleasure for each sub-study makes the strongest unique contribution to explain the dependent variables.

For the sub-study of green members, Arousal variable for model Avoidance and Aminusa does not make a significant unique contribution to the prediction of the dependent variables ($p>0.05$). For the sub-study of non-green members, Dominance variable for model Approach as well as Arousal for model Avoidance do not make a significant unique contribution to the prediction of the dependent variables ($p>0.05$). For the sub- study of green and non-green members, Dominance variable for model Approach as well as Arousal for model Avoidance does not make a significant unique contribution to the prediction of the dependent variable ($p>0.05$). This may be due to overlap with other independent variables in the model. In conclusion, the standard multiple regression analysis provides support for the results of H1, H2 and H3 from the previous analysis.

### 6.5.3 The Patterns of the Affective and Behavioural Variables

This section deals with the patterns of the affective and behavioural variables raised by the BPM. There are three hypotheses (H4, H5 and H6) involved in

order to test the patterns of the affective variables and two hypotheses (H7 and H8) for the patterns of the behavioural variables. One-way Analysis of Variance (ANOVA) followed by Tukey's HSD is used to test these hypotheses.

ANOVA is a statistical method used to determine whether the means of a variable differ from one group of observations to another (Iversen and Norpoth, 1976). ANOVA instead of t tests is used for the current study as it can compare two or more treatment conditions and several dependent variables, whereas t tests are limited to two treatment conditions (Burns and Burns, 2008). In addition, ANOVA instead of t tests has more advantages in terms of helping to protect against a Type 1 and Type 2 error (Field, 2000). A Type 1 error involves rejecting the null hypothesis (e.g. there are no differences among the groups) when it is actually true (Pallant, 2007). A Type 2 error is the retention of the null hypotheses when in fact it should be rejected.

One-way ANOVA involves one independent variable which has a number of different levels. This statistics technique is appropriate to test the assumption that the means of Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa will be different for each of the eight contingency categories (CCs) as predicted by the BPM. An F ratio is calculated which represents the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups than there is within each group. A significant F test indicates that the null

hypotheses can be rejected. Tables 6.30, 6.31, and 6.32 show the results of the one-way ANOVA for affective variables. Tables 6.33, 6.34 and 6.35 show the results for behavioural variables. As overall, the ANOVAs show the main effects that are highly significant (p<0.001) for each of the CCs.

Table 6.30: Sub-study of Green Members: Analysis Of Variance of the Affective Variables

| Variables | d.f. | F7,800 | Significant |
|---|---|---|---|
| Pleasure | 7 | 71 | <0.001 |
| Arousal | 7 | 18 | <0.001 |
| Dominance | 7 | 43 | <0.001 |

Table 6.31: Sub-study of Non-Green Members: Analysis Of Variance of the Affective Variables

| Variables | d.f. | F7,800 | Significant |
|---|---|---|---|
| Pleasure | 7 | 75 | <0.001 |
| Arousal | 7 | 9 | <0.001 |
| Dominance | 7 | 54 | <0.001 |

Table 6.32: Sub-study of Green and Non-Green Members: Analysis Of Variance of the Affective Variables

| Variables | d.f. | F7,1600 | Significant |
|---|---|---|---|
| Pleasure | 7 | 146 | <0.001 |
| Arousal | 7 | 24 | <0.001 |
| Dominance | 7 | 95 | <0.001 |

Table 6.33: Sub-study of Green Members: Analysis Of Variance of the Behavioural Variables

| Variables | d.f. | F7,800 | Significant |
|---|---|---|---|
| Approach | 7 | 20 | <0.001 |
| Avoidance | 7 | 17 | <0.001 |
| Aminusa | 7 | 26 | <0.001 |

Table 6.34: Sub-study of Non-Green Members: Analysis Of Variance of the Behavioural Variables

| Variables | d.f. | F7,800 | Significant |
|---|---|---|---|
| Approach | 7 | 19 | <0.001 |
| Avoidance | 7 | 18 | <0.001 |
| Aminusa | 7 | 26 | <0.001 |

Table 6.35: Sub-study of Green and Non-Green Members: Analysis Of Variance of the Behavioural Variables

| Variables | d.f. | F7,1600 | Significant |
|---|---|---|---|
| Approach | 7 | 38 | <0.001 |
| Avoidance | 7 | 34 | <0.001 |
| Aminusa | 7 | 49 | <0.001 |

Although ANOVA provides results to reject the null hypotheses, it does not provide specific information about which group were affected (Hair et al., 1998, Field, 2000). Hence, post hoc tests were designed to provide information on the differences in means among groups, and to help protect against a Type 1 error. The major post hoc tests are Tukey's Honestly Significant Difference (HSD), Bonferroni and the Games-Howell procedure. However, Tukey's HSD was used for this research because it is more powerful when there are a number of comparisons with samples that are very similar in size. This is because the Bonferroni is only suitable to use if there are only a few comparisons while the Games-Howell procedure is only suitable when variance differs (Burns and Burns, 2008). Additionally, it is strongly recommended to use Tukey's HSD test because 'if there are eight or more means to compare, this test is the best procedure for controlling error rate' (Howell, 1987, cited in Yani-de-Soriano, 2000, p. 127).

Thus, this study used Tukey's HSD in order to determine the differences in means among the contingency categories for each of the affective and behavioural variables as well as to examine the pattern of these variables. This can be done by looking at the table of multiple comparisons that identify which categories are significantly higher than the other. The asterisks (*) next

to the value listed indicate that the two groups being compared are significantly different from one another.

It is possible to determine the effect size of the post hoc results by using the Eta Squared. SPSS does not generate this analysis. However, it can be done by dividing the sum of squares between groups by the total sum of squares. It has been stated that the Eta value of 0.01 classifies as a small effect, 0.06 as a medium effect and 0.14 as a large effect (Cohen, 1998, cited in Pallant, 2007, pp. 207- 208).

In this study, there were five hypotheses that needed to be tested (H4, H5, H6, H7 and H8). Three hypotheses (H4, H5 and H6) required that the pattern of differences of each of the variables be tested among the other two variables. The rationale behind this analysis is to detect whether the observed pattern in each independent variable is unique to that variable (Yani-de-Soriano, 2000).

**1) The Pleasure hypothesis – (1, 2, 3, 4 > 5, 6, 7, 8)**

The Pleasure hypothesis of means (1, 2, 3, 4 > 5, 6, 7, 8) was tested among the Pleasure, Arousal and Dominance means. The results for each of sub-study are shown in Tables 6.36, 6.37 and 6.38, respectively.

Table 6.36: Sub-study of Green Members: Analysis of Pleasure Means (F7, 800 = 71.02 p<0.001)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | **1 > 8 but = 6,7 and < 5**<br>**2 > 8 but =5,6,7**<br>**3 > 6,7,8 but = 5**<br>**4 > 8, but =5,6,7** |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1 > 8 but = 7 and < 3,4<br>2 > 8 but = 3,4,7<br>5 > 8 but = 3,4,7<br>6 > 8 but = 4,7 < 3 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1 > 8 but = 6 < 2,4<br>3 > 6,8 but = 2,4<br>5 > 8 but = 2,4,6<br>7 > 8 but = 2,4,6 |

Figure 6.7: Sub- study of Green Members: Pleasure Means

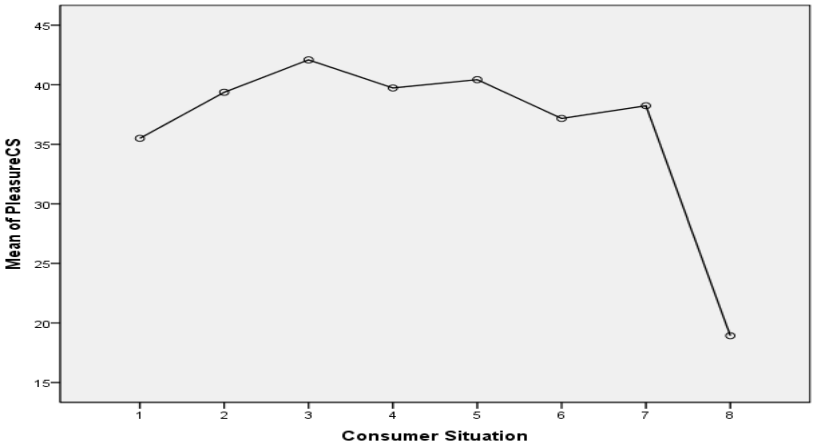



Table 6.36 shows the analysis of means for the sub-study of green members. CCs 1, 2, 3 and 4 illustrate higher means than CC 8. CC 1 shows significantly lower mean than CC 5 and is not significantly different from CCs 6 and 7. CC 2 and CC 4 also show no significant difference from those of CCs 5, 6 and 7. CC 3 demonstrates higher mean than CCs 7 and 8, but is not significantly different from CC 5. All the results will be discussed in detail in Chapter 7. The actual difference in the Pleasure means scores of the green members was very large. This is evident from the large effect size obtained (eta squared = 0.4). A graphical interpretation of the results is presented in Figure 6.7.

Table 6.37: Sub-Study of Non-Green Members: Analysis of Pleasure Means ($F_{7, 800} = 75.26$ $p<0.001$)

| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | **1 > 8 but = 5,6,7**<br>**2, 4 > 6, 8 but = 5,7**<br>**3 > 6,7,8 but = 5** |
|---|---|---|---|
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1 > 8 but = 4,7 < 3<br>2, 5 > 8 but = 3,4,7<br>6 > 8 but = 7 < 3,4 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1, 7 > 8 but = 2,4,6<br>3, 5 > 6,8 but = 2,4 |

Figure 6.8: Sub- study of Non-Green Members: Pleasure Means

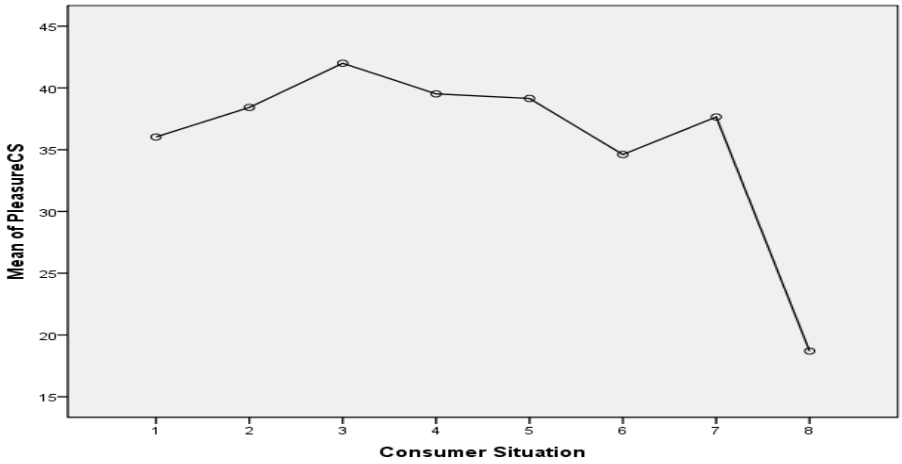



Table 6.37 shows the analysis of means for the sub-study of non-green members. CC 1 shows significantly higher mean than CC 8 and is not significantly different from CCs 5, 6 and 7. CCs 2 and 4 also illustrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. CC 3 shows significantly higher mean than CCs 6, 7 and 8, but is not significantly different from CC 5. The actual difference in the Pleasure means scores of the non-green members was very large. This is evident from the large effect size obtained (eta squared = 0.4). A graphical interpretation of the results is presented in Figure 6.8.

Table 6.38: Sub-study of Green and Non-Green Members: Analysis of Pleasure Means (F7, 1600= 145.60 p<0.001)

| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | **1 > 8 but = 6,7 <5**<br>**2, 4 > 6,8 but = 5,7**<br>**3 > 6,7,8 but =5** |
|---|---|---|---|
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1,6 > 8 but = 7 < 3,4<br>2 > 8 but = 4,7 < 3<br>5 > 8 but = 3,4,7 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1 > 8 but = 6 < 2,4<br>3 > 2,6,8 but = 4<br>5 > 6,8 but = 2,4<br>7 > 8 but = 2,4,6 |

Figure 6.9: Sub- study of Green and Non Green Members: Pleasure Means

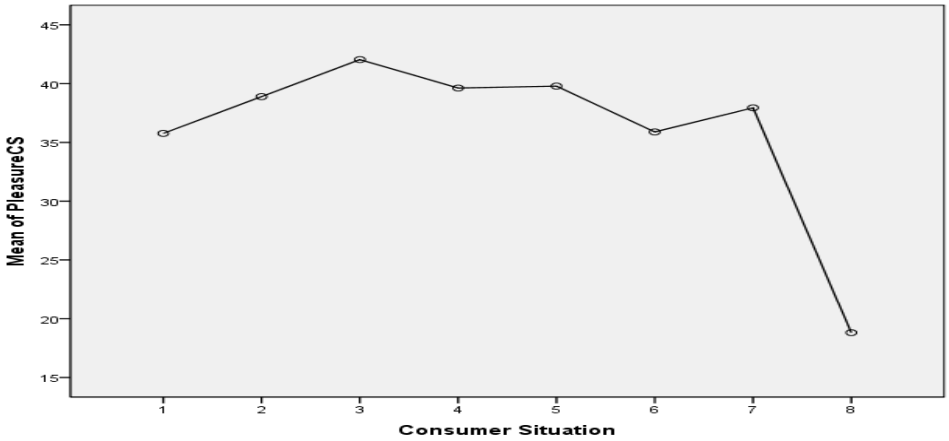



Table 6.38 shows the analysis of means for the sub-study of green and non-green members. CC 1 shows significantly higher mean than CC 8 and is not significantly different from CCs 6 and 7. Additionally, CC 1 also shows significantly lower mean than CC 5. CCs 2 and 4 illustrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. CC 3 shows significantly higher mean than CCs 6, 7 and 8, but is not significantly different from CC 5. The actual difference in the Pleasure means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.4). A graphical interpretation of the results is presented in Figure 6.9.

**2) The Arousal hypothesis – (1, 2, 5, 6 > 3, 4, 7, 8)**

The Arousal hypothesis of means (1, 2, 5, 6 > 3, 4, 7, 8) was tested among the Pleasure, Arousal and Dominance means. The results for each of the sub-studies are shown in Tables 6.39, 6.40 and 6.41, respectively.

Table 6.39: Sub-study of Green Members: Analysis of Arousal Means ($F_{7, 800} = 17.96$ $p<0.001$)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1, 2 > 7,8 but = 5,6<br>3 > 7 but = 5,8 < 6<br>4 > 7 but = 8 < 5,6 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | **1 > 7,8 but = 3,4**<br>**2,6 > 3,4,7,8**<br>**5 > 4,7,8 but = 3** |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1 > 8 but = 2,4,6<br>3 = 4,8 but < 2,6<br>5 > 4,8 but = 2,6<br>7 < 2,4,6 but = 8 |

Figure 6.10: Sub- study of Green Members: Arousal Means

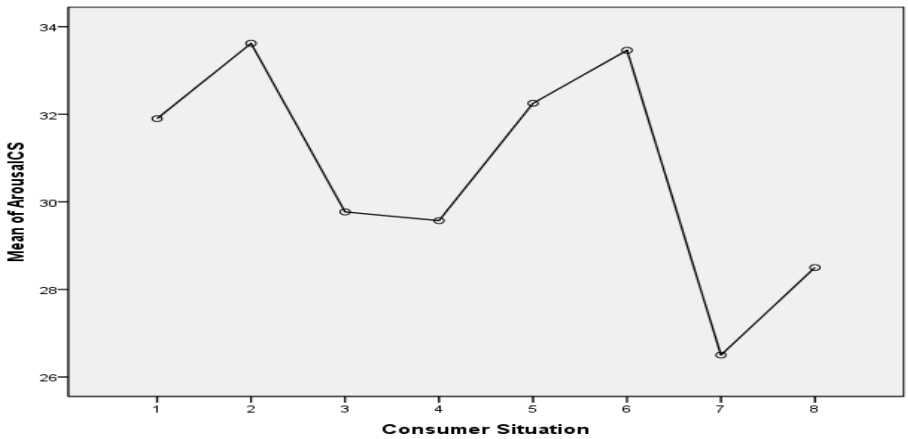



Table 6.39 shows the analysis of means for the sub-study of green members. CC 1 illustrates higher mean than CCs 7 and 8, but is not significantly different from CCs 3 and 4. CCs 2 and 6 show significantly higher means than CCs 3, 4, 7 and 8. CC 5 also shows higher mean than CCs 4, 7 and 8, but is not significantly different from CC 3. All the results are discussed in detail in

Chapter 7. The actual difference in the Arousal means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.1). A graphical interpretation of the results is presented in Figure 6.10.

Table 6.40: Sub-study of Non-Green Members: Analysis of Arousal Means ($F_{7, 800} = 9.14$ $p<0.001$)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1,2 > 7,8 but = 5,6<br>3,4 > 7 but = 5,6 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | **1,2 > 4,7,8 but = 3**<br>**5, 6 > 7 but = 3,4,8** |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1 > 4,8 but = 2,6<br>3, 5 = 2,4,6,8<br>7 < 2,4,6 but = 8 |

Figure 6.11: Sub- study of Non-Green Members: Arousal Means

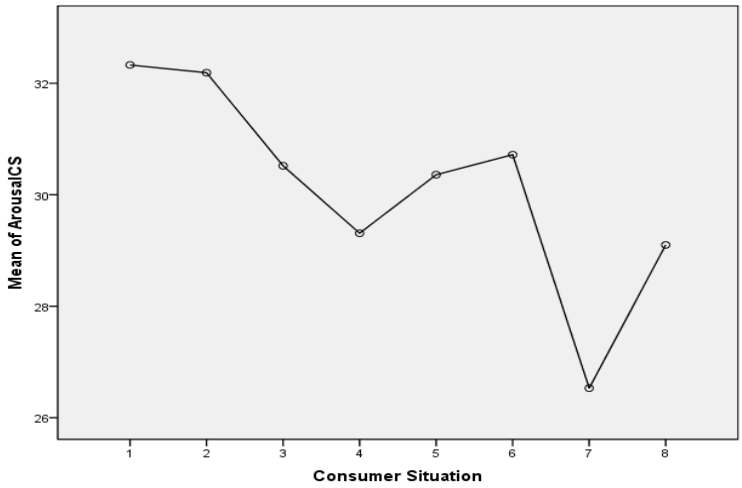



Table 6.40 shows the analysis of means for the sub-study of non-green members. CCs 1 and 2 show significantly higher means than CCs 4, 7 and 8, but are not significantly different from CC 3. CCs 5 and 6 also illustrate higher means than CC 7, but are not significantly different from CCs 3, 4 and 8. The actual difference in the Arousal means scores of the groups was very large.

This is evident from the large effect size obtained (eta squared = 0.1). A graphical interpretation of the results is presented in Figure 6.11.

Table 6.41: Sub-Study of Green and Non-Green Members: Analysis of Arousal Means (F7, 1600= 24.34 p<0.001)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1,2 > 7,8 but = 5,6<br>3 > 7 but = 5,8 < 6<br>4 > 7 but = 8 < 5,6 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | **1,2,6 > 3,4,7,8**<br>**5 > 4,7,8 but = 3** |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | 1 > 4,8 but = 2,6<br>3 < 2,6 but = 4,8<br>5 > 4,8 but = 2,6<br>7 < 2,4,6,8 |

Figure 6.12: Sub- study of Green and Non-Green Members: Arousal Means

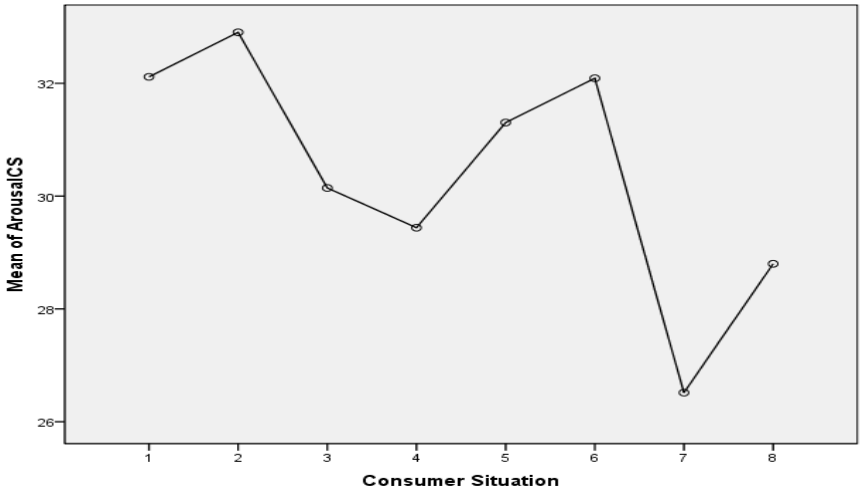



Table 6.41 shows the analysis of means for the sub-study of green and non-green members. CCs 1, 2 and 6 show significantly higher means than CCs 3, 4, 7 and 8. CC 5 illustrates higher mean than CCs 4, 7 and 8, but is not significantly different from CC 3. The actual difference in the Arousal means scores of the groups was very large. This is evident from the large effect size

obtained (eta squared = 0.1). A graphical interpretation of the results is presented in Figure 6.12.

**3) The Dominance hypothesis – (1, 3, 5, 7 > 2, 4, 6, 8)**

The Dominance hypothesis of means (1, 3, 5, 7 > 2, 4, 6, 8) was tested among the Pleasure, Arousal and Dominance means. The results for each of sub-study are shown in Tables 6.42, 6.43 and 6.44, respectively.

Table 6.42: Sub-study of Green Members: Analysis of Dominance Means (F7, 800 = 42.52 p<0.001)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1,2 > 6,8 but = 5 < 7<br>3 > 6,8 but = 5,7<br>4 < 5,7 but = 6,8 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1,2 > 4,8 but < 3,7<br>5 > 4,8 but = 3,7<br>6 < 3,7 but = 4,8 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | **1,5 > 4,6,8 but = 2**<br>**3,7 > 2,4,6,8** |

Figure 6.13: Sub- study of Green Members: Dominance Means


Table 6.42 shows the analysis of means for the sub-study of green members. CCs 1 and 5 illustrate higher means than CCs 4, 6 and 8, but are not

significantly different from CC 2. CCs 3 and 7 show significantly higher means than CCs 2, 4, 6 and 8. All the results are discussed in detail in Chapter 7. The actual difference in the Dominance means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.3). A graphical interpretation of the results is presented in Figure 6.13.

Table 6.43: Sub-study of Non-Green Members: Analysis of Dominance Means ($F_{7, 800} = 53.55$ $p<0.001$)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1 > 6,8 but = 5 < 7<br>2 > 6,8 but < 5,7<br>3 > 6,8 but = 5,7<br>4 < 5,7 but = 6,8 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1 > 4,8 but = 3 < 7<br>2 > 4,8 but < 3,7<br>5 > 4,8 but = 3,7<br>6 < 3,7 but = 4,8 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | **1,3,5,7 > 2,4,6,8** |

Figure 6.14: Sub- study of Non-Green Members: Dominance Means

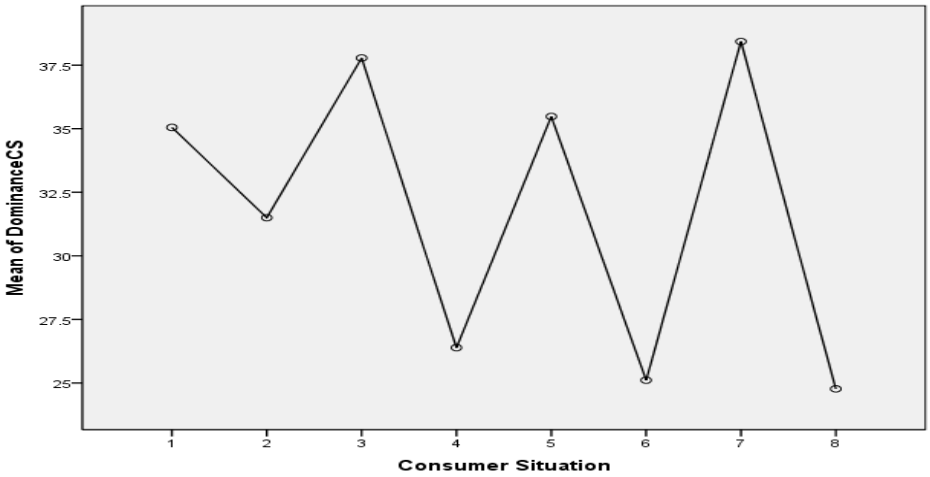



Table 6.43 shows the analysis of means for the sub-study of non-green members. CCs 1, 3, 5 and 7 show significantly higher means than CCs 2, 4, 6 and 8. The actual difference in the Dominance means scores of the groups was very large. This is evident from the large effect size obtained (eta

squared = 0.3). A graphical interpretation of the results is presented in Figure 6.14.

Table 6.44: Sub-study of Green and Non-Green Members: Analysis of Dominance Means (F7, 1600= 95.03 p<0.001)

| | | | |
|---|---|---|---|
| Pleasure | CCs | 1,2,3,4 > 5,6,7,8 | 1 > 6,8 but = 5 < 7<br>2 > 6,8 but < 5,7<br>3 > 6,8 but = 5,7<br>4 < 5,7 but = 6,8 |
| Arousal | CCs | 1,2,5,6 > 3,4,7,8 | 1,2 > 4,8 but < 3,7<br>5 > 4,8 but = 3 < 7<br>6 < 3,7 but = 4,8 |
| Dominance | CCs | 1,3,5,7 > 2,4,6,8 | **1 > 4,6,8 but = 2**<br>**3,5,7 > 2,4,6,8** |

Figure 6.15: Sub- study of Green and Non-Green Members: Dominance Means

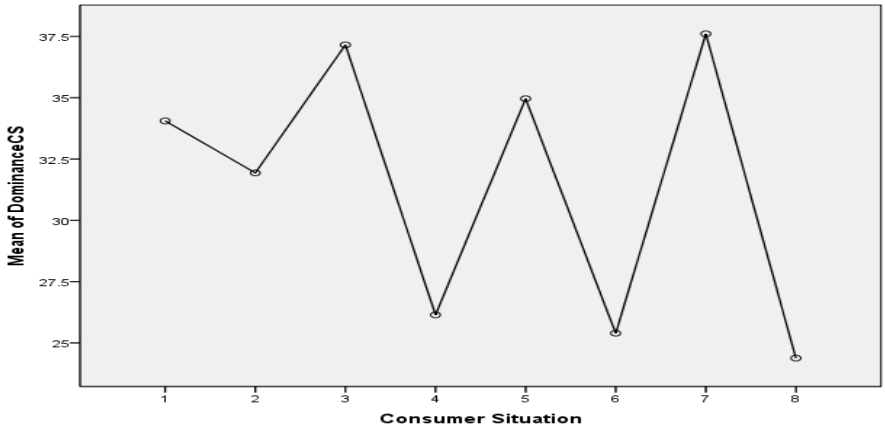



Table 6.44 shows the analysis of means for the sub-study of green and non-green members. CC 1 shows significantly higher mean than CCs 4, 6 and 8, but is not significantly different from CC 2. CCs 3, 5 and 7 illustrate higher mean than CCs 2, 4, 6 and 8. The actual difference in the Dominance means scores of the groups was very large. This is evident from the large effect size

obtained (eta squared = 0.3). A graphical interpretation of the results is presented in Figure 6.15.

**4) The Aminusa Hypotheses**

There are two hypotheses involved for Aminusa: H7 and H8. The aim was to test whether Aminusa will be higher for responses associated with Accomplishment and Hedonism versus Accumulation and Maintenance (1, 2, 3, 4 > 5, 6, 7, 8). This study also tested whether Aminusa will be different between the openness and closeness of the consumer behaviour setting (1, 3, 5, 7 > 2, 4, 6, 8). The results for each of the sub-studies are shown in Tables 6.45, 6.46, and 6.47, respectively.

Table 6.45: Sub-study of Green Members: Analysis of Aminusa Means (F7, 800 = 25.54 p<0.001)

| Variable | Hypotheses | Predicted Contingency Categories | Results |
|---|---|---|---|
| Aminusa | 7 | 1,2,3,4 > 5,6,7,8 | **1,2,3,4 > 8 but = 5,6,7** |
| Aminusa | 8 | 1,3,5,7 > 2,4,6,8 | **1 > 8 but = 4,6 < 2**<br>**3, 5, 7 > 8 but = 2,4,6** |

Figure 6.16: Sub- study of Green Members: Aminusa Means

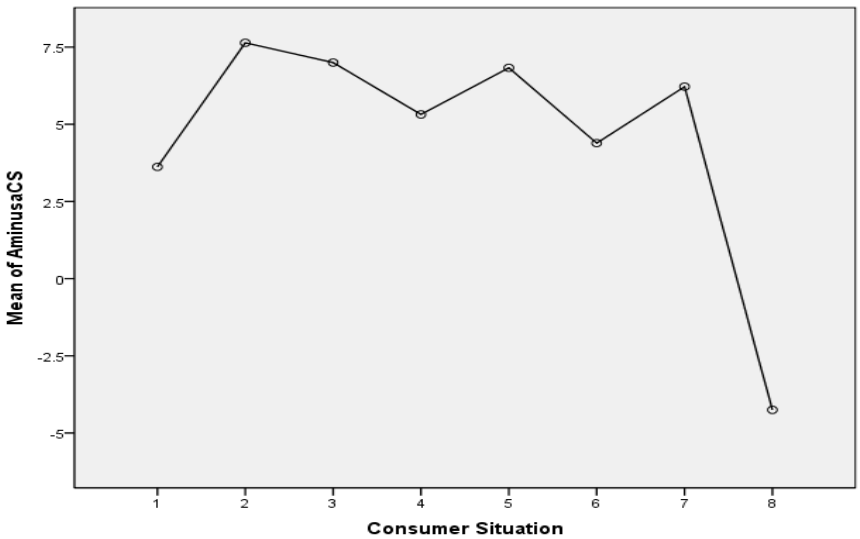


Table 6.45 shows the analysis of means for the sub-study of green members. The first analysis is to test H7. CCs 1, 2, 3 and 4 show significantly higher means than 8, but are not significantly different from CCs 5, 6 and 7. The second analysis is to test H8. CC 1 illustrates higher mean than CC 8, but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CCs 3, 5 and 7 show higher means than CC 8, but are not significantly different from CCs 2, 4 and 6. The actual difference in the Aminusa means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.2). All the results are discussed in detail in Chapter 7. A graphical interpretation of the results is presented in Figure 6.16.

Table 6.46: Sub-Study of Non-Green Members: Analysis of Aminusa Means ($F_{7, 800} = 25.78$ $p<0.001$)

| Variable | Hypotheses | Predicted Contingency Categories | Results |
|---|---|---|---|
| Aminusa | 7 | 1,2,3,4 > 5,6,7,8 | **1, 4 > 8 but = 5,6,7**<br>**2 > 6,8 but = 5,7**<br>**3 > 6,7,8 but =5** |
| Aminusa | 8 | 1,3,5,7 > 2,4,6,8 | **1 > 8 but = 4,6 < 2**<br>**3 > 6,8 but = 2,4**<br>**5, 7 > 8 but = 2,4,6** |

Figure 6.17: Sub- study of Non-Green Members: Aminusa Means

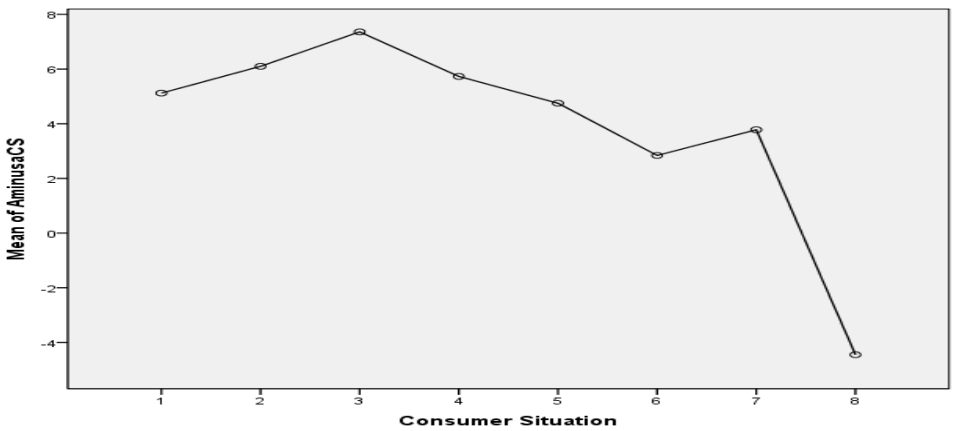


Table 6.46 shows the analysis of means for the sub-study of non-green members. The first analysis is to test H7. CCs 1 and 4 show significantly higher means than CC 8, but are not significantly different from CCs 5, 6 and 7. CC 2 demonstrates higher mean than CCs 6 and 8, but is not significantly different from CCs 5 and 7. CC 3 shows higher means than CCs 6, 7 and 8, but is not significantly different from CC 5. The second analysis is to test H8. CC 1 illustrates higher mean than CC 8, but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CC 3 shows significantly higher mean than CCs 6 and 8, but is not different from CCs 2 and 4. CCs 5 and 7 demonstrate higher means than CC 8, but are not significantly different from CCs 2, 4 and 6. The actual difference in the Aminusa means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.2). A graphical interpretation of the results is presented in Figure 6.17.

Table 6.47: Sub-study of Green and Non-Green Members: Analysis of Aminusa Means ($F_{7, 800} = 49.24$ $p<0.001$)

| Variable | Hypotheses | Predicted Contingency Categories | Results |
|---|---|---|---|
| Aminusa | 7 | 1,2,3,4 > 5,6,7,8 | **1, 4 > 8 but = 5,6,7**<br>**2, 3 > 6,8 but = 5,7** |
| Aminusa | 8 | 1,3,5,7 > 2,4,6,8 | **1 > 8 but = 4,6 < 2**<br>**3 > 6,8 but = 2,4**<br>**5, 7 > 8 but = 2,4,6** |

Figure 6.18: Sub- study of Green and Non-Green Members: Aminusa Means

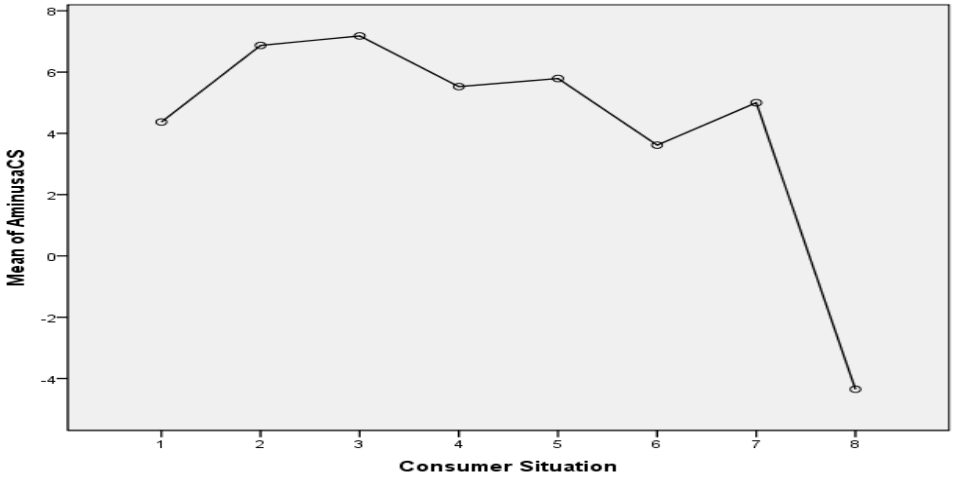



Table 6.47 shows the analysis of means for the sub-study of green and non-green members. The first analysis is to test H7. CCs 1 and 4 show significantly higher means than CC 8, but are not significantly different from CCs 5, 6 and 7. CCs 2 and 3 demonstrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. The second analysis is to test H8. CC 1 illustrates higher mean than CC 8, but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CC 3 shows significantly higher mean than CCs 6 and 8, but is not different from CCs 2 and 4. CCs 5 and 7 demonstrate higher means than CC 8, but are not significantly different from CCs 2, 4 and 6. The actual difference in the Aminusa means scores of the groups was very large. This is evident from the large effect size obtained (eta squared = 0.2). A graphical interpretation of the results is presented in Figure 6.18.

In conclusion, the one-way ANOVA and Tukey's HSD analyses provide support for the results of H4, H5, H6, H7 and H8. Five hypotheses were accepted for each of the sub-studies.

### 6.5.4 The Aminusa Means by the Attitude Variables Pleasure, Arousal and Dominance Hypotheses

This section deals with whether the effect that a learning theory approach would lead to acceptable levels of attitude-behavioural consistency. The aim is to test hypothesis H9; Aminusa (Approach - Avoidance) will be determined by the attitudes variables of Pleasure, Arousal and Dominance. A model was built for each of the sub-studies using three independent variables (PAD) in order to assess the relationship with Aminusa. A standard multiple regression analysis was used to explore the relationship between one continuous dependent variable and a number of independent variables or predictors. Table 6.48 shows the results of standard multiple regression analysis for each sub-study.

Table 6.48: Results of Multiple Regression Analysis for Aminusa

| Model | $F_{3,800}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Sub- study of Green Members** | | | | | | | |
| **Aminusa =** | 171.13 | <0.001 | .39 | | | | |
| **P** | | | | .56 | <0.001 | .79 | 1.3 |
| **+** | | | | | | | |
| **A** | | | | **.04** | **.193** | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .12 | <0.001 | .82 | 1.2 |
| **Sub- study of Non-Green Members** | | | | | | | |
| **Aminusa =** | 188.25 | <0.001 | .41 | | | | |
| **P** | | | | .59 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .10 | <0.001 | .95 | 1.1 |
| **+** | | | | | | | |
| **D** | | | | .06 | .053 | .85 | 1.2 |
| **Model** | $F_{3,1600}$ | **Sig.** | **Adjusted $R^2$** | $\beta$ | **Sig.** | **T** | **VIF** |
| **Sub- study of Green and Non-Green Members** | | | | | | | |
| **Aminusa =** | 357.05 | <0.001 | .40 | | | | |
| **P** | | | | .58 | <0.001 | .81 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .07 | .001 | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .09 | <0.001 | .84 | 1.2 |

The first task before starting a multiple regression is to measure sample size and multicollinearity. The current sample size did not violate the sample size required for multiple regression analysis (N>98 cases). Next is to assess multicollinearity, the presence of high correlations between independent variables. The findings show that for all sub-studies, no tolerance value falls below 0.1 and no VIF exceeds 10. Thus, the current sub-studies did not violate the multicollinearity assumption.

In the sub-study of non-green members, the Adjusted $R^2$ illustrates a larger percentage of variance in Aminusa (41%) than the sub-study of green

members (39%). For the sub-study of green and non-green members, the model explains 40% of Aminusa. These percentage are highly significant ($p<0.001$). Pleasure has the largest and strongest beta value. This means that Pleasure for each sub-study makes the strongest unique contribution to explaining the dependent variable. For the sub-study of green members, Arousal variable does not make a significant unique contribution to the prediction of the dependent variable ($p>0.05$). This may be due to overlap with other independent variables in the model. Dominance for each sub-study also makes a contribution to explaining the model. In conclusion, the standard multiple regression analysis provides support for the result of H9.

## 6.6 The Discriminant Power of Variables

This section aims to test whether the affective and behavioural variables differentiated significantly; (1) among classes of consumer behaviour and (2) the open versus closed consumer behaviour setting. Seven tests were conducted in order to find the discriminant power of variables. Table 6.49 shows the discriminant test for the affective and the behavioural variables. In summary, it was expected that Arousal would discriminate between Accomplishment and Hedonism, and between Accumulation and Maintenance. Next, both Pleasure and Arousal were expected to discriminate between Hedonism and Accumulation, and between Accomplishment and Maintenance. Pleasure was expected to discriminate between Accomplishment and Accumulation, and between Hedonism and Maintenance. Finally, Dominance was expected to discriminate between closed and open settings (Foxall and Greenley, 2000).

Table 6.49: Discriminant Test for Affective and Behavioural Variables

| Test | Affective and Behavioural Variables | CCs |
|---|---|---|
| 1 | Accomplishment – Hedonism | Between 1,2 and 3,4 |
| 2 | Hedonism - Accumulation | Between 3,4 and 5,6 |
| 3 | Accumulation -Maintenance | Between 5,6 and 7,8 |
| 4 | Accomplishment - Accumulation | Between 1,2 and 5,6 |
| 5 | Accomplishment - Maintenance | Between 1,2 and 7,8 |
| 6 | Hedonism- Maintenance | Between 3,4 and 7,8 |
| 7 | Open- Closed Setting | Between 1,3,5,7 and 2,4,6,8 |

Discriminant analysis (DA) was used to test the discriminative power of the affective (Pleasure, Arousal and Dominance) and the behavioural (Approach, Avoidance and Aminusa) variables. This analysis allowed the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously (Klecka, 1980). There are many purposes of DA: to investigate differences between groups on the basis of the attributes of the cases, indicating which attributes contribute most to group separation; to determine the most parsimonious (economical) way to distinguish between groups; and to test theory whether cases are classified as predicted.

The basic assumption of discriminant analysis can be stated as being that the observations are a random sample, each predictor variable is normally distributed, each of the allocations for the dependent categories in the initial classification are correctly classified, there must be at least two groups or categories, each group or category must be well defined, discriminating variables are measured at the interval level, and group sizes of the dependent should not be grossly different; moreover, there should be at least five times the number of independent variables (Klecka, 1980).

Multiple discriminant analysis (MDA) also termed Discriminant Factor Analysis or Canonical Discriminant Analysis is an extension of discriminant analysis (Garson, 2008). It is used when the dependent variable is categorical. This analysis focuses on the data that are most important to specific types of analysis by shrinking down the number of differences between them without factoring them out. Although MDA is related to the analytical technique of MANOVA, it is used to address quite different things. MANOVA allows researchers to look at how groups differ by predicting membership related to mean differences, while MDA helps to identify what predictor discriminates between two or more groups (Coakes and Steed, 1999, Kinnear and Gray, 1999). MDA is also the opposite of MANOVA, whereby in the latter, the dependent variable is metric and the independent variable is categorical (Hair et al., 1998).

The interpretation of MDA is similar to logistic regression or multiple regression analysis. Logistic regression is a statistical technique which is used to test models to predict categorical outcomes with two or more categories. This analysis is suitable to use when data are not normal in distribution or group sizes are unequal (Garson, 2008). However, if the group sizes are equal, then the MDA is the better choice. This is because MDA has more statistical power than logistic regression and is capable of avoiding the Type 2 errors (Garson, 2008). As in multiple regression, it is possible to predict the values of a dependent variable from the specified value of a predictor variable. However, regression is used when the dependent variable is metric. In summary, the current study used MDA as a multivariate technique which is

applicable in situations in which the total sample can be divided into groups based on classes predicted by the BPM.

In this study, the first step was to transform the data. For test 1 to test 6, the consumer situation data are transformed into four new categories. Consumer situation 1 and 2 are transformed into category 1 (Accomplishment), consumer situation 3 and 4 are transformed into category 2 (Hedonism/Pleasure), consumer situation 5 and 6 are transformed into category 3 (Accumulation), consumer situation 7 and 8 are transformed into category 4 (Maintenance). For test 7, the consumer situation data are transformed into two new categories. Consumer situation 1, 3, 5 and 7 are transformed into category 1 (open), while consumer situation 2, 4, 6 and 8 are transformed into category 2 (closed). It was important to transform the consumer situation data. This is because there were differences between the untransformed and transformed data of consumer situation, as shown in Table 6.50. These differences are based on the analysis conducted for this study.

Table 6.50: Differences between the Untransformed and Transformed Data of Consumer Situation

| Untransformed Data of Consumer Situation | Transformed Data of Consumer Situation |
|---|---|
| Classifications on results of original grouped cases correctly classified are smaller. | Classifications on results of original grouped cases correctly classified are bigger. |
| The structure matrix has limited acceptance of variables. | The structure matrix has more acceptances of variables. |

Next, a standard multiple discriminant analysis was used. This is where all the variables are entered simultaneously and the predictive power of the

combination of all of the variables is considered (Brace et al., 2006). The group variable is now the dependent variable and all the others become the independent variables (Pleasure, Arousal, Dominance, Approach, Avoidance and Aminusa). This study did not use the stepwise method. The stepwise approach can be dangerous due to the variables adopted and the possibility that the predictions made can be prone to the effect of minor variation in the predictor variables (Brace et al., 2006). The decision to avoid the stepwise approach was also based on the analysis conducted for this study. Table 6.51 shows an analysis of differences between the Standard and Stepwise Method.

Table 6.51: Differences between the Standard and Stepwise Method

| Standard Method | Stepwise Method |
|---|---|
| The Eigenvalue is large which indicates better discrimination. | The Eigenvalue is small which indicates less discrimination. |
| The structure matrix has more acceptance of variable. | The structure matrix has limited acceptance of variable. |
| Wilk's lambda values indicate that the differences are significant. | Wilk's lambda values very close to 1 indicate that the differences are not significant |

After that, it was necessary to double-check the validity of discriminant function by using the cross-validation procedures. This is because discriminant analysis tends to overestimate the success of the discriminant function. Cross - validation reduces this overestimation by checking the validity of the discriminant function derives (Brace et al., 2006). To access the validity of the analysis of the sub-study of green members, the results of the sub-study of non-green members and the sub-study of green and non-green members were used for cross-validation purposes.

Finally the data interpretation process. Wilk's lambda is used to assess whether this function reliably discriminates among the categories. Values very close to one indicate that the differences are not significant (Brace et al., 2006). The sampling distribution of lambda is very complex, hence its significance is more conveniently found from a chi-square value (Kinnear and Gray, 2000). Chi- square is statistically significant if $p<0.05$.

Discriminant loadings are also used to measure the linear correlation between each variable and the discriminant function are used as a basis for interpreting the discriminating power of the variables. The cut off point of 0.3 and above is considered substantive (Hair et al., 1998). The Univariate F Ratio shows whether there is significant effect of category for each of the predictor variables. Larger F values indicate greater discriminatory power (Brace et al., 2006). Moreover, the classified versus misclassified cases also provide additional insights into the group predictions. It is also a good idea to look at the eigenvalue as it measures how well the discriminant function discriminates between the categories. The larger the value, the better the discrimination. Tables 6.52 to 6.72 show the results of these tests for each sub-study.

**1. Accomplishment –Hedonism**

Tables 6.52, 6.53 and 6.54 show the results of discriminant analyses for Accomplishment and Hedonism respectively.

Table 6.52: Sub-study of Green Members: Accomplishment –Hedonism

| Wilks' lambda 0.86* | | Chi square 59* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Arousal | .65 | 27* |
| Pleasure | -.49 | 15* |
| | | |
| Dominance | .22 | 3 |
| Avoidance | .13 | 1 |
| Aminusa[a] | -.08 | 0.5 |
| Approach | -.01 | 0.01 |

**Note: the overall success rate for prediction of membership is 64%**
**a. This variable not used in the analysis.**

Table 6.53: Sub-study of Non-Green Members: Accomplishment –Hedonism

| Wilks' lambda 0.89* | | Chi square 48* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | -.63 | 20* |
| Arousal | .55 | 16* |
| Avoidance | .30 | 5* |
| | | |
| Dominance | .19 | 2 |
| Aminusa[a] | -.18 | 2 |
| Approach | -.01 | 0.004 |

**Note: the overall success rate for prediction of membership is 66%**
**a. This variable not used in the analysis.**

Table 6.54: Sub-study of Green and Non-Green Members: Accomplishment – Hedonism

| Wilks' lambda 0.88* | | Chi square 104* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Arousal | .62 | 42* |
| Pleasure | -.56 | 34* |
| | | |
| Avoidance | .21 | 5* |
| Dominance | .21 | 5* |
| Aminusa[a] | -.13 | 2* |
| Approach | -.01 | 0.02 |

**Note: the overall success rate for prediction of membership is 65%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Arousal and Pleasure are significant discriminators. Of the affective variables, Arousal is the highest discriminator between Accomplishment and Hedonism. The eigenvalue for this sub-study is 0.161. For the sub-study of non-green members, Pleasure, Arousal and

Avoidance are significant discriminators. Of the affective variables, Pleasure is the highest discriminator between Accomplishment and Hedonism. The eigenvalue for this sub-study is 0.128. For the sub-study of green and non-green members, Arousal and Pleasure are significant discriminators. Of the affective variables, Arousal is the highest discriminator between Accomplishment and Hedonism. The eigenvalue for this sub-study is 0.139. Overall, the discriminant function successfully predicted outcome in between 64% and 66% of cases.

**2. Hedonism –Accumulation**

Tables 6.55, 6.56 and 6.57 show the results of discriminant analyses for Hedonism and Accumulation respectively.

Table 6.55: Sub-study of Green Members: Hedonism –Accumulation

| Wilks' lambda 0.90* | | Chi square 42* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Arousal | -.84 | 31* |
| Pleasure | .37 | 6* |
| | | |
| Approach | .22 | 2 |
| Dominance | .18 | 1.5 |
| Aminusa[a] | .11 | 0.5 |
| Avoidance | .04 | 0.1 |

**Note: the overall success rate for prediction of membership is 63%**
**a. This variable not used in the analysis.**

Table 6.56: Sub-study of Non-Green Members: Hedonism –Accumulation

| Wilks' lambda 0.93* | | Chi square 30* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .81 | 21* |
| Approach | .73 | 17* |
| Aminusa[a] | .68 | 14* |
| Avoidance | -.38 | 5* |
| Dominance | .33 | 4 |
| | | |
| Arousal | -.19 | 1 |

**Note: the overall success rate for prediction of membership is 61%**
**a. This variable not used in the analysis.**

Table 6.57: Sub-study of Green and Non-Green Members: Hedonism – Accumulation

| Wilks' lambda 0.93* | | Chi square 62* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .61 | 24* |
| Arousal | -.57 | 21* |
| Approach | .49 | 15* |
| Aminusa[a] | .39 | 10* |
| | | |
| Dominance | .27 | 5* |
| Avoidance | -.16 | 2 |

**Note: the overall success rate for prediction of membership is 63%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Arousal and Pleasure are significant discriminators. Arousal is the highest discriminator and discriminates negatively between the two operant classes. The eigenvalue for this sub-study is 0.112. For the sub-study of non-green members, Pleasure, Approach, Avoidance and Dominance are significant discriminators. Although Aminusa is also part of discriminators, this variable is not used in the analysis. Pleasure is the highest discriminator between Hedonism and Accumulation. The eigenvalue for this sub-study is 0.079. For the sub-study of green and non-green members, Pleasure, Arousal and Approach are significant discriminators. Aminusa was not used in the analysis. Of the affective variables, Pleasure is the highest discriminator. The eigenvalue for this sub-study is 0.081. Overall the discriminant function successfully predicted outcome in 61% and 63% of cases.

### 3. Accumulation – Maintenance

Tables 6.58, 6.59 and 6.60 show the results of discriminant analyses for Accumulation and Maintenance respectively.

Table 6.58: Sub-study of Green Members: Accumulation – Maintenance

| Wilks' lambda 0.69* | | Chi square 150* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .68 | 85* |
| Arousal | .65 | 78* |
| Aminusa[a] | .41 | 31* |
| Approach | .39 | 28* |
| Avoidance | -.30 | 16* |
| | | |
| Dominance | -.03 | .11 |

**Note: the overall success rate for prediction of membership is 76%**
**a. This variable not used in the analysis.**

Table 6.59: Sub-study of Non-Green Members: Accumulation – Maintenance

| Wilks' lambda 0.79* | | Chi square 96* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .75 | 61* |
| Aminusa[a] | .51 | 28* |
| Avoidance | -.44 | 21* |
| Arousal | .41 | 18* |
| Approach | .40 | 17* |
| | | |
| Dominance | -.13 | 2 |

**Note: the overall success rate for prediction of membership is 71%**
**a. This variable not used in the analysis.**

Table 6.60: Sub-study of Green and Non-Green Members: Accumulation – Maintenance

| Wilks' lambda 0.75* | | Chi square 234* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .73 | 145* |
| Arousal | .55 | 83* |
| Aminusa[a] | .46 | 59* |
| Approach | .40 | 45* |
| Avoidance | -.37 | 37* |
| | | |
| Dominance | -.07 | 1.4 |

**Note: the overall success rate for prediction of membership is 73%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Pleasure, Arousal, Approach and Avoidance are significant discriminators. Pleasure is the highest discriminator and the eigenvalue for this sub-study is 0.459. For the sub-study of non-green

members, Pleasure, Avoidance, Arousal and Approach are significant discriminators. Although Aminusa is also part of discriminators, this variable was not used in the analysis. Pleasure is the highest discriminator between Accumulation and Maintenance. The eigenvalue for this sub-study is 0.274. For the sub-study of green and non-green members, Pleasure, Arousal, Approach and Avoidance are significant discriminators. Aminusa was not used in the analysis. Pleasure is the highest discriminator. The eigenvalue for this sub-study is 0.342. Overall the discriminant function successfully predicted outcome in between 71% and 76% of cases.

**4. Accomplishment – Accumulation**

Tables 6.61, 6.62 and 6.63 show the results of discriminant analyses for Accomplishment and Accumulation respectively.

Table 6.61: Sub-study of Green Members: Accomplishment – Accumulation

| Wilks' lambda 0.94* | | Chi square 23* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Dominance | .62 | 9* |
| | | |
| Pleasure | -.29 | 2 |
| Approach | .26 | 1.7 |
| Avoidance | .26 | 1.7 |
| Arousal | -.03 | .03 |
| Aminusa[a] | .01 | .001 |

**Note: the overall success rate for prediction of membership is 61%**
**a. This variable not used in the analysis.**

Table 6.62: Sub-study of Non-Green Members: Accomplishment – Accumulation

| Wilks' lambda 0.92* | | Chi square 35* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Approach | .65 | 16* |
| Dominance | .57 | 12* |
| Arousal | .48 | 8* |
| Aminusa[a] | .40 | 6* |
| | | |
| Pleasure | .06 | 0.14 |
| Avoidance | .01 | 0.001 |

**Note: the overall success rate for prediction of membership is 63%**
**a. This variable not used in the analysis.**

Table 6.63: Sub-study of Green and Non-Green Members: Accomplishment – Accumulation

| Wilks' lambda 0.94* | | Chi square 53* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Dominance | .62 | 21* |
| Approach | .50 | 14* |
| | | |
| Arousal | .26 | 4* |
| Aminusa[a] | .22 | 3 |
| Avoidance | .13 | 0.9 |
| Pleasure | -.10 | 0.6 |

**Note: the overall success rate for prediction of membership is 61%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Dominance is the only significant discriminator. The eigenvalue for this sub-study is 0.060. For the sub-study of non-green members, Approach, Dominance and Arousal are significant discriminators. Although Aminusa is also part of discriminators, this variable was not used in the analysis. Dominance is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.092. For the sub-study of green and non-green members, Dominance and Approach are significant discriminators. Dominance is the highest discriminator. The eigenvalue for this sub-study is 0.069. Overall the discriminant function successfully predicted outcome in 61% and 63% of cases.

## 5. Accomplishment –Maintenance

Tables 6.64, 6.65 and 6.66 show the results of discriminant analyses for Accomplishment and Maintenance respectively.

Table 6.64: Sub-study of Green Members: Accomplishment –Maintenance

| Wilks' lambda 0.75* | | Chi square 113* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Arousal | .73 | 71* |
| Pleasure | .68 | 62* |
| Approach | .56 | 42* |
| Aminusa[a] | .47 | 29* |
| Avoidance | -.25 | 8* |
| | | |
| Dominance | .23 | 7* |

**Note: the overall success rate for prediction of membership is 71%**
**a. This variable not used in the analysis.**

Table 6.65: Sub-study of Non-Green Members: Accomplishment – Maintenance

| Wilks' lambda 0.74* | | Chi square 118* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Approach | .72 | 72* |
| Pleasure | .72 | 71* |
| Aminusa[a] | .65 | 59* |
| Arousal | .59 | 48* |
| Avoidance | -.38 | 20* |
| | | |
| Dominance | .16 | 3 |

**Note: the overall success rate for prediction of membership is 74%**
**a. This variable not used in the analysis.**

Table 6.66: Sub-study of Green and Non-Green Members: Accomplishment – Maintenance

| Wilks' lambda 0.75* | | Chi square 228* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .71 | 133* |
| Arousal | .67 | 117* |
| Approach | .65 | 110* |
| Aminusa[a] | .56 | 84* |
| Avoidance | -.31 | 26* |
| | | |
| Dominance | .19 | 10* |

**Note: the overall success rate for prediction of membership is 71%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Arousal, Pleasure, Approach and Avoidance are significant discriminators. Although Aminusa is also part of discriminators, this variable was not used in the analysis. Arousal is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.331. For the sub-study of non-green members, Approach, Pleasure, Arousal and Avoidance are significant discriminators. Aminusa was not used in the analysis. Pleasure is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.347. For the sub-study of green and non-green members, Pleasure, Arousal, Approach and Avoidance are significant discriminators. Pleasure is the highest discriminator. The eigenvalue for this sub-study is 0.332. Overall the discriminant function successfully predicted outcome in 71% and 74% of cases.

**6. Hedonism – Maintenance**

Tables 6.67, 6.68 and 6.69 show the results of discriminant analyses for Hedonism and Maintenance respectively.

Table 6.67: Sub-study of Green Members: Hedonism – Maintenance

| Wilks' lambda 0.68* | | Chi square 151* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .86 | 136* |
| Approach | .50 | 47* |
| Aminusa[a] | .47 | 41* |
| | | |
| Avoidance | -.29 | 16* |
| Arousal | .25 | 12* |
| Dominance | .06 | 1 |

**Note: the overall success rate for prediction of membership is 76%**
**a. This variable not used in the analysis.**

Table 6.68: Sub-study of Non-Green Members: Hedonism – Maintenance

| Wilks' lambda 0.65* | | Chi square 169* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .84 | 150* |
| Aminusa[a] | .63 | 84* |
| Approach | .60 | 76* |
| Avoidance | -.45 | 42* |
| | | |
| Arousal | .23 | 11* |
| Dominance | .03 | .23 |

**Note: the overall success rate for prediction of membership is 77%**
**a. This variable not used in the analysis.**

Table 6.69: Sub-study of Green and Non-Green Members: Hedonism – Maintenance

| Wilks' lambda 0.67* | | Chi square 318* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Pleasure | .86 | 287* |
| Approach | .55 | 120* |
| Aminusa[a] | .55 | 120* |
| Avoidance | -.37 | 54* |
| | | |
| Arousal | .24 | 23* |
| Dominance | .05 | 1 |

**Note: the overall success rate for prediction of membership is 77%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Pleasure and Approach are significant discriminators. Although Aminusa is also part of discriminators, this variable is not used in the analysis. Pleasure is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.464. For the sub-study of non-green members, Pleasure, Approach and Avoidance are significant discriminators. Aminusa was not used in the analysis. Pleasure is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.532. For the sub-study of green and non-green members, Pleasure, Approach and Avoidance are significant discriminators. Pleasure is the highest discriminator. The eigenvalue for this sub-study is

0.491. Overall the discriminant function successfully predicted outcome in 76% and 77% of cases.

### 7. Open-Closed Setting

Tables 6.70, 6.71 and 6.72 show the results of discriminant analyses open-closed setting respectively.

Table 6.70: Sub-study of Green Members: Open- Closed Setting

| Wilks' lambda 0.78* | | Chi square 196* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Dominance | .94 | 198* |
| Pleasure | .46 | 48* |
| Avoidance | -.31 | 21* |
| Aminusa[a] | .30 | 21* |
| | | |
| Approach | .21 | 10* |
| Arousal | -.18 | 7* |

**Note: the overall success rate for prediction of membership is 69%**
**a. This variable not used in the analysis.**

Table 6.71: Sub-study of Non-Green Members: Open- Closed Setting

| Wilks' lambda 0.71* | | Chi square 274* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Dominance | .95 | 293* |
| Pleasure | .45 | 65* |
| | | |
| Avoidance | -.29 | 27* |
| Aminusa[a] | .27 | 24* |
| Approach | .17 | 10* |
| Arousal | -.05 | 1 |

**Note: the overall success rate for prediction of membership is 74%**
**a. This variable not used in the analysis.**

Table 6.72: Sub-study of Green and Non-Green Members: Open- Closed Setting

| Wilks' lambda 0.75* | | Chi square 465* |
|---|---|---|
| **Variable** | **Discriminant Loadings** | **Univariate F Ratio** |
| Dominance | .95 | 484* |
| Pleasure | .46 | 112* |
| Avoidance | -.30 | 48* |
| Aminusa[a] | .30 | 44* |
| | | |
| Approach | .19 | 19* |
| Arousal | -.11 | 6 |

**Note: the overall success rate for prediction of membership is 71%**
**a. This variable not used in the analysis.**

For the sub-study of green members, Dominance, Pleasure and Avoidance are significant discriminators. Although Aminusa is also part of discriminators, this variable was not used in the analysis. Dominance is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.280. For the sub-study of non-green members, Dominance and Pleasure are significant discriminators. Dominance is the highest discriminator between these two operant classes. The eigenvalue for this sub-study is 0.410. For the sub-study of green and non-green members, Dominance, Pleasure and Avoidance are significant discriminators. Aminusa was not used in the analysis. Dominance is the highest discriminator. The eigenvalue for this sub-study is 0.338. Overall the discriminant function successfully predicted outcome in between 69% and 74% of cases.

## 6.7 The Effect of Pleasure, Arousal and Dominance

This section deals with the test for the effect of each of independent variable (PAD) on the dependent variable (Approach-Avoidance) and also identifies any interaction effect. The presence of independent variables effects on dependent variable can have important implications for the interpretation of

research data. There are two possible effects: main effect and an interaction effect (Kinnear and Gray, 2000).

The main effect is the effect of each variable on its own whereby the influence of the other variable is disregarded. To determine whether there is a main effect for each independent variable, the $p \leq 0.05$ (Pallant, 2007). An interaction effect occurs when the effect on one independent variable is not the same under all the conditions of the other dependent variable (Burns and Burns, 2008). It can be said that the interaction effect is the joint effect of two or more independent variables on a dependent variable; however; two variables can both influence a dependent variable without an interaction being present (Newton and Rudestem, 1999). There could be a two way interaction or three way interaction effect (Brace et al., 2006). To find out whether interaction is significant, the p value should be $\leq 0.05$(Pallant, 2007). Previous research has reported the findings of the interaction effect between the Arousal and Pleasure effects (Russell and Mehrabian, 1978, Foxall and Greenley, 1998, Yani-de-Soriano, 2000).

Factorial ANOVA is used to examine the relationship between affective and behavioural variables. Factorial ANOVA is an extension of the one-way ANOVA whereby it can test not only the presence of the main effects of each factor, but also interactions between the factors (Kinnear and Gray, 2000). In summary, two analyses were conducted for each sub-study. First, the main and interaction effects of the independent variables along with any two way and three way interactions among these independent variables were

examined. The General Linear Model (GLM) was used for analysing these effects. Second, the interaction was investigated in detail by using the ANOVA tests of Tukey's HSD procedures.

In order to carry out these analyses, the scores of PAD had to be subdivided into low, medium and high. This can be done by direct inspection of the scores of the means for groups in homogenous subsets displayed for each of the affective variables. These data were obtained from the Tukey's HSD procedure from previous one-way ANOVA test for the pattern of PAD. The new data of subdivided PAD were then transformed into different variables and were ready to be used for the Factorial ANOVA analysis. Such subdivision inevitably reduces the accuracy of estimated interaction among independent variables (Foxall and Greenley, 1998). However, in order to minimize this issue, the current study has come out with a number of combination levels. The satisfactory level scores for PAD were chosen based on the effect size, percentage explained by the model and high F values.

In the sub-study of green members, the scores of the independent variables were sub-divided into low (6-27), medium (28-35) and high (36 or more). For the sub-study of non-green members, the scores of the independent variables were sub-divided into low (6-26), medium (27-34) and high (35 or more). In the sub-study of green and non-green members, the scores of the independent variables were sub-divided into low (6-26), medium (27-34) and high (35 or more). Tables 6.73, 6.74 and 6.75 show the ANOVA results of the main and interaction effects for each sub-study.

Table 6.73: Sub-study of Green Members: ANOVA Results for Approach – Avoidance

| | F | Sig. |
|---|---|---|
| **Main effects** | | |
| Pleasure | 82.63 | <0.001 |
| Arousal | 2.11 | .12 |
| Dominance | 11.266 | <0.001 |
| **Two- way interaction** | | |
| Pleasure x Arousal | 0.55 | .70 |
| Pleasure x Dominance | 2.33 | .05 |
| Arousal x Dominance | 0.70 | .59 |
| **Three- way interactions** | | |
| Pleasure x Arousal x Dominance | 0.75 | .65 |
| **Explained** | 17.8 | <0.001 |

In the sub-study of green members, Pleasure and Dominance show highly significant main effects ($p<0.001$). The results show only one two-way interaction effect between Pleasure and Dominance ($p\leq 0.05$). This interaction accounts for 18% of the variance in Approach-Avoidance.

Table 6.74: Sub-study of Non-Green Members: ANOVA Results for Approach – Avoidance

| | F | Sig. |
|---|---|---|
| **Main effects** | | |
| Pleasure | 118.92 | <0.001 |
| Arousal | 0.88 | .42 |
| Dominance | 1.56 | .21 |
| **Two- way interaction** | | |
| Pleasure x Arousal | 0.32 | .87 |
| Pleasure x Dominance | 2.18 | .07 |
| Arousal x Dominance | 2.42 | .05 |
| **Three- way interactions** | | |
| Pleasure x Arousal x Dominance | 1.70 | .10 |
| **Explained** | 18.12 | <0.001 |

In the sub-study of non-green members, only Pleasure shows highly significant main effects ($p<0.001$). The results show only one two-way

interaction effect between Arousal and Dominance (p≤ 0.05). This interaction accounts for 18% of the variance in Approach-Avoidance.

Table 6.75: Sub-study of Green and Non-Green Members: ANOVA Results for Approach – Avoidance

| | F | Sig. |
|---|---|---|
| **Main effects** | | |
| Pleasure | 209.21 | <0.001 |
| Arousal | 1.67 | .19 |
| Dominance | 6.76 | <0.001 |
| **Two- way interaction** | | |
| Pleasure x Arousal | 1.53 | .19 |
| Pleasure x Dominance | 2.90 | .02 |
| Arousal x Dominance | 1.51 | .19 |
| **Three- way interactions** | | |
| Pleasure x Arousal x Dominance | 2.06 | .04 |
| **Explained** | 34.15 | <0.001 |

In the sub-study of green and non-green members, Pleasure and Dominance show highly significant main effects (p<0.001). The results show only one two-way interaction effect between Pleasure and Dominance (p<0.05). This interaction accounts for 34% of the variance in Approach-Avoidance. Also, a three-way interaction effect is shown for the three independent variables (p< 0.05). Tables 6.76, 6.77 and 6.78 show cell means for Approach-Avoidance of the interaction for each sub-study.

Table 6.76: Sub-study of Green Members: Pleasure and Dominance Interaction - Cell Means for Approach – Avoidance

| Pleasure | Descriptive Statistics | Dominance | | | Total |
|---|---|---|---|---|---|
| | | Low | Moderate | High | |
| Unpleasant Environment | M | -4.23 | -1.80 | 1.94 | -2.91 |
| | SD | 6.54 | 4.98 | 6.29 | 6.44 |
| | N | 100 | 40 | 18 | 158 |
| Neutral Environment | M | 1.18 | 1.59 | 2.08 | 1.56 |
| | SD | 5.92 | 5.69 | 7.31 | 6.09 |
| | N | 62 | 97 | 40 | 199 |
| Pleasant Environment | M | 6.30 | 7.68 | 10.60 | 8.64 |
| | SD | 7.25 | 7.53 | 6.73 | 7.34 |
| | N | 94 | 159 | 190 | 443 |

Table 6.77: Sub-study of Non-Green Members: Arousal and Dominance Interaction- Cell Means for Approach – Avoidance

| Arousal | Descriptive Statistics | Dominance | | | Total |
|---|---|---|---|---|---|
| | | Low | Moderate | High | |
| Unaroused Environment | M | -1.00 | 1.89 | 4.09 | 1.66 |
| | SD | 8.41 | 7.45 | 7.07 | 7.97 |
| | N | 76 | 45 | 79 | 200 |
| Neutral Environment | M | 2.28 | 4.06 | 5.42 | 4.05 |
| | SD | 7.90 | 7.21 | 6.97 | 7.41 |
| | N | 118 | 162 | 152 | 432 |
| Aroused Environment | M | 1.31 | 3.85 | 9.35 | 6.20 |
| | SD | 7.89 | 7.93 | 7.83 | 8.50 |
| | N | 29 | 54 | 85 | 168 |

Table 6.78: Sub-study of Green and Non-Green Members: Pleasure and Dominance Interaction- Cell Means for Approach – Avoidance

| Pleasure | Descriptive Statistics | Dominance | | | Total |
|---|---|---|---|---|---|
| | | Low | Moderate | High | |
| Unpleasant Environment | M | -4.45 | -1.98 | -1.39 | -3.22 |
| | SD | 7.04 | 6.56 | 6.49 | 6.93 |
| | N | 162 | 89 | 49 | 300 |
| Neutral Environment | M | 0.96 | 0.30 | 0.99 | 0.67 |
| | SD | 6.10 | 5.31 | 5.90 | 5.69 |
| | N | 98 | 157 | 90 | 345 |
| Pleasant Environment | M | 5.82 | 7.21 | 9.21 | 7.89 |
| | SD | 6.83 | 7.04 | 6.79 | 7.00 |
| | N | 184 | 318 | 453 | 955 |

In the sub-study of green members, the Tukey HSD test indicates that the means score for the Pleasure and Dominance are highly significantly ($p< 0.001$) different between the three levels of means (low, medium and high). The sub-study of non-green members also indicates that the means score for the Arousal and Dominance are highly significantly ($p\leq0.001$) different between the three levels of means (low, medium and high). In the sub-study of green and non-green members, the Tukey HSD test indicates that the means score for the Pleasure and Dominance are highly significantly ($p< 0.001$) different between the three levels of means (low, medium and high).

## 6.8 Conclusion

Chapter 6 deals with the descriptive findings obtained from the empirical survey of Cardiff consumers. Data were analysed for green members, non-green members, and a combination of green and non-green members. A variety of different types of analysis were conducted in order to test the nine hypotheses, description of data, reliability, validity and representative of the study. Overall, the analysis provides support for the results of H1 to H9. An extended discussion follows in Chapter 7.

# CHAPTER SEVEN

## DISCUSSION AND FURTHER ANALYSIS

### 7.1 Introduction

The research problems addressed in this study are: consumer feeling and behaviour regarding specific descriptions of consumer environmental situations, and whether the BPM is able to interpret consumer environmental behaviour. Chapter 7 provides an intensive discussion of the research findings in the context of some further analysis. The discussion is presented in the same order as Chapter 6. It is divided into six parts: (1) comparability of data (2) validation of consumer environmental situations (3) the relationship between affective and behavioural variables (4) the patterns of the affective and behavioural variables (5) the discriminant power of variables, and (6) the effect of Pleasure, Arousal And Dominance.

The findings from the Cardiff study are discussed and compared between the three sub-studies of green members, non-green members as well as the combination of the green and non-green members. This is to find out whether the findings are consistent or different between them. The third sub-study of green and non-green members was put together from the two groups mentioned above. The reason was to know whether the combination of a larger sample size and mixture of feedback might affect the findings.

The current study of Cardiff consumers' environmental behaviour with the application of the model has not been conducted in any of the BPM study. Nevertheless, the present findings conducted in Cardiff are also to be

compared with the results of previous applications of the model in England and Venezuela (Foxall, 1997a, Foxall, 1997b, Foxall and Greenley, 1998, 1999, Yani-de-Soriano, 2000, Foxall and Yani-de-Soriano, 2005). The present study has different consumer situations when compared to the England and Venezuela study; however, the measurement scales are all the same. Thus, discussion can be made to find out any similarity or comparison between them.

## 7.2 Comparability of Data

This sub-section is concerned with the comparability of sample and the measurement scales. The data will be discussed in terms of the characteristics of the sample, validity of consumer situation, the level of accuracy, precision of measurement, reliability, meaning and interpretation. Overall, the present data are compared within Cardiff consumers' groups (green members, non-green members and a combination of both groups), and with findings from previous research.

### 7.2.1 Comparability of Sample

This sub-section is concerned with the issue of comparability of the samples. The idea is to find out whether each present sub-study shares similar demographics, socio-economic characteristics and opinions with regards to environmental behaviour. The distributions of the sample involvement in environmentally-related groups or campaigns are also included in the discussion. The discussion of the present sample profile and other relevant background information is only for the two groups: green members and non-green members. The information of the third group of green and non-green

members is not included because the samples are the same as the two groups mentioned above.

The distribution of the sample of Cardiff consumers (N=200) showed that the ratio of males to females is 1:2, the average age is between 31 and 40 years old, the typical sample member held a bachelor degree, and the majority of members were of white ethnicity. For both sub-studies, female sample members formed the majority of this survey because they were more interested in participating in the survey. Additionally, there were more female sample members involved in environmentally-related groups or campaigns. The people who were involved in the environmental groups were basically those who were active member. They positioned themselves as the co-ordinator, project co-ordinator, group leaders, managers or even volunteers. The main reason Cardiff people did not want to participate in this survey was due to their busy schedules and the length of survey questionnaire, as mentioned in Chapter 5. Transgender was also included in the survey questionnaire to represent a person whose identity does not conform unambiguously to normally associated gender.

For both sub-studies, the three highest occupation categories were ‘others’, professional and managers/executives. The nature of employment for the ‘others’ category was part-time workers, volunteers, government officials, students, housewives, pensioners and non profit organisation workers. The typical respondent’s annual income was between £10,000 and £20,000 and

most of the respondents at the time of answering resided either at their own house or privately rented accommodation and owned private transportation.

In the last section of the survey questionnaire, samples members were asked about their opinion with regards to the question “Do you think that if you make small changes in your behaviour, it will impact the environment?” The results for both studies show that most of the respondents agreed with the question. Those who didn’t agree believed that there needs to be extra commitment from various parties such as the government or big industries to change the environment. Findings from the Cardiff qualitative interviews also show that 93% of green members and almost 50% of non-green members believed that small changes in behaviour will impact on the environment. The findings of the qualitative interviews are in sub-section 5.5.

The sample from the England (N= 561) and Venezuelan (N= 254) studies produced sample equivalence (Foxall, 1997a, Yani-de-Soriano et al., 2002). The distribution of the sample in each of the studies showed that the ratio of males to females was 1:1, aged between 20 and 50 years and middle class. The typical Venezuelan consumer was 36 years of age, held a university degree, had a middle management/office occupation, and was earning a typical annual income of £12,000.

It can be concluded that the characteristics of the Cardiff consumers are matched between green and non-green members. In terms of the Venezuelan and England samples, they are not perfectly reflecting the characteristics of

Cardiff consumers. However, it is possible to make valid comparisons between the studies.

### 7.2.2 Comparability of the Measurement Scales

Exploratory factor analysis was used to assess the dimensionality of the measurement scales for the present study via the principal component analysis (PCA) technique. Prior to performing PCA, the suitability of data for factor analysis was assessed. The KMO value for all sub-studies exceeded the recommended value of 0.6 and Bartlett's Test of Sphericity reached statistical significance, therefore factor analysis was appropriate. Tables 6.15, 6.16 and 6.17 in Chapter 6 show the results of the factor analysis. Three out of four components were found reflecting the Mehrabian and Russell's PAD scales. For the three sub-studies, Pleasure, Arousal and Dominance accounted for 24%, 14 to 16%, and 10 to 11%, respectively.

The present findings also show that the items in the PAD scale are unidimensional, whereby they are strongly associated with each other and reflected by a separate factor or components. These findings are consistent with previous research (Mehrabian and Russell, 1974, Yani-de-Soriano, 2000).

The present findings also reveal the order of the emergence of the factors. Pleasure was the first factor to emerge in all sub-studies. This was followed by the second factor, which is Dominance, and Arousal was the last factor. The order of the emergence of the present factors supported the previous findings from Yani-de- Soriano and Foxall's research and is slightly different

from Mehrabian and Russell. In Mehrabian and Russell's study, Pleasure is the first factor followed by Arousal and Dominance.

Cronbach's alpha was used in the study to assess the internal consistency of the measurement scales. The cut off criteria of 0.60 or 0.70 is used for exploratory research (Hair et al., 1998). Table 7.1 and 7.2 show the results in Cardiff, Venezuela and England.

Table 7.1: Internal Consistency: Comparison between Affective and Behavioural Variables for Cardiff Study

| Variables | Sub-study of Green Members | | Sub-study of Non-Green Members | | Sub-study of Green Members and Non-Green Members | |
|---|---|---|---|---|---|---|
| | Number of items | Cronbach's alpha | Number of items | Cronbach's alpha | Number of items | Cronbach's alpha |
| Pleasure | 6 | 0.9 | 6 | 0.9 | 6 | 0.9 |
| Arousal | 6 | 0.6 | 6 | 0.6 | 6 | 0.6 |
| Dominance | 6 | 0.8 | 6 | 0.8 | 6 | 0.8 |
| Approach | 3 | 0.6 | 3 | 0.7 | 3 | 0.6 |
| Avoidance | 3 | 0.7 | 3 | 0.7 | 3 | 0.7 |

Table 7.2: Internal Consistency: Comparison between Affective and Behavioural Variables for Venezuelan and English Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | | Sub-study of English | |
|---|---|---|---|---|---|---|
| | Number of items | Cronbach's alpha | Number of items | Cronbach's alpha | Number of items | Cronbach's alpha |
| Pleasure | 6 | 0.93 | 6 | 0.94 | 6 | 0.88 |
| Arousal | 6 | 0.75 | 6 | 0.84 | 6 | 0.82 |
| Dominance | 6 | 0.82 | 6 | 0.90 | 6 | 0.89 |
| Approach | 3 | 0.77 | 3 | 0.72 | 3 | - |
| Avoidance | 3 | 0.79 | 3 | 0.83 | 3 | - |
| Approach-Avoidance | - | - | - | - | 6 | 0.78 |

(Foxall and Greenley, 1998, Yani-de-Soriano, 2000)

For the three Cardiff sub-studies, all of the affective and behavioural variables have good internal consistency, with Cronbach's alpha coefficients reported

between 0.6 and 0.9. This means that the scales in the current study are reliable for the exploratory research. The results are very similar and are consistent with previous results obtained in Venezuela and England. A cross-check of the Cronbach alpha's scores also supported this statement.

To summarized, the last two decades have seen the usage of PAD as the measurement scales in studies of purchasing and consumption with mixed findings (Lutz and Kakkar, 1975, Russell and Pratt, 1980, Donovan and Rossiter, 1982, Yalch and Spangenberg, 1988, cited in Turley and Milliman, 2000). A number of authors failed to measure Dominance and deleted it due to lack of support for this variable in their earlier study. For example, a measure of Dominance accounted for only a trivial proportion of variance in the factor analysis and lower reliability (Russell and Pratt, 1980, Donovan and Rossiter, 1982). However, this sub-section showed that various combinations of PAD scales may adequately influence consumer behaviour study.

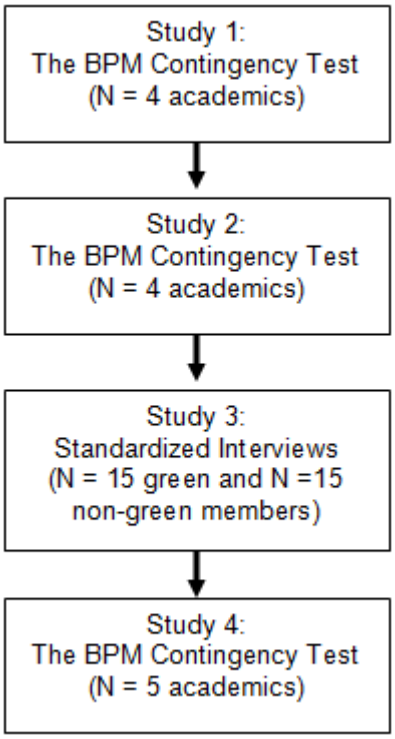
### 7.3 Validation of Consumer Environmental Situations

The concept of the consumer situation, which lies at the heart of the BPM, locates consumer behaviour at the meeting place of the consumer and the setting. The model contends that consumer behaviour is predictable from the interaction between the discriminative stimuli of the behaviour setting and the individual's history of informational and utilitarian consequences in similar settings (Foxall, 1999). Previous studies in England and Venezuela have used similar orthodox consumer situations. The difference is that some situations had to be adapted to the Venezuelan context. The present study used

different consumer situations as compared to the study in England and Venezuela. The situations were initially derived a priori from the BPM to illustrate consumer behaviour in each of the contingency categories defined in Table 3.5. It is also important to select the right consumer environmental situations which were familiar to the Cardiff context and achieved consensual validity.

Consensuality requires that scientific knowledge be soundly established and generally accepted by a scientific community (Foxall, 1999). Three series of panel experts' studies and a series of face-to-face standardized interviews were conducted to assess the consensual validity of the consumer environmental situations of the BPM. Figure 7.1 shows the flow chart of consensual validity process that was used for the current research.

Figure 7.1: Flow Chart of Consensual Validity Process




Study 1, 2 and 4 were conducted to find out how far panel experts allocated the sixteen descriptions of consumer situations among the eight contingency categories specified by the BPM. Analysis for the inter judge reliability was conducted by using the percent agreement.

Study 3 was performed in order to understand consumer current environmental behaviour and to explore consumer feeling with regards to specified consumer situations. The findings from study 3 helped to develop or reconstruct consumer environmental situations which were closer to the consumer environment and the model. Analysis of the interviews was conducted by using content analysis. Details of the procedure followed and the results obtained are provided in Chapter 5.

In study 1, the inter judge reliability scores for the given consumer environmental situations are not high. Only 4 out of 16 situations produced scores more than 70%. The new and improved consumer situations were then developed based on the findings from study 1. Study 2 showed a slight increase in scores where 6 out of 16 situations produced acceptable scores. Thus, the new and improved consumer situations were developed for further testing.

Study 3 showed the main leads from the interviews such as: (1) the most popular environmental behaviour choices; (2) the least favoured environmental behaviour; (3) green and non-green current behaviour in relation to waste disposal practices, private transportation usage, domestic electricity and water consumption; (4) anticipation of the utilitarian and informational benefit; (5) consumer emotion regarding environmentally significant behaviour; (6) consumer environmental knowledge and influences (e.g. regulatory factors, temporal factors, social factors, physical factors) and (7) the meaning of green consumer and behaviour. However, a number of respondents were unable to give genuine responses to some of the 16 consumer environmental situations (e.g. Park & Ride Scheme, LCD Television, Earth Hour, recycling old inkjet cartridge and paying bills). This is because they were not familiar with the given situations and were therefore unable to capture the exact consumer situations. The findings from study 3 helped to develop consumer situations (stimuli) which were closer to the consumer environment.

Finally, study 4 produced moderate to high inter judge reliability scores. 13 out of 16 consumer environmental situations had high scores of either 80% or 100%. 7 consumer situations had perfect 100% scores. On the other hand, 3 situations produced moderate scores of 60%. Thus, 8 out of 16 proposed consumer situations were used for the actual survey. The main reason was that the inter judge reliabilities scores for these selected consumer situations were found to be high. The situations were: hybrid car, being carless, energy star laptop, loft insulation grant, food waste disposal, waste reward, refilling and reusing water bottles, and fixing dripping taps.

Two pre-tests were conducted with a sample similar to the proposed main sample in order to validate the measurement scales. Although the sample members were English-speaking consumers who could speak fluently, it was necessary to conduct the test of PAD scales. This was to know whether each of the sample members in fact understood the adjective words and the scales used in the present research. The first pre-test of the PAD scales was conducted during study 3 of standardized interviews. The second pre-test was conducted among 20 green and 20 non-green consumers. Details of the procedure are presented in Chapter 5. In the pre-test, explanation was needed for some of the adjectives such as ‘aroused- unaroused’, ‘important-awed’, and ‘controlling – controlled’. Thus, the present study used verbal explanation in order to clarify some of the adjectives. A list of adjective words with explanation was also provided on the last page of the survey questionnaire. The Venezuelan study also came across the same adjectives

issue with words such as ‘controlling- controlled’ and ‘dull’ (Yani-de-Soriano, 2000).

The consensual validity obtained in the present study indicates that the study should be able to use the consumer environmental situations and its scales with confidence in consumer analysis. This sub-section is exploratory whereby the studies reported were not concerned with the testing of the model (that work has proceeded separately); instead its results were used to investigate the possibilities for consensual agreement among users of the model.

## 7.4 The Relationship between Affective and Behavioural Variables

This sub-section deals with the relationship between affective (Pleasure, Arousal and Dominance) and behavioural (Approach, Avoidance and Aminusa) variables. Three hypotheses where proposed and analyzed using the correlation and standard multiple regression analysis. Table 7.3 shows the affective and behavioural hypotheses for the Cardiff study.

Table 7.3: Affective and Behavioural Hypotheses

| | |
|---|---|
| H1 | Affective variables of Pleasure, Dominance and Arousal will each have a positive relationship with Approach. |
| H2 | Affective variables of Pleasure, Arousal and Dominance will each have a negative relationship with Avoidance. |
| H3 | Affective variables of Pleasure, Arousal and Dominance will each have a positive relationship with Aminusa, the net difference between Approach and Avoidance. |

The findings for each of the Cardiff sub-studies provide support for these hypotheses. Additionally, the inter-relations found are not sufficiently high to breach Mehrabian and Russell’s assumptions of orthogonality (statistically

independent) of the affective variables. The details are discussed and compared within Cardiff consumers' groups (green members, non-green members and a combination of members from both groups), and with findings from previous research. The results of this study also show that Dominance is capable of influencing the behavioural variables. These results are consistent with the findings obtained from the Venezuelan and English study (Foxall, 1997a, Foxall and Greenley, 1999, Yani-de-Soriano, 2000).

### 7.4.1 Hypothesis 1

The results for hypotheses 1 provide support that Pleasure, Arousal, and Dominance would each have a positive relationship with Approach. Pearson product-moment correlation (r) is used to describe the strength and direction of the linear relationship between variables. The standard multiple regression analysis is also used to: (1) determine how well the independent variables collectively explain the variance in each of the dependent variables, and (2) determine the relative importance of each of the independent variables in the prediction of each of the dependent variables. Tables 7.4, 7.5, and 7.6 present the relationship between Approach and the PAD variables for the Cardiff, Venezuelan and English studies, respectively.

Table 7.4: The Relationship between Approach and the PAD Variables for the Cardiff Study

| Variables | Sub-study of Green Members (1) | | Sub-study of Non Green Members (2) | | Sub-study of Green and Non Green Members (3) | |
|---|---|---|---|---|---|---|
| | Person's r | β | Person's r | β | Person's r | β |
| Pleasure | .54* | .50* | .52* | .48* | .53* | .49* |
| Arousal | .16* | .06** | .28* | .18* | .22* | .12* |
| Dominance | .28* | .07** | .22* | **.01** | .25* | **.04** |

(1) F3,800 = 111.35; p<0.001; Adjusted R squared = .29
(2) F3,800 = 112.91; p<0.001; Adjusted R squared = .30
(3) F3,1600 =221.07;p<0.001; Adjusted R squared = .29
* p<0.001, **p<0.05

Table 7.5: The Relationship between Approach and the PAD Variables for the Venezuelan Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | |
|---|---|---|---|---|
| | Person's r | β | Person's r | β |
| Pleasure | .51* | .34* | .58* | .40* |
| Arousal | .42* | .19* | .44* | .25* |
| Dominance | .35* | .14* | .40* | .06** |

(1) F3,1012 = 145.76; p<0.001; Adjusted R squared = .30
(2) F3,1012 = 208.09; p<0.001; Adjusted R squared = .38
* p<0.001, **p<0.05
(Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

Table 7.6: The Relationship between Approach and the PAD Variables for the English Study

| Variables | Sub-study of English (1) | | Sub-study of English (2) | | Sub-study of English (3) | | Sub-study of English (4) | |
|---|---|---|---|---|---|---|---|---|
| | Person's r | β | r | β | r | β | r | β |
| Pleasure | .23* | .32* | .59* | .51* | .53* | .51* | .49* | .37* |
| Arousal | .18* | .06** | .38* | .19* | .25* | **.12** | .43* | .24* |
| Dominance | .37* | .11** | .25* | .06** | .15* | -.05* | .18* | **-.03** |

(1) F3,1132 = 67.95; p<0.001; Adjusted R squared = .15

(2) F3,1156 = 248.71; p<0.001; Adjusted R squared = .39

(3) F3,1052 = 143.77; p<0.001; Adjusted R squared = .29

(4) F3,1132 = 148.09; p<0.001; Adjusted R squared = .28

* p<0.001, **p<0.05

(Foxall, 1997a, Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

In all of the Cardiff sub- studies, the correlation between Approach and PAD was positive and highly significant ($p<0.001$ one tailed). Compared to Arousal and Dominance, Pleasure shows the highest association with Approach. Similar findings are found in the Venezuelan and English studies.

In all sub- studies of Cardiff consumers, PAD collectively explains 29% and 30% of the variance in Approach, respectively. These percentages are highly significant ($p<0.001$). Pleasure has the largest and strongest beta value. This means that Pleasure for each sub-study makes the strongest unique contribution to explain the dependent variables. For the sub-study of non-green members as well as the third study of green and non-green members, the Dominance variable does not make a significant unique contribution to the prediction of the Approach model ($p>0.05$). This may be due to overlap with other independent variables in the model.

The English study also encountered the same issue whereby Arousal in sub-study 3 and Dominance in sub-study 4, did not make a significant contribution to the Approach model. The Venezuelan study shows PAD had a highly significant prediction for the model. Compared to the Venezuelan and English study, the Cardiff study shows higher beta scores for Pleasure. In the prediction of Approach, Arousal in the Cardiff, Venezuelan and English studies is the second in importance, except for in English sub-study 1.

### 7.4.2 Hypothesis 2

Hypothesis 2 predicted that Pleasure, Arousal, and Dominance would each have a negative relationship with Avoidance. Analyses were conducted using

the Pearson product-moment correlation (r) and the standard multiple regression analysis. The findings for each of the Cardiff sub-studies provide support for this hypothesis. Tables 7.7, 7.8, and 7.9 present the relationship between Avoidance and the PAD variables for the Cardiff, Venezuelan, and English studies, respectively.

Table 7.7: The Relationship between Avoidance and the PAD Variables for Cardiff Study

| Variables | Sub-study of Green Members (1) | | Sub-study of Non Green Members (2) | | Sub-study of Green and Non Green Members (3) | |
|---|---|---|---|---|---|---|
| | Person's r | β | Person's r | β | Person's r | β |
| Pleasure | -.52* | -.46* | -.56* | -.52* | -.53* | -.49* |
| Arousal | -.10** | **-.01** | -.11** | **-.02** | -.11* | **.01** |
| Dominance | -.33* | -.14* | -.29* | -.09*** | -.31* | -.11* |

(1) F3,800 = 103.30; p<0.001; Adjusted R squared = .28

(2) F3,800 = 122.12; p<0.001; Adjusted R squared = .31

(3) F3,1600 =223.77; p<0.001; Adjusted R squared =.30

* p<0.001, **p<0.01, ***p<0.05

Table 7.8: The Relationship between Avoidance and the PAD Variables for Venezuelan Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | |
|---|---|---|---|---|
| | Person's r | β | Person's r | β |
| Pleasure | -.36* | -.22* | -.47* | -.27* |
| Arousal | -.32* | -.17* | -.38* | -.21* |
| Dominance | -.27* | -.13* | -.40* | -.14* |

(1) F3,1012 = 68.61; p<0.001; Adjusted R squared = .17
(2) F3,1012 = 120.72; p<0.001; Adjusted R squared = .26
* p<0.001
(Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

Table 7.9: The Relationship between Avoidance and the PAD Variables for English Study

| Variables | Sub-study of English (1) | | Sub-study of English (2) | | Sub-study of English (3) | | Sub-study of English (4) | |
|---|---|---|---|---|---|---|---|---|
| | Person's r | β | r | β | r | β | r | β |
| Pleasure | -.23* | -.15* | -31* | -.28* | -.39* | -.38* | -.43* | -.37* |
| Arousal | -.19* | -.11** | -.12* | **-.01** | -.15* | **-.04** | -.31* | -.10* |
| Dominance | -.24* | -.16* | -.16* | -.07** | -.16* | **-.02** | -.20 | **-.04** |

(1) F3,1132 = 37.83; p<0.001; Adjusted R squared = .09

(2) F3,1156 = 42.55; p<0.001; Adjusted R squared = .10

(3) F3,1052 = 64.86; p<0.001; Adjusted R squared = .15

(4) F3,1132 = 93.55; p<0.001; Adjusted R squared = .20

* p<0.001, **p<0.05

(Foxall, 1997a, Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

In all of the Cardiff sub- studies, the correlation between Avoidance and PAD is negative and highly significant (p<0.01 and p<0.001 one tailed). Compared to Arousal and Dominance, Pleasure shows the highest association with Avoidance. Similar findings were found in the Venezuelan and English studies.

In all the sub- studies of Cardiff consumers, PAD collectively explains 28% to 31% of the variance in Avoidance, respectively. These percentages are highly significant (p<0.001). Pleasure has the largest and strongest beta value. This means that Pleasure for each sub-study makes the strongest unique contribution to explain the dependent variables. For each sub-study of Cardiff consumers, Arousal variable for model Avoidance does not make a significant unique contribution to the prediction of the Avoidance model (p>0.05). This may be due to overlap with other independent variables in the model.

The English study also encountered the same issue. Arousal in sub-study 2 and 3 as well as Dominance in sub-study 3 and 4 does not make a significant contribution to the Avoidance model. The Venezuelan study shows PAD had a highly significant prediction of the Avoidance model. Compared to the Venezuelan and English study, the Cardiff study shows higher beta scores for Pleasure. In the prediction of Avoidance, Dominance for the Cardiff and English study is the second in importance, though is not for the Venezuelan and English sub-studies 4.

### 7.4.3 Hypothesis 3

Hypothesis 3 predicted that Pleasure, Arousal, and Dominance would each have a positive relationship with Aminusa (Approach - Avoidance). Analyses were conducted using the Pearson product-moment correlation (r) and the standard multiple regression analysis. The findings for each of the Cardiff sub-study provide support for this hypothesis. Tables 7.10, 7.11, and 7.12 present the relationship between Aminusa and the PAD variables for Cardiff, Venezuelan and English study, respectively.

Table 7.10: The Relationship between Aminusa and the PAD Variables for Cardiff Study

| Variables | Sub-study of Green Members (1) | | Sub-study of Non Green Members (2) | | Sub-study of Green and Non Green Members (3) | |
|---|---|---|---|---|---|---|
| | Person's r | β | Person's r | β | Person's r | β |
| Pleasure | .62* | .56* | .63* | .59* | .63* | .58* |
| Arousal | .15* | **.04** | .23* | .10* | .19* | .07** |
| Dominance | .36* | .12* | .30* | .06*** | .33* | .09* |

(1) F3,800 = 171.13; p<0.001; Adjusted R squared = .39

(2) F3,800 = 188.25; p<0.001; Adjusted R squared = .41

(3) F3,1600 =357.05; p<0.001; Adjusted R squared = .40

* p<0.001, **p<0.01, ***p<0.05

Table 7.11: The Relationship between Aminusa and the PAD Variables for Venezuelan Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | |
|---|---|---|---|---|
| | Person's r | β | Person's r | β |
| Pleasure | .48* | .31* | .57* | .36* |
| Arousal | .40* | .20* | .49* | .25* |
| Dominance | .34* | .15* | .43* | .12* |

(1) F3,1012 = 128.67; p<0.001; Adjusted R squared = .27

(2) F3,1012 = 203.53; p<0.001; Adjusted R squared = .37

* p<0.001
(Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

Table 7.12: The Relationship between Avoidance and the PAD Variables for English Study

| Variables | Sub-study of English (1) | | Sub-study of English (2) | | Sub-study of English (3) | | Sub-study of English (4) | |
|---|---|---|---|---|---|---|---|---|
| | Person's r | β | r | β | r | β | r | β |
| Pleasure | .33* | .25* | .51* | .46* | .49* | .48* | .59* | .47* |
| Arousal | .21* | .09** | .27* | .03** | .21* | .08** | .47* | .21* |
| Dominance | .27* | .16* | .23* | .08** | .17* | **-.01** | .25* | **.02** |

(1) F3,1132 = 64.63; p<0.001; Adjusted R squared = .15

(2) F3,1156 = 37.14; p<0.001; Adjusted R squared = .27

(3) F3,1052 = 116.51; p<0.001; Adjusted R squared = .25

(4) F3,1132 = 231.07; p<0.001; Adjusted R squared = .38

* p<0.001, **p<0.05

(Foxall, 1997a, Foxall and Greenley, 1999, Yani-de-Soriano, 2000)

In all of Cardiff sub- studies, the correlation between Aminusa and PAD are positive and highly significant (p<0.001 one tailed). Compared to Arousal and Dominance, Pleasure shows the highest association with Aminusa. Similar findings are found in the Venezuelan and English studies.

In all sub- studies of Cardiff consumers, PAD collectively explains 39% to 41% of the variance in Aminusa, respectively. These percentages are highly significant (p<0.001). Pleasure has the largest and strongest beta value. This

means that Pleasure for each sub-study makes the strongest unique contribution to explain the dependent variables.

For the sub-study of green members, Arousal variable does not make a significant unique contribution to the prediction of the Aminusa model ($p>0.05$). This may be due to overlap with other independent variables in the model. The Dominance variable for English sub - study 3 and 4, does not make a significant unique contribution to the Aminusa model ($p>0.05$). The Venezuelan study shows PAD had a highly significant prediction of the Aminusa model. Compared to the Venezuelan and English study, the Cardiff study shows higher beta scores for Pleasure. In the prediction of Aminusa, Dominance for Cardiff and English study is the second in importance but it is not in the Venezuelan and English sub-studies 3 and 4.

## 7.5 The Patterns of the Affective and Behavioural Variables

This section deals with the patterns of the affective and behavioural variables. There are three hypotheses (H4, H5 and H6) involved in order to test the patterns of the affective variables and two hypotheses (H7 and H8) for the patterns of the behavioural variables. One-way Analysis of Variance (ANOVA) followed by Tukey's HSD were used to test these hypotheses. Finally, the underlying assumptions that the Aminusa (Approach – Avoidance) would lead to acceptable levels of attitude - behavioural consistency was examined. Hence, H9 was tested using a standard multiple regression analysis. Table 7.13 shows the hypotheses for the Cardiff study.

Table 7.13: Hypotheses (H4 to H9)

| | |
|---|---|
| H4 | Pleasure will be higher for responses associated with consumer situations maintained by high levels of utilitarian reinforcement than for those maintained by low levels of utilitarian reinforcement. |
| H5 | Arousal will be higher for responses associated with consumer situations maintained by high levels of informational reinforcement than for those maintained by low levels of informational reinforcement. |
| H6 | Dominance will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H7 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations maintained by Accomplishment and Hedonism rather than for those maintained by Accumulation and Maintenance. |
| H8 | Aminusa (Approach- Avoidance) will be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. |
| H9 | Aminusa (Approach- Avoidance) will be determined by the attitude variables pleasure, arousal and dominance. |

Tables 7.14, 7.15, and 7.16 show the results of the one-way ANOVA for affective variables. These results are for the Cardiff, Venezuelan and English studies. Tables 7.17 and 7.18 show the results for behavioural variables. In all of the Cardiff sub-studies, the ANOVAs show main effects that are highly significant ($p<0.001$) for each of the CCs. These results are consistent with those of the Venezuelan and English studies, as shown in Tables 7.15, 7.16, and 7.18.

Table 7.14: ANOVA of the Affective Variables for Cardiff Study

| Variables | Sub-study of Green Members | | Sub-study of Non Green Members | | Sub-study of Green and Non Green Members | |
|---|---|---|---|---|---|---|
| | F7,800 | Sig. | F7,800 | Sig. | F7,1600 | Sig. |
| Pleasure | 71 | <0.001 | 75 | <0.001 | 146 | <0.001 |
| Arousal | 18 | <0.001 | 9 | <0.001 | 24 | <0.001 |
| Dominance | 43 | <0.001 | 54 | <0.001 | 95 | <0.001 |

Table 7.15: ANOVA of the Affective Variables for Venezuelan Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | |
|---|---|---|---|---|
| | F7,1008 | Sig. | F7,1008 | Sig. |
| Pleasure | 116 | <0.001 | 145 | <0.001 |
| Arousal | 66 | <0.001 | 176 | <0.001 |
| Dominance | 63 | <0.001 | 127 | <0.001 |

(Yani-de-Soriano, 2000)

Table 7.16: ANOVA of the Affective Variables for English Study

| Variables | Sub-study of English (1) | | Sub-study of English (2) | | Sub-study of English (3) | | Sub-study of English (4) | |
|---|---|---|---|---|---|---|---|---|
| | F7,1128 | Sig. | F7,1152 | Sig. | F7,1048 | Sig. | F7,1128 | Sig. |
| Pleasure | 91 | <0.001 | 214 | <0.001 | 222 | <0.001 | 251 | <0.001 |
| Arousal | 141 | <0.001 | 129 | <0.001 | 38 | <0.001 | 148 | <0.001 |
| Dominance | 99 | <0.001 | 58 | <0.001 | 90 | <0.001 | 135 | <0.001 |

(Foxall, 1997a)

Table 7.17: ANOVA of the Behavioural Variables for Cardiff Study

| Variables | Sub-study of Green Members | | Sub-study of Non Green Members | | Sub-study of Green and Non-Green Members | |
|---|---|---|---|---|---|---|
| | F7,800 | Sig. | F7,800 | Sig. | F7,1600 | Sig. |
| Approach | 20 | <0.001 | 19 | <0.001 | 38 | <0.001 |
| Avoidance | 17 | <0.001 | 18 | <0.001 | 34 | <0.001 |
| Aminusa | 26 | <0.001 | 26 | <0.001 | 49 | <0.001 |

Table 7.18: ANOVA of the Behavioural Variables for Venezuelan and English Study

| Variables | Sub-study of Venezuelan (1) | | Sub-study of Venezuelan (2) | | Sub-study of English | |
|---|---|---|---|---|---|---|
| | F7,1008 | Sig. | F7,1008 | Sig. | F7,4480 | Sig. |
| Approach | - | - | - | - | - | - |
| Avoidance | - | - | - | - | - | - |
| Aminusa | 139 | <0.001 | 77 | <0.001 | 234 | <0.001 |

(Foxall and Yani-de-Soriano, 2005)

Although ANOVA provides results to reject the null hypotheses, it does not provide specific information about which group was affected. Thus, this study used Tukey's HSD in order to determine the differences in means among the contingency categories for each of the affective and behavioural variables as

well as to examine the pattern of these variables. In this study, there were five hypotheses that needed to be tested (H4, H5, H6, H7 and H8).

### 7.5.1 Hypothesis H4 - Pleasure

Pleasure is an index of the utilitarian reinforcement signalled as contingent upon approach behaviour by the discriminative stimuli. The Pleasure hypothesis was tested in order to find out whether Pleasure would be higher for responses associated with high levels than for the low levels of utilitarian reinforcement. For example; the Pleasure means for CCs 1, 2, 3, and 4 will each be significantly higher than those for CCs 5, 6, 7, and 8. The results for each of sub-studies are shown in Tables 7.19, 7.20, and 7.21, respectively.

Table 7.19: Analysis of Pleasure for Cardiff Study

| Predicted CCs | Findings | | |
|---|---|---|---|
| | Sub-study of Green Members | Sub-study of Non-Green Members | Sub-study of Green and Non- Green Members |
| **Pleasure**<br>**(1,2,3,4 > 5,6,7,8)** | **1 > 8 but = 6,7 and < 5;**<br>**2 > 8 but =5,6,7;**<br>**3 > 6,7,8 but = 5;**<br>**4 > 8, but =5,6,7** | **1 > 8 but = 5,6,7;**<br>**2, 4 > 6, 8 but = 5,7;**<br>**3 > 6,7,8 but = 5** | **1 > 8 but = 6,7 <5;**<br>**2, 4 > 6,8 but = 5,7;**<br>**3 > 6,7,8 but =5** |
| Arousal<br>(1,2,5,6 > 3,4,7,8) | 1 > 8 but = 7 and < 3,4;<br>2 > 8 but = 3,4,7;<br>5 > 8 but = 3,4,7;<br>6 > 8 but = 4,7 < 3 | 1 > 8 but = 4,7 < 3;<br>2, 5 > 8 but = 3,4,7;<br>6 > 8 but = 7 < 3,4 | 1,6 > 8 but = 7 < 3,4;<br>2 > 8 but = 4,7 < 3;<br>5 > 8 but = 3,4,7 |
| Dominance<br>(1,3,5,7 > 2,4,6,8) | 1 > 8 but = 6 < 2,4;<br>3 > 6,8 but = 2,4;<br>5 > 8 but = 2,4,6;<br>7 > 8 but = 2,4,6 | 1, 7 > 8 but = 2,4,6;<br>3, 5 > 6,8 but = 2,4 | 1 > 8 but = 6 < 2,4;<br>3 > 2,6,8 but = 4;<br>5 > 6,8 but = 2,4;<br>7 > 8 but = 2,4,6 |

Table 7.20: Analysis of Pleasure for Venezuelan Study

| Predicted CCs | Findings | |
|---|---|---|
| | **Sub-study of Venezuelan (1)** | **Sub-study of Venezuelan without CC5 (2)** |
| **Pleasure (1,2,3,4 > 5,6,7,8)** | **1,2,3> 5,6,7,8; 4 > 7,8 but =5,6** | **1,2,3 > 6,7,8; 4>8 but < 6,7** |
| Arousal (1,2,5,6 > 3,4,7,8) | 1> 3,4,7,8; 2>4,7,8 but =3 5,6 > 8 but =4,7 and <3 | 1> 3,4,7,8; 2> 4,7,8 but =3; 6> 4,8 but =7 and <3 |
| Dominance (1,3,5,7 > 2,4,6,8) | 1> 2,4,6,8; 3>4,6,8 but =2; 5>8 but=4,6 and <2; 7>8 but= 6 and <2,4 | 1 > 2,4,6,8; 3>4,6,8 but= 2; 7>4,8 but =6 and <2 |

(Yani-de-Soriano, 2000)

Table 7.21: Analysis of Pleasure for English Study

| Predicted CCs | Findings | | | |
|---|---|---|---|---|
| | **Sub-study of English (1)** | **Sub-study of English (2)** | **Sub-study of English (3)** | **Sub-study of English (4)** |
| **Pleasure (1,2,3,4> 5,6,7,8)** | **1,2,3>5,6,7,8; 4 > 7,8 but = 5,6** | **1,2,3,4>5,6,7,8** | **1,2,3>5,6,7,8; 4>8 but<5,6,7** | **1,2,3,4>5,6,7,8** |
| Arousal (1,2,5,6> 3,4,7,8) | 1>3,4,7,8; 2>4,7,8 but = 3; 5>7,8 but= 3,4; 6>7,8 but =3,4 | 1>4,7,8 but=3; 2>4,7,8 but<3; 5>7,8 but<3,4; 6>8,=7,and<3, 4 | 1,2>2,4,6,8 but=3; 5,6>4,8 but<3 and =7 | 1,2>3,4,7,8; 5>7,8 but<3,4; 6<3,4 and =7,8 |
| Dominance (1,3,5,7> 2,4,6,8) | 1>2,4,6,8; 3>4,6,8 but =2; 5=4,6 but < 2 and >8 | 1>2,4,6,8; 3>2,4,6,8; 5=6,>8but<2,4; 7>8,=6 but<2,4 | 1,2>2,4,6,8; 5,7>4,8 but=6 and<2 | 1=2,4,6,8; 3>4,6,8 but<2; 5>6,8 but <2,4; 7= 6,8 and < 2,4 |

(Foxall, 1997a)

Table 7.19 shows the analysis of Pleasure for Cardiff. For the sub-study of green members, CCs 1, 2, 3 and 4 illustrate higher means than CC 8. CC 1 shows significantly lower mean than CC 5 and is not significantly different from CCs 6 and 7. CC 2 and CC 4 also show no significant difference from those of CCs 5, 6 and 7. CC 3 demonstrates higher mean than CCs 7 and 8, but is not of significant difference from CC 5.

For the sub-study of non-green members, CC 1 shows significantly higher mean than CC 8 and is not significantly different from CCs 5, 6 and 7. CCs 2 and 4 also illustrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. CC 3 shows significantly higher mean than CCs 6, 7 and 8, but is not significantly different from CC 5. For the sub-study of green and non-green members, CC 1 shows significantly higher mean than CC 8 and is not significantly different from CCs 6 and 7. Additionally, CC 1 also shows significantly lower mean than CC 5. CCs 2 and 4 illustrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. CC 3 shows significantly higher mean than CCs 6, 7 and 8, but is not significantly different from CC 5. Thus, it can be concluded that this sub-study shows similar results to the sub-study of green members and sub-study of non-green members.

Overall, the Cardiff results indicate that this hypothesis is validated with the exception of CC 1 for the sub-study of green members as well as the combination of the sub-study of green and non-green members. Although, there are some differences in means among the contingency categories which are not statistically significant, they are in the right direction. For example, the mean of CC 4 for the sub-study of non-green members is larger than CCs 5 and 7. Pleasure for CC 1 is significantly lower than those for CC 5. When compared with the non- green member study, it is clear that the green members did not find as complete Pleasure in driving a green car (CC 1) as in food waste disposal (CC 5). They believed that a green car can create another problem such as road congestion and over demand of cars as well as

its associated creation. A number of green members also doubted the credibility of a green car. Nevertheless, there was another half of green members who opted for a green car. The best alternative is to cut down car consumption and choose another alternative for transportation.

The findings from Table 7.20 for the Venezuelan study also indicate similar results whereby Pleasure hypothesis is validated with the exception of CC 4 whose Pleasure is significantly lower than CCs 6 and 7 (sub-study 2). Table 7.21 shows the findings from the English study. The results indicate that this hypothesis is validated with the exception of CC 4 whose Pleasure is significantly lower than those for CCs 7 and 8 (sub-study 1) as well as CCs 5, 6, and 7 (sub-study 3).

The present results in Table 7.19 also show that, when tested among Arousal and Dominance, the hypothesised pattern of Pleasure means does not hold. Thus, it helps to accept the results of H4 with greater confidence. Additionally, when compared with the English and Venezuelan studies, it is clear that the present study of Cardiff consumers is consistent with the previous studies.

### 7.5.2 Hypothesis 5 - Arousal

Arousal is a measure of the information rate of an environment. The Arousal hypothesis was tested in order to find out whether Arousal would be higher for responses associated with high levels than for the low levels of informational reinforcement. For example; the Arousal means for CCs 1, 2, 5, and 6 will each be significantly higher than those for CCs 3, 4, 7, and 8. The results for each of sub-study are shown in Tables 7.22, 7.23, and 7.24, respectively.

Table 7.22: Analysis of Arousal for Cardiff Study

| Predicted CCs | Findings | | |
|---|---|---|---|
| | Sub-study of Green Members | Sub-study of Non-Green Members | Sub-study of Green and Non-Green Members |
| Pleasure<br>(1,2,3,4 > 5,6,7,8) | 1, 2 > 7,8 but = 5,6;<br>3 > 7 but = 5,8 < 6;<br>4 > 7 but = 8 < 5,6 | 1,2 > 7,8 but = 5,6;<br>3,4 > 7 but = 5,6 | 1,2 > 7,8 but = 5,6;<br>3 > 7 but = 5,8 < 6;<br>4 > 7 but = 8 < 5,6 |
| **Arousal**<br>**(1,2,5,6 > 3,4,7,8)** | **1 > 7,8 but = 3,4;**<br>**2,6 > 3,4,7,8;**<br>**5 > 4,7,8 but = 3** | **1,2 > 4,7,8 but = 3;**<br>**5, 6 > 7 but = 3,4,8** | **1,2,6 > 3,4,7,8;**<br>**5 > 4,7,8 but = 3** |
| Dominance<br>(1,3,5,7 > 2,4,6,8) | 1 > 8 but = 2,4,6;<br>3 = 4,8 but < 2,6;<br>5 > 4,8 but = 2,6;<br>7 < 2,4,6 but = 8 | 1 > 4,8 but = 2,6;<br>3, 5 = 2,4,6,8;<br>7 < 2,4,6 but = 8 | 1 > 4,8 but = 2,6;<br>3 < 2,6 but = 4,8;<br>5 > 4,8 but = 2,6;<br>7 < 2,4,6,8 |

Table 7.23: Analysis of Arousal for Venezuelan Study

| Predicted CCs | Findings | |
|---|---|---|
| | Sub-study of Venezuelan (1) | Sub-study of Venezuelan (2) |
| Pleasure<br>(1,2,3,4 > 5,6,7,8) | 1,2> 5,6,7,8; 3>7,8 but= 5,6; 4= 7,8 and <5,6 | 1>5,6,7,8; 2>6,7,8 but =5; 3>8 but =7 and <5,6; 4=7,8 and <5,6 |
| **Arousal**<br>**(1,2,5,6 > 3,4,7,8)** | **1,2,5,6 >3,4,7,8 with the exception of 5,6 =3** | **1,2,5,6 >3,4,7,8** |
| Dominance<br>(1,3,5,7 > 2,4,6,8) | 1>4,6,8 but =2; 3,5>4,8 but =6 and <2; 7>8 but =4 and <2,6 | 1>2,4,6,8; 3>8 but =4 and <2,6; 5>4,6,8 but =2; 7 =4,8 and <2,6 |

(Yani-de-Soriano, 2000)

Table 7.24: Analysis of Arousal for English Study

| Predicted CCs | Findings | | | |
|---|---|---|---|---|
| | Sub-study of English (1) | Sub-study of English (2) | Sub-study of English (3) | Sub-study of English (4) |
| Pleasure<br>(1,2,3,4> 5,6,7,8) | 1>7,8 but=5,6;<br>2>5,6,7,8; 3>7 but=8 and <5,6;<br>4<5,6,8 and =7 | 1,2>6,7,8 but=5;<br>3,4 > 7,8 but <5,6; | 1>6,7,8but=5;<br>2>7,8but=5,6;<br>3<5,6and=7,8;<br>4<5,6,7,8 | 1>5,6,7,8;<br>2>6,7,8 but=5;<br>1>7,8 but=5,6;<br>4<5,6 and=7,8 |
| **Arousal**<br>**(1,2,5,6> 3,4,7,8)** | **1,2,5,6> 3,4,7,8** | **1,2,5,6> 3,4,7,8** | **1,2,5,6> 3,4,7,8** | **1,2,5 >3,4,7,8;**<br>**6>4,7,8 but=3** |
| Dominance<br>(1,3,5,7> 2,4,6,8) | 1=2,6 and >4,8;<br>3>4 but=2,6,8;<br>5=2,4,6 but >8;<br>7<2,6,8 and =4 | 1=2 but>4,6,8;<br>3>4,8 but<2,6;<br>5=2,6 but>4,8;<br>7=8and <2,4,6 | 1>4,6,8and=2;<br>3>4but<2,6 and=8; 5=2,4,6,8;<br>7=8 and >4 but<2,6 | 1,5>4,6,8 but=2;<br>3>4,8 but<2 and =6;<br>7<2,6,8and =4 |

(Foxall, 1997a)

Table 7.22 shows the analysis of Arousal for Cardiff. For the sub-study of green members, CC 1 illustrates higher mean than CCs 7 and 8, but is not

significantly different from CCs 3 and 4. CCs 2 and 6 show significantly higher means than CCs 3, 4, 7 and 8. CC 5 also shows higher mean than CCs 4, 7 and 8, but is not significantly different from CC 3. For the sub-study of non-green member, CCs 1 and 2 show significantly higher means than CCs 4, 7 and 8, but are not significantly different from CC 3. CCs 5 and 6 also illustrate higher means than CC 7, but are not significantly different from CCs 3, 4 and 8. For the sub-study of green and non-green members, CCs 1, 2 and 6 show significantly higher means than CCs 3, 4, 7 and 8. CC 5 illustrates higher mean than CCs 4, 7 and 8, but is not significantly different from CC 3. Thus, it can be concluded that this sub-study shows clear results of the Arousal as compared to the sub-study of green members and the sub-study of non-green members.

Overall, the Cardiff results indicate that the Arousal hypothesis is validated. When compared with the non-green member study, it is clear that the green member illustrates more significant means. Although, there are some differences in means among the contingency categories which are not statistically significant, they are in the right direction. For example, the mean of CC 1 for the sub-study of green members is larger than CCs 3 and 4. These results support findings from the Cardiff qualitative interviews whereby green members tend to be more stimulated in terms of environmental behaviour. Previous research also shows that green members are likely to incorporate their environmental interests with their personal preferences (Melucci, 1989, cited in Horton, 2005, Hounsham, 2006, Little, 2009). The main reason they opted for environmental behaviour were for environmental

benefit, saving money, and being part of who they are. On the other hand, the reason for non- green members who performed environmental behaviour was due to convenience, saving money and others (e.g. government obligation, tax reduction for economy car). The findings of the qualitative interviews are in Chapter 5.

The findings from Tables 7.23 and 7.24 for the Venezuelan and English studies also indicate similar results whereby the Arousal hypothesis is validated. The present results in Table 7.22 also show that, when tested among Pleasure and Dominance, the hypothesised pattern of Arousal means does not hold. Thus, it helps to accept the results of H5 with greater confidence. Additionally, when compared with the English and Venezuelan studies, it is clear that the present studies of Cardiff consumers are consistent with the previous studies.

### 7.5.3 Hypothesis 6 - Dominance

Dominance is predicted to increase with the degree of openness of the consumer behaviour setting and vice versa. The Dominance hypothesis was tested in order to find out whether Dominance would be higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. For example; the Dominance means for CCs 1, 3, 5, and 7 will each be significantly higher than those for CCs 2, 4, 6, and 8. The results for each sub-study are shown in Tables 7.25, 7.26, and 7.27, respectively.

Table 7.25: Analysis of Dominance for Cardiff Study

| Predicted CCs | Findings | | |
|---|---|---|---|
| | **Sub-study of Green Members** | **Sub-study of Non-Green Members** | **Sub-study of Green and Non-Green Members** |
| Pleasure<br>(1,2,3,4 > 5,6,7,8) | 1,2 > 6,8 but = 5 < 7;<br>3 > 6,8 but = 5,7;<br>4 < 5,7 but = 6,8 | 1 > 6,8 but = 5 < 7;<br>2 > 6,8 but < 5,7;<br>3 > 6,8 but = 5,7;<br>4 < 5,7 but = 6,8 | 1 > 6,8 but = 5 < 7;<br>2 > 6,8 but < 5,7;<br>3 > 6,8 but = 5,7;<br>4 < 5,7 but = 6,8 |
| Arousal<br>(1,2,5,6 > 3,4,7,8) | 1,2 > 4,8 but < 3,7;<br>5 > 4,8 but = 3,7;<br>6 < 3,7 but = 4,8 | 1 > 4,8 but = 3 < 7;<br>2 > 4,8 but < 3,7;<br>5 > 4,8 but = 3,7;<br>6 < 3,7 but = 4,8 | 1,2 > 4,8 but < 3,7;<br>5 > 4,8 but = 3 < 7;<br>6 < 3,7 but = 4,8 |
| **Dominance**<br>**(1,3,5,7 > 2,4,6,8)** | **1,5 > 4,6,8 but = 2;**<br>**3,7 > 2,4,6,8** | **1,3,5,7 > 2,4,6,8** | **1 > 4,6,8 but = 2;**<br>**3,5,7 > 2,4,6,8** |

Table 7.26: Analysis of Dominance for Venezuelan Study

| Predicted CCs | Findings | |
|---|---|---|
| | **Sub-study of Venezuelan (1)** | **Sub-study of Venezuelan (2)** |
| Pleasure<br>(1,2,3,4 > 5,6,7,8) | 1>6,8 but=5,7; 2>8but=6 and <5,7; 3>5,6,8 but =7; 4=8 and <5,6,7 | 1>5,6,7,8; 2>8 but=6and <5,7, 3>6,8 but=5,7; 4=8 and <5,6,7 |
| Arousal<br>(1,2,5,6 > 3,4,7,8) | 1>4,8 but=3,7; 2,6>8 but=4 and <3,7; 5>4,8 but=7and<3 | 1>3,4,7,8; 2,6>4,8 but <3,7; 5>4,8 but=3,7 |
| **Dominance**<br>**(1,3,5,7 > 2,4,6,8)** | **1,3,5,7 >2,4,6,8** | **1,3,5,7 >2,4,6,8** |

(Yani-de-Soriano, 2000)

Table 7.27: Analysis of Dominance for English Study

| Predicted CCs | Findings | | | |
|---|---|---|---|---|
| | **Sub-study of English (1)** | **Sub-study of English (2)** | **Sub-study of English (3)** | **Sub-study of English (4)** |
| Pleasure<br>(1,2,3,4> 5,6,7,8) | 1>6,7,8and=5;<br>2>8but<5,6,7;<br>3>6,8but=5,7;<br>4<5,6,7 and=8 | 1>5,6,7,8; 2>6,8 but=5,7;<br>3>6,8but=5,7;<br>4=6,8and <5,7 | 1>4,8and=5,7;<br>2<5,6,7and=8;<br>3>6,8 but=5,7;<br>4,5,6,7,8 | 1>5,6,7,8;<br>2,4<5,7and=6,8;<br>3>6,8 but=5,7 |
| Arousal<br>(1,2,5,6> 3,4,7,8) | 1>4,7,8 but=3;<br>2>4,8 but<3,7;<br>5>4,7,8 but=3;<br>6>4,8 but<3,7 | 1>3,4,7,8; 2>4,8 but<7and=3;<br>5>4,8 but=3,7;<br>6<3,7 and=4,8 | 1,5>4,8but= 3,7;<br>2>4,7 but=8;<br>7>4,8 but<3,7 | 1>3,4,7,8;<br>2,6<3,7and=4,8;<br>5>4,8 but=3,7 |
| **Dominance**<br>**(1,3,5,7> 2,4,6,8)** | **1,3,5>2,4,6,8**<br>**7>2,4,6,8 and =6** | **1,7>2,4,6,8;**<br>**3>4,6,8and=2;**<br>**5>4,6,8and=2;** | **1,3,5,7 >2,4,6,8** | **1,3,5,7>2,4,6,8** |

(Foxall, 1997a)

Table 7.25 shows the analysis of Dominance for Cardiff. For the sub-study of green members, CCs 1 and 5 illustrate higher means than CCs 4, 6 and 8, but

are not significantly different from CC 2. CCs 3 and 7 show significantly higher means than CCs 2, 4, 6 and 8. For the sub-study of non-green members, CCs 1, 3, 5 and 7 show significantly higher means than CCs 2, 4, 6 and 8. For sub-studies of green and non-green members, CC 1 shows significantly higher mean than CCs 4, 6 and 8, but is not significantly different from CC 2. CCs 3, 5 and 7 illustrate higher means than CCs 2, 4, 6 and 8.

Overall, the Cardiff results indicate that the Dominance hypothesis is validated. Although, there are some differences in means among the contingency categories which are not statistically significant, they are in the right direction. For example, the mean of CCs 1 and 5 for the sub-study of green members is larger than CC 2. The sub-study of non-green members shows perfect results of the Dominance as compared to the sub-study of green members and the sub-study of green and non-green members.

The findings from Tables 7.26 and 7.27 for the Venezuelan and English studies also indicate similar results whereby the Dominance hypothesis is validated. The present results in Table 7.25 also show that, when tested among Pleasure and Arousal, the hypothesised pattern of Dominance means does not hold. Thus, it helps in accepting the results of H6 with greater confidence. Additionally, when compared with the English and Venezuelan studies, it is clear that the present studies of Cardiff consumers are consistent with the previous studies.

### 7.5.4 Hypotheses 7, 8 and 9 - Aminusa

Aminusa is the net difference between Approach and Avoidance. Three hypotheses H7, H8 and H9 were tested for the present study. The first two hypotheses H7 (CCs 1, 2, 3, 4 > 5, 6, 7, 8) and H8 (CCs 1, 3, 5, 7 > 2, 4, 6, 8) were tested for the level of Aminusa in each of the operant classes of the BPM. One-way ANOVA and Tukey's HSD analysis were used to test hypotheses 7 and 8. Finally, hypothesis 9 was tested in order to find out whether Aminusa would be determined by the attitude variables of PAD. A standard multiple regression analysis was used to explore hypothesis 9. Details of the hypotheses are presented in Table 7.13. The results for each of the sub-studies are shown in Tables 7.28, 7.29, 7.30 and 7.31, respectively.

Table 7.28: Analysis of Aminusa for Cardiff Study

| Predicted CCs | Findings | | |
|---|---|---|---|
| | Sub-study of Green Members | Sub-study of Non-Green Members | Sub-study of Green and Non- Green Members |
| Aminusa (1,2,3,4 > 5,6,7,8) | 1,2,3,4 > 8 but = 5,6,7 | 1, 4 > 8 but = 5,6,7;<br>2 > 6,8 but = 5,7;<br>3 > 6,7,8 but =5 | 1, 4 > 8 but = 5,6,7;<br>2, 3 > 6,8 but = 5,7 |
| Aminusa (1,3,5,7 > 2,4,6,8) | 1 > 8 but = 4,6 < 2;<br>3, 5, 7 > 8 but = 2,4,6 | 1 > 8 but = 4,6 < 2;<br>3 > 6,8 but = 2,4;<br>5, 7 > 8 but = 2,4,6 | 1 > 8 but = 4,6 < 2;<br>3 > 6,8 but = 2,4;<br>5, 7 > 8 but = 2,4,6 |

Table 7.29: Analysis of Aminusa for Venezuelan and English Study

| Predicted CCs | Findings | | |
|---|---|---|---|
| | Sub-study of Venezuelan (1) | Sub-study of Venezuelan (2) | Sub-study of English |
| Aminusa - (H7) (1,2,3,4 > 5,6,7,8) | 1,2,3>5,6,7,8;<br>4<5,6,7,8 | 1,2,4>5,6,7,8;<br>3>6,7,8 but=5 | Similar results as Venezuelan findings |
| Aminusa - (H8) (1,3,5,7 > 2,4,6,8) | 1,3,5,7>2,4,6,8 | 1,3,5,7>2,4,6,8 | 1>2,4,6,8<br>3,7>4,6,8<br>5>8 but <2 |

(Foxall and Yani-de-Soriano, 2005)

Table 7.28 shows the analysis of Aminusa for Cardiff. For the sub-study of green members, the first analysis was to test H7. CCs 1, 2, 3 and 4 show significantly higher means than 8, but are not significantly different from CCs 5, 6 and 7. The second analysis was to test H8. CC 1 illustrates higher means than CC 8, but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CCs 3, 5 and 7 show higher means than CC 8, but are not significantly different from CCs 2, 4 and 6.

For the sub-study of non-green members, the first analysis was to test H7. CCs 1 and 4 show significantly higher means than CC 8, but are not significantly different from CCs 5, 6 and 7. CC 2 demonstrates higher mean than CCs 6 and 8, but is not significantly different from CCs 5 and 7. CC 3 shows higher mean than CCs 6, 7 and 8, but is not significantly different from CC 5. The second analysis was to test H8. CC 1 illustrates higher mean than CC 8, but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CC 3 shows significantly higher mean than CCs 6 and 8, but is not different from CCs 2 and 4. CCs 5 and 7 demonstrate higher means than CC 8, but are not significantly difference from CCs 2, 4 and 6.

For the sub-study of green and non-green members, the first analysis was to test H7. CCs 1 and 4 show significantly higher means than CC 8, but are not significantly different from CCs 5, 6 and 7. CCs 2 and 3 demonstrate higher means than CCs 6 and 8, but are not significantly different from CCs 5 and 7. The second analysis was to test H8. CC 1 illustrates higher mean than CC 8,

but is not significantly different from CCs 4 and 6. Additionally, CC 2 is significantly higher than CC 1. CC 3 shows significantly higher mean than CCs 6 and 8, but is not different from CCs 2 and 4. CCs 5 and 7 demonstrate higher means than CC 8, but are not significantly different from CCs 2, 4 and 6. Thus, it can be concluded that this sub-study shows similar results to the sub-study of green members and the sub-study of non-green members.

Overall, the Cardiff results indicate that the Aminusa hypothesis for H7 is validated. The findings for H7 show that the non-green member study has more significantly higher means than the green member study. The Aminusa hypothesis for H8 is also validated. Although the mean of CC 1 (driving hybrid car) is smaller then CC 2 (carless), it is tentatively accepted. This is because the prediction was that the Aminusa means of CCs 1, 3, 5 and 7 would exceed CCs 2, 4, 6 and 8. The CC 2 situation is described as the mission to cut down car usage by choosing another alternative of transportation. However, when compared to CC 1, the findings show that consumers are more likely to experience controlling, dominant or autonomous power of using the carless transportation instead of driving a hybrid car.

Findings from Table 7.29 for the Venezuelan and English studies show clear results of the Aminusa hypothesis as compared to the sub-study of Cardiff consumers. The findings also have the same issue as the Cardiff study. The findings for hypothesis 7 show that the mean of CC 4 for the Venezuelan study is smaller than those of CCs 5, 6, 7 and 8. Hypothesis 7 is only tentatively accepted given that the prediction was that the Aminusa means for

CCs 1 to 4 would exceed CCs 5 to 8 (Foxall and Yani-de-Soriano, 2005). The findings for hypothesis 8 also show that the mean of CC 5 for the English study is significantly smaller than CC 2. When compared with the English and Venezuelan studies, the present studies of Cardiff consumers are similar to the previous studies.

Table 7.30: Results of Multiple Regression Analysis for Cardiff Study

| Model | $F_{3,800}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Sub- study of Green Members** | | | | | | | |
| **Aminusa =** | 171.13 | <0.001 | .39 | | | | |
| **P** | | | | .56 | <0.001 | .79 | 1.3 |
| **+** | | | | | | | |
| **A** | | | | **.04** | **.193** | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .12 | <0.001 | .82 | 1.2 |
| **Sub- study of Non-Green Members** | | | | | | | |
| **Aminusa =** | 188.25 | <0.001 | .41 | | | | |
| **P** | | | | .59 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .10 | <0.001 | .95 | 1.1 |
| **+** | | | | | | | |
| **D** | | | | .06 | .053 | .85 | 1.2 |
| **Model** | $F_{3,1600}$ | **P** | **Adjusted $R^2$** | $\beta$ | **P** | **T** | **VIF** |
| **Sub- study of Green and Non-Green Members** | | | | | | | |
| **Aminusa =** | 357.05 | <0.001 | .40 | | | | |
| **P** | | | | .58 | <0.001 | .81 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .07 | .001 | .96 | 1.0 |
| **+** | | | | | | | |
| **D** | | | | .09 | <0.001 | .84 | 1.2 |

Table 7.31: Results of Multiple Regression Analysis for Venezuelan and English Study

| Model | $F_{3,1012}$ | Sig. | Adjusted $R^2$ | $\beta$ | Sig. | T | VIF |
|---|---|---|---|---|---|---|---|
| **Sub- study of Venezuelan (1)** | | | | | | | |
| **Aminusa =** | 128.67 | <0.001 | .27 | | | | |
| **P** | | | | .31 | <0.001 | .62 | 1.6 |
| **+** | | | | | | | |
| **A** | | | | .20 | <0.001 | .71 | 1.4 |
| **+** | | | | | | | |
| **D** | | | | .15 | <0.001 | .80 | 1.3 |
| **Sub- study of Venezuelan (2)** | | | | | | | |
| **Aminusa =** | 203.53 | <0.001 | .37 | | | | |
| **P** | | | | .36 | <0.001 | .48 | 2.1 |
| **+** | | | | | | | |
| **A** | | | | .25 | <0.001 | .70 | 1.4 |
| **+** | | | | | | | |
| **D** | | | | .12 | <0.001 | .61 | 1.6 |
| **Model** | $F_{3,4484}$ | **Sig.** | **Adjusted $R^2$** | $\beta$ | **Sig.** | **T** | **VIF** |
| **Sub- study of English** | | | | | | | |
| **Aminusa =** | 512.84 | <0.001 | .26 | | | | |
| **P** | | | | .43 | <0.001 | .83 | 1.2 |
| **+** | | | | | | | |
| **A** | | | | .11 | <0.001 | .86 | 1.2 |
| **+** | | | | | | | |
| **D** | | | | .06 | <0.001 | .87 | 1.5 |

(Foxall and Yani-de-Soriano, 2005)

Table 7.30 shows the multiple regression analysis of Aminusa for Cardiff. In the sub-study of green members, PAD collectively explains 39% of the variance in Aminusa. In the sub-study of non-green members, the affective variables account for a larger percentage of variance in behaviour than in the sub-study of green members and the sub-study of green and non-green members (41%). For the sub-study of green and non-green, the model explains 40% of the Aminusa model. Although these percentages are moderate, they are highly significant ($p<0.001$). The findings show that for all

sub-studies, no tolerance value falls below 0.1 and no VIF exceeds 10. Thus, the current sub-studies have not violated the multicollinearity assumption. Pleasure has the largest and strongest beta value. This means that Pleasure for each sub-study makes the strongest unique contribution to explain the dependent variable. For the sub-study of green members, Arousal variable does not make a significant unique contribution to the prediction of the dependent variable ($p>0.05$). This may be due to overlap with other independent variables in the model. Dominance for each sub-study also makes a contribution to explaining the model. The evidence for attitude-behaviour consistency over the range of situations investigated is encouraging whereby PAD explained 39 to 41% of the Aminusa model in the Cardiff study. Hence, the standard multiple regression analysis provides support for the result of H9.

The findings from Table 7.31 for the Venezuelan and English studies also indicate similar results whereby hypothesis 9 is validated. In the sub-study Venezuelan 1, PAD collectively explains 27% of the variance in Aminusa. In the sub-study Venezuelan 2, the affective variables account for a larger percentage of variance in behaviour than in sub-study Venezuelan 1 and the sub-study of English consumers (37%). For the sub-study of English consumers, the model explains 26% of the Aminusa model. Although these percentages are moderate, they are highly significant ($p<.001$). When compared with the English and Venezuelan studies, it is clear that the present studies of Cardiff consumers are consistent with the previous studies.

## 7.6 The Discriminant Power of Variables

A more stringent evaluation of the BPM can be conducted in order to evaluate differences between the operant classes of consumer behaviour with respect to multivariate profile. The multivariate profile consists of the affective variables (PAD) and the behavioural variables (Approach, Avoidance and Aminusa). Hence this sub-section aims to test the discriminating power of the affective and behavioural variables as well as the open versus closed consumer behaviour setting. A standard multiple discriminant analysis is used to test the discriminant power of variables.

It is expected that Arousal will discriminate between Accomplishment and Hedonism, and between Accumulation and Maintenance. Next, both Pleasure and Arousal are expected to discriminate between Hedonism and Accumulation, and between Accomplishment and Maintenance. Pleasure is expected to discriminate between Accomplishment and Accumulation, and between Hedonism and Maintenance. Finally, Dominance is expected to discriminate between closed and open settings.

The interpretation of MDA is similar to logistic regression or multiple regression analysis. Wilk's lambda and chi-square statistics are used to assess whether this function reliably discriminates among the categories. Discriminant loadings are also used to measure the linear correlation between each variable and the discriminant function are used as a basis for interpreting the discriminating power of the variables. The cut off point of 0.3 and above is considered substantive (Hair et al., 1998). The Univariate F

Ratio shows whether there is significant effect of category for each of the predictor variables. Tables 7.32, 7.33, and 7.34 show the discriminant power of variables for Cardiff, Venezuelan, and English study.

Table 7.32: Discriminant Power of Variables for Cardiff Study

| Affective and Behavioural Variables | Findings | | |
|---|---|---|---|
| | Sub-study of Green Members | Sub-study of Non-Green Members | Sub-study of Green and Non-Green Members |
| Accomplishment – Hedonism | **Arousal**, pleasure | **Pleasure,** arousal, avoidance | **Arousal**, pleasure |
| Hedonism - Accumulation | **Arousal**, pleasure | **Pleasure**, approach, aminusa*, avoidance, dominance | **Pleasure**, arousal, approach, aminusa* |
| Accumulation - Maintenance | **Pleasure**, arousal, aminusa*, approach, avoidance | **Pleasure**, aminusa*, avoidance, arousal, approach | **Pleasure**, arousal, aminusa*, approach, avoidance |
| Accomplishment - Accumulation | **Dominance** | **Approach**, dominance, arousal, aminusa* | **Dominance**, Approach |
| Accomplishment - Maintenance | **Arousal**, pleasure, approach, aminusa*, avoidance | **Approach**, pleasure, aminusa*, arousal, avoidance | **Pleasure**, arousal, approach, aminusa*, avoidance |
| Hedonism- Maintenance | **Pleasure**, approach, aminusa* | **Pleasure**, aminusa*, approach, avoidance | **Pleasure**, approach, aminusa*, avoidance |
| Open- Closed Setting | **Dominance**, pleasure, avoidance, aminusa* | **Dominance**, pleasure | **Dominance**, pleasure, avoidance, aminusa* |

*This value not used in the analysis
**The highest discriminator is in bold type**

Table 7.33: Discriminant Power of Variables for Venezuelan Study

| Affective and Behavioural Variables | Findings | |
|---|---|---|
| | Sub-study of Venezuelan (1) | Sub-study of Venezuelan (2) |
| Accomplishment – Hedonism | **Approach**, aminusa, arousal, avoidance, pleasure | **Arousal**, approach, aminusa, pleasure, avoidance |
| Hedonism - Accumulation | **Arousal**, pleasure, approach, aminusa | **Arousal** |
| Accumulation -Maintenance | **Arousal**, pleasure | **Arousal**, pleasure, aminusa |
| Accomplishment - Accumulation | **Approach**, aminusa, pleasure, avoidance | **Approach**, aminusa, pleasure, avoidance, dominance, arousal |
| Accomplishment - Maintenance | **Approach**, aminusa, pleasure, arousal, avoidance | **Arousal**, approach, pleasure, aminusa, avoidance |
| Hedonism- Maintenance | **Pleasure**, arousal | **Pleasure**, approach, aminusa |
| Open- Closed Setting | **Dominance**, approach, aminusa, pleasure, avoidance | **Dominance**, pleasure, aminusa, approach |

**The highest discriminator is in bold type**
(Yani-de-Soriano, 2000)

Table 7.34: Discriminant Power of Variables for English Study

| Affective and Behavioural Variables | Findings<br>English Study |
|---|---|
| Accomplishment – Hedonism | **Arousal,** approach, aminusa |
| Hedonism - Accumulation | **Arousal**, pleasure, approach, aminusa |
| Accumulation -Maintenance | **Arousal**, pleasure |
| Accomplishment - Accumulation | **Pleasure**, approach, aminusa, avoidance |
| Accomplishment - Maintenance | **Pleasure**, arousal, aminusa, approach |
| Hedonism- Maintenance | **Pleasure**, approach, aminusa |
| Open- Closed Setting | **Dominance**, pleasure |

**The highest discriminator is in bold type**
(Foxall and Greenley, 2000)

Table 7.32 shows the discriminant power of variables for the Cardiff study. For the sub-study of green members, Arousal is the highest discriminator between Accomplishment and Hedonism. For the sub-study of non-green members, Pleasure is the highest discriminator, followed by Arousal. For the sub-study of green and non-green members, Arousal is the highest discriminator. These results are consistent with those obtained in Tables 7.33 and 7.34 of the Venezuelan and English study.

For the sub-study of Cardiff green members, Arousal is the highest discriminator between Hedonism and Accumulation. This is followed by the Pleasure variable. For the sub-study of non-green members, Pleasure is the highest discriminator. In the sub-study of green and non-green members, Pleasure is the highest discriminator and followed by Arousal. These results are consistent with the Venezuelan and English studies. The findings also demonstrate that the Arousal variable discriminates negatively.

The findings for Accumulation and Maintenance show that the Pleasure variable is the highest discriminator for each part of the Cardiff study. This is followed by the Arousal variable. A finding of the Venezuelan and English

study reveals that Arousal is the highest discriminator, followed by Pleasure. Comparisons of all sub-studies show that there is a difference between the main discriminator. However, the affective discriminators are all the same.

For the sub-study of Cardiff green members, Dominance is the highest discriminator between Accomplishment and Accumulation. For the sub-study of non-green members, Approach, Dominance, and Arousal are significant discriminators. Approach is the highest discriminator between these two operant classes. For the sub-study of green and non-green members, Dominance and Approach are significant discriminators. The study also shows that Dominance is the highest discriminator. The findings of the Venezuelan study illustrate that Approach is the highest discriminator, followed by the Pleasure variable. In the English study, Pleasure is the highest discriminator. Comparisons of all sub-studies show that there is a difference between the main discriminator.

For the sub-study of Cardiff green members, Arousal is the highest discriminator between Accomplishment and Maintenance. This is followed by the Pleasure variable. For the sub-study of non-green members, Approach is the highest discriminator, followed by the Pleasure and Arousal variables. In the sub-study of green and non-green members, Pleasure is the highest discriminator, followed by the Arousal variable. These results are consistent with the Venezuelan and English studies.

Findings for Hedonism and Maintenance show that the Pleasure variable is the highest discriminator for each of the Cardiff studies. These results are consistent with the Venezuelan and English studies. Finally, the findings for open and closed setting show that the Dominance variable is the highest discriminator for each of the Cardiff studies. These results are consistent with the Venezuelan and English studies.

Generally, the discriminant functions for the Cardiff studies have successfully predicted outcome in between 61% and 77% of cases. This signifies that the percentage of cases classified for all the analysis samples exceeds the 50% level occurring by chance, indicating a good fit of the data.

## 7.7 The Effect of Pleasure, Arousal and Dominance

An interaction effect is the joint effect of two or more independent variables on a dependent variable. Interaction is significant when the p value is ≤0.05. Previous research has reported the findings of interaction effect between the Arousal and Pleasure. However, the role of Dominance remains enigmatic.

Factorial ANOVA is used to examine the relationship between affective and behavioural variable. Two analyses were conducted for each sub-study. The first was to examine the main and interaction effects of the independent variables via the General Linear Model (GLM). Second, the interaction was investigated in detail by the ANOVA tests of Tukey's HSD procedures. The results of the analysis are shown in Chapter 6. Figures 7.2, 7.3 and 7.4 show two-way interactions of affective variables in Cardiff.

Figure 7.2: Sub-study of Green Members -Two Way Interaction of Pleasure and Dominance

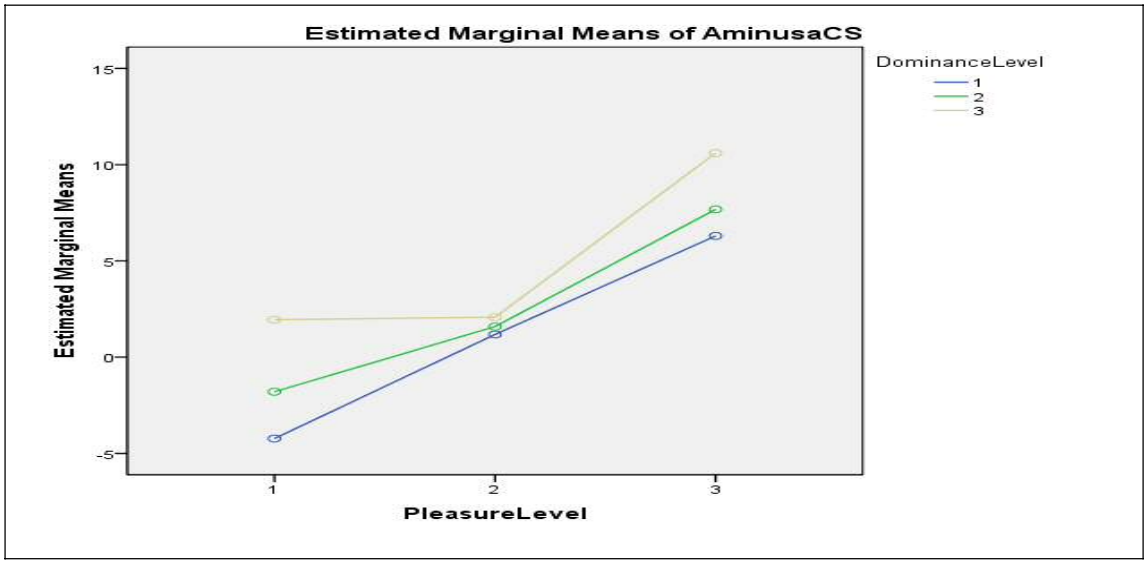



Figure 7.3: Sub-study of Non-Green Members -Two Way Interaction of Arousal and Dominance

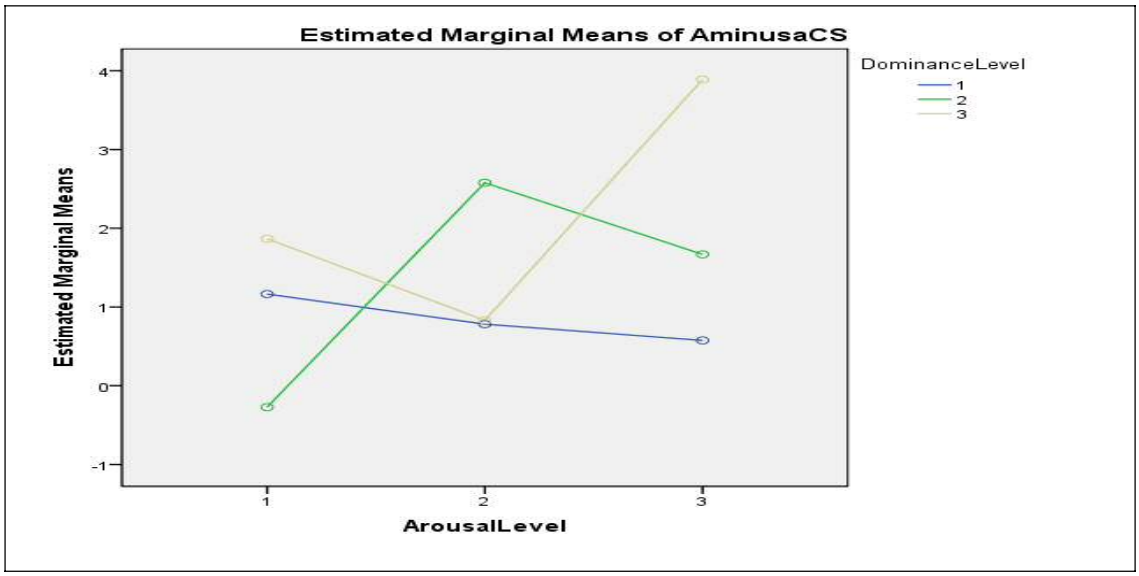
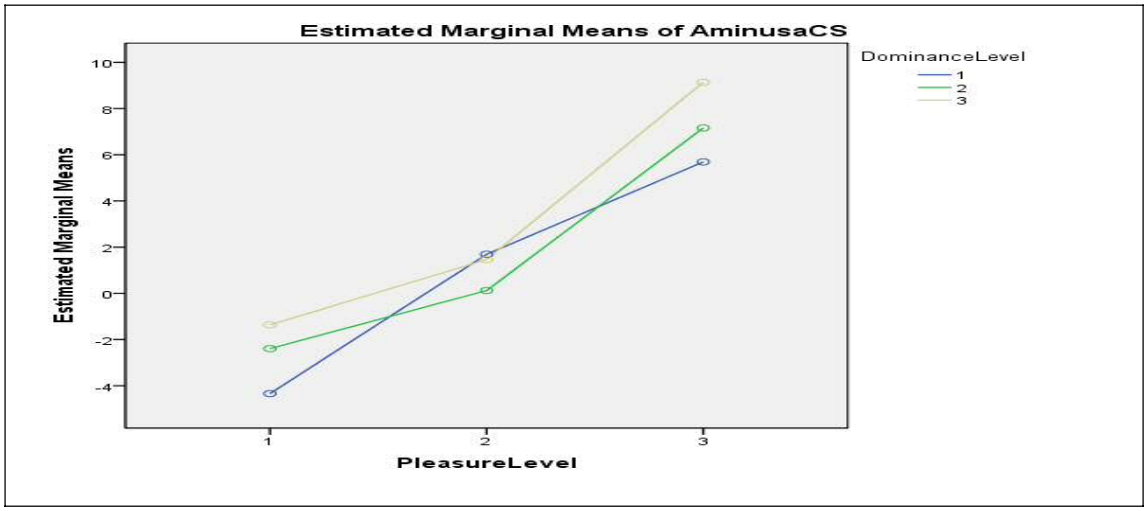


Figure 7.4: Sub-study of Green and Non-Green Members -Two Way Interaction of Pleasure and Dominance




The findings show that for all Cardiff sub-studies, there is a significant two-way interaction effect. In the sub-study of green members, the results show only one two-way interaction effect between Pleasure and Dominance ($p \leq 0.05$). This interaction accounts for 18% of the variance in Approach-Avoidance. The Tukey's HSD test indicates that the means score for Pleasure and Dominance highly significantly ($p<0.001$) different between the three levels of means (low, medium and high). Pleasure and Dominance show highly significant main effects ($p<0.001$). When compared with the Venezuelan and English studies, it is clear that Pleasure and Arousal in the Cardiff study did not show any interaction effect ($p> 0.05$).

In the sub-study of non-green members, the results show only one two-way interaction effect between Arousal and Dominance ($p \leq 0.05$). This interaction accounts for 18% of the variance in Approach-Avoidance. Pleasure shows a highly significant main effect ($p<0.001$).

The sub-study of non-green members also indicates that the means score for Arousal and Dominance significantly ($p \leq 0.001$) different between the three levels of means (low, medium and high). When compared with the Venezuelan and English studies, it is clear that Pleasure and Arousal in the Cardiff study did not show any interaction effect ($p > 0.05$).

In the sub-study of green and non-green members, Pleasure and Dominance show highly significant main effects ($p < 0.001$). The results show only one two-way interaction effect between Pleasure and Dominance ($p < 0.05$). This interaction accounts for 34% of the variance in Approach-Avoidance. Also a three-way interaction effect is shown for the three independent variables ($p < 0.05$). The Tukey HSD test indicates that the means score for the Pleasure and Dominance highly significantly ($p < 0.001$) different between the three levels of means (low, medium and high). When compared with the Venezuelan and English studies, it is clear that Pleasure and Arousal in the Cardiff study did not show any interaction effect ($p > 0.05$).

## 7.8 Conclusion

Chapter 7 deals with the discussion of the Cardiff consumers' data in the context of some further analysis. The discussion covers a wide range of area from the forecast based on the application of Mehrabian and Russell's environmental psychology to the BPM and consumer situations. The measurement of Approach, Avoidance and Aminusa (Approach-Avoidance) has led to the finding of the relationship with the affective variables. Overall, consumers' verbal responses to descriptions of selected consumer environmental situations confirm the BPM interpretation of consumer choice.

A summary of the main findings, research limitation, contribution and future studies will be discussed in the last chapter of the thesis.

# CHAPTER EIGHT

## CONCLUSIONS AND FUTURE RESEARCH

### 8.1 Introduction

This thesis has been built upon 8 chapters. Chapter 1 provides a general view of what is to be expected from the thesis. This includes a summary of the research background and problem. Chapter 1 also addresses the research purpose, questions, objectives, hypotheses and justification for the research. In addition, a summary of the research methodology is also presented. Chapter 2 describes the rise of environmental concerns, the green movement and a broad range of green behaviour, such as the use of private transportation, reusing waste, using less energy and cutting water consumption. A review of the current environmental scenario in the UK and Cardiff is also included. Chapter 2 ends with a review of the extended literature on green consumer studies.

Chapter 3 presents the literature review of the Behavioural Perspective Model as the theoretical foundation upon which the research is based. Chapter 4 deals with the literature on consumer emotion which is specifically linked to the Mehrabian and Russell theory of emotional responses. The methodology of the thesis is presented in Chapter 5. This is followed by data analysis and the results in Chapter 6. Chapter 7 provides an intensive discussion of the research findings in the context of some further analysis. The findings from the Cardiff study are discussed and compared between the three sub-studies of green member, non-green member and a combination of the green and non-green member. The present findings conducted in Cardiff were also

compared with the results of previous applications of the model in England and Venezuela. Although this study has different consumer situations compared to the English and Venezuelan studies, the measurement scales are all the same.

Finally, Chapter 8 concludes the thesis. This chapter presents an overview of the thesis as well as a summary of the main findings. The research contributions and meaningful guidance for future research are also included. Additionally, the limitations of the research are discussed and Chapter 8 ends with the study's conclusion.

## 8.2 Research Overview

Previous attempts to interpret consumer environmental behaviour through theoretical perspectives have been unsuccessful in producing concrete findings (Tanner, 1999, Peattie, 2001, Hartmann, 2006). To date, a number of studies have been conducted in relation to environmental issues, attitudinal studies and green consumer behaviour, along with the associated demographic variables and their socioeconomic contexts (Dunlap and Scarce, 1991, Chan and Lau, 2000, Bhate, 2001, Laroche et al., 2001, Diamantopoulos et al., 2003, Jackson, 2005, Young et al., 2010, Cordano et al., 2011). Hitherto, researchers still could not understand the real green consumer behaviour (Mullaly, 1998, Straughan and Roberts, 1999, Peattie, 2001, Wagner, 2003, Rex and Baumann, 2007).

There are issues that have emerged from green studies such as the 'attitude – behaviour gap' or 'value- action gap' whereby consumers' environmental

concern differs from their actual behaviour (Corraliza and Berenguer, 2000, Young et al., 2010). This could be due to the models used in the studies, such as the Theory of Reason Action, do not include emotional behaviour and the role of habit (Jackson, 2005, Fitzmaurice, 2005). Moreover, the ecological value theory also overlooks the influence of situational variables in the relationship between value and environmental behaviour (Jackson, 2005). Thus, it is not impossible to find that some of the consumer behaviour studies indicate that consumer decisions seldom reflect consumer behaviour (Foxall and Yani-de-Soriano, 2005, Jackson, 2005, Mostafa, 2007).

Despite the undoubted contributions of these researchers, there are many questions left unanswered. What reinforces consumers' environmental behaviour choices in different situations? How do they feel about specific descriptions of consumer environmental situations? Is it possible to interpret consumer environmental behaviour across different situations in a systematic way?

Researchers should consider the influence of the consumer environment or situation in the consumer environmental behaviour study. This is because the consumer situation has specific emotional effects on consumer approach-avoidance behaviour (Kotler, 1973, Turley and Milliman, 2000). It is also vital to understand the role of emotion in consumer behaviour since consumers use their emotional perspective and may choose either to approach or avoid the behaviour of choice (Kaufman, 1999, Jackson, 2005, Jang and Namkung, 2009). In addition, the social learning theory is also practical for the study of environmentally friendly behaviour due to its powerful avenue of behaviour

change. Previous research has used applied behaviour analysis to study consumer environmental behaviour (Stern and Gardner, 1981, van Houwelingen and van Raaij, 1989, Bechtel, 1997, Schultz, 1998, Dietz et al., 2009). However, the empirical findings of applied behaviour analysis lack systematic organization and theory based generalisation (Foxall, 1994b).

Based on the above points, this thesis deals with the interpretation of consumers' environmental behaviour responses in terms of the different consumer situations in which they take place and the pattern of reinforcement which those settings indicate as probable. Of particular interest, for example, are domestic water and electricity consumption, private transportation patterns and waste disposal practices. A particularly relevant stream of research to explain the mechanism behind this situational effect on consumers' environmental behaviour choices is the Behavioural Perspective Model (BPM).

A key insight of the BPM is that the anticipated benefit consumers acquired and the impact of the environment that surrounds the consumer's choice (Foxall and Greenley, 1998, Foxall et al., 2006, Foxall, 2011). The model has been useful in analysis of typical consumer behaviour (Foxall and Greenley, 1999, Yani-de-Soriano et al., 2002). However, no study has been conducted in relation to consumer environmental behaviour. Hence, it is important for the present research to assess whether the BPM is able to explain consumer environmental behaviour across different situations.

This model also employs the Mehrabian and Russell (1974) PAD scales which evaluate the emotional responses to descriptions of physical and social environments (Foxall, 1997a). The descriptions of ranges of consumer environmental situations are constructed with reference to the BPM. According to the findings, the BPM has been shown capable of predicting Cardiff consumers' environmental behaviour.

## 8.3 Summary of the Main Findings

This section presents a summary of the main findings obtained from the Cardiff consumers' environmental behaviour research. The main purpose of this study is to interpret consumer environmental behaviour across different situations in a systematic way by using the BPM. The findings from the consumers' verbal responses to descriptions of eight consumer environmental situations confirm the predictions raised by the BPM interpretation of consumer choice. The findings indicate that:

**a. The relationship of affective (Pleasure, Arousal, Dominance) variables is as predicted by the behavioural variables (Approach and Avoidance).**

The findings show that: (1) the affective variables of Pleasure, Dominance and Arousal have a positive relationship with Approach, (2) the affective variables of Pleasure, Dominance and Arousal have a negative relationship with Avoidance, and (3) the affective variables of Pleasure, Dominance and Arousal have a positive relationship with Aminusa, the net difference between Approach and Avoidance.

**b. The patterns of the affective and behavioural variables are as predicted by the BPM model.**

The findings show that: (1) Pleasure was higher for responses associated with consumer situations maintained by high levels of utilitarian reinforcement than for those maintained by low levels of utilitarian reinforcement, (2) Arousal was higher for responses associated with consumer situations maintained by high levels of informational reinforcement than for those maintained by low levels of informational reinforcement, (3) Dominance was higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting, (4) Aminusa (Approach- Avoidance) was higher for responses associated with consumer situations maintained by Accomplishment and Hedonism rather than for those maintained by Accumulation and Maintenance, and (5) Aminusa (Approach- Avoidance) was higher for responses associated with consumer situations characterised by the openness of the consumer behaviour setting than for those characterised by the closeness of the consumer behaviour setting. The discriminant analysis justified the predicted capability of the BPM.

**c. Interaction effect of Dominance and Pleasure or Arousal**

The findings show that there was a significant two-way interaction effect between Pleasure and Dominance as well as Arousal and Dominance.

In summary, this study shows that the application of the model is not only empirically limited to familiar themes of consumer research but also applicable to different consumer environmental behaviour. The present study seeks to

develop a constructive theoretical framework to analyze environmental behaviour across different situations in a systematic way in reference to the BPM, illustrate procedures for environmental behaviour studies, and provide insights relevant to green marketing.

## 8.4 Key Contributions

This section deals with the research contribution obtained from the present study. It covers from the theoretical to methodological contributions.

### 8.4.1 Theoretical

Previous research has consistently revealed an increased environmental knowledge and attitudes among consumers (Ellen, 1994, Lomborg, 2001, Belz and Peattie, 2009, Cordano et al., 2011). However, the majority of attitudinal studies have also shown that environmental concern or attitudinal variables failed to assess consumer behaviour (Tanner, 1999, Corraliza and Berenguer, 2000, Lomborg, 2001, Truffer et al., 2001, Randall, 2005, Vaze, 2009, Young et al., 2010). The present study has used the BPM model to interpret consumer environmental behaviour across different consumer situations. The findings support the view that the model provides a valid framework for the interpretation of consumer environmental behaviour. Below is the contribution of the BPM model from theoretical perspectives.

#### a. The Applicability of the BPM

Previous studies of consumer environmental behaviour have been inconclusive due to: overlooking of the influence of consumer situational variables, excluding of emotional behaviour of the models, lacking of empirical

work of the role of physical stimuli in consumer research, and researchers using ad hoc setting due to lack of the theoretical framework for consumer behaviour setting (Foxall, 1994b, Foxall and Greenley, 1998, Foxall, 1998, Turley and Milliman, 2000, Jackson, 2005, Fitzmaurice, 2005, Carrus et al., 2008).

However, the BPM model can be employed to study and interpret consumer behaviour in systematic consumer situations (Foxall, 1993b, Foxall, 1999, Foxall and Greenley, 2000, Foxall, 2011). The model has been highly acclaimed in consumer behaviour studies due to its strong links between environmental behaviour and its consequences. This is where the BPM emerged as an integrative device which is capable of predicting consumer behaviour via the intersection between the behaviour setting and the pattern of reinforcement signalled from the consumer learning history (Foxall et al., 2006). It has been stated that the BPM model 'provides a useful generic Applied Behaviour Analysis model to explain how environmental behaviours are controlled by antecedent and consequence events' (Roy, 2010, p. 218).

The present study of Cardiff consumers' environmental behaviour has used the BPM model. The findings support the view that the BPM is able to predict consumer behaviour and also provides explanation in terms of the pattern of behaviour to be found in each of eight contingency categories. The consumers' verbal responses to descriptions of consumer environmental situations confirm the predictions raised by the BPM interpretation of consumer choice.

The present study also showed that the Mehrabian and Russell's scales are reliable for interpreting consumer environmental behaviour. Findings from the affective (Pleasure, Arousal and Dominance) and behavioural (Approach, Avoidance and Aminusa) variables have been predictable by the relationship and degree of the relationship between variables, the pattern of the variables, and the discriminant power of affective and behavioural variables. These findings are consistent with previous English and Venezuelan studies that used the BPM to interpret typical consumer behaviour (Foxall, 1997b, Foxall and Greenley, 1999, Yani-de-Soriano, 2000). Thus, it can be concluded that the BPM is able to provide a framework for systematic usage of the Mehrabian and Russell's scales in the consumer behaviour study (Foxall, 1997a). The model also has a direct relationship with environmental psychology via the application of the Mehrabian and Russell model in consumer study (Foxall, 2010a). This is where the BPM allows consumers to remain, explore, browse and socialize verbally in term of their emotional reactions within the consumer behaviour setting.

The present study did not show any interaction effect between Pleasure and Arousal. It only demonstrates a significant two-way interaction effect between Pleasure and Dominance as well as Arousal and Dominance. However, previous English and Venezuelan studies identified the interaction effect of Pleasure and Arousal in the consumer Approach or Avoidance behaviour (Foxall, 1997b, Foxall and Greenley, 1999, Yani-de-Soriano, 2000). Clearly, the present findings of interaction effect have showed the important role of Dominance in Approach-Avoidance behaviour. Dominance is associated with

the closed and open behaviour setting. The importance of consumer behaviour setting has been acknowledged in the study of consumer behaviour (Belk, 1974, Lutz and Kakkar, 1975, Russell and Mehrabian, 1978, Donovan and Rossiter, 1982, Eroglu and Machleit, 2008). This is because consumer behaviour setting consists of the discriminative stimuli (e.g. salesperson, business hours, self and other rules) which induce or inhibit consumer behaviour (Foxall, 2010a, Foxall, 2011). Thus, it would be interesting to learn more about this effect since the previous study of consumer behaviour have not found interaction effect of Dominance (Mehrabian and Russell, 1974, Foxall and Greenley, 1998, Yani-de-Soriano, 2000)

The present study also shows that the application of the model is not empirically limited only to familiar themes of consumer research but also applicable to different consumer environmental behaviour. Thus, this study has created a new set of consumer situations which focus on consumer environmental behaviour. The findings in Cardiff show the capability of the model to work under different consumer situations and a different cultural context. In other words, the results also broaden the scope of application of the model to Cardiff, Wales.

**b. Assessment of the Dimensionality and Reliability of the Scales**

Mehrabian and Russell have developed a PAD model to describe the relationship between consumer behaviour and environment. The PAD model was used to (a) select a comprehensive and balanced set of everyday situation-activity combinations, and (b) obtain the relationship between emotional responses to specific situations (Mehrabian and Russell, 1974,

Mehrabian et al., 1997). The model are well-known in the consumer study (Havlena and Holbrook, 1986). It has been claimed that PAD model is able to provide a general framework to explain any emotional state, stimuli, situations, activities or behavioural inclinations (Mehrabian et al., 1997). For example; findings of the emotional preferences for everyday situations showed that Pleasure and Dominance are positive correlates of preferred emotions or vice versa (Mehrabian et al., 1997). Additionally, the PAD model shows more validity as compared to other emotional models (e.g. the PANAS model) (Mehrabian, 1997). A study between the PAD paradigm and Plutchik's emotional categories in consumer behaviour has also showed that the PAD model is probably more useful and able to capture more information about the emotional responses to the consumption experience (Havlena and Holbrook, 1986).

The present research adopts Mehrabian and Russell's (1974) measurement scales without modification. This is because previous research has shown the reliability and validity of the scales (Foxall, 1997b, Yani-de-Soriano and Foxall, 2006). However, it was important to test the dimensionality and reliability of the scales due to the nature of the present study, which used different consumer situations in a new environment. Thus, exploratory factor analysis was used to assess the dimensionality of the measurement scales for the present study via the PCA technique.

The present findings show that the items in the PAD scale are unidimensional whereby they are strongly associated with each other and reflected by a

separate factor or components. These findings are consistent with previous research (Mehrabian and Russell, 1974, Foxall, 1997b, Foxall and Greenley, 1999, Yani-de-Soriano, 2000). The present findings also reveal the order of the emergence of the factors. Pleasure has been the first factor to emerge in all sub-studies. This is followed by the second factor, Dominance and Arousal, the last factor. The order of the emergence of the present factors supports the previous findings from Yani-de- Soriano and Foxall's research. This study also points out that the PAD scales are reliable. Cronbach's alpha is used in the study of the findings of all Cardiff sub-studies which revealed that the affective and behavioural variables have high internal consistency. This means that the scales in the current study are reliable for the exploratory research. When compared to the English and Venezuelan studies, the present results are very similar and consistent with the previous results.

**c. The Rise of Dominance Variable**

Research on the consumer environment domain continues to evolve as an important factor in consumer behaviour (Eroglu and Machleit, 2008). It covers a wide range of areas from atmospherics, social stimuli between customers and employees to servicescapes (Kotler, 1973, Bitner, 1990, Bitner, 1992, Baker et al., 2002). One of the commonly used models to study the person-environment relationship is the Mehrabian and Russell's PAD scales (Mehrabian and Russell, 1974, Russell and Mehrabian, 1978, Donovan and Rossiter, 1982, Mehrabian et al., 1997).

The last two decades have seen the use of PAD as the measurement scales in studies of purchasing and consumption leading to mixed findings (Lutz and

Kakkar, 1975, Russell and Pratt, 1980, Donovan and Rossiter, 1982, Yalch and Spangenberg, 1988, cited in Turley and Milliman, 2000). This is where Pleasure and Arousal as compared to Dominance has been well established in the literature (Havlena and Holbrook, 1986). A number of authors failed to measure Dominance and deleted it due to lack of support for this variable in their earlier study (Russell and Pratt, 1980, Donovan and Rossiter, 1982). This could be due to the failure of researchers deal adequately with setting in relation to respondents' reported Dominance or using ad hoc setting as they lack the theoretical framework for consumer environmental setting (Foxall and Greenley, 1998). By contrast, it also has been proven that there is a consistency of findings between satisfaction and various everyday settings (Dominance) (Mehrabian et al., 1997). The studies in England and Venezuela have found support for the role of Dominance in consumer behaviour (Yani-de-Soriano and Foxall, 2006).

The present study shows that various combinations of PAD scales may adequately influence consumer behaviour study. The findings from the standard multiple discriminant analysis found distinct support for the role of Dominance as an influence on consumer behaviour. For all Cardiff sub-studies, Dominance is the highest discriminator. Dominance discriminates between open and closed consumer behaviour settings as proposed by the BPM model. In addition, Dominance together with Pleasure and Arousal is able to influence Approach-Avoidance behaviour and collectively explain 39 to 41% of the variance for each sub-study, and these results were highly significant ($p<0.001$).

Thus, the evidence presented in this section about the validity of Dominance as an emotional descriptor of environments is strong and should be included in the three dimensional PAD model.

### 8.4.2 Methodological

The present study has used mixed method research in order to explore and examine consumer environmental behaviour across different situations by using the BPM model. A preliminary study of Cardiff consumers' environmental behaviour via standardized interviews was conducted in order to explore current consumer environmental behaviour, feelings and reinforcement. The strengths of the standardized interviews are: increasing comparability of responses, reducing interviewer effects and bias, permitting evaluation users to see and reviewing the instrumentation used in the evaluation, and facilitating organization of data (Patton, 2002). Detailed findings of the qualitative interviews are in sub-section 5.5. These findings were used to form consumer environmental situations for the survey.

Prior to the survey, consumer environmental situations were developed, tested and chosen on the basis of the BPM model and the Cardiff environment. Panel experts were invited to take part in the BPM Contingency Definition Test. This was to ascertain how far judges were able to allocate the proposed consumer situations based on the categories specified by the BPM model (Foxall, 1999). The findings assisted the researcher to choose the most reliable and workable consumer environmental situation to be used for the survey. Two pre-test were also conducted with samples similar to those of the proposed main sample in order to validate the measurement scales. It is

crucial to undergo these processes in order to make sure that respondent does understand the *literal meaning* and *pragmatic meaning* of what researcher has in mind. *Literal meaning* refers to whether respondents understand the words and later able to provide a meaningful answer (Weaver and Schwarz, 2008). A *pragmatic meaning* can be described between 'hearing what a marketing researcher says and deciding what the researcher actually means' (Weaver and Schwarz, 2008, p. 1082).

Survey data were collected and analysed to assess whether consumer feedback can be predicted from consumers' affective reactions to specific consumer environmental situations. The objective was to measure consumer verbalised emotional responses to descriptions of eight consumer environmental situations, and to find out whether the Behavioural Perspective Model (BPM) is able to explain consumer environmentally friendly behaviour. Eighteen pairs of adjectives from Mehrabian and Russell's PAD scales and six items of Approach/ Avoidance were used for each of the consumer situations (Mehrabian and Russell, 1974). The choice of sample and the sampling procedures are also described. A justification of the methodology and the rationale for the choice of Cardiff as a context for the study are explained. Analyses using SPSS were conducted in order to find out the reliability and validity of measurement scales, hypotheses testing, the validity of the BPM model, and the interaction effect of affective variables. Finally, the choice to use different types of analysis for the present study is also described and justified. Detailed findings of the survey are illustrated in Chapter 6.

Thus, these procedures should be valuable for any researchers who are interested in doing future research related to consumer environmental behaviour and the BPM model.

## 8.5 Implications for Practitioners

The present study has shown that PAD is a valid emotional dimension and mediates Approach-Avoidance behaviour. Thus, the findings of the present study might prove valuable for practitioners for understanding consumer environmental behaviour. In addition, the BPM model presented might be useful for marketers, governments and society as a whole to change consumers' thoughts and behaviours.

### a. Marketers

This study makes a contribution that will aid marketers whereby a better understanding of the way the model works contributes to a better formulation of marketing strategies. A successful marketing strategy revolves around an efficient, flexible, and adaptable blending of the elements of the marketing mix to satisfy consumers in a particular market (Kurtz and Boone, 2006). Thus, marketers can take action to design, promote and sell environmental solutions that need to be seen in relation to the audience by encouraging approach behaviour strategies (Foxall, 1994b, Rex and Baumann, 2007, Grant, 2007, Goldsmith, 2009). This can be achieved by employing the reinforcement learning. Reinforcement is how consumer behaviour is learned 'whereby action is constrained by the opportunities available and directed by the rewards and costs that are presented' (East et al., 2008, p. 24). Thus, it can

be said that consumer behaviour are learned through the process of association between stimulus, response and its outcomes.

The present study has used the BPM model to interpret consumer environmental behaviour. This is where consumer response behaviour can be predicted from two elements of situational influence: (1) the behaviour setting and (2) the pattern of utilitarian and informational reinforcement signalled from the setting and consumer's learning history (Foxall et al., 2006). The utilitarian and information reinforcement can be in the form of feedback or incentives such as prizes, consumer deals (discounts, refunds and rebate), sweepstakes, rewards and contests. For example, in the present findings of BPM, private transportation is categorized as Accomplishment because consumer behaviour is maintained by high levels of utilitarian (e.g., fun of driving) and informational reward (e.g., travel time) (Foxall et al., 2006). In order to change consumer transportation behaviour, utilitarian reward is much more effective (Foxall, 2002). Therefore, marketers have to develop a more attractive green product or services which focus on reinforcement consequences.

This is where the product shaping process takes place. Product shaping can be defined as behaviour that gradually shifted due to the reinforcers that such products deliver (East et al., 2008). Thus, consumer may seek more sophisticated eco-friendly car that represent their environmental behaviour. For example, Hybrid cars such as Honda Civic Hybrid are developed and

promoted as trendy and fuel-efficient with fewer emissions and capable of making long journeys (Hailes, 2007, Constantino, 2009).

The pattern of utilitarian and informational reinforcement can be used to classify consumer behaviour: Accomplishment, Accumulation, Hedonism/Pleasure, and Maintenance. These operant classifications of consumer behaviour can be used to communicate new products (DiClemente and Hantula, 2003). For example, the Accomplishment category for initiators stage, Hedonism/Pleasure for early imitators, Accumulation for later imitators and Maintenance for adopters (Nicholson and Xiao, 2010). Hence, marketers can take the opportunity to use the four classes of consumer behaviour as a framework to engage consumer environmental behaviour.

Consumers also need to be informed of green products or services. This is because lack of knowledge will lead to distortion in green consumer behaviour (Grant, 2007). One of the ways to inform and educate consumers is via advertising (Kotler and Keller, 2006). Emotion plays an important role in mediating consumer responses to advertising (Laros and Steenkamp, 2005). In particular, it has been stated that emotions can help to explain why consumers are not always rational in their decision making process (Jansson-Boyd, 2010). Hence, the findings of the present research may assist marketers to consider the role of Pleasure, Arousal and Dominance as mediators of consumer responses to advertising: for example, advertising judged high on Pleasure, Arousal and Dominance, such as adverts for Toyota Prius, evoking pleasant, social prestige and freedom.

Marketers are encouraged to use repetition of marketing stimulus and pictorial cues to ensure that their products' advertisements are more likely to be remembered (Solomon et al., 1999, Jansson-Boyd, 2010). Marketers can also employ the frequency marketing technique which reinforces regular customers with increasing rewards along with their consumption (Solomon et al., 1999). For example, Tesco offers bonus points for consumers who used their recycled bags at Tesco outlets. Consumers can either save their points or redeem for prizes. This operant learning technique can shape consumer behaviour for taking appropriate action such as shopping with minimal usage of plastic bags.

Marketers might also consider the elements of the consumer environment or situation that provoke Dominance. This is because consumer environment is able to cause specific emotional responses which can enhance consumer behaviour either intrinsically or extrinsically (Kotler, 1973, Turley and Milliman, 2000, Jang and Namkung, 2009). These situations may be psychical surroundings, social surroundings, temporal perspective, task definition, and antecedent states (Belk, 1975, Foxall et al., 1998). It has been proven that a pleasant environment such as the choice of music and scent makes consumer feel better and therefore influences their positive behaviour (East et al., 2008, Baron et al., 2008). In other words, the combination of similar music and scent are able to increase the evaluation of the in-store environment (Mattila and Wirtz, 2001).

Hence, marketers should improve the consumer behaviour setting so that it is inviting and joyful and makes green stuff accessible as well as easy to grasp (Grant, 2007). Attention should be given towards the physical, temporal, social, and regulatory environment that produces approach rather than avoidance behaviour. For example, marketers can use the nature background music team with earth scent that could have a positive influence on evaluation in the green store as well as congruent with the green product.

**b. Government**

The government has acknowledged the role of environmental management as one of the key strategies towards sustainable development (Mullaly, 1998, Simms and Smith, 2008, Russell, 2009, Goldsmith, 2009). It allows people to become more nature sensitive and understand better the relationship between people and nature as well as take meaningful corrective action. The closer the government's understanding of what causes consumer environmental behaviour, the better it can develop green marketing strategies. However, little progress has been made toward linking the macro level of government environmental policy with the intricacies of multiplying motivated consumer behaviour (Friends of the Earth, 1990, Press Association, 2010). It can be said that it is not easy to change consumer behaviour. Nevertheless there are two methods which might be useful to encourage consumer environmental behaviour which are stimulus control management and contingency management.

Stimulus control management is where stimuli such as models, specific cues and instructions are used to engage consumer towards particular behaviour

(Jansson-Boyd, 2010). On the other hand, contingency management is where consumers associate rewards or punishments with a particular behaviour (Walker, 1979, cited in Jansson-Boyd, 2010). However, there are some limitations to these methods. First, it is very difficult to promote consumers' environmental behaviour if they are living in the societies that actively support over-consumption. Second, it is also difficult to engage consumers towards environmental behaviours if they only notice the short-term instead of the long-term benefits of their behaviour (Jansson-Boyd, 2010). Nevertheless, environmental behaviour research still shows that rewards or punishments are able to influence consumer behaviour (van Houwelingen and van Raaij, 1989, Bechtel, 1997, Bekin et al., 2007, Constantino, 2009, Goldsmith, 2009). It has been found that a good reinforcer such as reward may increase consumer behaviour (Premack, 1959, cited in Jansson-Boyd, 2010). Thus, the findings of the present research may assist the government to understand the relationship between consumer environmental behaviour and the reinforcement consequences.

Two reinforcement consequences can be used to promote environmental behaviour. First is informational reinforcement in the form of feedback. Second is utilitarian reinforcement in the form of incentives (Foxall, 2002). The government can modify consumers' private transportation by promoting free road tax for the green car (Constantino, 2009, Goldsmith, 2009). Another alternative is to provide car sharing programmes or make public transportation more popular. This is where the government has to promote green transportation programmes (e.g., car sharing programmes or park and ride)

by educating consumers in terms of utilitarian reinforcement such as faster travel systems and information reinforcement in the form of cost no longer incurred (Foxall, 1994b, Foxall, 2002, Semlyen, 2003).

Most people believe that feedback and incentive strategies do work and can reinforce consumer environmental behaviour (van Houwelingen and van Raaij, 1989, Bechtel, 1997, McCalley and Midden, 2002, Loftus, 2006, Constantino, 2009, Goldsmith, 2009, Roy, 2010). However, feedback and incentives do not always strengthen positive consumer behaviour (Hutchinson and Eisenstein, 2008). Thus, in order to make these strategies more effective, government should consider combining them with other variables such as goal, information, education and motivation (Stern, 2000, McCalley and Midden, 2002, Roy, 2010)

Modification of consumers' waste disposal can also be done by adopting reinforcement consequences. For example, in the BPM, waste disposal is classed as Accumulation whereby the utilitarian level of reinforcement is low but the informational level is high (Foxall, 1994b). The government can increase informational reinforcement (e.g., linking behaviour to saving the environment or feedback on progress) and utilitarian reinforcement (e.g., waste reward) to those who recycled more. Government can also adopt the punishment consequences for those who produce more waste and less recycling. For example, the Denmark municipal waste management has charged consumers according to the volume of their household waste (Solomon et al., 1999).

Another most effective way to reduce waste disposal is by treating the places of waste disposal in terms of, for example, the condition of bins, bags, waste disposal lorries or recycling containers which are convenient for consumers to use (Foxall, 1994b). For example, the Japanese government train their citizens to recycle by providing the waste disposal lorries that play classical music (Solomon et al., 1999).

The council can also use the foot-in-the-door technique in order to gain waste disposal compliance. This is a procedure for gaining compliance in which target consumer agree to a small request and then proceed to a larger request (Baron et al., 2008). For example, the council offers consumer free recycling bags and then, when this is given; escalates to a larger request which is to do a proper recycling programme. This procedure is based on the principle of consistency whereby once consumers have agreed to do small request, they are more likely to do the larger request (Baron et al., 2008). Hence, this helps the council to manage its waste collection services. Additionally, the council could cut down the number of waste collection trips and encourage recycling by creating more recycling facilities (Bekin et al., 2007).

**c. Society as a Whole**

Society needs to work together to minimize the environmental problem. Its members are the main contributors to environmental problems (Friends of the Earth, 1990, Withrington, 2009, Friedman, 2009). The problems they cause often stem from patterns of consumerism, such as the widespread use of private cars, over consumption of electricity and generating a great deal of

waste (McCarthy, 2004, Khaneka, 2006, Withrington, 2009). The issue of product disposition also emerged since people live in a throw-away society which eventually creates environmental problem and a great deal of unnecessary waste (Solomon et al., 1999).

The present study can help society to reduce its environmental impact. The BPM model provides a good framework to understand consumer behaviour (Foxall, 2010a, Foxall, 2011). This model suggests that consumer behaviour can be divided into four classes: Accomplishment, Hedonism/Pleasure, Accumulation, and Maintenance. These classes can help researchers, practitioners and society to understand consumer behaviour. For example, domestic energy is classed as Hedonism/Pleasure due to the high level of utilitarian reinforcement and low informational reinforcement. One of the guidelines for reducing energy consumption is to encourage avoidance of high bills by giving feedback on consumption (van Houwelingen and van Raaij, 1989, Bechtel, 1997, Foxall, 2002). Additionally, promotion can be used to inform consumers regarding their domestic energy green consumption (e.g., better insulation and green electrical appliances). Marketers can design advertisements which focus on the underlying utilitarian or informational reinforcement that will increase consumer environmental behaviour.

Domestic water consumption is classed as Maintenance - the levels of utilitarian and informational reinforcements are low. This is because they are related to the consumer's state of deprivation, as domestic water is a basic human need. An increase in price blended with feedback would be an

effective tool to modify consumer behaviour (Foxall, 1994b). For example, water metering provides customer with quick feedback (informational reinforcement) on their current usage and costs of domestic water (Loftus, 2006). Local home water conservation should also take place, such as by using a water saving device (Hailes, 2007, Constantino, 2009).

The non-profit environmental groups can also use the present findings to encourage and promote environmental behaviour. The environmental programmes should include both informational and utilitarian reinforcement along with a fully integrated marketing mix (Foxall, 2002). For example, some of the non-profit environmental groups venture into second-hand shops (e.g., OXFAM and Re-Create, Cardiff & Vale Play Services) which provide a venue to support, promote and donate towards environmental causes. It can be said that the growth of the second-hand market is able to assist the non-profit groups to promote the environment, reduce waste and fulfil the demands for quality and cost consciousness' consumers (Solomon et al., 1999)

Past environmental programmes have been criticised for focusing too much on information and failed to change consumer behaviour (Foxall, 1994b). It has been argued that:

> Information is not enough; people seldom take advice unless taking other advice has been reinforced. If, on the other hand, [we] adopt the 'attitude-change' approach, people are also not likely to change. Attitudes are inferences from the behaviour that is said to show their presence and are not directly accessible. If I turn off unnecessary lights and appliances in my home, it is not because I have a 'positive attitude' toward conservation, but because doing so has some kind of reinforcing consequences. To induce people to conserve energy, one must change contingencies of reinforcement, not attitudes. No one should try to beat a 'path from

> information to action,' because action is the problem and contingencies the solution (Skinner, 1987, p. 785).

The lack of relationship between information and actual environmental behaviour may also be due to the inefficient execution of the actual information as well as how people are being targeted (Jansson-Boyd, 2010). This could be because the information is not attracting enough attention or the focused is in the direction of consumers' attitudes instead of behaviours (Stern, 2000). Thus, the information of environmental behaviour should be designed towards the implementation of behavioural change strategies. One way of communicating environmental behaviour is through modelling.

Modelling is a form of vicarious learning whereby people observe a real life role model and inspire to follow their role model behaviour (Jansson-Boyd, 2010). For example, it can be very effective to make use of popular celebrities such as Leonardo DiCaprio to inform and persuade people towards environmental behaviour because he is well-known for his environmental campaign. It has been proven that the idea of using popular celebrities is able to increase positive environmental behaviour (Verhue and Verbeek, 2002). There are factors which can increase effectiveness of modelling via celebrities such as using a celebrity who is credible, exerting attraction, and matching the audience identity as well as message.

## 8.6 Research Limitations

This study of Cardiff consumers' environmental behaviour is not without limitations. The research limitations can be related to the verbal reports of affective response or participation of respondents.

### a. Verbal Reports of Affective Response

The research relies on the assumption that the verbal measures of PAD are appropriate responses to consumer behaviour. Therefore, it cannot be said that these verbal responses either reflect consumers' affective behaviour or predict their actual behaviour in the setting tested in the present study. However, the BPM predictions of consumers' affective and behavioural responses are supported by the present findings regarding Cardiff consumers. Additionally, the findings from the English and Venezuelan studies also supported the BPM predictions of consumer behaviour (Foxall and Greenley, 1999, Yani-de-Soriano et al., 2002) .

### b. Target Respondent

The sample characteristics may not be representative of the population of Cardiff as a whole. It can be said that the sample in the present study has been skewed towards middle class consumers. However, it represents the green and non-green members in Cardiff. The selection of respondents was done cautiously. Only the active members of green groups were involved in the study. In attempting to satisfy sample equivalence, the selection of non-green members was based on the characteristics which matched the green members, such as demographic and socioeconomic factors. Details of samples and the sampling procedure are in sub-section 5.4.

### c. Access to do data collection

The present research also encountered a problem in terms of access to data collection. First, several of the well-known green groups were reluctant to give permission to collect data among their group members. The main reason was

that they have a very busy schedule. Second, several of the green groups did not have a permanent address for their group gatherings or meetings. They conduct a meeting via the Internet or meet at different locations. Hence, it was difficult for the researcher to have consistent data collection. In order to overcome this problem, the present study used snowball sampling. The researcher also had to spend time and energy as a volunteer at community activities in order to recruit potential respondents. Prize draws were offered for those who participated in the survey.

## 8.7 Future Research

Future research can be conducted in order to improve the findings found in the present study. Thus, it is suggested that:

### a. Replication of the Environmental Behaviour Study

The present findings show that the BPM is able to predict consumer environmental behaviour. The consumer environmental situations developed in the study can be used in other English speaking countries which share similar environmental behaviour. It would also be interesting to test the BPM in other countries which are keener towards environmental behaviour such as Germany. It is hoped that the findings would be able to test the practicability and generalisability of the present study. Additionally, the three dimensional PAD model can also be tested in other languages in order to further examine the reliability of its application. At the moment, the PAD model has had its validity in the Spanish language tested (Yani-de-Soriano and Foxall, 2002).

**b. Test the Interaction Effect of Dominance and Pleasure or Arousal**

The interaction of Dominance with other affective variables such as Pleasure or Arousal has not been fully explored. The findings of the present research have found interaction between Dominance and Pleasure as well as Dominance and Arousal in Approach-Avoidance consumer behaviour. It has been stated that Dominance plays an important role for researchers, practitioners and consumers (Mehrabian and Russell, 1974, Yani-de-Soriano and Foxall, 2006, Foxall, 2011). For example, Dominance can mediate the effects of advertising or influence Approach-Avoidance behaviour (Kotler, 1973, Turley and Milliman, 2000, Jang and Namkung, 2009). In the BPM, Dominance is expected to represent the consumer closed and open behaviour setting (Foxall, 1994a, Foxall, 1997c, Yani-de-Soriano, 2000). A consumer behaviour setting consists of discriminative stimuli in the form of physical, social, temporal or regulatory stimuli which induce or inhibit consumer behaviour (Foxall, 1994a, Yani-de-Soriano et al., 2002, Xiao and Nicholson, 2009, Foxall, 2011).

Thus, it would be interesting to learn more about this effect since most of the previous research has only discussed the interaction between Pleasure and Arousal (Mehrabian and Russell, 1974, Foxall and Greenley, 1998, Yani-de-Soriano, 2000).

**c. Actual Behaviour**

The present study has used verbal behaviour to interpret consumer's affective and behavioural responses. The findings have produced consistent results. However, further research needs to be conducted in order to detect the

consistency of verbal responses with the actual behaviour. The previous studies of typical consumer behaviour by BPM also stated the need to discover the uniformity between verbal responses and actual consumer behaviour (Foxall, 1997b, Yani-de-Soriano, 2000).

Thus, one of the approaches to measure consumer behaviour is through keeping a diary of behaviour. For example, consumer will be asked to fill out his/ her diary with records of his/ her energy and water consumption over a certain period of times. The advantage of a diary is that it can improve and strengthen the accuracy of consumer behaviour measurement (McKenzie, 1983, Mullaly, 1998). However, the drawback is that this approach may reduce participation rates (McKenzie, 1983, Mullaly, 1998). Future research will take into account the diary approach in order to gather data in the study of consumer environmental behaviour.

**d. Study of the Communes**

Further research can be conducted among the communes as they have a notionally high ecological profile. They are usually small in number, from discrete units whose residents are committed to living together and they are mostly from rural areas. Residents can be green consumers, anti-urbans and/or sometimes people lacking money (Pepper, 1991). In addition, they are middle class, educated and favour alternative technology rather than high technology. Most importantly, their values and moral concerns of group solidarity and relations are more important to them than instrumental and economic concerns (Pepper, 1991). It is interesting to predict their

environmental behaviour in terms of consumers' affective and behavioural verbal responses derived from the BPM.

## 8.8 Conclusion

Despite the efforts made by previous researchers to understand consumer behaviour, there are still incomplete understandings of the consumer over-consumption of resources (Mullaly, 1998, Straughan and Roberts, 1999, Peattie, 2001, Wagner, 2003, Rex and Baumann, 2007). Attempts to promote environmental behaviour through mass campaigns have been largely ineffective (Foxall, 1994b) . Studies of the impact of consumer environmental behaviour have also been theoretically limited (Foxall, 1994b, Tanner, 1999, Peattie, 2001, Hartmann, 2006). The question arises as to whether it is possible to interpret consumer environmental behaviour.

Thus, the central purpose of this thesis is to interpret consumers' environmental behaviour across different situations in a systematic way by using the BPM. The findings show that the BPM was able to predict Cardiff consumers' environmental behaviour. The applicability of the model is not empirically limited only to familiar themes of consumer research but also valid in terms of different consumer environmental behaviour. In addition, the BPM also provides a framework within which Mehrabian and Russell's scales of affective (PAD) and behavioural variables really work in the consumer behaviour study.

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# APPENDICES

# Appendix 1:

# Ethics Form for Qualitative Interviews

## CARDIFF BUSINESS SCHOOL ETHICAL APPROVAL FORM: PHD THESIS RESEARCH

(For guidance on how to complete this form, please see http://www.cf.ac.uk/carbs/research/ethics.html)

For Office Use: Ref Meeting

**Does your research involve human participants?** Yes ☒ No ☐

If you have answered 'No' to this question you do not need to complete the rest of this form, otherwise please proceed to the next question

**Does your research have any involvement with the NHS?** Yes ☐ No ☒

If you have answered Yes to this question, then your project should firstly be submitted to the NHS National Research Ethics Service. Online applications are available on http://www.nres.npsa.nhs.uk/applicants/ . It could be that you may have to deal directly with the NHS Ethics Service and bypass the Business School's Research Ethics Committee.

**Name of Student:** Zuha Rosufila Abu Hasan

**Student Number:** 0739002

**Section:** CARBS Marketing & Strategy

**Email:** AbuHasanZR@cardiff.ac.uk

**Names of Supervisors:** Prof. Gordon R. Foxall, Dr. M. Mirella Yani- de-Soriano, Dr.Victoria K. James

**Supervisors' Email Addresses:** foxall@Cardiff.ac.uk, yani-de-soriamom@Cardiff.ac.uk, jamesvk@Cardiff.ac.uk

**Title of Thesis:** Interpreting Green Consumer Behaviour: An Exploratory Examination of Cardiff Consumers

**Start and Estimated End Date of Research:** October 2007- September 2011

**Please indicate any sources of funding for this research:** Self funding from the Malaysian Ministry of Higher Education
Total: £300 (£10 per respondent x 30 respondents)

### 1. *Describe the Methodology to be applied in the research*

The research design for this study of consumer environmental behaviour is a mixed method approach which is combination of qualitative and quantitative data collection. Due to the exploratory nature of the study, a series of face to face standardized open ended interview will be conducted in order to generate more information about consumer environmental situations. This information will then assist in the formation of quantitative instrument items for the larger scale stage of the research (quantitative survey). Interviews will be conducted mainly in the Cardiff area among 30 green and non green consumers. A control group of non green consumers will be adopted in order to explore distinctive characteristics between both samples.

The questionnaire is divided into four parts: Part 1 (Consumer Current Behaviour), Part 2 (Consumer Environmental Knowledge and Influences), Part 3 (Consumer Feelings and Reinforcement) and Part 4 (Consumer Background). The aim is to examine consumer current behaviour and to understand what reinforces consumers' environmental behaviour choices. Apart from that, the study would like to explore consumer feelings about specific consumer environmental situations, as well as to identify any influences in consumer current behaviour. Interviews will be conducted using an open ended, evoked speech, scaled response and a series of hypothetical consumer environmental situations. The interview formats are:

- Part 1 (Consumer Current Behaviour) is the combination of an open ended and evoked speech.
- Part 2 (Consumer Environmental Knowledge and Influences) is an open ended question.
- Part 3 (Consumer Feelings and Reinforcement) is the combination of an open ended, scaled response and hypothetical consumer environmental situations.
- Part 4 (Consumer Background) is an open ended question.

A copy of questionnaire is included as **Appendix 1.** Show cards will also be used for the scaled response questionnaire. Transcripts collected will be analyzed using content analysis and coding processes.

2. ***Describe the participant sample who will be contacted for this Research Project. You need to consider the number of participants, their age, gender, recruitment methods and exclusion/inclusion criteria***

Approximately fifteen green consumers and fifteen non green consumers (aged 20 to 44) from Cardiff will be selected based on a snowball sampling. Snowball samples are most appropriate when there is a limited sample frame and certain issues arise such as the shifting population. In the case of green consumer, the sample frame might experience an issue of shifting population due to the inconsistent nature of green consumer (Peattie 1992).

Green membership will be used as a representative of green consumer. It has been described (Melucci 1989 cited in Horton 2006, p. 130) that green members tend to incorporate their environmental concerns and commitment with their personal preferences. This is not to say that they are perfectly green, however they are potentially useful model for environmental behaviour study. The green samples will be recruited from green societies or groups of similar interested parties in Cardiff. It is also important to include non green consumers in order to find out any distinctive characteristics between both participants. Non green consumers will be sampled as those who reside in Cardiff.

The respondents will be selected from the researcher's network of green societies, groups of similar parties, community centres, clubs and friends who will be contacted personally by the researcher. Face to face interviews will be conducted either at groups' gatherings, community centres or respondents' residences in Cardiff. After each respondent is interviewed, researcher will ask them to recommend others contact that are willing to participate until the target of thirty green and non green consumers can be reached.

Face to face interviews will be conducted in Cardiff area due to several reasons. First, Cardiff has the largest population compare to other city in Wales. According to Census 2001 data, Cardiff ranked as the 14th largest settlement in the United Kingdom and the 21st largest urban area. Second, more than 45% out of 321,000 populations are between 20 to 44 years old which represent a large potential for sampling (Cardiff Council 2007). Third, Cardiff also has diverse ethnicity due to its past trading, immigration and foreign students. Finally, environmentally friendly programs are already in place and advertised in Cardiff area.

Respondents must be the person who is responsible for making decisions about consumption of domestic electricity, water, waste disposal and private transportation. Miners will be excluded from the survey, as they would not be suitable for the issue under investigation. The sample will also cover diverse age groups, ethnicity, gender, socio economic groups, locations, green and non green consumers. Modest reimbursement worth £10 cash will be given to respondent. Respondents will be told that they are being paid for their time and not being paid for their responses. They also have to sign a research participant payment verification form in order to get their cash reimbursement. Please refer to **Appendix 3**.

3. ***Describe the consent and participant information arrangements you will make, as well as the methods of debriefing. If you are conducting interviews, you <u>must</u> attach a copy of the consent form you will be using.***

The idea of informed consent is that when people know they are being asked to participate in research, they should be informed about all aspects of the process (Social Research Association 2003). Brief information via an interview transcript will be read when asking for participants consent orally prior to interviewing them. A detailed consent form will be given to the respondent which contains information about who is conducting research, the purpose of the research, type of research intervention, time commitment, the benefits, offer to answer questions, reimbursement, voluntary participation, the right to withdraw, an assurance of confidentiality and anonymously. Please refer to **Appendix 2**.

Participants will read, sign a consent form and will be told that they could withdraw at any time or may even refuse to answer the questions. Debriefing will be provided through a summary document comprising a synopsis of the study questions.

*4. Please make a clear and concise statement of the ethical considerations raised by the research and how you intend to deal with them throughout the duration of the project*

The first ethical issue is the invasion of privacy. It is common to see that respondents refuse to answer certain questions which they do not wish to make public. For example, questions about income, age, specific beliefs or even their actual environmental behaviour. Thus, I have the duty to respect respondent's privacy and anonymity. It can be done by assuring respondents that they have the right of not answering the questions and information given will be treated as confidential and anonymous.

Next ethical issue is maintaining the confidentiality of records (SRA 2003). This means that as researcher, I have to be extra careful when dealing with the identities of respondents. Research findings should be clear of any individual identification. In order to overcome confidentiality issue, I will inform respondents that the publish findings will not have individual identifier.

Finally, the issue of informed consent is frequently debated within social research ethics. This is where respondents are not fully informed about the research process as well as not given the opportunity to refuse to participate. Thus, I will provide as much information as might be needed by respondents. This information will help respondents to make an informed decision whether or not they wish to participate in this study of consumer environmental behaviour. I will get informed consents at the beginning of the interview by reading aloud as what is spelt out in the interview transcript with reference to the purpose of the research and the ethics concerns. I will also get their signature on the consent form provided under **Appendix 2**. As sum, respondents are invited to contact me or my supervisor regarding research issues or asking for additional information.

**PLEASE NOTE that you should include a copy of your questionnaire**

**NB: Copies of your signed and approved Research Ethics Application Form together with accompanying documentation must be bound into your Dissertation or Thesis.**

5. *Please complete the following in relation to your research:*

| | | Yes | No | n/a |
|---|---|---|---|---|
| (a) | Will you describe the main details of the research process to participants in advance, so that they are informed about what to expect? | ☒ | ☐ | ☐ |
| (b) | Will you tell participants that their participation is voluntary? | ☒ | ☐ | ☐ |
| (c) | Will you obtain written consent for participation? | ☒ | ☐ | ☐ |
| (d) | Will you tell participants that they may withdraw from the research at any time and for any reason? | ☒ | ☐ | ☐ |
| (e) | If you are using a questionnaire, will you give participants the option of omitting questions they do not want to answer? | ☒ | ☐ | ☐ |
| (f) | Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs? | ☒ | ☐ | ☐ |
| (g) | Will you offer to send participants findings from the research (e.g. copies of publications arising from the research)? | ☐ | ☐ | ☒ |

**PLEASE NOTE:**
If you have ticked No to any of 5(a) to 5(g), please give an explanation on a separate sheet.
(Note: N/A = not applicable)
There is an obligation on the lead researcher to bring to the attention of Cardiff Business School Ethics Committee any issues with ethical implications not clearly covered by the above checklist.

***Two copies of this form (and attachments) should be submitted to Ms Lainey Clayton, Room F09, Cardiff Business School.***

Signed

Print Name Zuha Rosufila Abu Hasan

Date 2/10/09

## SUPERVISOR'S DECLARATION

As the supervisor for this research I confirm that I believe that all research ethical issues have been dealt with in accordance with University policy and the research ethics guidelines of the relevant professional organisation.

Signed (Primary supervisor)

Print Name Prof. Gordon R. Foxall

Date 2.10.09

## STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed School procedures and is now approved.

Signed (Chair, School Research Ethics Committee)

Print Name

Date 6 October 2009.

APPLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

**Appendix 1: Copy of Interview Transcript**

**Interpreting Consumer Environmental Behaviour**

**Introduction**

This interview is part of a research dissertation titled 'Interpreting Green Consumer Behaviour: An Exploratory Examination of Cardiff Consumers'. The aim is to examine consumer current behaviour and to understand what reinforces consumers' environmental behaviour choices. Apart from that, the study would like to explore consumer feelings about specific consumer environmental situations, as well as to identify any influences in consumer current behaviour. The questionnaire is divided into four parts: Part 1 (Your Current Behaviour), Part 2 (Your Environmental Knowledge and Influences), Part 3 (Your Feelings and Reinforcement) and Part 4 (Your Background). The completion of the interview should not take you more than **one hour** of your time. The anonymity and confidentiality of this interview is fully guaranteed. The data collected will only be used for academic analysis and study and if published will not be identifiable as yours. Your sincere response is highly needed to ensure the success of the research. You also have the right to withdraw your data without explanation and retrospectively. You are free to discuss your concerns with Zuha Rosufila Abu Hasan (AbuHasanZR@Cardiff.ac.uk) or Prof. Gordon R. Foxall (foxall@Cardiff.ac.uk). You have received a consent form to sign, which indicates your consent to this interview. The interview will be recorded. We thank you for your time and cooperation in making this interview successful.

**Part 1: Your Current Behaviour**

The following questions relate to your current behaviour. Of particular interest, for example, domestic water and electricity consumption, private transportation patterns and waste disposal practices.

**Questions and Procedure:**

Q1. First, I'm interested to know about your waste disposal practices. I would like you to talk for five minutes about how you dispose of your waste. If you finish telling about one practise, you can continue on telling about another one until the five minutes is over. If you have any questions, I will be happy to respond to them now. If not, I will tell you when to start and to stop. You may start now.

*(The following questions will only be asked if respondent don't talk more about waste disposal practices)*

- ✓ What was it about *(e.g., recycling/ re-use/compost/etc.)* that attracted you to do it?
- ✓ What was it about *(e.g., recycling/ re-use/compost/etc.)* that opposed you to do it?
- ✓ How do you feel about doing this?

Q2. **Transition**: Now tell me what experiences you would have regarding your current private transportation usage? It could be your experience of using car, bicycle, park & ride scheme or even car sharing.

*(The following questions will only be asked if respondent don't talk more about his/her private transportation usage)*

- ✓ What was it about *(e.g., bicycle/car sharing/park & ride scheme/ etc.)* that attracted you to use it?
- ✓ What was it about *(e.g., bicycle/car sharing/park & ride scheme/ etc.)* that opposed you to use it?
- ✓ How do you feel about using this?

Q3. **Transition**: I'm also interested to know about your domestic water consumption. My question is how do you deal with your domestic water usage?

*(The following questions will only be asked if respondent don't talk more about his/her water usage)*

- ✓ What are the reasons you use *(e.g., shower/ water meter/ drink tap water/grey water/etc)*?
- ✓ What are the reasons you do not use *(e.g., shower/ water meter/ drink tap water/grey water/etc)*?
- ✓ How do you feel about using this?

Q4. **Transition**: Now, I also would like to know about your domestic electricity consumption. How do you deal with your domestic electricity usage?

*(The following questions will only be asked if respondent don't talk more about his/her electricity usage)*

- ✓ What are the reasons you use *(e.g., home insulation/ renewable electricity/ less electricity/ etc)*?
- ✓ What are the reasons you do not use *(e.g., home insulation/ renewable electricity/ less electricity/ etc)*?
- ✓ How do you feel about using this?

**Part 2: Your Environmental Knowledge and Influences**

**Transition**: We've been talking about your current behaviour. The following questions relate to your environmental knowledge and influences. The objective is to find out how much you know about environmental schemes and influence changes in your current behaviour.

**Questions and Procedure:**

Q5. Tell me how much, if anything, do you know about environmental campaigns and initiatives? It could be any campaigns and initiatives related with waste disposal, private transportation, electricity or even water.

*(The following questions will only be asked if respondent don't talk more about environmental campaigns and initiatives)*

- ✓ How about environmental campaigns and initiatives carried out by a government?
- ✓ Source of campaigns and initiatives

Q6. Now, I will show you the image of selected environmental campaigns. How much do you know about these campaigns?

Q7. What is your opinion of joining environmental campaigns and initiatives?

Q8. I'm also interested to know about environmental rules and penalties carried out by a government. How much, if anything, do you know it?

Q9. Other people sometimes influence what we do. What other people, if any, played role in your environmental behaviour?

Q10. How do you describe green consumer?

*We're about halfway through the interview now. Like a break?*

**Part 3: Your Feelings and Reinforcement**

**Transition**: We've been talking about your personal experience and influence. Now I'd like to understand more of your feelings and reinforcement about specific consumer environmental situations. You will be given a 'show card' of feelings adjective with a numerical scale attached to each adjective. So, for each adjective pair, please choose numerical scale (Example; +4 is assigned for extremely happy, 0 for neither happy nor unhappy and -4 for extremely unhappy) which best describe your feelings of the given situation.

*(Notes: example of feeling adjective's show card is included at the end of interview transcript)*

**Questions and Procedure:**

Q11. Let's say that you are saving butter or ice cream tubs which can be used either for storage or refill. Tell me which number from adjective pairs that best describes your feelings of doing this.

Q12. What do you think the benefits of doing this?

Q13. How much would you like to do this?

Q14. **Transition**: Now, we're moving to the next situation. Imagine you are sorting your waste into white bio-bag, green recycling bag and black bag (as you do every day). You understand that the government offers waste rebate (an amount paid as reward) on waste council tax and extra recycling bag for those who recycled more. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q15. What do you think the benefits of doing this?

Q16. How much would you like to do this?

Q17. **Transition**: You are showing off your brand new Toyota Prius hybrid car to your relatives and friends. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q18. What do you think the benefits of doing this?

Q19. How much would you like to do this?

Q20. **Transition**: Now, we're moving to the next situation. Imagine you have signed up for the car sharing scheme which has been organized by your local community. This involves finding someone to share your commute or a one-off journey. You are thinking how much this scheme can make a positive contribution towards reducing congestion and pollution with enjoyment. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q21. What do you think the benefits of doing this?

Q22. How much would you like to do this?

Q23. **Transition**: Let's say that you are opting to own an energy star laptop instead of desktop. You believe it's capable of meeting your needs, worth the aesthetic compromise, reliable multimedia performance, and even more energy efficient. Tell me which number from adjective pairs that best describe your feelings of using an energy star laptop.

Q24. What do you think the benefits of using an energy star laptop?

Q25. How much would you like to use an energy star laptop?

Q26. **Transition**: Now, we're moving to the next situation. Imagine you are turning off your non-essential lights and other electrical appliances for one hour on the last Saturday of March in order to fulfil with the Welsh government's energy saving program. You are thinking about an opportunity to be a part of this historic occasion, enjoying the moment, and saving energy

and Earth. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q27. What do you think the benefits of doing this?

Q28. How much would you like to do this?

Q29. **Transition**: Now, imagine you are taking a daily shower instead of a bath in your home. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q30. What do you think the benefits of doing this?

Q31. How much would you like to do this?

Q32. **Transition**: Imagine you are planning to install a water meter for your home. You must contact your water company to arrange a home survey to check there are no practical limitations and no unreasonable costs to fit a meter (the company will not install a meter if it is technically impossible). You have to go through this survey before a meter can be fitted for your home. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q33. What do you think the benefits of doing this?

Q34. How much would you like to do this?

Q35. **Transition**: Let's say that you are saving your old inkjet cartridges for recycling. You understand that you can post your old cartridge for FREE to business providers such as TESCO or BOOTS. They also offer a donation to charity for each inkjet cartridge that you recycled. Tell me which number from adjective pairs that best describes your feelings of doing this.

Q36. What do you think the benefits of doing this?

Q37. How much would you like to do this?

Q38. **Transition**: Now, we're moving to the next situation. You are accumulating 'green clubcard points' by every time you use recycled carrier bags at a given supermarket (points that are exchangeable for vouchers). Tell me which number from adjective pairs that best describe your feelings of doing this.

Q39. What do you think the benefits of doing this?

Q40. How much would you like to do this?

Q41. **Transition**: You are opting to buy a second hand car. You choose a model with low fuel consumption, a good safety rating and a reputation for reliability and longevity. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q42. What do you think the benefits of using a second hand car?

Q43. How much would you like to use a second hand car?

Q44. **Transition**: Now, we're moving to the next situation. Imagine you are taking part in a Park & Ride scheme which has been introduced by the city council. This involves parking your car at a convenient location and getting a bus into the city centre. Park & Ride schemes like this are something you have done several times before. The cost is just £3 per car which is significantly less than many multi-storey car parks in the city centre. You also avoid queuing in traffic, experience less stress, save time and at the same time help the environment. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q45. What do you think the benefits of doing this?

Q46. How much would you like to do this?

Q47. **Transition**: Let's say that you are switching your old television for a LCD television. You presume that LCD television will give you the most pleasing image, connection flexibility and be far more energy efficient than a plasma television. Tell me which number from adjective pairs that best describe your feelings of using a LCD television.

Q48. What do you think the benefits of using a LCD television?

Q49. How much would you like to use a LCD television?

Q50. **Transition**: Now, we're moving to the next situation. Imagine you are installing cavity wall insulation aided by a government cavity wall insulation grant. You are thinking that by having the insulation, you will be able to turn thermostat down a few degrees without being cold. You can also save your money on heating costs. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q51. What do you think the benefits of doing this?

Q52. How much would you like to do this?

Q53. **Transition**: Now, imagine you are drinking tap water instead of bottled water in your home, as you do every day. Tell me which number from adjective pairs that best describe your feelings of doing this.

Q54. What do you think the benefits of doing this?

Q55. How much would you like to do this?

Q56. **Transition**: Finally, you are comparing your estimated water metered bill with what you must actually pay for your current water consumption. Your present bill is based on the standard metered charges or standard unmeasured charges (Rateable Value charge or Uniform Service charge). Tell me which number from adjective pairs that best describe your feelings of doing this.

Q57. What do you think the benefits of doing this?

Q58. How much would you like to do this?

**Part 4: Your Background**

**Transition:** This next question asks about your background. The purpose of these questions is to help me understand on how people with varying backgrounds have reacted to the environmental behaviour.

**Questions and Procedure:**

Q59. Tell me about yourself?

- ✓ Age
- ✓ Ethnic group
- ✓ Education
- ✓ Job
- ✓ Marital status
- ✓ Current resident
- ✓ Private transportation
- ✓ Volunteer of any environmental communities/ clubs/ campaigns/ etc.

Q60. Finally, what about your household?

- ✓ Size
- ✓ Children

Anything you care to add? This is the end of interview with.....

*Example of feeling adjective's show card*

Please use the following numerical scale to indicate your feelings in the given situation with the adjective pairs below. Example; **+4 is assigned for extremely happy, 0 for neither happy nor unhappy and -4 for extremely unhappy.**
Numerical Scale:

| +4 | +3 | +2 | +1 | 0 | -1 | -2 | -3 | -4 |
|---|---|---|---|---|---|---|---|---|
| Extremely | Very | Moderate | Slightly | Neither | Slightly | Moderate | Very | Extremely |

| | | |
|---|---|---|
| Happy | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Unhappy |
| Pleased | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Annoyed |
| Satisfied | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Unsatisfied |
| Stimulated | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Relaxed |
| Excited | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Calm |
| Frenzied | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Sluggish |
| Controlling | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Controlled |
| Influential | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Influenced |
| In control | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Cared-for |
| Contented | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Melancholic |
| Hopeful | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Despairing |
| Relaxed | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Bored |
| Jittery | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Dull |
| Wide-awake | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Sleepy |
| Aroused | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Unaroused |
| Important | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Awed |
| Dominant | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Submissive |
| Autonomous | +4, +3, +2, +1, 0, -1, -2, -3, -4 | Guided |

Notes:
This show card is used for the scaled response questionnaire in the Part 3 (Consumer Feelings and Reinforcement) interview. Please refer to Part 3 of interview transcript.

## Appendix 2: Consent Form – Confidential and Anonymous Data

**CARDIFF BUSINESS SCHOOL**
**RESEARCH ETHICS**

**Consent Form – Confidential and Anonymous Data**

I understand that my participation in this research will involve answering questionnaires about my behaviour, reinforcement, feelings and influences on environmental behaviour.

I understand that this research will involve my participation in an interview which will take about **one hour** of my time. I am aware that my participation in this research will provide useful information on topic of interest.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason.

I understand that I am free to ask any questions at any time. If for any reason I experience discomfort during participation in this research, I am free to withdraw or discuss my concerns with Prof. Gordon R. Foxall (foxall@Cardiff.ac.uk).

I understand that the information provided by me will be held anonymously and confidentially, such that only the Experimenter can trace this information back to me individually. I understand that I can ask for the information I provide to be deleted/destroyed at any time.

I also understand that I will not be provided any incentive to take part in this research. However, I will receive £10 cash as a reimbursement for my time.

I, _____ (*NAME*) consent to participate in the study conducted by Zuha Rosufila Abu Hasan of Cardiff Business School, Cardiff University, under the supervision of Prof. Gordon R. Foxall.

Signature of Participant: _____

Date: _____

Day/month/year

**Appendix 3: Research Participant Payment Verification Form**

| **Research Participant Payment Verification Form** |
|---|

Date : _____(*Day/month/year)*

Participant No.: _____

**Re: <u>Interview on Consumer Environmental Behaviour</u>**

*To be completed by participant*

I _____ (*full name*) hereby acknowledge that I have received the amount of £10 cash as a reimbursement for my participation in the above mentioned interview.

_____

Participant's Signature

_____

Researcher's Signature

(Zuha Rosufila Abu Hasan)

**Ethics Form: Additional Information for 5 (g)**

I have ticked 'Not Applicable' for Q5 (g) due to several reasons. First, this is an early part of the study (preliminary research). I will use this study (interviews) to generate more information about consumer environmental situations. In addition, the information will then assist me in the formation of quantitative instrument items for the larger scale stage of the research. Second, this is an early part of the work. Therefore, it is unlikely there will be any direct publications from this stage of the research. Finally, any research publications will take a while to come out. Thus, it will be difficult to know exactly what to send to each participant.

# Appendix 2:

# Ethics Form for Survey Questionnaires

## CARDIFF BUSINESS SCHOOL ETHICAL APPROVAL FORM: PHD THESIS RESEARCH

(For guidance on how to complete this form, please see http://www.cf.ac.uk/carbs/research/ethics.html)

For Office Use: Ref Meeting

**Does your research involve human participants?** Yes ☒ No ☐

If you have answered 'No' to this question you do not need to complete the rest of this form, otherwise please proceed to the next question

**Does your research have any involvement with the NHS?** Yes ☐ No ☒

If you have answered Yes to this question, then your project should firstly be submitted to the NHS National Research Ethics Service. Online applications are available on http://www.nres.npsa.nhs.uk/applicants/ . It could be that you may have to deal directly with the NHS Ethics Service and bypass the Business School's Research Ethics Committee.

**Name of Student:** Zuha Rosufila Abu Hasan

**Student Number:** 0739002

**Section:** CARBS Marketing & Strategy

**Email:** AbuHasanZR@cardiff.ac.uk

APPLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

**Names of Supervisors:** Prof. Gordon R. Foxall, Dr. M. Mirella Yani- de-Soriano, Dr. Victoria K. James

**Supervisors' Email Addresses:** foxall@Cardiff.ac.uk, yani-de-sorianom@Cardiff.ac.uk, jamesvk@Cardiff.ac.uk

**Title of Thesis:** Interpreting Green Consumer Behaviour: An Exploratory Examination of Cardiff Consumers

**Start and Estimated End Date of Research: October 2007- September 2011**

**Please indicate any sources of funding for this research:** Self funding from the Malaysian Ministry of Higher Education
Total: **£176** (2x £40 per Wind Up Radio, 2x £30 per Eco Kettle, 6x £6 per Wind Up Torch)

### *1. Describe the Methodology to be applied in the research*

The study of consumer environmental behaviour will be conducted through survey questionnaire. The formulation of the questionnaire and consumer situations is based on the; (1) findings from a preliminary study of Cardiff Consumers' Environmental Behaviour via standardized open ended interview, (2) findings from panel experts and (3) extensive literature review in the areas of consumer behaviour specifically the Behavioural Perspective Model, green consumer behaviour and Mehrabian and Russell's (1974) approach to environmental psychology, which assesses the emotional responses of individuals to descriptions of physical and social environments. The aim of the study is to examine consumers' environmental behaviour responses from the behaviour setting in which they take place and the pattern of reinforcement which those setting indicate. Apart from that, the study would like to measure consumer emotional responses to descriptions of eight consumer situations. Survey will be conducted mainly in the Cardiff area among 200 green and non green consumers. A control group of non green consumers will be adopted in order to explore distinctive characteristics between both samples.

In this study, two methods of administration will be applied; (1) face-to-face survey and (2) self-administered survey. The questionnaire is divided into two sections:

- Section A: Brief introduction, purpose and instruction of the questionnaire. It also includes the questionnaire and emotional responses that require the respondents to fill up.
- Section B: Questionnaire in relation to the respondents' background.

A copy of questionnaire is included as **Appendix 1.** Data collected will be analyzed (e.g. multiple discriminant analysis) in order to test the discriminating power of the affective variables (emotional responses) and the behavioural responses variables.

2. ***Describe the participant sample who will be contacted for this Research Project. You need to consider the number of participants, their age, gender, recruitment methods and exclusion/inclusion criteria***

Approximately one hundred green consumers and one hundred non green consumers (aged 20 to 60+) from Cardiff will be selected based on a self selecting method and snowball sampling method. Self selecting and snowball samples are most appropriate when there is a limited sample frame and certain issues arise such as the shifting population. In the case of green consumer, the sample frame might experience an issue of shifting population due to the inconsistent nature of green consumer (Peattie 1992).

Green membership will be used as a representative of green consumer. It has been described (Melucci 1989 cited in Honon 2006, p. 130) that green members tend to incorporate their environmental concerns and commitment with their personal preferences. This is not to say that they are perfectly green, however they are potentially useful model for environmental behaviour study. The green samples will be recruited from green societies or groups of similar interested parties in Cardiff. It is also important to include non green consumers in order to find out any distinctive characteristics between both participants. Non green consumers will be sampled as those who reside in Cardiff.

The respondents will be selected from the researcher's network of green societies, groups of similar parties, community centres, clubs and friends who will be contacted personally by the researcher. Face-to-face and self-administered survey will be conducted either at groups' gatherings, community centres or respondents' residences in Cardiff. After each respondent has completed their survey, researcher will ask them to recommend others contact that are willing to participate until the target of two hundred green and non green consumers can be reached.

Survey will be conducted in Cardiff area due to several reasons. First, Cardiff has the largest population compare to other city in Wales. According to Census 2001 data, Cardiff ranked as the 14th largest settlement in the United Kingdom and the 21st largest urban area. Second, more than 65% out of 321,000 populations are between 20 to 60+ years old which represent a large potential for sampling (Cardiff Council 2007). Third, Cardiff also has diverse ethnicity due to its past trading, immigration and foreign students. Fourth, most of the Cardiff's green movement situated in Cardiff. Finally, environmentally friendly programs are already in place and advertised in Cardiff area.

Respondents must be the person who is responsible for making decisions about consumption of domestic electricity, water, waste disposal and private transportation. Minors will be excluded from the survey, as they would not be suitable for the issue under investigation. The sample will also cover diverse age groups, ethnicity, gender, socio economic groups, green and non green consumers. As a small token of appreciation, respondents will be offered to enter a modest prize draw. This is subject to respondents' willingness to enter the draw. The winner will have to sign a prize draw acceptance verification form. Please refer to **Appendix 2**.

3. ***Describe the consent and participant information arrangements you will make, as well as the methods of debriefing. If you are conducting interviews, you <u>must</u> attach a copy of the consent form you will be using.***

The idea of informed consent is that when people know they are being asked to participate in research, they should be informed about all aspects of the process (Social Research Association 2003). Brief introduction about the research will be included in the survey questionnaire. It contains information about the purpose of the study, who is conducting research, time commitment, the benefits, offer to answer questions, prize draw for those who would like to take part, voluntary participation, the right to withdraw, an assurance of confidentiality and anonymously. Participants will give their consent by completing this survey. Thus, no additional consent is sought.

4. ***Please make a clear and concise statement of the ethical considerations raised by the research and how you intend to deal with them throughout the duration of the project***

The first ethical issue is the invasion of privacy. It is common to see that respondents refuse to answer certain questions which they do not wish to make public. For example, questions about income or age. Thus, I have the duty to respect respondent's privacy and anonymity. It can be done by assuring respondents that they have the right of not answering the questions and information given will be treated as confidential and anonymous.

Next ethical issue is maintaining the confidentiality of records (SRA 2003). This means that as researcher, I have to be extra careful when dealing with the identities of respondents. Research findings should be clear of any individual identification. In order to overcome this issue, I will inform respondents that the published findings will not have individual identifier.

Finally, the issue of informed consent is frequently debated within social research ethics. This is where respondents are not fully informed about the research process as well as not given the opportunity to refuse to participate. Thus, I will provide as much information as might be needed by respondents. This information will help respondents to make an informed decision whether or not they wish to participate in this study of consumer environmental behaviour. In this particular study, respondents are not being asked to give their consent directly by signing a consent form. However, consent is given once the respondents completed the questionnaire and return it to researcher. Furthermore, respondents are not required to provide contact details except for those who would like to enter a prize draw. Any information given will be treated as confidential and anonymous. In sum, respondents are invited to contact me or my supervisor regarding research issues or asking for additional information.

**PLEASE NOTE that you should include a copy of your questionnaire**

NB: **Copies of your signed and approved Research Ethics Application Form together with accompanying documentation must be bound into your Dissertation or Thesis.**

5. *Please complete the following in relation to your research:*

| | | Yes | No | n/a |
|---|---|---|---|---|
| (a) | Will you describe the main details of the research process to participants in advance, so that they are informed about what to expect? | ☒ | ☐ | ☐ |
| (b) | Will you tell participants that their participation is voluntary? | ☒ | ☐ | ☐ |
| (c) | Will you obtain written consent for participation? | ☐ | ☐ | ☒ |
| (d) | Will you tell participants that they may withdraw from the research at any time and for any reason? | ☒ | ☐ | ☐ |
| (e) | If you are using a questionnaire, will you give participants the option of omitting questions they do not want to answer? | ☒ | ☐ | ☐ |
| (f) | Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs? | ☒ | ☐ | ☐ |
| (g) | Will you offer to send participants findings from the research (e.g. copies of publications arising from the research)? | ☒ | ☐ | ☐ |

**PLEASE NOTE:**
If you have ticked No to any of 5(a) to 5(g), please give an explanation on a separate sheet.
(Note: N/A = not applicable)
There is an obligation on the lead researcher to bring to the attention of Cardiff Business School Ethics Committee any issues with ethical implications not clearly covered by the above checklist.

***Two copies of this form (and attachments) should be submitted to Ms Lainey Clayton, Room F09, Cardiff Business School.***

Signed

Print Name Zuha Rosufila Abu Hasan

Date 21.05.2010

APPLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

## SUPERVISOR'S DECLARATION

As the supervisor for this research I confirm that I believe that all research ethical issues have been dealt with in accordance with University policy and the research ethics guidelines of the relevant professional organisation.

Signed (Primary supervisor)

Print Name Prof. Gordon R. Foxall G. R. Foxall

Date 21. 5. 10

APPLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

## STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed School procedures and is now approved.

Signed (Chair, School Research Ethics Committee)

Print Name Tom Kontogeorgis

Date 10 June 2010.

## Appendix 1

# CONSUMER ENVIRONMENTAL BEHAVIOUR SURVEY

**Dear Sir/Madam,**
This survey is part of a research dissertation titled: 'Interpreting Green Consumer Behaviour: An Exploratory Examination of Cardiff Consumers'. The aim is to examine consumers' environmental behaviour responses from the behaviour setting in which they take place and the pattern of reinforcement which those setting indicate. Apart from that, the study would like to measure consumer emotional responses to descriptions of eight consumer situations. The completion of the survey should not take you more than **20 minutes** of your time. You can, if you wish, get a copy of findings of this research by **emailing me at AbuHasanZR@Cardiff.ac.uk.** The anonymity and confidentiality of this survey is fully guaranteed. You are free to withdraw or discuss your concerns with Prof. Gordon R. Foxall **(foxall@Cardiff.ac.uk)** or Zuha Rosufila Abu Hasan **(AbuHasanZR@Cardiff.ac.uk).** The data collected will only be used for academic analysis and study if published will not identifiable as yours. Your sincere response is highly needed to ensure the success of the research.

**As a small token of appreciation for your help, we would like to enter your email address into a prize draw to win one of the following prizes. 2x Wind Up Radio, 2x Eco Kettle, 6x Wind Up Torch. If you wish to enter the draw please state your email address at the end of this questionnaire.**

**Section A: Your Feeling and Responses of Environmental Behaviour**

We would like to measure your feelings and responses of eight consumer environmental situations. Please take your time to really get into the mood of the given situation; then:-

- Rate your feelings in the situation with the **word pairs** below. Some of the pairs might seem unusual, but you'll probably feel more one way than the other. So, for each pair, put a circle mark close to the word which you believe to describe your feelings better. **A list of words with explanations is also provided at the last page.**
- Rate your degree of responses with each of the questions related to the eight consumer situation. For question 1, put a circle mark close to the given scale such as **0 (none)** to **7(many, many days).** Questions 2 through 6 are answered by the following scale: **0 (not at all) to 7 (extremely so).**

**Situation 1: You are driving a brand new Toyota Prius hybrid car in the city with your relatives or friends. The hybrid system combines battery and petrol power so that, at low speeds, the car will run silently only on battery power. It also has the hybrid system indicator, which gives you real-time information about your driving technique. You can also show your relatives or friends exactly how the car is being powered at any point in time. With carbon emissions of just 89g/km, you pay no road tax and are exempted from congestion tax. The car is drinking more than you expected and it's cool to be green. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 1: You are driving a brand new Toyota Prius hybrid car in the city with your relatives or friends. The hybrid system combines battery and petrol power so that, at low speeds, the car will run silently only on battery power. It also has the hybrid system indicator, which gives you real-time information about your driving technique. You can also show your relatives or friends exactly how the car is being powered at any point in time. With carbon emissions of just 89g/km, you pay no road tax and exempted from congestion tax. The car is drinking more than you expected and it's cool to be green. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 2: You are on a mission to cut down your driving steadily to 50% less than your normal miles per year. In order to achieve this mission, you must plan and consolidate your trips either by walking, cycling, public transport, sharing a lift or reducing the amount of total car trips you make. You understand that being carless can help you to get fit, increase your quality of life, reduce pollution, save money and allow you to be an example to your family or friends. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 2: You are on a mission to cut down your driving steadily to 50% less than your normal miles per year. In order to achieve this mission, you must plan and consolidate your trips either by walking, cycling, public transport, sharing a lift or reducing the amount of total car trips you make. You understand that being carless can help you to get fit, increase your quality of life, reduce pollution, save money and allow you to be an example to your family or friends. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 3: You are using an energy star laptop. You spend a lot of time doing your work, entertainment or internet communication with your laptop. It uses 70% less electricity than computers without this designation. If left inactive, your laptop will enter a sleep mode. You can awaken your laptop in a matter of seconds by simply hitting a key on the keyboard or moving the mouse. The best part of your laptop is that not only can it save energy, but it also helps the equipment to run cooler and last longer. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 3: You are using an energy star laptop. You spend a lot of time doing your work, entertainment or internet communication with your laptop. It uses 70% less electricity than computers without this designation. If left inactive, your laptop will enter a sleep mode. You can awaken your laptop in a matter of seconds by simply hitting a key on the keyboard or moving the mouse. The best part of your laptop is that not only can it save energy, but it also helps the equipment to run cooler and last longer. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 4: You are planning to install loft insulation aided by a government grant. The government has offered you at least 50% off or a free loft insulation grant. This means that you can install loft insulation professionally at a cheaper or even for free when compared with doing it yourself. However, you can only use the insulation material of their choice. You are thinking that by having the insulation, you will be able to turn the thermostat down a few degrees without being cold. You believe this is the easiest way to reduce your expensive energy bills at less/no cost and to save the environment. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 4: You are planning to install loft insulation aided by a government grant. The government has offered you at least 50% off or a free loft insulation grant. This means that you can install loft insulation professionally at a cheaper or even for free when compared with doing it yourself. However, you can only use the insulation material of their choice. You are thinking that by having the insulation, you will be able to turn the thermostat down a few degrees without being cold. You believe this is the easiest way to reduce your expensive energy bills at less/no cost and to save the environment. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 5: You are cleaning up your kitchen after cooking or a big meal. You are saving all your raw or cooked food waste in the kitchen caddy instead of throwing it away inside the black bags. You only use the biodegradable bags to line your kitchen caddy. When the bag starts to get full, you tie it and put it in your green wheeled bin or white bio-bag. Later, your food waste will be collected by the council for composting. Although you are under less compulsion to do this, you are thinking this is the easiest way to support the council food waste composting campaign. Your act will also help to reduce the amount of waste going to landfill. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 5: You are cleaning up your kitchen after cooking or a big meal. You are saving all your raw or cooked food waste in the kitchen caddy instead of throwing it away inside the black bags. You only use the biodegradable bags to line your kitchen caddy. When the bag starts to get full, you tie it and put it in your green wheeled bin or white bio-bag. Later, your food waste will be collected by the council for composting. Although you are under less compulsion to do this, you are thinking this is the easiest way to support the council food waste composting campaign. Your act will also help to reduce the amount of waste going to landfill. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 6: Imagine that your local council promote a waste reward (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need to follow their waste guidelines before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chances you will get your waste reward. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 6: Imagine that your local council promote a waste reward (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need to follow their waste guidelines before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chances you will get your waste reward. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 7: You are refilling and reusing plastic or glass water bottles with tap water for drinking, as you do every day. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 7: You are refilling and reusing plastic or glass water bottles with tap water for drinking, as you do every day. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 8: You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must repair or replace your taps soon by DIY (Do It Yourself) or call a plumber. You must fix the problem before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 8: You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must repair or replace your taps soon by DIY (Do It Yourself) or call a plumber. You must fix the problem before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

## Section B: About You

*Please tick (/) the appropriate box.*

**1. Your age (years)**

- 20-30 ☐
- 31-40 ☐
- 41-50 ☐
- 51-60 ☐
- 60+ ☐

**2. Your ethnic group**

- White ☐
- Mixed ☐
- Asian or Asian British ☐
- Black or Black British ☐
- Chinese or Chinese British ☐
- Other, please specify: ☐

**3. Your gender**

- Male ☐
- Female ☐
- Transgender ☐

**4. Your highest educational level**

- High School or equivalent ☐
- Vocational or Technical School ☐
- College Graduate ☐
- Professional Degree ☐
- Bachelor degree ☐
- Master ☐
- Ph.D. ☐
- Other, please specify: ☐

**5. Your household size**

- 1 person ☐
- 2 person ☐
- More than 2 persons ☐

**6. Your occupation**

- Managers/ Executives ☐
- Professionals ☐
- Clerks ☐
- Technicians ☐
- Labourers ☐
- Self-employed ☐
- Others (e.g., government officials, students, housewives etc.) ☐

**7. Are there any children living in your household?**

- Yes ☐
- No ☐

**8. Do you own any private transportation?**

- Yes ☐
- No ☐

**9. Annual personal income *(Please include student loan, paid employment etc.)***

- Less than £ 10,000 ☐
- £ 10,000 - £ 20,000 ☐
- £ 20,001 - £ 30,000 ☐
- £ 30,001 - £ 40,000 ☐
- £ 40,001 - £ 50,000 ☐
- More than £ 50,000 ☐

**10. Your current resident**

- My own house ☐
- My parents' house ☐
- Privately rented accommodation ☐
- Property rented from the council or housing association ☐
- Property owned by friends ☐
- Other property owned by me or my family ☐
- University/college owned hall of residence ☐
- Privately owned hall of residence ☐
- Flat/ house owned by the university/ college ☐
- Other ☐

**11. Are your involved in any environmental related communities/ clubs/ campaigns/ parties? *(It could be as a formal or informal members such as volunteers)***

- Yes ☐ → Please specify:
- No ☐

**12. Do you think that if you make small changes in your behaviour, it will impact the environment?**

- Yes ☐
- No ☐

**Please enter your email address below if you wish to enter the prize draw. Please be assured that your email address will not be used for any other purposes.**

E-mail address_____

***We thank you for your time and cooperation in making this survey successful.***

**Glossary**

| | |
|---|---|
| Annoyed | feeling moderate anger or impatient |
| Aroused | feeling interested, responsive or desire to do something |
| Autonomous | feeling independent and not controlled by others or by outside forces |
| Awed | feeling of amazement and respect mixed with fear that is often coupled with a feeling of personal insignificance or powerlessness |
| Bored | feeling tired and impatient because you have lost interest in somebody/something or because you have nothing to do |
| Calm | feeling peaceful and without anxiety or strong emotion |
| Cared-for | feeling having needed care and attention |
| Contented | feeling peacefully happy and satisfied |
| Controlled | feeling guarded, kept in check and not expressed fully or at al |
| Controlling | feeling able to exercise power or authority over something |
| Despairing | feeling or showing loss of hope or miserable |
| Dominant | feeling in control |
| Dull | feeling no interest or excitement |
| Excited | feeling enjoyment or pleasurable anticipation |
| Frenzied | feeling wildly excited or out of control |
| Guided | feeling being lead by somebody in the right direction |
| Happy | feeling or showing pleasure, contentment, or joy |
| Hopeful | feeling fairly sure that something that is wanted will happen |
| Important | feeling having value or significant |
| In-control | feeling able to direct a situation, person, or activity |
| Influenced | feeling being influence on; behaviour, development, action, or thought |
| Influential | feeling able to have a powerful effect on people and what they do, or on events |
| Jittery | feeling anxious or edgy , making rapid jumpy movements |
| Melancholic | feeling or tending to feel a thoughtful or gentle sadness, gloomy |
| Pleased | feeling or expressing satisfaction or pleasure |
| Relaxed | feeling no strain or tension, and not exerting much strain or force on anything else |
| Satisfied | feeling pleased or content |
| Sleepy | feeling quiet and not very lively or exciting |
| Sluggish | feeling slow to react or respond to stimulation |
| Stimulated | feeling able to rouse to action or effort |
| Submissive | feel giving in or tending to give in to the demands or authority of others |
| Unaroused | feeling lack of interest or desire |
| Unhappy | feeling not pleased or satisfied |
| Unsatisfied | feeling unhappy or displeased |
| Wide-awake | feeling completely awake and alert |

**Appendix 2: Prize Draw Acceptance Verification Form**

| **Prize Draw Acceptance Verification Form** |
|---|

Date : _____(*Day/month/year)*

**Re: <u>Survey on Consumer Environmental Behaviour</u>**

*To be completed by participant*

I _____ (*full name*) hereby acknowledge that I have received the prize of *(Wind Up Radio/ Eco Kettle/ Wind Up Torch)** as a token of appreciation for my participation in the above mentioned survey.

_____

Participant's Signature

_____

Researcher's Signature

(Zuha Rosufila Abu Hasan)

** Please delete as appropriate.*

**Ethics Form: Additional Information for 5 (c)**

I have ticked 'Not Applicable' for Q5 (c) due to several reasons. First, in my survey respondents are not being asked to give their consent directly by signing a consent form. However, consent is given once the respondents have completed the questionnaire. If they don't want to take part in this survey (e.g. by not completing the questionnaire or refuse to participate), it signified that no consent involved between both parties. Second, comprehensive information with reference to the present research will be included at the beginning of the questionnaire. The participants will be informed about all aspects of the research process as well as the opportunity to refuse to participate at the beginning of the survey questionnaire. Respondents will read this information and decide whether to take part or not. Respondent will have the opportunity to give their consent by completing this survey.

# Appendix 3:

# Survey Questionnaires

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

# CONSUMER ENVIRONMENTAL BEHAVIOUR SURVEY

**Dear Sir/Madam,**
This survey is part of a research dissertation titled: 'Interpreting Green Consumer Behaviour: An Exploratory Examination of Cardiff Consumers'. The aim is to examine consumers' environmental behaviour responses from the behaviour setting in which they take place and the pattern of reinforcement which those setting indicate. Apart from that, the study would like to measure consumer emotional responses to descriptions of eight consumer situations. The completion of the survey should not take you more than **20 minutes** of your time. You can, if you wish, get a copy of findings of this research by **emailing me at AbuHasanZR@Cardiff.ac.uk.** The anonymity and confidentiality of this survey is fully guaranteed. You are free to withdraw or discuss your concerns with Prof. Gordon R. Foxall **(foxall@Cardiff.ac.uk)** or Zuha Rosufila Abu Hasan **(AbuHasanZR@Cardiff.ac.uk).** The data collected will only be used for academic analysis and study if published will not identifiable as yours. Your sincere response is highly needed to ensure the success of the research.

**As a small token of appreciation for your help, we would like to enter your email address into a prize draw to win one of the following prizes. 2x Wind Up Radio, 2x Eco Kettle, 6x Wind Up Torch. If you wish to enter the draw please state your email address at the end of this questionnaire.**

**Section A: Your Feeling and Responses of Environmental Behaviour**

We would like to measure your feelings and responses of eight consumer environmental situations. Please take your time to really get into the mood of the given situation; then:-

- Rate your feelings in the situation with the **word pairs** below. Some of the pairs might seem unusual, but you'll probably feel more one way than the other. So, for each pair, put a circle mark close to the word which you believe to describe your feelings better. **A list of words with explanations is also provided at the last page.**
- Rate your degree of responses with each of the questions related to the eight consumer situation. For question 1, put a circle mark close to the given scale such as **0 (none)** to **7(many, many days).** Questions 2 through 6 are answered by the following scale: **0 (not at all) to 7 (extremely so).**

**Situation 1: You are driving a brand new Toyota Prius hybrid car in the city with your relatives or friends. The hybrid system combines battery and petrol power so that, at low speeds, the car will run silently only on battery power. It also has the hybrid system indicator, which gives you real-time information about your driving technique. You can also show your relatives or friends exactly how the car is being powered at any point in time. With carbon emissions of just 89g/km, you pay no road tax and are exempted from congestion tax. The car is drinking more than you expected and it's cool to be green. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 2: You are on a mission to cut down your driving steadily to 50% less than your normal miles per year. In order to achieve this mission, you must plan and consolidate your trips either by walking, cycling, public transport, sharing a lift or reducing the amount of total car trips you make. You understand that being carless can help you to get fit, increase your quality of life, reduce pollution, save money and allow you to be an example to your family or friends. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
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| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
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| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 3: You are using an energy star laptop. You spend a lot of time doing your work, entertainment or internet communication with your laptop. It uses 70% less electricity than computers without this designation. If left inactive, your laptop will enter a sleep mode. You can awaken your laptop in a matter of seconds by simply hitting a key on the keyboard or moving the mouse. The best part of your laptop is that not only can it save energy, but it also helps the equipment to run cooler and last longer. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
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| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
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| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 4: You are planning to install loft insulation aided by a government grant. The government has offered you at least 50% off or a free loft insulation grant. This means that you can install loft insulation professionally at a cheaper or even for free when compared with doing it yourself. However, you can only use the insulation material of their choice. You are thinking that by having the insulation, you will be able to turn the thermostat down a few degrees without being cold. You believe this is the easiest way to reduce your expensive energy bills at less/no cost and to save the environment. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
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| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 5: You are cleaning up your kitchen after cooking or a big meal. You are saving all your raw or cooked food waste in the kitchen caddy instead of throwing it away inside the black bags. You only use the biodegradable bags to line your kitchen caddy. When the bag starts to get full, you tie it and put it in your green wheeled bin or white bio-bag. Later, your food waste will be collected by the council for composting. Although you are under less compulsion to do this, you are thinking this is the easiest way to support the council food waste composting campaign. Your act will also help to reduce the amount of waste going to landfill. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 6: Imagine that your local council promote a waste reward (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need to follow their waste guidelines before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chances you will get your waste reward. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 6: Imagine that your local council promote a waste reward (e.g., money, shopping voucher or tax reduction) for those who recycle more and produce less waste. However, you need to follow their waste guidelines before claiming your waste reward. First, you have to make sure there is no mixed waste inside the recycling bags. Second, garden waste and shredded paper must be loose in your green bin or white bag. Finally, you must put any recycling items into your green bag and place it on the pavement. Every time you do recycling, you will check how many recycling items you have accumulated so far. The more you do this, the more chances you will get your waste reward. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 7: You are refilling and reusing plastic or glass water bottles with tap water for drinking, as you do every day. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 7: You are refilling and reusing plastic or glass water bottles with tap water for drinking, as you do every day. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

**Situation 8: You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must repair or replace your taps soon by DIY (Do It Yourself) or call a plumber. You must fix the problem before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. YOU FEEL**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annoyed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pleased |
| Autonomous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Guided |
| Relaxed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Bored |
| Calm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Excited |
| Satisfied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unsatisfied |
| Melancholic | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Contented |
| Despairing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Hopeful |
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unhappy |
| Frenzied | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Sluggish |
| Awed | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Important |
| Dull | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Jittery |
| Aroused | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Unaroused |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Controlling | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Controlled |
| Stimulated | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Relaxed |
| Influenced | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Influential |
| In-control | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cared-for |
| Sleepy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Wide-awake |
| Submissive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Dominant |

**Situation 8: You have a few dripping taps/faucets in your home. The water is still dripping even after you have closed the taps properly. The drip sound of your taps is not only annoying; it is also costing you money. Sometimes you have to lie awake in bed at night hearing the steady drip of your tap. You must repair or replace your taps soon by DIY (Do It Yourself) or call a plumber. You must fix the problem before your money drips down the drain and causes unsightly staining to the taps themselves or the appliances which they supply. They also can ruin your cabinets or floors if they are leaking on to them. Please answer the following questions.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Q1 | How much time in a row would you like to spend in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | None | A few minutes | 30 min | 60 min | A few hours | A day | A few days | Many, many days |
| Q2 | How much would you try to leave or get out of this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q3 | Once in this situation, how much would you enjoy exploring around? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q4 | Is this a situation in which you might try to avoid other people, avoid having to talk to them? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q5 | To what extent is this a situation in which you would feel friendly and talkative to a stranger who happens to be near you? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |
| Q6 | How much would you try to avoid any looking around or exploration in this situation? | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Not at all | Very slightly | Slight | Slight to moderate | Moderate | Much | Very much | Extremely so |

## Section B: About You

*Please tick (/) the appropriate box.*

**13. Your age (years)**

- 20-30 ☐
- 31-40 ☐
- 41-50 ☐
- 51-60 ☐
- 60+ ☐

**14. Your ethnic group**

- White ☐
- Mixed ☐
- Asian or Asian British ☐
- Black or Black British ☐
- Chinese or Chinese British ☐
- Other, please specify: ☐

**15. Your gender**

- Male ☐
- Female ☐
- Transgender ☐

**16. Your highest educational level**

- High School or equivalent ☐
- Vocational or Technical School ☐
- College Graduate ☐
- Professional Degree ☐
- Bachelor degree ☐
- Master ☐
- Ph.D. ☐
- Other, please specify: ☐

**17. Your household size**

- 1 person ☐
- 2 person ☐
- More than 2 persons ☐

**18. Your occupation**

- Managers/ Executives ☐
- Professionals ☐
- Clerks ☐
- Technicians ☐
- Labourers ☐
- Self-employed ☐
- Others (e.g., government officials, students, housewives etc.) ☐

**19. Are there any children living in your household?**

- Yes ☐
- No ☐

**20. Do you own any private transportation?**

- Yes ☐
- No ☐

**21. Annual personal income *(Please include student loan, paid employment etc.)***

- Less than £ 10,000 ☐
- £ 10,000 - £ 20,000 ☐
- £ 20,001 - £ 30,000 ☐
- £ 30,001 - £ 40,000 ☐
- £ 40,001 - £ 50,000 ☐
- More than £ 50,000 ☐

**22. Your current resident**

- My own house ☐
- My parents' house ☐
- Privately rented accommodation ☐
- Property rented from the council or housing association ☐
- Property owned by friends ☐
- Other property owned by me or my family ☐
- University/college owned hall of residence ☐
- Privately owned hall of residence ☐
- Flat/ house owned by the university/ college ☐
- Other ☐

**23. Are your involved in any environmental related communities/ clubs/ campaigns/ parties? *(It could be as a formal or informal members such as volunteers)***

- Yes ☐ → Please specify:
- No ☐

**24. Do you think that if you make small changes in your behaviour, it will impact the environment?**

- Yes ☐
- No ☐

**Please enter your email address below if you wish to enter the prize draw. Please be assured that your email address will not be used for any other purposes.**

E-mail address_____

***We thank you for your time and cooperation in making this survey successful.***

**Glossary**

| | |
|---|---|
| Annoyed | feeling moderate anger or impatient |
| Aroused | feeling interested, responsive or desire to do something |
| Autonomous | feeling independent and not controlled by others or by outside forces |
| Awed | feeling of amazement and respect mixed with fear that is often coupled with a feeling of personal insignificance or powerlessness |
| Bored | feeling tired and impatient because you have lost interest in somebody/something or because you have nothing to do |
| Calm | feeling peaceful and without anxiety or strong emotion |
| Cared-for | feeling having needed care and attention |
| Contented | feeling peacefully happy and satisfied |
| Controlled | feeling guarded, kept in check and not expressed fully or at al |
| Controlling | feeling able to exercise power or authority over something |
| Despairing | feeling or showing loss of hope or miserable |
| Dominant | feeling in control |
| Dull | feeling no interest or excitement |
| Excited | feeling enjoyment or pleasurable anticipation |
| Frenzied | feeling wildly excited or out of control |
| Guided | feeling being lead by somebody in the right direction |
| Happy | feeling or showing pleasure, contentment, or joy |
| Hopeful | feeling fairly sure that something that is wanted will happen |
| Important | feeling having value or significant |
| In-control | feeling able to direct a situation, person, or activity |
| Influenced | feeling being influence on; behaviour, development, action, or thought |
| Influential | feeling able to have a powerful effect on people and what they do, or on events |
| Jittery | feeling anxious or edgy , making rapid jumpy movements |
| Melancholic | feeling or tending to feel a thoughtful or gentle sadness, gloomy |
| Pleased | feeling or expressing satisfaction or pleasure |
| Relaxed | feeling no strain or tension, and not exerting much strain or force on anything else |
| Satisfied | feeling pleased or content |
| Sleepy | feeling quiet and not very lively or exciting |
| Sluggish | feeling slow to react or respond to stimulation |
| Stimulated | feeling able to rouse to action or effort |
| Submissive | feel giving in or tending to give in to the demands or authority of others |
| Unaroused | feeling lack of interest or desire |
| Unhappy | feeling not pleased or satisfied |
| Unsatisfied | feeling unhappy or displeased |
| Wide-awake | feeling completely awake and alert |