

THE CONTRIBUTION OF SOCIAL DILEMMA THEORY AND INDIVIDUALISM/COLLECTIVISM TO THE MARKETING OF WATER

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Abstract

The role of marketing in social issues has grown over the last thirty years since Kotler himself introduced the concept (Kotler & Zaltman, 1971). In the evolution of social marketing it has moved from being entirely marketing process orientated towards expanding its vision to other useful theories from the subject's parent disciplines. Social dilemma theory, one such theory, evolved in the laboratories, computer programmes and field experiments of psychologists and economists. In 1991 marketers proposed the theory as an aid to understanding individual action in collective problems. The current study assesses the relevance of social dilemma theory for the marketing of water conservation behaviours in an emerging market. As such, it seeks to establish if the key variables were present and what, if any, impact large cultural forces, such as individualism and collectivism have on individual conserving behaviour.

Individualism and collectivism were studied at the personal level of idiocentrism and allocentrism and along the sub-dimensions of horizontal and vertical individualism and collectivism. The interactions of these values on individual behaviour were studied, together with two key variables in social dilemma theory namely, perceived consumer effectiveness (PCE) and faith in others (FIO). Individual perceptions of resource abundance and attitudes towards non-marketing solutions, such as a sanctioning system, were investigated.

The study was conducted among 444 teenage learners at secondary schools in Gauteng. A descriptive research design was used. The study found that there was an interaction between social dilemma variables and individualism/collectivism which did have an impact on individual conserving behaviour. Most, but not all relationships were verified. Collectivists required higher levels of perceived consumer effectiveness in order to engage in conservation actions, while individualists needed a greater sense of the co-operation of others. Faith in others and individualism/collectivism emerged as having a direct impact on consumer behaviour, while perceived consumer effectiveness was a moderator of the other variables and had no main, direct, effect on behaviour. Water was thought of as an abundant resource and in little need of conservation. Low income consumers favoured a sanctioning system to enforce compliance. The implications of the study for marketing theory and practice are discussed.

Declaration

I declare that this dissertation is my own, unaided work. It is being submitted in fulfilment of the requirements for the degree of Master of Commerce. It has not been submitted before for any degree or examination in any other University.

Kerry Fiona Chipp

____ day of _____ 2007

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1. Chapter 1: Introduction and Overview

1.1. Overview of the Field of Study

The current study seeks to explore and marry relationships found in social dilemma theory, the cultural constructs of individualism and collectivism and pro-environmental consumer behaviours. Unlike previous studies in these areas, it stems from a marketing angle and tests theory in an emerging African market. Social marketing has developed into a flourishing area of study. The field was defined by Hardin (1968) and pursued with vigour by psychologists and economists alike in the 1980s and 1990s (for example, Liebrand, Messick & Wilke, 1992; Dawes & Messick, 2002). The last ten years have witnessed a greater stress on moving research out of psychological laboratories and econometric and computer modelling and into the real world. The current investigation continues in the spirit of the contemporary trend. It also seeks to strengthen social dilemma research by enhancing the progress of marketing into this area. It will test the potential of social dilemma theory for marketing efforts in order to provide directives for future marketing driven water conservation.

1.2. Theoretical Background to the Research

Social dilemmas have been extensively studied in Psychology and Economics. These disciplines are two of the founding three disciplines of Marketing (Hastings & Saren, 2003). The third being Sociology (Hastings & Saren, 2003) and this is the field that has contributed much to the understanding of individualism and collectivism. Thus the current research unites theory from each parent of Marketing.

1.2.1. Social Dilemmas

Social dilemmas are instances where group interests conflict with individual interests (Dawes, 1980). These dilemmas have been explained after Hardin's (1968) metaphor of the "Tragedy of the Commons". Herders sharing a common pasturage would be compelled through self-interest to increase their herds by one animal, as this would provide benefit with little cost to self. Nevertheless, should all herders act

in this way, the commons would be destroyed and both the group and the individual herder would lose. Social dilemmas have gained topicality recently as the world struggles to find solutions to dilemmas of the commons, such as global warming, pollution and use of electricity and water.

Social dilemmas present individuals with the paradox that there is greater individual benefit from defection, but should all individuals defect, poorer outcomes for all result (Dawes & Messick, 2000). The “individual” is termed as any decision making unit which shares a resource with others. Large scale social dilemmas are situations where a community goal (such as environmental conservation) will only be achieved if all community members sacrifice (Wiener & Doescher, 1991). Most, if not all, community members would prefer to have all constituents sacrifice to preserve rather than forfeit the resource. Co-operation is discouraged for two primary reasons: each individual member would have more resources if they did not sacrifice and if their individual sacrifice would not have any measurable influence on the achievement of the final goal (Wiener & Doescher, 1991, 1994; Dawes & Messick, 2000).

Thus to a large degree, individual co-operation rests on perceived payoff. Payoff is defined in terms of social (the impact the action has on reality) and non-social (the utility gained from simply acting in a pro-social manner) (Wiener & Doescher 1991). The conundrum stems from, firstly, the amount that the individual must sacrifice in order to positively impact the community good and secondly, the size of the community. Large communities, where all members have access to community resources, may result in the individual perceiving little, if any, communal benefit from their own sacrifice (Van Lange, 1992). A related concept is perceived consumer effectiveness (PCE), which is defined as the extent to which personal consumption activities contribute to the solution of the problem (Ellen, Wiener & Cobb-Walgren, 1991; Berger & Corbin, 1992). In other words, individuals are not simply cooperating because the cost is high but also because they believe that they can make a difference. This echoes McCarty and Shrum’s (2001) findings that high internal locus of control positively impacts pro-environmental behaviour. If the problem is large, PCE may be small. Thus there is the problem of scale: the community will benefit only if sufficient numbers of the community sacrifice. Hence the common finding in social dilemma research that small groups evidence greater degrees of co-operation than large groups (Wiener & Doescher, 1991).

Wiener and Doescher (1994) speculate that consumers caught in a social dilemma are motivated by more than self-interest and thus will co-operate voluntarily, especially when they believe that others will co-operate. Thus co-operation is met with co-operation and defection is met with defection. Sen, Gürhan-Canli and Morwitz (2001) add that expectations of overall co-operation could be based on reference group behaviour and, correspondingly, social norms. Thus the two key areas for the current research are: firstly, the belief in individual effectiveness, measured by perceived consumer effectiveness (PCE), and, secondly, the belief that others will co-operate, possibly moderated by the degree of individualism and collectivism present in the target community, thus the social norms.

Messick and Brewer (1983) define two main avenues to solving social dilemmas: either behaviourally or structurally. Behavioural solutions induce co-operation for the sake of co-operation, whilst structural solutions involve changing the properties of the situation so that it is no longer a social dilemma.

Behavioural solutions face three main barriers: first, the desire to avoid being a "sucker", where the resource is destroyed despite the individual's sacrifice: thus the likelihood that the group's goal will be achieved plays a large role here. Second, self-interest impedes individual action. As Rothschild (1979) and Wiener and Doescher (1991) note it is the low benefit-cost ratio that obstructs individual action in solving many social marketing problems. The value of co-operation must therefore be increased. Third, mistrust of others, that is, the disbelief that others will co-operate, provides the final barrier. Individuals are thus willing to conserve when others are, making the successful achievement of the final goal elusive if much co-operation is required (Wiener & Doescher, 1991). Thus it is here that the reference group provides the greatest influence.

Structural solutions are realised by altering the payoffs, usually by restricting individual freedoms through legislation. Legislation indicates that social marketing efforts have failed or not even been tried. Marketers have not managed to "sell brotherhood" (Rothschild, 1979, p.11), however, group consent for the political act may need to be enlisted, thus the legislative solution may have to be "sold" to the group. Thus the paramount barrier to structural solutions is the individual's desire to maintain their freedom from restrictive laws that seek to control individual behaviour (Wiener & Doescher, 1991).

Societal change is affected by three main mechanisms: education, marketing and the law (Rothschild, 1999). Social dilemma theory has been applied in all three. The distinction between these lies in the nature of change, that is whether or not it is attitudinal or behavioural, and in whether or not the change is voluntary or coerced. Education aims for attitudinal change, which is voluntary; the law aims for behavioural change that is coerced; while marketing aims for voluntary behavioural change. Rothschild (1999) criticised public behaviour management as too focussed on education and law and neglectful of marketing and the principles of exchange. The aim of social marketing is, therefore, to effect voluntary behavioural change through the application of relevant theory and marketing practice to societal issues.

1.2.2. Individualism/Collectivism

The dimensions of individualism and collectivism have a long history in the social sciences (Triandis, 1995). These constructs are essentially a summation of an individual's desire to conform to a group and place group interests ahead of self-interests juxtaposed against an individual's preference for being distinct from a group and treating self-interest as paramount (Triandis, 1989; Brewer, 1991; Triandis, 1995). The implications for social dilemma researchers are clear: individuals who value group interests above their own (collectivists) should be more cooperative. This has indeed been the case in studies conducted internationally (Gärling, 1999; Van Vugt, 2002, for instance).

Individualism and collectivism are societal level constructs. Much criticism has been levelled at labelling whole countries as 'collectivist' or 'individualist' as Hofstede did (Triandis, 1989; Voronov & Singer, 2002). Moreover the constructs were not necessarily polar opposites; that is, an individual could have each to differing degrees (Brewer, 1991; Triandis, 1995, 2001; Triandis & Suh, 2002). Thus the new perspective evolved that these constructs were separate. At an individual level they were termed allocentrism for collectivism and idiocentrism for individualism (Triandis, 1989, 1995). Allocentrism and idiocentrism have also been conceptualised in terms of individual orientation towards hierarchy, or what Hofstede termed "power distance" (Triandis, 1995).

Societies and their individual members are either accepting of social distinctions or not. The Swedes, for instance, strive for equality and do not desire status over others (Triandis, 1995). The Americans, conversely, aim to be distinct, as they wish

to stand out from others (Triandis, 1995). They quest for the "fifteen minutes of fame" that the Swedes shun. Both Sweden and the US were termed "individualistic" by Hofstede in his business survey of IBM employees globally, thus there must be another dimension present to explain these differences. Triandis (1989, 1995; 2001; Triandis & Suh, 2002) defined society in terms of "Verticality" or "Horizontalty". Vertical societies believe in social distinctions, status and hierarchies while horizontal ones desire equality between all people. Societies and people can have one of four possible dominant characteristics: vertical collectivism, horizontal collectivism, vertical individualism and horizontal individualism. These constructs are important as they influence the propensity of individual co-operation, as well as individual preference for certain outcomes. Individuals high in vertical individualism/idiocentrism, for instance, wish to maximise the difference between what they get out and what another gets out (Triandis, 1995). In the herders on the commons example, such people would seek to get the most out of the pasturage at the expense of the other herders. The notion of winning is thus very important to vertical individualists. Conversely, horizontal individualists seek fairness and equal outcomes for all (Triandis, 1995; Gärting, 1999).

There has also been an acknowledgement of the dynamic nature of societies and their culture. Thus societies change as do their levels of individualism and collectivism. Change has been evidenced to occur as a society becomes more affluent, mobile and diverse (Triandis, 1995). Increasing levels of income, mobility, choice and mixed populations coincides with an increase in individualism (Triandis, 1995). Emerging markets, such as South Africa, feel these changes acutely and their citizens are changing their social value orientations. This will, of course, impact on the levels of co-operation in general and in a resource dilemma in particular.

Although individualists are less co-operative, they have greater levels of self-efficacy than collectivists (McCarty & Shrum, 1991; Triandis, 1995). Thus their levels of PCE or perceived consumer effectiveness, should be higher than those of collectivists, and they will be more likely to act as they believe their actions will have an impact. Collectivists, then, believe in co-operation with in-groups, while individualists have greater belief in individual power. Thus individualism and collectivism adds depth to the understanding of social dilemmas and their possible solution. Individualists should be encouraged to cooperate with groups, while the PCE of collectivists should be increased so they do not see their efforts as futile.

1.3. Motivation

The study evaluated if the tenets of the social dilemma framework were present and could play a role in the effective marketing of water conservation in South Africa. Water conservation falls into the class of social dilemmas known as *Resource Dilemmas* (Van Vugt, 2001, 2002). Wiener and Doescher (1991, 1994) explored the workings of resource dilemmas in the context of social marketing. As marketers, Wiener and Doescher (1991, 1994), Wiener (1993), Ellen, Wiener and Cobb-Walgren (1991), Berger and Corbin (1992) isolated two key variables affecting the marketing solution of social dilemmas: Faith in Others (FIO) and Perceived Consumer Effectiveness (PCE). The fundamental orientations of consumer behaviour towards environmental problems are different to those towards goods and services. Thus, the influence of two such orientations, individualism and collectivism, on the tenets of the social dilemma framework was also studied.

Water conservation, therefore, readily falls into the context of other overseas studies on the applicability of social dilemma theory to marketing problems and thus the current study could provide further support for the wide applicability of Wiener and Doescher's framework. Thus the promise of their work to help resolve social dilemmas, or "dilemmas of the commons" has been in part fulfilled. The as yet unexplored potential for the use of social dilemma theory and associated marketing strategies on water conservation, an almost typical commons dilemma, was empirically tested in the present research. In doing so, the current research takes the marketing use of social dilemma out of the developed world and into the developing world. This will then in part address Wiener and Doescher's (1991) directive to establish whether their promotional framework to resolve social dilemmas is generalisable to non-Western cultures. In particular it will help determine if their belief that individualistic and collectivist cultures will interact with the treatments used in social dilemma experiments, as suggested by the work of Triandis (1995).

1.4. The Research Problem

Thus the key areas for the current research are: firstly, the belief in individual effectiveness, measured by perceived consumer effectiveness (PCE), and, secondly, the belief that others will co-operate, or faith in others (FIO), and thirdly, the extent to

which these variables are moderated by the degree of individualism and collectivism present in the target community. Figure 1 illustrates the relation of these constructs in the current research.

A diagram of the proposed model is outlined below:

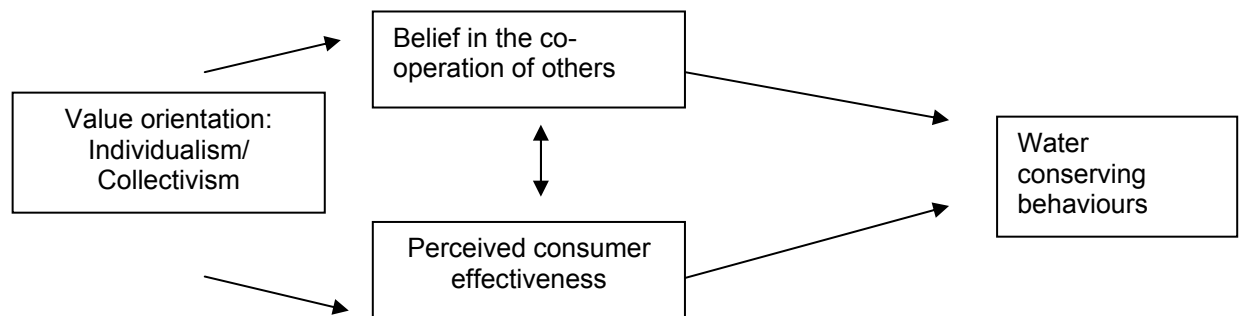


Figure 1: Proposed Model

1.5. Methodology

The research followed a descriptive research design whereby 444 self completion interviews were held with teenagers (14-17 years old). A self completion questionnaire is one that is filled in by the respondent and not the interviewer and is common in educational research (Zikmund, 2003). The population of teenagers was selected as they are the primary focus of the South African government's informational campaign to conserve water. Moreover, according to the Social-Ecological Approach, a model followed by many social marketers (Alcalay & Bell, 2000), the environment in which an individual is raised is vital to their attitude formation later in life. Thus the current study measured the water conservation behaviour of teenagers, their observed behaviour of communities and schools and their individualist/collectivist orientation.

1.6. Limitations of the Study

The study is a descriptive one; hence no causality can be inferred. Its results are limited to a young population in the industrial heartland of South Africa.

1.7. Chapter Summary and Outline of Dissertation

The current chapter provides an introduction to and overview of the key concepts involved in the current study. The place of social dilemma theory and individualism and collectivism within marketing was established. Each concept and its implications for other constructs were discussed. A model outlining the study was presented in Figure 1, p.7.

Chapters 2 to 5 cover the three areas of literature pertinent to the research. Chapter 2 reviews social marketing, while Chapter 3 scrutinises social dilemma research, from its origins to its solutions. The various typologies of social dilemmas are discussed as well as the two key variables of faith in others and perceived consumer effectiveness. Chapter 4 turns to individualism and collectivism. The terms are defined and the progress in both theory development and empirical work are outlined. Hence the development towards horizontal and vertical individualism and collectivism is explained and the characteristics of each are provided. The ecology involved in the formation of individualism and collectivism is detailed, as is the use of the concepts in social dilemma theory and marketing. The next area of interest is water research, covered in Chapter 5. The global water situation, its challenges and the approaches of authorities to deal with these are outlined. The chapter includes a review of environmental approaches across disciplines and then in marketing. It closes with a look at water marketing research in South Africa.

The methodology is provided in Chapter 6, where a detailed list of research questions and hypotheses can be found. The reasoning behind the sample and measurement instrument selection is located here. Chapter 7 presents the results and Chapter 8 provides the discussion of the findings, conclusions and suggestions for future research.

2. Chapter 2: Social Marketing

2.1. Chapter Overview

The current chapter reviews the field of social marketing. In order to illustrate the place of social dilemmas in the broader discipline of social marketing, a review of social marketing is presented. Firstly, social marketing's domain is reviewed along with its definition, secondly the various modes of thought that have guided its theory and practice are provided and thirdly, the position of social dilemma theory within the schools of thought is presented.

2.2. The Domain of Social Marketing

Social marketing arose out of a belief that marketing theory and practice could as equally be applied to non-commercial activities as it could be used for for-profit commercial gain. Although this proposition met some resistance when it was first introduced by Kotler and Zaltman (1971) (Peatie & Peatie, 2003), in the three decades since the growth of marketing's 'third consciousness' (Kotler, 1972, p.64), the use of marketing processes and function for a wide variety of exchanges (Kotler, 1972) has been generally accepted. Thus marketing has been defined in terms of functional rather than structural considerations. To define a field by means of function is to see it as a process or a set of activities. To define a field in terms of structure is to identify it with some phenomena such as a set of institutions (Kotler, 1972). In this view marketing can be viewed in terms of the processes it uses or its domain. Thus Kotler and Zaltman (1971) rooted marketing practice in its process rather than its structures, which enabled its processes to be used outside of the profit orientated commercial domain. Hence Kotler and Zaltman's (1971) definition of social marketing was:

....the design, implementation and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution and marketing research. (p.5)

Thus social marketing was conceived in 1971 to entail the marketing of social ideas by means of techniques and practices developed within the marketing spectrum. The emphasis on the marketing of ideas led to some confusion of social marketing

with social communication and educational efforts (Rothschild, 1997). Many social programmes are primarily associated with one of the four Ps, that is promotion, and hence such a narrow perspective does not constitute social marketing (Andreason, 1994). Furthermore, many academics and practitioners felt that the definition of social marketing did not sufficiently distinguish the discipline from other related activities such as societal marketing, nor did it provide guidelines as to whether profit orientated organisations could engage in social marketing, such as a car insurer encouraging safe driving (Andreason 1994). Moreover, many felt that social marketing was more than the marketing of ideas, but the marketing of attitudes and behaviours. Andreason (1994), for example, revised the definition to:

*the adaptation of commercial marketing technologies to programs designed to influence the voluntary **behavior** of target audiences to improve their personal welfare and that of the society of which they are a part. (p.11, emphasis added)*

The Andreason definition has been widely accepted in the last ten years. Its core contribution was the change of behaviour brought about by conventional marketing tools. Both Andreason and others (Hastings & Saren, 2003) have espoused the techniques of marketing as well as its consumer orientated focus as the core offering of marketing to resolving social problems.

Nevertheless, the Andreason definition has, too, become a yet another landmark in the evolving field of social marketing. Whilst this definition is widely held, it restricts social marketing to “commercial marketing technologies” that is theories and processes already developed and used within the marketing field. As the field has progressed, social marketers find that social marketing, like services marketing before it, can be greatly served by theory and practice from other fields as well as that developed within the field itself (Peattie & Peattie, 2003). Peattie and Peattie argue that the unique situation of social marketing makes direct translation of conventional marketing practice somewhat clouded.

Evidence of this can be found in the difficulties documented by various researchers in the field (Rothschild, 1979; Fox & Kotler, 1980; Bloom & Novelli, 1981). Commercial marketing places increasing emphasis “on products we want, but don’t particularly need, [c]onversely in social marketing, the emphasis is on behaviours we need, but don’t particularly want” (Peattie & Peattie, 2003, p.380). Thus conventional marketing concepts must be reframed, then, to a social marketing vocabulary that includes “social propositions” rather than products; “costs of involvement” instead of

price; “accessibility” instead of place; “social communication” instead of promotion; “interaction” instead of exchange and competition framed in terms of competing ideas and the need to win the battle for attention to secure behavioural adoption (Peattie & Peattie, 2003).

Social marketing’s domain, therefore, has grown from one of social communication of ideas, to behavioural change using a consumer orientation and marketing tools, to one of behavioural change using marketing and other relevant concepts. Thus, social marketers use marketing as a base for the application of all relevant theory and practice to effect behavioural change in society. Such an approach remains true to the heart of marketing; that is “marketing has always been concerned with the influence, if not manipulation of consumer demand” (Hastings & Saren, 2003, p.311), while using theories from sister disciplines, particularly from the domains of psychology and economics. In this spirit, social dilemma theory, which has origins in both of psychology and economics, has been successfully employed in the marketing of societal change.

2.3. An Overview of Social Marketing Practice: From Exchange Theory to Social Dilemmas

Just as the definition of social marketing has altered from one of idea modification to behaviour change, the means by which this goal could be achieved has also altered in the years following Kotler’s (1969 in Kotler, 1972) expansion of marketing to the domain of social causes. Kotler’s broadening of marketing was met with substantial derision by marketing scholars who felt that marketing was to be strictly applied to markets and profit enterprises (Andreason, 2003; Hastings & Saren, 2003). Not surprisingly then, initially social marketers adhered to the application of established marketing concepts to social issues, notwithstanding the fact that marketing itself constantly borrowed theory from other disciplines. Glenane-Antoniadis, Whitwell, Bell and Menguc (2003, p.326) classify these approaches, which still persist, as “traditionalist”.

Such approaches are found in the application of exchange theory to social causes (Kotler & Zaltman, 1971; Glenane-Antoniadis, Whitwell, Bell & Menguc, 2003). Exchange theory is held to lie at the heart of marketing and entails a trade between two parties, each of whom has something of value to offer and the perceived benefits of the deal outweigh the perceived costs of the purchase (Kotler & Zaltman, 1971;

Kotler, 1972; Hastings & Saren, 2003). Kotler (1972) outlined the application of exchange theory to social causes in his seminal paper by stressing the use of established marketing tools, that is, the four Ps, market segmentation, target marketing, market research and the like, to induce an exchange between benefits and costs of behaviour change:

Marketing is a particular way of looking at the problem of achieving a valued response from a target market. It essentially holds that exchange values must be identified, and the marketing program must be based on these exchange values. Thus the anticigarette [sic] marketer analyses what the market is being asked to give up and what inducements might be offered. The marketer recognizes that every action by a person has an opportunity cost. The marketer attempts to find ways to increase the person's perceived rate of exchange between what he would receive and what he would give up in freely adopting that behavior. (Kotler, 1972, p.72)

The “traditionalists” adopted this approach and many social marketing tools employed in the years that followed were based on such a view. Exchange theory was extensively used in health communications whereby individuals, groups and organisations had resources that they could be willing to exchange for perceived benefits (Alcalay & Bell, 2000). The “seller” provides a tangible good (such as a smoking cessation kit) or an intangible product (such as an idea, as found in the health risks of a high fat diet) (Alcalay & Bell, 2000). The “sale” or transaction is brought about by established marketing tools and theories.

Alcalay and Bell (2000), in their extensive review of social marketing tools, outlined the most widely used social marketing practices: The Health Belief Model (HBM), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour, the Information Processing Paradigm and the Transtheoretical Model (TM). Other models include the Motivation Opportunity and Ability (MOA) Framework (Binney, Hall & Shaw, 2003) and other more stepped methods, such as the “Seven Step Social Marketing Approach” (Social Change Media, 2003). All of these models were based on widely used theories in marketing (although many had their genesis in other disciplines) and followed an individualistic and context free approach. Therefore, the individual was the object of focus in the exchange, and their environment, whether political, cultural, social or economic, was largely excluded.

The lack of social context in the interventions was not the only critique of the traditionalist viewpoint. Many scholars argued that exchange theory is limited in its

application to social causes: that is, it is hard to sell benefits that consumers could possibly never see; the benefits themselves are often ambiguous; and Kotler's prerequisite of balance of power in such exchanges did not exist for disadvantaged groups (Hastings & Saren, 2003); moreover, many environmental or societal causes have no clearly defined immediate benefit for the individual. Other scholars (Peattie & Peattie, 2003) have questioned whether or not a genuine exchange is possible in social marketing. After all, no behaviour or product is owned or transferred between parties and the quid pro quo of a commercial exchange is lacking (Peattie & Peattie, 2003). Even advertising models, such as the Information Processing Paradigm, were critiqued for possessing too narrow a focus on messages that must be received and decoded by an audience, whilst communication theory had advanced beyond this towards an idea of communication as a social process that stressed interaction, involvement and shared understanding (Peattie & Peattie, 2003).

These critiques substantiated the second movement in social marketing; one that looked outside the domain of traditional marketing practice for the tools for social change and often ran in parallel with the traditionalist approaches. The second movement was termed "the convergents" and adherents followed either an individualist or a societal and relational approach (Glenane-Antonaidis, Whitwell, Bell & Menguc, 2003). Individualist methods include Social Learning Theory (Alcalay & Bell, 2000), Stakeholder Theory, Diffusion Theory and Quality Of Life Theory (Glenane-Antonaidis, *et al.*, 2003).

The societal and relational approach was bred from a plethora of critiques that held that no social change was possible without an acknowledgement and an inclusion of the broader environment. An individualistic approach blind-sided social marketers to the negative or constraining social structural influences on individual behaviour, particularly those that originated in the marketing activities of their commercial brethren (Goldberg, 1995). Indeed, a focus on the individual ensured that the social status quo was endorsed and not questioned (Goldberg, 1995). Moreover, such an approach assumed that the power to correct the situation lay entirely in the hands of the individual as the role of outside structures was not acknowledged (Andreason, 1997). Such a view becomes more problematic when the behavioural change profits third parties or a collective, such as driving slower or recycling. The role of personal benefit and cost then changes and must of necessity widen the scope of focus to being more societal than individual. Furthermore a collective change, as required for

water conservation, demands collective action and the cost/benefit ratio difference between individuals and the larger society.

The application of social dilemma theory to social marketing, therefore, stemmed from the societal and relational approach that was borne within the convergents. Social dilemma theory, along with theories such as the Community Organisation Model, the Social-Ecological Approach (Alcalay & Bell 2000), Community-Based Social Marketing (McKenzie-Mohr, 2000a; McKenzie-Mohr, 2000b) and the Community Readiness Model (Kelly, Edwards, Comello, Plested, Thurman, & Slater, 2003) exemplify the social method within social marketing. Although there have been fewer studies by the convergents, these have been more wide ranging and have dealt with a far greater variety of contexts. Social dilemma theory is one of the few, however, that deals with the problem of engendering collective benefit from individual cost.

2.4. Chapter Summary

Through the long-standing evolution of marketing's approach to social issues, there have been various ways of addressing the social aspects of a community from a marketing perspective. Many scholars have, and indeed persist, in using the many theories routinely used by marketers to explain consumer behaviour. Such 'mainstream' marketing theories have had varying degrees of effectiveness and are often critiqued as not addressing the social and environmental context in which consumers find themselves, as they are viewed as placing too much emphasis on the individual. Hence the current study has focussed on the broader context and hence followed the 'convergent' school of thought in social marketing. Thus other mainstream marketing theories are not covered as they have limited application in this particular study.

3. Social Dilemma Theory

3.1. Chapter Overview

The current chapter reviews the field of social dilemma research. The core concepts that underpin all social dilemmas are described, followed by a review of the various typologies through which these concepts are expressed. The two main components of social dilemmas, perceived co-operation of others and perceived consumer effectiveness are then presented. The chapter then turns to solutions to social dilemmas and closes with the application of this theory to social marketing.

3.2. Definition

Social dilemma theory is rooted in the established 'Tragedy of the Commons' principle, as set out by Hardin in his 1968 seminal article. Social dilemmas, particularly in the case of pollution, global warming and water conservation, have faced intense interest from all academic disciplines over the last thirty years (see Dawes, 1980; Ostrom, 1998; Kollock, 1998 and Dawes & Messick, 2000 for reviews). Much of the work in defining the conditions of social dilemmas was outlined in key articles in the 1980s, when social and economic researchers sought to build on the pioneering work of Hardin. Hardin (1968) captured the heart of a social dilemma with his metaphor of overgrazing on the commons: that, as a rational being, an individual herdsman sharing the common pasturage, views adding an additional animal to his herd to be beneficial to himself; however, should all his fellow herdsmen do likewise, the commons would be destroyed. The situation is a tragedy because a *rational* man is

locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. (Hardin, 1968, p.1244)

The true meaning of tragedy is apparent here: not unhappiness but the remorseless working of things (Kollock, 1998). Hardin, too, eliminates Adam Smith's 'invisible hand' in resolving population problems, as Smith does not examine the paradox where individual gain is not at the expense of others – a concept captured in the economic concept of an externality (Dawes, 1980). Externalities can be both

negative and positive; these simply entail that the behaviour of one has an impact on others without the explicit agreement of those persons (Dawes 1980). Furthermore, only when externalities are small can efficient results for the collective be produced by decentralised decision making, as found in Adam Smith's markets (Kollock, 1998). Large externalities produce a social dilemma, as self-interested, myopic, individual decisions converge at an equilibrium of collective disaster (Schwartz-Shea & Orbell, 1992).

Thus a social dilemma is a situation where gain accumulates to the individual, but costs accrue to the collective. The most widely cited definition is that of Dawes (1980):

Social dilemmas are characterized by two properties: (a) the social payoff to each individual for defecting behavior is higher than the payoff for cooperative behavior, regardless of what other society members do, yet (b) all individuals in the society receive a lower payoff if all defect than if all cooperate. (p.170)

Komorita and Lapworth (1982) extended the definition of Dawes; they viewed the rational choice to defect as a *dominating strategy*, as it yields a higher outcome for an individual than any other choice, and the choice of this dominating strategy results in a deficient equilibrium. Equilibria in individual/collective interactions are termed *Nash Equilibria* and are defined as "any pair of strategies with the property that each player maximises his or her payoff given what the other player does" (Ostrom, Gardner & Walker, 1994, p.54). An equilibrium is termed deficient if there are other outcomes that reward larger payoffs to every member of the group (Komorita & Lapworth, 1982).

There are, however, a few more preconditions before a situation can be termed a 'social dilemma'. Firstly, it must be impossible to exclude anyone from the commons; second, there must be a group benefit to be had from social co-operation; thirdly, there must be a production function linking the contributions by individuals to the final level of the good produced, meaning that contributing to the overall good must have a form of cost for the individual and, fourthly, the societal production costs are the same regardless of group size. To elaborate, public television has a fixed cost of production, no matter how many people access it. Fifthly, the benefits must be divisible, that is collective benefits can be individually consumed (Sell & Wilson, 1991; Heckathorn, 1998). These preconditions lead to important additional options for individuals in a social dilemma. As the production costs are the same regardless

of group size and no individual can be excluded, there is always the potential for free-riding once a critical number of people have contributed to solving the dilemma: some can always defect (Bicchieri, 2002 and Szilagyi & Szilagyi, 2002).

3.2.1. Conceptualisations of the Individual in Social Dilemmas

Despite Hardin's forecast of doom, much co-operation in solving social dilemmas has been found to be present (Ostrom, 1998). Part of the debate stems from the notion of individual self interest. Social dilemma definitions have, by and large, been provided by economists, such as Hardin. Consequently, there has been a great deal of focus on utilities, payoff matrixes and the notion of rational man. Not surprisingly, the idea of 'rational' man came under much fire since the 1990s. Schwartz-Shea and Orbell (1992, pp. 21-22) question the economists' assumption of egotism as the main driver of human motivation; instead they propose that humans could rather be 'social animals' disposed to cooperative behaviour; 'parochial animals', submerging private welfare to small local groups, or, alternatively, people are 'moral animals', placing welfare of general populations over that of small membership groups.

Economists countered this with the notion of social and non-social payoffs; while the individual may benefit from defecting privately (a non-social payoff), she would face a social cost in terms of the esteem to which her community viewed her actions (Hollander, 1990). Later economists and psychologists focussed on the notion of bounded rationality: an individual acts to the best of her ability based on the time, abilities and information available to her (McCarthy & Hagan, 1998).

Heckathorn (1998) explicitly linked bounded rationality to ideology, particularly that of individualism and collectivism. He did so by deducing that the cost of acquiring information is large for individuals with bounded rationality in complex systems. Therefore, in order to reduce the costs of decision making, human actors condense their motivations to a few well known images of the 'good society' embodied in the core philosophies available. Philosophies such as individualism and collectivism conceptualise the relationship between individual and collective interests and can thus serve as a basis to reconcile those interests (Heckathorn, 1998).

The political scientist Elinor Ostrom took this notion further and turned it into common academic currency in her 1998 presidential address to the American Political Science Association. She reviewed much multi-disciplinary literature and concluded that the

role of learning heuristics, social norms and rules were better tools to understand actors in social dilemmas than the current focus on ‘talented, analytically sophisticated, short-term hedonists’ that most economic theories and psychological research viewed participants to be (Ostrom, 1998, p.15). Hence, individualism and collectivism and the behavioural norms associated with these constructs can be seen as powerful shapers of Ostrom’s ‘complex fallible learners’ (1998, p.9), rather than ‘rational men’ who make decisions in social dilemmas.

3.2.2. Core Choices in a Social Dilemma

Most social dilemma research describes the choice facing individuals in a dilemma to be binary: to co-operate or defect (Yamagishi, 1992) and much research developed economic models based on these two options and, consequently their influence on payoff matrixes (Heckathorn, 1998). Although this approach has been criticised by more recent researchers who believe that defect/co-operate choice can be continuous (Parks, 2000; De Cremer & Van Dijk, 2002) and too rational (Ostrom, 1998), it still forms the basis for the payoff matrixes for different types of dilemmas as it demonstrates well the individual return for co-operation and defection. Overall, the payoff matrixes are constructed as set out in Table 1 below.

	C (Co-operate)	D (Defect)
C (Co-operate)	CC $R = V - K_{c1}$ (R = the ‘reward’ payoff)	CD $S = V(1 - 0.5^F) - K_{c1}$ (S = the ‘sucker’ payoff)
D (Defect)	DC $T = V(1 - 0.5^F)$ (T = the ‘temptation’ or free-riding payoff)	DD $P = 0$ (P = the ‘punishment’ payoff)

Table 1: Core Payoff Matrix

Adapted from Heckathorn (1998, p.458)

Where:

C = Co-operative Choice

D = Choice to Defect

V = Value of the Good/Resource

F = The Production/Preservation Function – the function reflecting the critical mass required before the accumulated co-operative acts produce the public good or preserve the resource

0.5 = the Proportion of the Population Selecting a Co-operative Choice

K = Individual’s Cost

Table 1 is a simplified payoff matrix where the options and outcomes of a two-person social dilemma are represented. The first column represents the first player's individual choice (co-operate or defect), while the first row represents the second player's choice between the same two options. Essentially, this matrix can be extrapolated to multi-player social dilemmas, such as found in water conservation, as an individual's co-operation is met with either co-operation or defection from the group at large; or else the individual's defection is met with co-operation or defection of one other. In terms of the above table, the benefit to any individual depends on the level of resource preserved (L), which is a proportion of the total amount that could potentially be preserved, and the value (V) which is the full preservation of the resource, less the cost of the individual's co-operation (K) (Heckathorn, 1998). Under these conditions, the utility functions have the form:

Equation 1: Utility Functions

$$U = VL - K$$

The standard production function in economics and collective action is an S-shaped curve, adapted for water conservation as a preservation function (see Figure 2). If D is the number of actors in the group who defect, N is the number of actors in the group, F is an exponent controlling the shape of the preservation function and L is the level of resources preserved (Heckathorn, 1998), thus:

Equation 2: Preservation Function

$$L = 1 - (D/N^F)$$

Therefore, as defined from the above notations, the level of collective resource preservation or collective good production can vary from $L = 0$ (no production/preservation) where $D = N$ to $L = 1$ where $D = 0$ (full production/preservation). When intermediate numbers of actors co-operate, that is $0 < D < N$, the link between the proportion of the population contributing to saving the resource and the level of preserving that resource depends on the value of the exponent F (see Heckathorn, 1998 for the application to public goods).

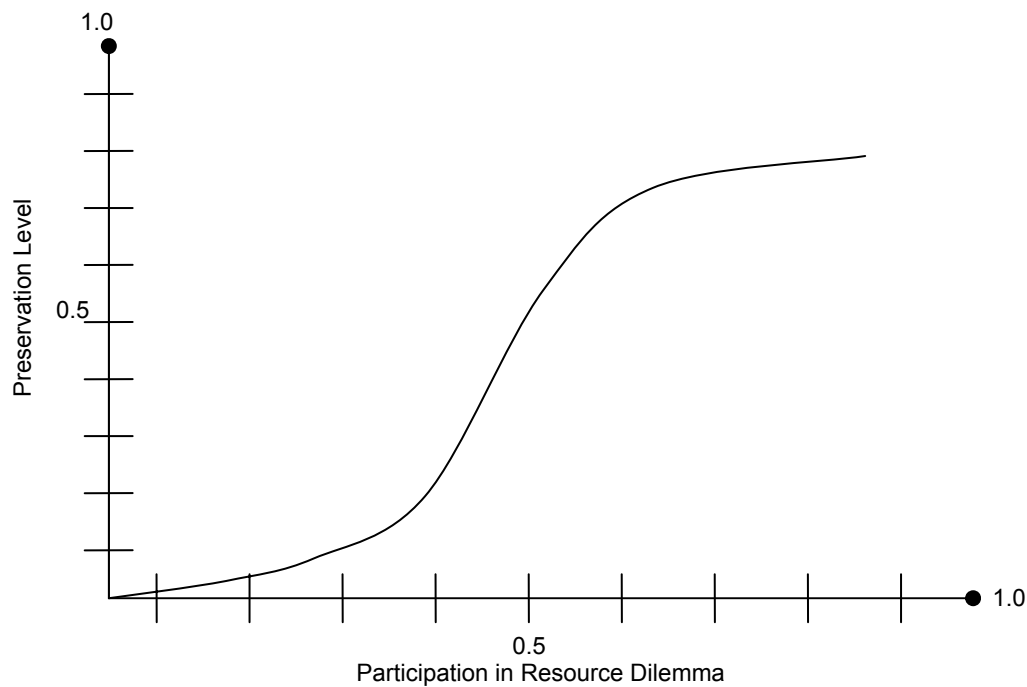


Figure 2: The Preservation Function
Adapted from Heckathorn (1998, p.456)

In order to demonstrate the relationship between the proportion of the group that contributes ($(N - D)/N$) and the level of resource preservation (L), the changing value of F must be taken into account. When $F = 1$, the preservation function is linear – at any given proportion of the population who co-operate will correspondingly preserve that proportion of the collective resource. If $F > 1$, the preservation function is decelerating, that is, the slope of the preservation function is a decreasing function of the number of contributors ($N - D$), thus there are diminishing marginal returns. Thus the impact of each additional person's co-operation is negatively related to the number of people who co-operate. Volunteering help at the scene of a traffic accident is an example of such a situation: a certain number of people are needed to stop and give aid, but if more than a critical amount stops, they become a hindrance. If $F < 1$, the preservation function is accelerating, that is, the slope of the preservation function is an increasing function of the number of contributors ($N - D$), thus there are increasing marginal returns. Here the impact of each additional person's co-operation is positively related to the number of people who co-operate. Not littering is a good example of increasing marginal returns (see Figure 3, below).

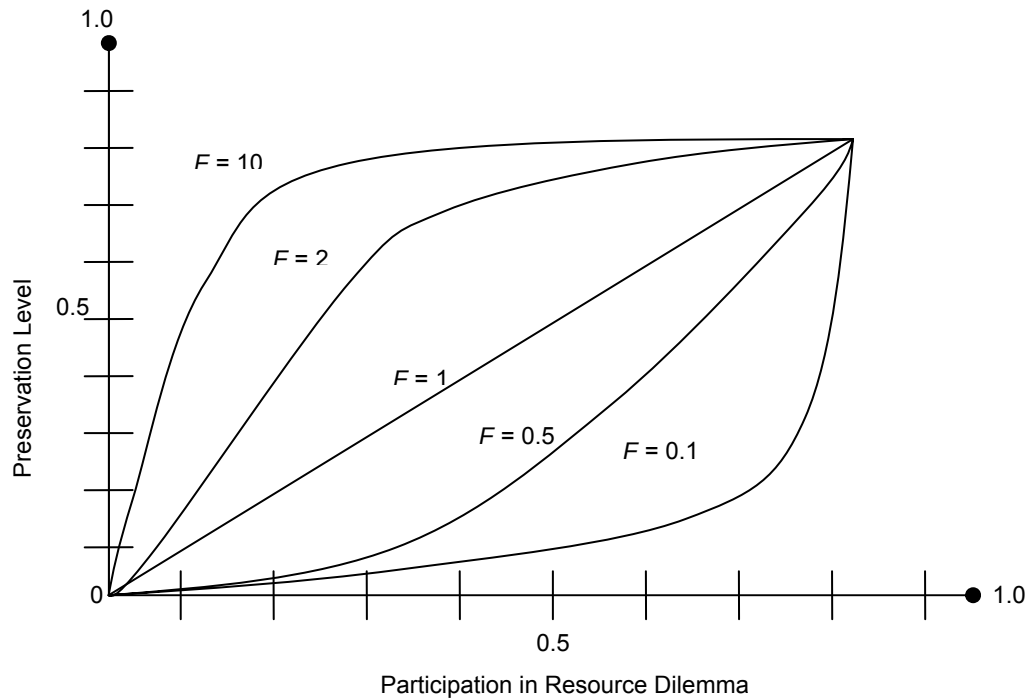


Figure 3: The Role of F in the Preservation Function

Adapted from Heckathorn (1998, p.456)

In situations where the preservation function is decelerating, very few individuals in the population need co-operate before a high level of the resource is conserved, thus the threat is small. F in these instances is large. Conversely, in situations of serious threat (such as global warming), high levels of co-operation are needed before collective benefit may be realised. F in these cases would be small.

3.3. Typologies of Social Dilemmas

Social dilemmas are conceptualised in three broad types: (1) intrapersonal dilemmas, seen in social traps or social fences (Messick & Brewer, 1983; Read & Roelfsma, 1999); (2) two-person social dilemmas, represented by the classic Prisoner's Dilemma (PD), the less used Altruists' Dilemma, the Assurance, Chicken or Privileged Games; and (3) multiple person or N -person dilemmas, constituted by the public goods provision or resource preservation dilemmas (Messick & Brewer, 1983; Van Lange, Liebrand, Messick & Wilke, 1992; Messick & Liebrand, 1995, 1997; Kollock, 1998 to name a few). The three types are discussed briefly and their contribution to understanding social dilemmas is provided below, before the key dilemma for water conservation, Resource Dilemma and hence the current study, is presented.

3.3.1. Intrapersonal Dilemmas: Social Traps

In 1973 Platt first conceptualised dilemmas in terms of intrapersonal situations or 'social traps' (Dawes, 1980). Essentially, in a social trap, immediate rewards leads to long term punishment; hence future selves pay the price for present self benefits (Dawes, 1980; Messick & Brewer, 1983). Such conflicts occur in conditions of alcohol use, cigarette smoking, work procrastination and the like, as the future self must pay for the present self's negative behaviour (Read & Roelfsma, 1999). Thus there is an element of time delay that separates the behaviour from its consequences, since the current defection by the immediate self has negative implications for the future self.

Social traps involve problem behaviour such as cigarette smoking, where the ill effects manifest long after the behaviour (Dawes, 1980). Messick & Brewer (1983) differentiate between social traps and social fences, stating that social fences are different as the problem behaviour is one of avoidance rather than action: such as the delay of study resulting in lower marks. Although psychologists have termed intrapersonal dilemmas as part of the broader social dilemma context, many later behavioural scientists have excluded these from their reviews (see Kollock, 1998). Nevertheless, study of social traps and fences highlighted a key variable that was excluded in many Prisoner Dilemma (PD) tests: that of time. Separation between actions and their consequences is a hallmark of Resource Dilemmas, as the effects of water over-use or global pollution are often deferred into the future.

3.3.2. Two Person Social Dilemmas

Schwartz-Shea and Orbell (1992) term two person dilemmas as 'simple dilemmas'. A large body of literature has focussed on two person social dilemmas, usually with emphasis on the Prisoner's Dilemma (PD). Indeed the ease in which this dilemma can be tested in the laboratory, to which Liebrand, Messick and Wilke's (1992) 'state-of-the-discipline' edited collection of research is testimony, and the smoothness of computer simulation with one player interacting in an iterative one-on-one fashion with others (from Axelrod, 1984 onwards), has encouraged focus on the PD game. Other two-person dilemmas are the Assurance, the Chicken, the Privileged Games and the Altruists' Dilemma (Heckathorn, 1998; Kollock, 1998). Nevertheless, the PD game, and its associated research, remains important for all research in social

dilemmas as it was the means through which many key variables in social dilemmas were isolated.

3.3.3. Prisoner's Dilemma

The PD metaphor has long been a successful narrative of a social dilemma; it has appeared in innumerable studies and reflected in countless television dramas. The PD game was created by Flood and Dresher, two scientists at the RAND Corporation in 1950, but the metaphor itself was the product of Albert Tucker, a mathematician friend of the pair (Kollock, 1998).

The metaphor runs thus: two prisoners have been arrested for a crime committed jointly; the district attorney (DA) places the offenders in separate rooms and tells each privately that she is certain of their mutual guilt and has sufficient evidence to send both to prison for one year (McCarthy & Hagan, 1998). The DA then offers each clemency if they provide evidence against their partner in crime, thereby decreasing their sentence while increasing that of their co-offender (McCarthy & Hagan, 1998). Neither individual knows the decision of the other; thus the degree to which they trust their partner to co-operate with them and keep quiet, or defect and obtain clemency, must factor into their decision. If both implicate the other (defect), neither realises the optimal return of clemency, nor the most costly outcome – a long prison term. If they both co-operate with each other and remain silent, their individual sentences are reduced and they maximise their collective rewards, although the maximum individual payoff occurs when only one defects (McCarthy & Hagan, 1998). The betrayed partner receives the 'sucker's payoff', while the informer is given immunity, hence allowing an offender to escape by turning 'state's evidence' (McCarthy & Hagan, 1998).

The dilemma described by the PD metaphor is that of unsecured transactions, where one party has to trust another to co-operate for both to maximise joint gains (Kollock, 1998). In the case of building a fence between neighbours, for example, both are better off with the fence and both will benefit if they jointly contribute towards the construction costs (CC from Table 1, p.18). Nevertheless, individual benefit is maximised if one defects, leaving the other neighbour to incur all costs – free ride or 'temptation' (DC in Table 1, p.18). Both are badly off when neither contributes (DD) as the good is not produced, while the sucker's payoff (CD in the same table) is the worst possible individual outcome for the individual who co-operates while her

partner defects. Thus they end up bearing the costs while their neighbour gains a fence at no personal cost. In a Prisoner's Dilemma, therefore, the outcomes are arranged thus: $DC > CC > DD > CD$ (Kollock, 1998; Heckathorn, 1998).

3.3.4. Assurance Game

When the outcomes ($DC > CC > DD > CD$) are switched, two important games emerge: the first stems from unilateral co-operation that leads to better outcomes than mutual defection ($CC > DC > DD > CD$) (Kollock, 1998). Here the preservation/production function is sharply accelerating and temptation and sucker payoffs decline in value (see Figure 3, p.21) (Heckathorn, 1998). As both are better off if co-operation is mutual, the dilemma involves one of trust – would each trust the other to co-operate? Without trust, mutual defection is the next best option; hence the assurance game has two equilibria: mutual co-operation and mutual defection (Kollock, 1998). This usually occurs if the threat to both is large or the target is difficult (Heckathorn, 1998).

3.3.5. Chicken Game

Switching the outcomes again allows the other two person game to emerge: the Chicken or Snowdrift game (Heckathorn, 1998; Kollock, 1998 and Doebelli & Hauert, 2005). The chicken metaphor is a striking one: two cars, racing towards each other in a game of 'chicken', embody this dilemma: the first to avert a collision is a 'chicken' and loses face, while the other gets the glory; nevertheless, if both were to 'defect' – that is not give in, the consequences are dire (Kollock, 1998). Correspondingly, the Snowdrift game is one where two drivers are trapped on either side of a snowdrift and have the options of staying in the car (defecting) or removing the snowdrift (co-operating); both are worse off if neither co-operates, but one has the potential to gain large rewards if they are the only one to defect (Doebelli & Hauert, 2005). In this situation, co-operation provides a common good that can be exploited by others, but also a good that is needed by the self (Doebelli & Hauert, 2005). Thus the payoff functions in this kind of dilemma are $DC > CC > CD > DD$ – note mutual defection is now the least favourable outcome.

The reversal of preferences comes from a more sharply decelerating production/preservation function, as an additional cooperator produces an even larger proportion of the common good (Heckathorn, 1998). In other words, it takes just one person to bring about a large proportion of shared good, just as it takes one

driver to flinch in the situation of two cars playing 'chicken'. Just as in the assurance game, there are two equilibria; although, unlike the assurance game, both rest on unilateral rather than mutual action: unilateral defection or unilateral co-operation (Kollock, 1998). An Assurance Game requires mutual action, while a Chicken Game requires just one party to co-operate.

3.3.6. Privileged Game

It has been argued that the Privileged Game is not a dilemma (Heckathorn, 1998), as $CC > DC > CD > DD$. Thus mutual co-operation has the highest payoff and mutual defection the lowest. Strictly speaking, there is no conflict between individual and collective interest. It occurs when the collective good grows in value or the cost of contributing declines, and the outcome of mutual co-operation is best for all involved (Heckathorn, 1998). A negative outcome or defection in such a game is sometimes termed 'Spite' (Heckathorn, 1998).

3.3.7. Altruists' Dilemma

Unlike the games outlined above, the Altruists' Dilemma is one where $DC > DD > CC > CD$. Defection therefore is the typical preference. It can be found when the value of the collective good is reduced or if the cost of contribution is increased, thus universal defection becomes preferable to universal co-operation (Heckathorn, 1998). It serves to prove that mutual co-operation is not always the best outcome and has been used in studies of coercion (Heckathorn, 1998). It could occur in situations where there is group think, thus the individual needs to defect, but there is pressure from the group to conform. The best outcome for the individual and perhaps society as well, is when the individual defects.

3.3.8. Contribution and Critique of Two-Person Social Dilemmas

Two person social dilemmas have emphasised the jointness and "nonexcludability" of social dilemmas. The uncertainty inherent in the conflict is highlighted both in terms of the production/preservation function (whether it is accelerating or decelerating), the behaviour of others (trust) and the minimal co-operation required before the public good is attained. The production/preservation function is a measure of how many co-operators it takes for the public good to be produced or the resource to be saved. Furthermore, each metaphor provides insight into the behavioural choices

(co-operation and defection) and their associated outcomes and costs (free-riding, cost, mutual loss, mutual benefit). These are present in all social dilemmas.

The critique two-person social dilemmas have faced is primarily that the functions of two-person games engender different variables to that of the larger, more common and more problematic multi-person dilemmas. Generally, parties in a two-person dilemma are known to each other; the harm of non-co-operation is focussed on one other person, rather than diffused amongst many; and, if a dilemma is iterated, the known historical behaviour of one other will shape the partner's strategy (Van Lange *et al.*, 1992).

The research paradigms used to test two-person (mainly PD games) have come under severe criticism. Most of this has centred on the external validity of the studies (Van Lange *et al.*, 1992; Wiener, 1993; McCarthy & Hagan, 1998). The majority has been conducted in a research laboratory; usually among student populations and for nominal monetary payoffs (Van Lange *et al.*, 1992; Henry, 2000). Ostrom (1998) was particularly scathing of such studies, especially their limitation to one-shot or finitely repeated social dilemmas – hence the impact of continued interaction amongst a group of social actors in the real world escapes the laboratory:

[s]ubstantial evidence from experiments demonstrates that co-operation levels for most one-shot or finitely repeated social dilemmas far exceed the predicted levels and are systematically affected by variables that play no theoretical role in affecting outcomes. (Ostrom, 1998: p.2)

Ostrom (1998) goes on to assert that many key variables present in real-life social dilemmas, such as group size, heterogeneity of participants, their dependence on benefits received, their discount rates, the type of predictability of transformational processes involved, the nesting of organisational levels, monitoring techniques and the information available to participants, cannot be adequately translated into a laboratory or a computer simulation setting. She thus joins the mounting chorus amongst social dilemma researchers: the need for mundane realism (McCarthy & Hagan, 1998; Henry, 2000; Eaton, 2004). Interestingly, most forays into improving the mundane realism of social dilemma research has been in the field of *N*-person social dilemmas, such as the work of Eek, Loukopolos, Fujii and Gärling 2002; Fujii, Gärling and Kitamura (2001); Sen, Gürhan-Canli and Morwitz (2001); Van Vugt (1997; 2001 and 2002); Van Vugt, Van Lange, Meertens and Joireman (1996) and

Wiener (1993), which began in earnest since 1990 and has slowly been gaining momentum.

3.4. Multiple Person Dilemmas or N-Person Dilemmas

Multiple person dilemmas, or *N*-Person dilemmas, share common features with PD games, in that the collective good is "nonexcludable", the payoff matrix is the same as in Table 1, p.18 and the outcomes are in the order of DC>CC>DD>CD. These games, however, fall into Schwartz-Shea and Orbell's (1992) categorisation of 'complex dilemmas' and have the common feature of ensuring a desired outcome is produced amongst groups (not just the two people of PD games). Consequently, such games have the challenge of obtaining co-operation amongst large populations, most of whom remain anonymous to each other and responsibility becomes diffused (Fleishman, 1988; Sell & Wilson, 1991) and, moreover, they often contain different subgroups who value the outcome differently (De Cremer & Van Dijk, 2002; Bryan, 2004). Most importantly, the size of the group engenders anonymity and thus increases the temptation to free-ride (Kollock, 1998).

The size of the group places the dilemma set with another problem: that of scale (Wiener & Doescher, 1991). This problem arises when large groups are involved, sizeable numbers of whom are required to sacrifice before the community good or resource is preserved. Rothschild (1979) used the example of littering to illustrate the problem of scale: unless all community members refrain from littering, none of the community would live in a pristine environment. As a large number of people are required to sacrifice, the benefit to the community of one person's sacrifice is almost zero and thus that person's social payoff is negative (Wiener & Doescher, 1991). Although each person's individual social payoff from defecting (in this case, littering) is negative, he or she would always be better off if most individuals did not defect (Wiener & Doescher, 1991).

Thus all the hallmarks of a dilemma, as outlined in the definition and core payoff matrix, are present. The additional factor of scale needs to be included. Wiener and Doescher (1991, pp.40-41) have provided the expression:

Equation 3: Factor of Scale

$$U(C, T) > T \text{ for some } C > n^*$$

Where:

U	=	Amount of utility from resource preservation
C	=	Number of community members who sacrifice
n	=	number of people in the population
n^*	=	Threshold number of people required before the resource is preserved
T	=	Temptation to defect

Where $U(C, T)$ is the amount of utility a person gets from the preservation of the community good, when C community members each sacrifice amount T and n is a specific number of people. Figure 4 is an illustration of the problem of scale. A person who sacrifices when fewer than n^* people do is a sucker as the utility she gains from her sacrifice is less than its value. A person who sacrifices when at least n^* people sacrifice is forgoing the opportunity to free ride, as she could enjoy the community good without sacrificing.

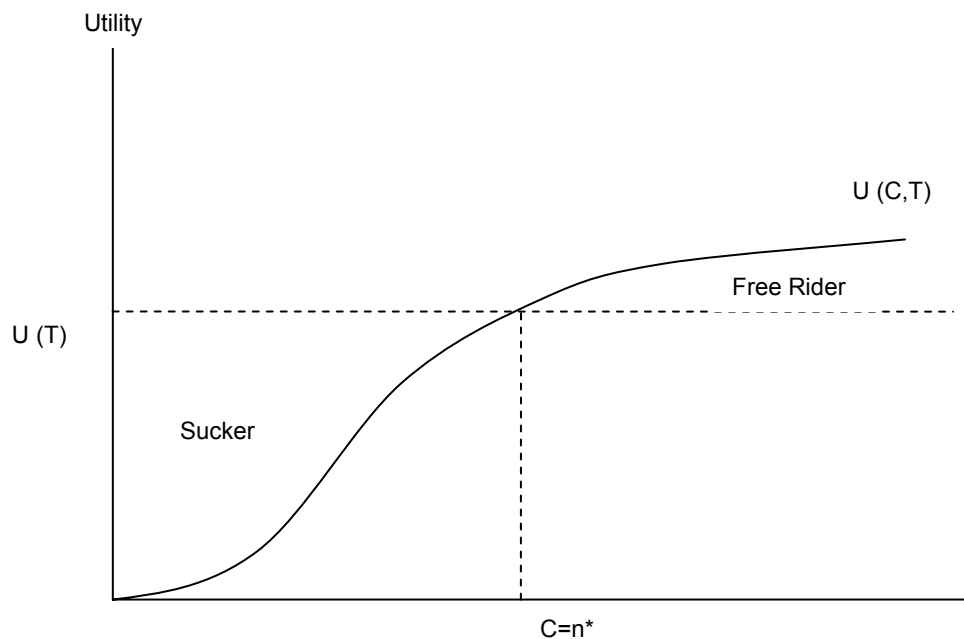


Figure 4 The Problem of Scale
Wiener & Doescher (1991, p.40)

Water conservation falls squarely in this class of social dilemmas. Nevertheless, N -Person dilemmas occur in two dominant types and these cannot be used interchangeably, as has occurred in some studies (Van Dijk & Wilke, 1995). One of the chief reasons for this is the notion of framing.

3.4.1. Framing

Multi-person or *N*-person social dilemmas have been categorised into two main types: firstly, 'give some' games or Public Goods Dilemmas and 'take some' games or Resource Dilemmas (Dawes, 1980). The 'Tragedy of the Commons' is viewed as a 'take some' or a Resource Dilemma. The distinction between the two is important: there is a long-standing set of empirical evidence stating that individuals respond differently to gains and losses (Kahneman & Tversky, 1979 in Van Dijk & Wilke, 1995). Such line of reasoning forms *Prospect Theory* (Tversky & Kahneman, 1991), which is an enhancement of the theory of *Expected Utility* (EU) when it comes to explaining choice in *N*-person social dilemmas (Sell, Chen, Hunter-Holmes & Johansson, 2002).

The discussion earlier highlighted expected utilities in terms of individual outcomes from a social dilemma, such as the prevalent outcome structure $DC > CC > DD > CD$ and the operation of the payoff matrix (see Table 1, p.18). While still valid and, indeed, the foundation of much thought in economics, there are violations of the expected outcomes that occur when people evaluate two outcomes differently, even though the outcomes have the same consequences (Sell *et al.*, 2002). Thus Expected Utility Theory's failure to adequately differentiate between decisions to *give* to public goods and *take* from community resources is challenged by prospect theory (Sell *et al.*, 2002). Expected Utility Theory asserts that there is one utility curve; prospect theory argues for two: one for gains and another for losses (De Vries & Wilke, 1992). Figure 5 below demonstrates the accepted prospect theory 'value function'. In EU, Quadrant 1 would be sufficient, as no difference is expected between the utility for gains and losses; in prospect theory, Quadrant 2 is required as a different curve is believed to characterise the *same individual* within the loss domain.

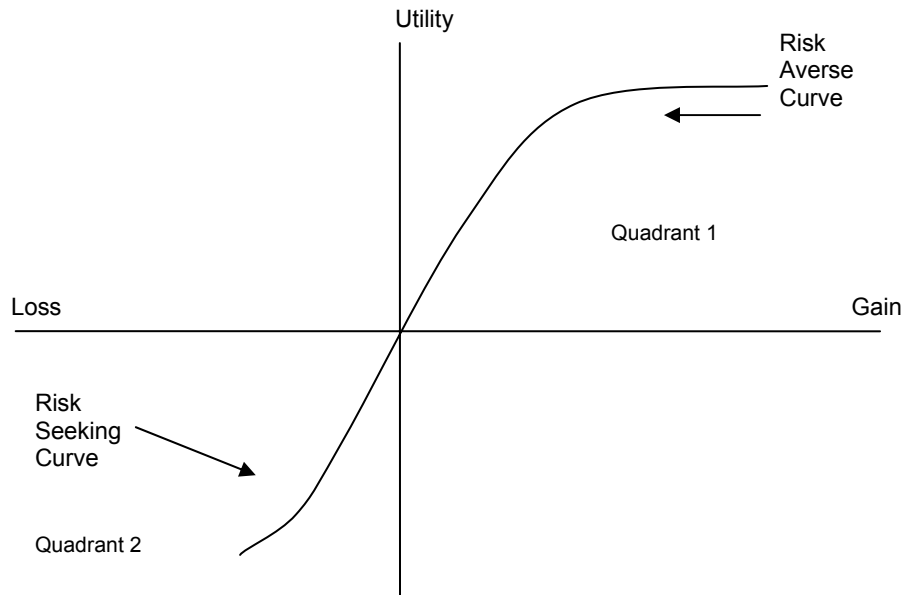


Figure 5: Prospect Theory, 'Value' Function
 Sell *et. Al.* (2002, p.287)

The reason for two quadrants lies in what is termed the 'endowment effect' (Fleishman, 1988; Komorita & Carnevale, 1992; Van Dijk & Wilke, 1995). The endowment effect is attributed to the fact that possession of a good or resource instantly increases the perceived value of that good because of the acquisition (Tversky & Kahneman, 1991; Sell *et al.*, 2002). When applied to Public Goods and Resource Dilemmas, individuals would then have to *give* something up and hence suffer a *loss* in order to contribute to a good that is shared with others (Sell *et al.*, 2002); hence this lies in quadrant 1 of Figure 5 and individuals will be risk averse towards giving. Conversely, in resource dilemmas, individuals would be more risk seeking (quadrant 2) and more willing to reign in their behaviour if that means they will keep a group good (Sell *et. al.*, 2002). In other words, individuals are risk adverse when it comes to giving something up in return for uncertain collective gain; but rather than sustain a loss of a collective resource, individuals would forgo taking.

3.4.2. Public Goods Dilemmas

A public good is a resource from which all may benefit, regardless if they have contributed towards its production. Public television is the most commonly used example (Kollock, 1998). Public goods are both "*nonexcludable*" and "*nonrival*", that is, no one may be prevented from enjoying the good and the consumption of that good by one does not affect the consumption of another (Kollock, 1998, p.189). In

public goods, the *preservation function* detailed earlier becomes a *production function*. In order to produce the goods, individuals must *give*; hence quadrant 1 of Figure 5, p.30, governs Public Goods dilemmas.

The extent to which public money is required to provide water to a community, water conservation efforts may constitute Public Goods Dilemmas; nevertheless this is not the case in South Africa. The country's new constitution guarantees everyone "*the right to have access to...(b). sufficient food and water*" (South African Constitution, Section 27.1, 1996), so the basic water needs of poor people must be met and it is impossible (ethically, practically and legally) to deny anyone water, even if they refuse to pay for it (Naidoo, 1999). Due to these complexities, many consumers are in arrears with their water service accounts, and local authorities cannot collect this money or cut off water supplies - attempts to do so have met with violent confrontations between consumers and police. Accordingly, in order to reconcile the need to ensure everyone has access to water and at the same time prevent municipal bankruptcies, a compromise was developed (McKay, 2000).

For practical, legal and ethical purposes, the constitutional right of access to water was interpreted as the "right of access to a basic minimum of 25 ℓ of clean potable water per person per day" (McKay, 2000). This has translated into a provision of 6000 ℓ of clean potable water per household per month, which will ensure that all households with 8 members or less have access to 25 ℓ of water per person per day (half of the internationally recommended 50 ℓ of water per person) (Kuylenstierna, Bjorjlund, & Najlis 1997). This policy is known as "Free Basic Water" (FBW) (McKay, 2000, p.4). Thus water conservation, while still being "nonexcludable", and to some extent "nonrival", does not operate under a production function; hence we now turn to Resource Dilemmas.

3.4.3. Resource Dilemmas

3.4.3.1. Defined

Resource management dilemmas occur when, like the example of herders sharing a common pasture, group members have access to a common resource (De Vries & Wilke, 1992). Like the Public Goods Dilemma (PGD) and the Prisoner's Dilemma (PD), Resource Dilemmas (RD) are "nonexcludable"; they are not, however,

"nonrival"; indeed it is the very rivalry, termed *subtractability* (Kollock, 1998, p. 191) that is part of the problem. For every fish caught by one fisherman in a river, one less fish is available to other fishermen. In the case of Resource Dilemmas (RD), it is not the production function that matters, but the preservation function, often termed the 'replenishment rate' (Kollock, 1998, p.191). The replenishment rate depends on a number of factors: size of the group sharing the resource; harvesting levels; natural replacement and any other factor that determines the degree to which the subtractable joint resource may be appropriated without exhausting the commons (Kollock, 1998).

Hardin operated under the assumption that the carrying capacity of the commons was known, a position which has come under much fire as common resources are often subject to the greatest degree of uncertainty as their constraints are unknown, and are, consequently, over-harvested (Rapoport, Budescu, Suleiman & Weg, 1992). Indeed, some researchers believe that the *environmental uncertainty* that Resource Dilemmas present enables this variable to be best studied in the resource paradigm (Rapoport *et al.*, 1992). Environmental uncertainty, does not, however, automatically lead to defection; Van Dijk and Wilke (1998) were the first to dispute the uncertainty/defection assumption of most researchers. Van Dijk and Wilke (1998) found that uncertainty had an effect on behaviour, most notably on coordination rules, but its effect depended on a number of other factors.

3.4.3.2. Behaviour in Resource Dilemmas

It is also possible to underuse a common resource, as outcomes of Resource Dilemmas depend on the harvesting behaviour of others and the size of the resource; yet exceeding the limit of the resource results in negative consequences for all, as the resource is *subtractable* (Rapoport *et al.*, 1992). Thus it is not the harvesting behaviour, but the coordination of that behaviour that becomes important: certainly some researchers have asserted that a Resource Dilemma is a dilemma of *coordination*, where harvesting behaviour needs to be managed (Van Lange *et al.*, 1992). Rapoport *et al.* (1992) suggested that the best explanation for harvesting behaviour is their *constrained egoism hypothesis*, where individual action is governed by perceptions of fairness. Their explanation for this is as follows: in symmetric situations where all parties have equal positions, each party expects the others to adhere to an equal sharing rule; however, if others over-harvest, matching their

behaviour is seen as fair as well, and over-harvesting by all ensues. In Rapoport *et al.*'s (1992) constrained egoism hypothesis, non-egoistic behaviour is best explained through respect for the entitlements of others.

Subsequent researchers have disputed this conclusion, most notably Budescu and Au (2002) who found that *protocols of play* were important in harvesting decisions. They investigated *sequential* and *positional protocols*, where in a sequential protocol every player knew their position and the sequence of total requests, whereas in a positional protocol, the player only knew her position. Budescu and Au's (2002) findings provided support for their own prior research in asserting that first movers harvest the greatest share of the resource, while last movers harvest least. In their study, they found little evidence for the constrained egoism hypothesis. Eaton (2004) drew similar conclusions to Budescu and Au. Nevertheless, it is questionable the extent to which these findings can be generalised, as both of these later studies concerned limited populations, small group sizes and instances where position to harvest could be known. Thus Rapoport *et al.*'s (1992) environmental uncertainty still holds true, unless one argues that positional and sequential effects could come into play through broadcasting that the amount left in the resource is minimal and the current users are nearing the end of that resource, such as warnings regarding over-fishing, global warming and the threat of electrical brownouts, as Wiener and Doescher (1991) suggest marketing could do.

Prospect theory, and its associated research, also offers an alternative perspective on the seeming contradictions between Rapoport *et al.*'s and Budescu and Au's explanation of behaviour in resource dilemmas. Prospect theory, evidenced earlier (see Figure 5, p.30), conceptualises behaviour in Resource Dilemmas as inherently more risk seeking, as individuals do not have to incur a loss to create a public good; they merely have to refrain from taking to ensure that they do not sustain a loss of the (albeit) group possession (Sell *et al.*, 2002). Empirical evidence for this has been mixed and largely context dependent; generally prospect theory has been found to have an effect when resources are near depletion and when others are more cooperative (Sell *et al.*, 2002). The greater impact of prospect theory when resources are close to exhaustion parallels Budescu and Au's (2002) sequential effects. That is, last movers draw less from a shared resource. Moreover, prospect theory also provides an explanation for this: people are risk averse when it comes to potential losses, thus, when the potential loss of a shared resource is imminent, individuals move to keep that resource. It is even easier, in terms of the theory to

keep a resource when individual behaviour required does not entail giving to a production function, as in a Public Goods dilemma.

3.4.3.3. Origins of Co-operation in Resource Dilemmas

There are essentially two different perspectives on the foundation of co-operation in Resource Dilemmas: the “self interest” and the “community” perspective (Van Vugt, 2002). Rational theories, such as game theory, have been responsible for much of the self-interest explanation (Van Vugt, 2002). Resource users are driven by short-term self-interest and will consume regardless of the carrying capacity of the land – as evidenced by Hardin’s herders on the commons. Nevertheless, as illustrated earlier, there has been considerable dissent regarding this perspective (see Ostrom, 1998), as it has failed to explain much cooperative behaviour in evidence. Other lines of research demonstrate that users are sensitive to other aspects of the Resource Dilemma beyond self-interest, which Van Vugt (2002) summarises as belongingness and identity needs. Such needs are seen to be generated from most people’s desire to have meaningful social relationships and are essential for a species evolved in groups rather than as solitary individuals (Van Vugt, 2002).

3.4.3.4. Symmetric/Asymmetric Resource Dilemmas

Schwartz-Shea and Orbell (1992) were some of the first researchers to question the assumption in social dilemma research that the externalities that generated the dilemma are equally shared by the entire population. That is, the tragedy of the commons was assumed to have a symmetric nature. Externalities could be carried by one subset of the population but avoided by others, termed a difference in ‘reach’ (Schwartz-Shea & Orbell, 1992, p.5). Thus the entire population of herders may not have equal access to the commons nor may they have equal size herds. Thus the concept of asymmetric dilemmas has subsequently been explored. Van Dijk & Wilke (1995) were the first to study asymmetric Resource Dilemmas, although there had been some interest in asymmetric situations in Public Goods Dilemmas. The Public Goods Dilemma literature suggested that the ‘number of endowments’ that participants possessed would determine their level of contribution to the public good (Wit, Wilke & Oppewal, 1992; Van Dijk & Wilke, 1995; Van Dijk, Wilke, Wilke & Metman 1998). Public Goods Dilemma research found that the norms of fairness came into play and a ‘proportionality rule’ prescribed that it would be fair for group

members to contribute in proportion to their endowments (Van Dijk & Wilke, 1995). Zeng and Chen (2003) established that this held true amongst corporate alliances.

Norms of fairness were hypothesised to also mediate between asymmetries of access in a Resource Dilemma (Van Dijk & Wilke, 1995). Van Dijk and Wilke found, however, that instead of the proportionality rule, participants used an 'equal final outcomes rule' in Resource Dilemmas. The proportions rule in Public Goods Dilemmas meant that each person would contribute in proportion to his ability or endowment. Giving something to a social cause would depend on the amount with which the actor started. In the equal final outcomes rule, individuals were more concerned with equitable outcomes for all group members. Thus subjects in an advantageous position (with greater herds of cattle or high access to the resource) were more likely to co-operate in the Resource than in the Public Goods Dilemma because they had a greater stake and had more to lose (Van Dijk & Wilke, 1995), a finding which was corroborated by their 1998 research. The rule itself was assessed by Van Dijk, Wilke, Wilke and Metman (1998) as conforming to an individual's desire for distributive justice. These authors note the 'phrasing' of a *N*-Person's dilemma in terms of a public good to be contributed towards or a resource to be divided would have important effects on the response of the group. The 'phrasing effect' manifests itself as subjects are more ready to divide outcomes equally when they are dividing resources than when they have to divide expenses (Van Dijk & Wilke, 1995).

Van Dijk and Wilke (1995) explicitly elaborate on the implications of this for water conservation: participants would prefer the costs of a water distribution system to be distributed proportionally, that is, payment in proportion to the income or usage of the water system; but in times of drought or shortage subjects would elect the equal final outcomes rule should the dilemma be phrased as one of preserving a shared resource (rather than setting up a distribution system). These findings directly tie in with prospect theory (Figure 5, p.30) and associated research discussed above. People are more sensitive to losses rather than gains; hence they are more hesitant to pay for the cost of the public good of a water distribution system. Consequently, the proportionality rule is preferred. In addition, people are more willing to take less when the resource is near depletion, a finding which is in line with Budescu and Au (2002) and Sell *et al.* (2002).

3.5. Key Variables

In the discussion of the core concepts involved in social dilemmas as well as the typologies, two variables emerge as key: co-operation of others and perceived individual effectiveness. The F function highlights both of these conditions: the number of others who co-operate (N) and the proportion of these who are required to produce a given level (L) of resource preservation, that is, their collective impact, is summarised in the F function. Where F is large, so is the impact of one individual; thus only a few individuals need co-operate for the resource to be preserved. In cases where F is small, large numbers of individuals need to co-operate before the resource is preserved (see Table 1, p.18).

The decision, therefore, to co-operate or defect depends on the number of fellow cooperators or defectors in a community and the impact that an individual's sacrifice will have on the community goal (Kerr, 1992; Wiener & Doescher, 1994 and De Cremer & Bakker, 2003). Should individuals co-operate and the dilemma is not solved, they are then 'suckers' (Dawes, 1980; Messick & Brewer, 1983 and Wiener & Doescher, 1991). A higher risk of being a sucker could occur if the community is large and the contribution of an individual is minimal (Wiener & Doescher, 1991). There is the twin temptation to 'free-ride': if sufficient community members sacrifice to save the resource, not all members need to; hence some can benefit both personally and collectively through defecting (Wiener & Doescher, 1991; Szilagyi & Szilagyi 2002).

Consequently, individuals need to believe that sufficient others will sacrifice along with them so that the dilemma is solved; however, if it is believed that most others will co-operate or that their contribution is too small to be effective, individuals will defect. As Liebrand, Messick and Wilke (1992) summarised in their review of twenty years of dilemma research: part of the problem is in individual judgements about frequencies, relative frequencies and probabilities as both the outcomes of the behaviour (perceived consumer effectiveness) and the number of cooperators (perceived faith in others) are unknown (Ellen, Wiener & Cobb-Walgren, 1991). Thus L , D (number of defectors) and F (potential influence of individual action) are unknown. Wiener and Doescher (1991, 1994) were among the first to note the potential contribution of marketing to reduce uncertainty and foster co-operation and it is these two variables that were the focus of their and Ellen, Wiener and Cobb-Walgren's (1991) attention.

We thus turn to a more in-depth review of these two variables: perceived co-operation of others and perceived consumer effectiveness.

3.5.1. Co-operation of Others/ Faith in Others (FIO)

*[People] want to 'do the right thing'; that is abstain from opportunistic behaviour, but they do not want to be the 'only ones' who are virtuous, because **there is usually no point in being the only one who is virtuous.** (Rothstein, 2000, p.487, emphasis added).*

Much literature in the field of social dilemma research has been dedicated to solving the riddle of fostering co-operation. One of the key variables is an individual's expectations or belief in the co-operation of others (Ellen, Wiener & Cobb-Walgren, 1991; Berger & Corbin, 1992). Even Sell *et al.* (2002) in their review of prospect theory found the theory to be more effective in explaining behaviour under the premise of a co-operative other. The importance of this variable has been highlighted earlier in the operations of the *F* preservation function and the sucker/free-rider problem. To reiterate: a critical mass of individuals are needed for a resource to be preserved, however, co-operation risks the 'sucker' payoff as individual behaviour could be punished by the defection of others and non-co-operation could be rewarded by the preservation of the resource and maintenance of own benefits which is the free rider temptation. Individuals in a social dilemma must deal with the fear that others will not co-operate and they will be 'suckered' and, also, they must deal with their own greed to overcome the temptation to free ride if they believe others will co-operate (McCarthy & Hagan, 1998; Simpson, 2003).

3.5.1.1. Reciprocity

Ellen *et. al.* (1991) neatly encapsulated this conundrum as a function of what they termed 'Faith in Others' or FIO. The overriding importance of this variable has been in the longstanding evidence that co-operation is met with co-operation by the norm of reciprocity (Wiener & Doescher, 1994). Axelrod's (1984) seminal book *The Evolution of Co-operation* reviewed co-operative behaviour from biological organisms to the 'Live-and-Let-Live' system found in trench warfare during World War I. His corroborating computer tournaments have been widely celebrated in the literature, to the extent that the twentieth anniversary of these simulations was commemorated

with a new round of Iterated Prisoner's Dilemma (IPD) games (Doebelli & Hauert, 2005).

Unlike many economists, Axelrod never held that players had to be rational (Axelrod, 1984), but did assert that scattered individuals with no interaction with each other would find it difficult to establish co-operation: small clusters interacting over extended periods of time were needed before reciprocity could totally come into play. Such groups could fully enable the 'shadow of the future' (Axelrod, 1984, p.124) to take effect: people were more cooperative if they were to have future dealings with others. His computer tournaments tested various behavioural heuristics regarding the simulated interaction of individuals with a larger population. While he did find that smaller groups tended to be more cooperative, individual co-operation was also a function of the existence of co-operation in the broader population. Individuals ascertained defection levels from their immediate neighbours (Axelrod, 1984). Thus he found that co-operation is not unconditional: reciprocity works for non-co-operative acts as well as for accommodating ones. The most successful strategy in Axelrod's stochastic games was *Tit-For-Tat* (TFT). TFT matches individual choices to those of her neighbours and thus successfully induced stable and predictable actions in a population. TFT was the most successful decision rule of the thousands that researchers entered into Axelrod's tournaments (Axelrod, 1984).

TFT would induce co-operation in an interacting population if the initial action was one of co-operation, which would thus be met with co-operation (Axelrod, 1984). Any defection in TFT would be immediately met with defection by the interacting party – which underscores the value of provocability, as attempts to free ride are immediately punished (Axelrod, 1984, p.184). Nevertheless, once the other party repents and co-operates, they are quickly forgiven as TFT would immediately return with a cooperative action. Axelrod's heuristic requires population units to interact and hence highlighted the importance of territoriality (Axelrod, 1984) or localisation in co-operation.

Komorita and Lapworth (1982) established the translatability of such computer results to the laboratory; they found that a deadlock of defection (DD choices) could be broken by a small concession by one side, which, if matched according to the TFT principle, would lead to a solution as each party reciprocated the actions of the other. Such conclusions parallel the well known 'foot-in-the-door' techniques of marketing, where a small concession is obtained from a consumer in order to induce co-

operation in a larger purchase (Churchill, 2000). Social marketers, such as McKenzie-Mohr (2000b), have used this to great effect in efforts to encourage environmentally responsible behaviour.

Larger, societal level dilemmas, such as Resource Dilemmas have been found to employ a modified version of TFT in computer simulations. Messick & Liebrand (1995) tested three adaptations of the reciprocity norm in a series of computer simulations in both large and small populations. The three norms, TFT, 'Win-Stay, Lose-Change' (WSLC) and 'Win-Cooperate, Lose-Defect' (WCLD), generated varying levels of co-operation across generations of iterations. Only TFT induced homogeneity in the population, however large (Messick & Liebrand, 1995). WCLD was the most effective with over 55% cooperative units in the population; WSLC was the least effective as it was most susceptible to the temptation of free-riding (Messick & Liebrand, 1995). Yet results vary depending on the presence of a fixed reference point or one which is the mean of the neighbours (Messick & Liebrand, 1995). This finding reiterates Axelrod's contention that territoriality, that is the influence of the behaviour of nearby others, has a large impact on co-operation. Thus faith in the co-operation of others (FIO) has been found to be important in computer simulations of both large and small groups.

3.5.1.2. Reciprocity and Norms

The robustness of FIO has been found in laboratory settings (Liebrand *et al.*, 1992; Van Lange *et al.*, 1992) as well as in real life Resource Dilemmas (Wiener & Doescher, 1994; McCarthy & Hagan, 1998). Liebrand *et al.* (1992) noted that the effectiveness of public persuasion campaigns hinged on their effectiveness in convincing people that enough others would co-operate. Sen, Gürhan-Canli and Morwitz (2001) established that co-operation in consumer boycotts (of companies whose policies violated environmental or political values) was determined partly by the boycott's likelihood of success and the number of people who would join the action. Wiener and Doescher (1994) found that individuals were more likely to install a load control device to monitor their electricity use if they believed that others had done so too. Wiener and Doescher (1991, 1994) were prepared to recommend, despite the questionable morality, that the over-claiming effect in market research surveys into green behaviour could be exploited, as the reported co-operation could be broadcast to the population, who would then respond in kind.

The role of norms was reviewed by Carpenter, Matthews and Ong'ong'a (2004). These authors investigated the motivations of group behaviour – whether norm based or otherwise – through the employment of punishment mechanisms in the enforcement of pro-social norms (Carpenter, Matthews & Ong'ong'a, 2004). Carpenter *et al.* (2004) tested motivation for people who punish defectors in terms of *fitness differential*, *strong reciprocity* and *social reciprocity theory*. Fitness differential theory views punishment to be motivated by punitive sentiment: punishers seek to tax away the benefits of free-riding for no other reason than free riders are better off materially, which follows a material, rational man perspective. Strong reciprocators care about in-group norms and are triggered into action by the ill-intentions that free riders display towards those norms. Consequently, these enforcers only punish in-group rather than out-group members. Social reciprocators punish all defectors, regardless of group membership, because a widely-held norm has been violated (Carpenter *et al.*, 2004).

In Ostrom's (1998, p.11) review, she isolated three reciprocity norms, at least one of which individuals usually make use of when faced with a social dilemma:

1. "Always co-operate first; stop cooperating if others do not reciprocate; punish noncooperators if feasible
2. Co-operate immediately only if one judges others to be trustworthy; stop cooperating if others do not reciprocate; punish noncooperators if feasible
3. Once co-operation is established by others, co-operate oneself; stop cooperating if others do not reciprocate; punish noncooperators if feasible"

She went on to outline a further possible three norms:

4. "Never co-operate
5. Mimic (1) or (2), but stop cooperating if one can successfully free ride on others
6. Always co-operate (an extremely rare norm in all cultures)."

Norms are thus vitally important; indeed they may be one of the reasons why reciprocity works so well. Behavioural norms are slow to change once agreed upon (Bicchieri, 2002). Groups often set norms for resource management simply through their behaviour and thus members simply follow a group norm regarding resource usage (Bicchieri, 2002). This underscores once more reciprocity: behaviour is anchored and learnt by interacting with and the mirroring of others (Bicchieri, 2002;

Engel, 2004). Thus co-operation will be fostered if non-co-operation is not present or is negatively viewed (De Cremer & Bakker, 2003). We should therefore turn to the society in which co-operation is nested.

3.5.1.3. Trust in Others as an Individual Characteristic

Trust has long been discussed as key in cooperative behaviour, as it affects expectations regarding the actions of others (Parks, 1997; Parks, Henager & Scamahorn, 1997). It has been defined as the belief that others will not exploit one's goodwill (Komorita & Carnevale, 1992; Parks, Henager & Scamahorn, 1997) as trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the truster, irrespective of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995, p.712). Trust is one of the two founding principles of Pruitt and Kimmel's goal/expectation theory's fundamentals of co-operation: first a common goal of mutual co-operation must be present and second, "*one should expect others to cooperate*" (in De Cremer & Stouten, 2003, p.42, emphasis added). De Cremer and Stouten (2003) viewed the essence of the expectations of co-operation of others to lie in trust.

Trust is an individual characteristic and research has shown that individuals high in trust tend to co-operate more in Resource Dilemmas, while individuals low in trust tend to defect or harvest more from the resource (Messick & Brewer, 1983; De Cremer & Stouten, 2003). To corroborate further, De Cremer and De Witte (2002) found trust to be independent of accountability for those high in trust. Thus high trusters remained high trusters regardless of whether or not they had to account for their actions. High trusters are also slower to react to erratic defection and co-operation on the part of others. They were, therefore, more tolerant of inconsistent behaviour (Parks, Henager & Scamahorn, 1997). Parks, Henager and Scamahorn, (1997) attribute this tolerant behaviour as part of a greater need by high trusters for substantial evidence before they believe that others are exploiting them.

Conversely, low trusters, when faced with messages regarding the tactics of others in a Prisoner's Dilemma, decreased their co-operation when the message was 'competitive' or issued a warning that defection would be met with defection, while high trusters increased their co-operation levels when faced with the same message

(Parks, Henager & Scamahorn, 1997). Lower trusters, nonetheless, are more supportive of policing and punishment in order to preserve the resource and they are more cooperative when a sanctioning system is in place (Yamagishi, 1992; Ostrom, 1998). In fact, Yamagishi (1992) found that low trusters were more willing to contribute towards a sanctioning system than to co-operate in the absence of such a system. Contributions towards a sanctioning system would, in fact, constitute a second order social dilemma as a monitoring system would be a public good to which members of the community would have to contribute (hence co-operate) in order to produce (Ostrom, 1998). Trust, therefore, represents a major variable in social dilemma, especially when dealing with individuals who have low faith in others (FIO).

3.5.1.4. Trust in Others as Social Capital

Trust in others does much to alleviate the fear of being a 'sucker' (Messick & Brewer, 1983). Messick and Brewer (1983) underline Axelrod's findings through their assertion that "trust develops from a sequence of interactions that reveal or disclose the motives and intentions of other[s]" (1983, p.25). Choosing to trust in situations where no past interaction or, indeed, any interaction at all, is present requires 'depersonalised trust' (Messick & Brewer, 1983, p.25). Such overarching trust in others is often seen to lie in ideas about morality. Wuthnow (1998 in Rothstein, 2000) challenges the rational man assumptions, on which Messick and Brewer's and Hardin's conclusions are based, as:

For most people, trust is not simply a matter of making rational calculations about the possibility of benefiting by cooperating with someone else. Social scientists who reduce the study of trust to questions about rational choice, and who argue that it has nothing to do with moral discourse, miss that point. (Wuthnow, 1998 in Rothstein, 2000, p.485)

Rothstein (2000) asserts that Hardin and his followers' rational approach to trust does not explain why the willingness to trust other individuals and societal institutions varies so greatly in different societies. Rothstein (2000) joins Ostrom (1998) in changing the level of analysis, and to some degree, the responsibility for trust and co-operation to the institutional level. The higher order level of trust is **social capital** (Rothstein, 2000). When individuals in a social dilemma are seeking information on how to behave and the behaviour of others, they will most readily turn to their social interaction with others, the media or government institutions (Rothstein, 2000). Such

interaction enables them to perceive societal norms and rules of appropriate behaviour (Rothstein, 2000). Institutions play a key role in enhancing or restricting the building of mutual trust, reciprocity and the maintenance of social reputations (Ostrom, 1998). Ostrom (1998) observes that political discourse that centres too much on leaders fosters citizen disempowerment, as citizen participation is restricted to merely one of electing leaders and not solving real world problems, such as the social dilemmas facing the communities in which they reside.

Social dilemmas, in Rothstein's view, serve to remind us that groups do not always have the norms that would be most functional for their needs and interests. Often this is the result of a lack of social capital: individuals do not trust their institutions or each other and so fail to co-operate with either. Rothstein found a high correlation between horizontal trust (between people) and vertical trust (trust in political and societal institutions) in his (2000) comparative study between Sweden and Russia – two countries with vastly different levels of social capital and co-operative behaviour. Not all can be blamed on social systems, however, as individuals are not merely cultural 'dupes', subject to the relentless working of their culture and society (Rothstein, 2000, p.489).

3.5.1.5. Group Identity

Group identity has long been posited to foster faith in others (FIO). Messick and Brewer (1983) and Van Lange *et al.* (1992) collected evidence from a series of studies that provided evidence for increased co-operation among in-group members. Most of these studies were done before the drive for mundane realism (as discussed earlier) and were thus laboratory and small group in nature. Nevertheless, group identity was suggested to foster social ties, provide a sense of membership, generate conformity and sanction non-co-operators (Messick & Brewer, 1983). These findings have been corroborated through later work, such as that of Bornstein and Ben-Yossef (1994); Dawes and Messick (2000); Biccheri (2002) and Baron (2001).

Categorisation into a group does not have to be based on any deep seated difference; psychological group membership can be generated from what is termed the '*minimal group paradigm*' (Biccheri, 2002). This paradigm stemmed from Tajfel and later Turner and Brewer's experiments where they found that group identity would form on the basis of random and meaningless criteria (in Biccheri, 2002). The

minimum criteria for group formation was merely the recognition and acceptance of some self-defining social categorisation. Selart and Eek (2005) found support for place identity, such as a neighbourhood, as a sufficient criterion for in-group perception. Social threats, interaction, common fate, proximity, similarity and common goals (Messick & Brewer, 1983; Wiener, 1993; Biccheri, 2002) may help group cohesiveness, but not necessarily be requirements for group identification (Biccheri, 2002).

If group membership is so easily made through social categorisation, what would the effect be on co-operation? Turner's *self-categorisation theory* explains group behaviour to be dependent on the definition and perception of the self (potentially quite different in individualistic and collectivistic societies) where a social and a personal identity are present (Biccheri, 2002). People alternate between social and personal identities, oftentimes perceiving themselves primarily in terms of their relevant group membership, depending on the situation (Biccheri, 2002). The more salient group membership becomes, the greater the tendency for co-operation to group actions and adherence to group norms, hence if the in-group are high users of a resource, an individual is likely to be so too (Biccheri, 2002). Nevertheless, the same high users, when a resource was threatened, were the most restrained thereafter (Biccheri, 2002), thus obtaining group compliance can be relatively easy when groups are cohesive thanks to a shared identity.

Not surprisingly, then, co-operation in groups has been found to be enhanced through a feeling of inclusiveness (De Cremer, 2002) and individuals were more likely to choose cooperative or defecting behaviour in a similar manner to individuals who were described as similar to themselves (Parks, Sanna & Berel, 2001). Van Vugt, in two studies of water conservation in England, found that users were more restrained in their water use during a drought if they identified with (Van Vugt, 2001) and felt attached to their community (Van Vugt, 2002). Moreover, De Cremer (2002) and Van Vugt (2002) both believed that their results would to some extent be due to the actors' need for belongingness. The need for belongingness gains additional credence as the individuals in De Cremer's (2002) study co-operated the most when they were afforded respect by the group who were the ones who had initially felt the least included.

Groups are not always beneficial for societal co-operation; in-groups have been found to co-operate when the insider's gain is the outsider's loss (Baron, 2001).

People favour groups that include themselves, even at the expense of their own self-interest – a tendency that has been termed *parochialism*, closely related to ‘in-group bias’ (Baron, 2001; Bornstein & Ben-Yossef, 1994). Dilemmas between groups are thus often found to be the most extreme (Bornstein & Ben-Yossef, 1994; Dawes & Messick 2000). Baron (2001) even found that in-group co-operation was increased further if the out-group was harmed through the process. So, the more people think of inter-group boundaries as arbitrary, the more they can direct their non-selfish concern towards the good of the society (Baron, 2001). Thus, Baron (2001) suggests a means of managing negative group biases through informing members about the parochialism effect that can work contrary to their own self interest. Interestingly enough Triandis, in working with individualism and collectivism, found that the parochialism effect of Bornstein and Ben-Yossef (1994) was largely restricted to ‘vertical individualists’ (Baron, 2001). Such vertical individualists reported that they valued both the pursuit of self interest and competition against others – creating a remarkable paradox that individuals who claimed to be self-interested were extremely willing to sacrifice their self interest on behalf of the group (Baron, 2001).

3.5.2. Perceived Consumer Effectiveness (PCE)

In line with the *F* function provided earlier (Figure 3, p.21), the perceived criticality of individual actions has long been thought important (Klandermans, 1992; Messick & Rutte, 1992; De Cremer & Van Dijk, 2002). Authors, such as Bornstein and Ben-Yossef (1994) dispute the extent to which actions by individuals in large groups could be viewed as ‘critical’. Bornstein and Ben-Yossef (1994) advocate that in inter-group conflict individuals are more cooperative because they are more efficacious. At an individual level, therefore, it is not criticalness of an individual’s cooperative choice, but the extent to which they *perceive* their actions to have *an effect*. The larger groups become, the smaller this effect is seen to be; individuals see themselves as ineffective and thus do not co-operate (Klandermans, 1992).

Else, if the criticality hypothesis holds, individuals establish if a *minimal contributing set* is present, that is, if there are sufficient co-operators in the population already, and see their choice not critical to the preservation of the resource, hence they free ride (Bornstein, 1992). Free-riding was not a luxury of critical players in smaller groups (De Cremer & Van Dijk, 2002). Individuals, who perceive their contributions

to be critical, demonstrated greater social responsibility (De Cremer & Van Dijk, 2002).

Liebrand *et al.* (1992, p.31) noted that “people avoid futile actions”, whether these actions come from a lack of co-operation of others, or, more personally, a lack of effectiveness of their own actions. Hence the enduring academic interest in perceived consumer effectiveness (PCE). Perceived consumer effectiveness has evolved from persistent findings in social dilemma research regarding the role of self-efficacy and individual impact on social dilemmas (see for instance Kerr, 1992; Messick & Rutte, 1992; Kollock, 1998; Dawes & Messick, 2000; Rothstein, 2000). Perceived efficacy in these studies was defined as “the extent to which one believes that his or her own contributions help to achieve collective goals” (Van Lange *et al.*, 1992, p.18).

As highlighted earlier, efficacy of actions in social dilemmas is decreased as group size increases (Kerr, 1992; De Cremer & Bakker, 2003), making efficacy a key variable in Resource Dilemma (RD) research. Most economists and psychologists refer to the pioneering work of Kerr (1992) who viewed efficacy from a personal and collective perspective. Kerr (1992) was one of the first to establish a clear link between cooperative behaviour and efficacy. He also found a link between collective and individual efficacy: individuals who were more efficacious tended to believe that their groups would be too.

Marketers were the ones to coin the term ‘perceived consumer effectiveness’ (PCE) and have studied this in relation to socially and environmentally conscious consumption since the 1970s (Ellen, Wiener & Cobb-Walgren, 1991). Marketers “conceptualized and measured [PCE] as the extent to which the consumer believes that the efforts of an individual acting alone can make a difference” (Ellen, Wiener & Cobb-Walgren, 1991, p. 102). Ellen *et al.* (1991) go further to note that:

Perceived consumer effectiveness is defined as a domain-specific belief that the effectiveness of the efforts of an individual can make a difference in the solution to a problem. PCE is related to the concept of perceived behavioral control, which has been studied by theorists in the areas of learned helplessness, locus of control, and perceived control (p. 103)

Kerr (1992) was the first to conceptualise efficacy as a moderator in social dilemmas, as prior to this it was thought to be a cause of co-operation, with equivocal results. Kerr (1992) hypothesized that as the self-efficacy of co-operation declines, so should the effectiveness of the public good remedy. This has indeed been found to be the case in Kerr's own work as well as in the social marketing studies of Ellen *et al.* (1991) and Berger and Corbin (1992), who independently found PCE to be related to positive action in a number of pro-environmental behaviours. PCE is not just centred on an individual's ability to effect social change; the ability of the target audience to actually perform the pro-environmental behaviour required can also be a problem. Van Vugt *et al.* (1996) found that self efficacy beliefs around individual ability to 'carpool' were low and led to the failure of a solution to a real-world social dilemma. Consequently, Van Vugt *et al.* (1996) stress that it is important for social marketers to know more about the proportion of people who believe they are not capable of performing the collectively desired action so as to anticipate their feelings of frustration and relative deprivation.

PCE's importance as a moderator has been underscored through the findings of Lord and Putrevu (1998) who noted different reactions to green advertising messages based on level of individual PCE. The work of Sen *et al.* (2001) also found PCE to moderate between individuals' cooperative behaviour and the impact of normative social influences. More recently, Kim and Choi (2005) found that PCE acts as a moderator between green environmental purchase behaviour and collectivistic orientations: collectivistic subjects would only exhibit pro-environmental behaviours if they had a high degree of PCE. Kim and Choi's (2005) results discount Henry's (2000) dissenting voice against PCE: Henry asserted that group commitment made self-efficacy irrelevant; indeed Henry's own empirical findings were not conclusive and were carried out on a sample of American college students.

3.5.3. Solutions to Social Dilemmas

Many solutions have been proposed to solve social dilemmas. Types of solutions fall within one of two categories: behavioural solutions or structural ones. Behavioural solutions aim at encouraging individuals to co-operate, while structural resolutions seek to change the properties of the situation so that it is no longer a dilemma (Messick & Brewer, 1983). Kollock (1998) subdivides behavioural solutions further into 'motivational solutions' and 'strategic solutions'. The perspective taken on

human actors is what differentiates between Kollock's two behavioural solutions: motivational solutions accept a view of Ostrom's bounded rationality with a strong social heuristic (a norms approach), while 'strategic solutions' are designed for actors who are egoistic, hence the self-interested 'rational men' of most economists. In separating the two, Kollock is implicitly accepting that either perspective could have relevance depending on the actors, the situation or the history involved.

Motivational and strategic solutions are behavioural ones as they focus on changing the individual rather than the environment. Kollock (1998) views the two as similar because they both assume that the rules of the game cannot be changed and consequently focus on behaviour. Structural solutions, conversely, alter the rules of the game so that the dilemma is modified or eliminated completely (Kollock, 1998). As evidenced at the beginning of this chapter, behavioural change is a key part of the definition of social marketing and thus the domain of behavioural solutions is where marketing has most impact. Nevertheless, marketing interventions need not be restricted to behavioural solutions alone; they can also play a role in enhancing the acceptability of structural solutions.

3.5.3.1. Behavioural Solutions

Most behavioural solutions take their cue from the core payoff matrix (See Table 1, p.18), the type of dilemma and the variables found to be influential.

3.5.3.2. Motivational Solutions

Motivational solutions act on people who place some value on the outcomes of others (Kollock, 1998) rather than just their own. Thus these solutions seek to manipulate the payoff matrix in terms of the social payoffs rather than the non-social payoffs (Hollander, 1990) or to increase the importance weight to the outcomes of others (Liebrand, Messick & Wilke, 1992). Liebrand *et al.* (1992) provide the following value function, where Q is the outcome and W is the weight afforded:

Equation 4: Subjective Weight Value Function

Adapted from Liebrand *et al.* (1992)

$$Q_T = W_s * Q_{SELF} + W_o * Q_{OTHERS}$$

Thus motivational solutions seek to change the weights or else the perceived outcomes received by self and other.

a) Communication

Communication, especially face to face communication, has been found to have great impact on small group co-operation in a laboratory (Liebrand *et al.*, 1992; Van Lange *et al.*, 1992; Murnighan & King, 1992). In the laboratory, communication has enabled group members to coordinate their behaviour, as well as to work out what constitutes a "*minimal contributing set*" described earlier (Bornstein, 1992). Discussion also enhances group identity and norms, thus the 'promise keeping' norm is enforced – an individual makes a promise to co-operate, and then feels he or she has to comply (Bornstein, 1992; Biccheri, 2002). Thus what has been termed "cheap talk" has been lauded as a possible solution to dilemmas in small groups (Ostrom, 1998, p.6). 'Cheap talk' is when actors in a dilemma are allowed to communicate about strategies to solve that dilemma. Communication alone enables individuals to make conditional promises to one another and potentially build trust that would be reciprocated by others (Ostrom, 1998).

Larger dilemmas with more actors present more of a problem. Klandermans (1992) questions the power of persuasion in a large scale Resource Dilemma. He notes the additional concern of stressing a problem may even lead to less PCE and thus lower co-operation (Klandermans, 1992). A positive appeal may also be counterproductive if the audience reaches the conclusion that the minimal contributing set has been established and they can now free ride. As Klandermans (1992, p.313) concludes: "too much optimism reduces motivation, but so does too much pessimism". Wiener and Doescher (1991) have a similar disquiet and deal with it in terms of message framing (see point b) below).

Rosen and Haaga (1998) argue that persuasive appeals could be effectively used amongst large groups. They empirically tested the influence of Petty and Cacioppo's *Elaboration Likelihood Model* on inducement to co-operate. In the model, individuals are viewed as differing in the ways messages are processed; some focus on message arguments and have a central route processing dominance, while others rely on more superficial cues (such as visual aids or emotional appeals) and have a peripheral route processing dominance (Arnould, Price & Zinkhan, 2002). High involvement decisions often follow the central route, while low involvement ones are processed peripherally (Arnould, Price & Zinkhan, 2002). Rosen and Haaga's (1998) results indeed were in line with the model's predictions and the peripheral route message seemed to increase cooperative attitudes the most, surprisingly amongst those high in the need for cognition. The success of the peripheral route suggests

that conservation is indeed of low involvement and should be approached through appeals using the peripheral route.

b) Message frames

Framing was noted above as playing a crucial role in willingness to co-operate in a dilemma. To reiterate, as individuals are more averse to potential losses rather than gains, they are more likely to co-operate when a dilemma is presented as a resource rather than a public goods dilemma (Liebrand *et al.*, 1992; Sell *et al.*, 2002).

Framing is more than Tversky and Kahneman's (1991) losses and gains. It also refers to the positively and negatively framed messages that Lord and Putrevu (1998) used in their study. Sen *et al.* (2001) found positive or negative message frame to moderate the effect of FIO. In marketing these are often termed 'well-baby' and 'starving baby' appeals (Wiener & Doescher, 1991). Klandermans (1992) notes that framing can also be both diagnostic (identifying problems) and prognostic (suggesting solutions) as well, and both need to be done to motivate individuals. He stressed that framing needs to be done with the target population in mind and the extent to which the proposed behaviour is in line with its values. Wiener and Doescher (1991) considered each of the barriers to co-operation possible in a social dilemma (see column 1 of Table 2 overleaf) and suggested that an appropriate message appeals to be used in each instance.

Barriers to Cooperation	Information That Should Be Emphasized to Overcome the Barrier	Strategies for Overcoming the Barriers ^a
Reactance		
One-group case	Importance of reaching the goal	Starving baby appeal
Multigroup or individual case	None suggested	None suggested
Sucker	Goal will be reached	Well baby appeal
Self-interest	Size of dilemma is small	Scope-reduction approach, civic pride approach
	Your contribution will make the difference	Leadership appeal, phased segmentation approach
	Social payoff is larger, but not more important	Emphasize ease of cooperation
	Nonsocial payoff is larger and more important	Ethical appeal
Mistrust	Others are cooperating or will cooperate	Survey results approach, positive feedback appeal
	Group identification	Civic pride approach, common fate appeal
No reinforcement	Use mistrust and sucker information	Use mistrust and sucker strategies

Table 2: Message Frames – Overcoming the barriers to co-operation

Source: Wiener & Doescher (1991, p.43)

c) Group Identity

Group identity, noted earlier, could play a role in fostering co-operation, as people are more likely to comply with like-others with whom they are grouped. Indeed, very little is required for group identity to be fostered (Bicchieri, 2002). Van Vugt (2001) found this to hold in non-laboratory settings in the conservation of water.

Nevertheless, large groups are hard pressed to establish common identity as membership is often diffuse and without personal contact. Many researchers have thus stressed the need for the market to be broken down into smaller groups (Klandermans, 1992; Wiener & Doescher, 1991). Market segmentation is the common tool with which social marketers can affect this (Wiener & Doescher 1994). Alternatively, small community membership can be stressed and co-operation by neighbourhood combined action could be achieved, as Selart and Eek (2005) found.

d) Social Capital

Part of social capital is trust and group norms of co-operation (Rothstein, 2000; Ostrom, 1998). Any effort to enhance the overall social capital in a society would make co-operation in response to any particular dilemma easier. This would be particularly valuable for societies such as Russia, as Rothstein noted (see under Trust in Others as Social Capital, p.42).

e) Social Orientation

Social value orientation, that is, whether people are altruists (maximise the outcomes of others), competitors (maximise the relative difference between self and partner) or individualists (maximise own outcome without any regard for the outcome of others) has been extensively studied in social dilemma theory (Dawes, 1980; Kollock, 1998) and it is the closest social dilemma theory has come to account for the underlying influences of individualism and collectivism (see Chapter 4). Kollock's (1998) assertion that no actual mechanisms have been developed by which social value orientations form part of interventions in a social dilemma underlines the need for a review of social value orientations in Chapter 4.

3.5.3.3. Strategic Solutions

a) Reciprocity

Axelrod (1984, p.110) outlined the clear implications for small numbers of players to interact successfully:

- Don't be envious
- Don't be the first to defect
- Reciprocate both co-operation and defection (successful interaction requires a degree of reprimand)
- Don't be too clever

While Axelrod's directives may help individuals, group reciprocity, as evidenced from the discussion above, is best served through norms and heuristics. Kollock (1998) and Ostrom (1998) found norms around group behaviour to be a promising avenue for interventions. Alternatively, co-operation could be generated in small communities, where the interaction of all the players with each other could be effected (Selart & Eek, 2005).

b) Increasing choices

Komorita and Lapworth (1982) was the only study in the literature that reviewed the possibility of introducing a third, intermediate choice between the absolutes of co-operation and defection. Providing individuals with a compromise option was found to be most effective in starting slow negotiations towards an acceptable compromise.

c) Ownership

Bryan (2004) opens up a new avenue for prevailing over self-interest driven parties: foster a sense of ownership of the problem. In a sense this echoes Ostrom's (1998) call for greater citizen participation and, correspondingly, more social capital. Shared ownership would then transform Equation 4, p.48 from the self/other dichotomy to a focus on overall outcomes. Shared ownership solution differs from actual ownership (privatisation), which falls under the realm of structural solutions.

Ownership of actions was found to be more prevalent if actions were visible (De Cremer & De Witte, 2002). McKenzie-Mohr (2000a) used this to great effect in inducing co-operation for a neighbourhood recycling scheme when households had to place their recycling bins on the curb where all could see who was co-operating. The greater number of bins visible on the pavement, increased the likelihood that a non-cooperating house would recycle in order for their bin to be placed visibly on the sidewalk.

d) Reward schemes

Rewards for co-operation were criticised by Dawes (1980) as attempts to design away the dilemma rather than solving it. Rewards change the pay-off structure and thus increase individual gain, eliminating the 'social dilemma'. In essence individuals receive extrinsic, non-social rewards for co-operation. Nonetheless, Parks (2000) found reward schemas to induce high rates of co-operation that were maintained across a number of behavioural trials. Reward schemes, however, were more effective if they were competitive and performance based and completely ineffective if participants were rewarded for simply taking part in a group (Parks, 2000).

3.5.3.4. Structural Solutions

Structural solutions were termed by Hardin to be "mutual coercion, mutually agreed upon" (Hardin, 1968, p. 1247) and generally involve rules and regulations. Dawes (1980) views these solutions to be essentially the same as Hobbes' (1661 in Dawes, 1980) authoritarian Leviathan state. Ostrom (1998) prefers the workings of non-authoritarian social capital. Nevertheless, certain situations call for institutional coercion; indeed some individuals trapped in a dilemma may even request such intervention (Chipp and Morton-McKay, 2002). Certainly, the imposition of structural solutions require additional costs to be met – the provision of a monitoring system was viewed as inefficient by Dawes (1980).

a) Temporary structural changes

Not all structural changes need to be permanent to be used. Van Vugt *et al.* (1996) and Fujii *et al.* (2001) both studied the imposition of a structural solution on a temporary basis: Van Vugt *et al.* (1996) investigated the obligation of a 'carpool' lane in Europe, while Fujii *et al.* (2001) looked at the reactions of drivers' use of public transport during a freeway closure. Both studies found the temporary structural intervention to vary in effectiveness, in fact, Van Vugt *et al.* (1996) reported that participants de-emphasised positive aspects of 'carpooling', while stressing the negative aspects of the structural solution. Fujii *et al.* (2001) found that frequency of switching to public transport during the road closure was inversely related to the frequency of automobile driving before the closure. On a positive note, Fujii *et al.*'s Japanese drivers who overestimated the additional time involved in public transport were more likely to change their perspective and continued to use this mode after the road closure was over (Fujii *et al.*, 2001). It is interesting to note that each of these studies was conducted in a different cultural system (Japan and the UK) and both had markedly different results.

b) Sanctioning system

The employment of a sanctioning system was shown in the discussion on trust to be favoured by those low in this attribute (Yamagishi, 1992; Ostrom, 1998). In fact, low trusters were willing to contribute to the secondary level PG dilemma that such a system would create. Chipp and Morton-McKay (2002, 2003) found that low income consumers expressed preference for a sanctioning system for non-payment of water service. Not all consumers, however, favour a sanctioning system. Ostrom (1998) noted that often sanctioning systems have the counter-intuitive result of making individuals become less trustworthy because they feel that they are not trusted. The careful marketing of a sanctioning system presents a means to overcome this problem (Wiener & Doescher, 1991). Nevertheless, payment for and the effectiveness of a sanctioning system stands as secondary dilemmas that need to be solved (Ostrom, 1998).

c) Leaders

Decisions regarding a shared response can be abdicated to a leader in order to solve the crisis (Ostrom, 1998). When viewed from a social capital perspective, such leaders should foster vertical trust, as Rothstein (2000) noted. Leaders though are generally not the preferred type of structural intervention (Kollock, 1998). There is also the risk that any non-co-operative behaviour on the part of any leader would

lead to a decrease in social capital and correspondingly co-operation amongst the population at large.

d) Privatisation

One of the preconditions of social dilemmas is that of "nonexcludability". Privatisation seeks to change this through the imposition of boundaries (Kollock, 1998). Either authorities regulate who has access to the commons, how people withdraw from the commons, or ownership of the commons itself (Kollock, 1998; Van Vugt, 1997). Thus the tragedy of the commons is curtailed because it is no longer a 'commons'. Hardin (1968) himself advocated this as the best solution.

Van Vugt (1997) studied the impact of social value orientation (pro-socials, pro-selfs and competitive individuals) on privatisation of a public good. Overall, Van Vugt (1997) found that people were concerned more about the collective implications of universal access to the good than increased payments – a reference to the 'equal final outcomes rule' mentioned earlier (Sell *et al.*, 2002). Social value orientation was meaningfully related to the perception and response of the privatisation. Surprisingly, pro-socials proved to be unexpectedly sensitive to the transition costs to the private system (Van Vugt, 1997). Van Vugt (1997) concluded that success of privatisation systems would depend on minimising implementation costs and maximising individual and societal benefits. Not all goods can be privatised and new questions regarding social justice arise: who gets the newly privatised commons and how are portions allocated (Kollock, 1998)? Moreover, there has been some contention that 'tragedies of enclosure' could occur, as individuals routinely neglect their own property (Kollock, 1998). Ostrom (1998) opted for a third route: local regulation of access and use of the commons by those who use and have local knowledge of the resource. But this option is often not available for all resources, especially municipal water in a large city.

3.6. Marketing Applications and Relevance to Water Conservation

Wiener and Doescher (1991) were the first marketers to identify and expand social dilemma theory as a vast potential source for successful social marketing strategies. Until their seminal paper, social dilemma theory rested largely within the domains of psychology and economics, and studies focussed on small group research. They and the few others who followed their work, went on to establish in the decade that

followed the validity of this theory and the marketing strategies they derived from its premises. Social marketers have successfully applied this theory to public goods, such as utilities (Wiener & Doescher 1994), consumer boycotts (Sen *et al.*, 2001) and pro-environmental behaviour (Kim & Choi 2005).

It has generally been the overwhelming experience of social marketers that, despite large informational campaigns, attitudinal change does occur but very little behavioural change is effected (see for example Rothschild, 1979; Ritchie & McDougall, 1985). Social marketers have spent considerable time investigating why this is so and how marketing strategies should be amended to increase their impact on actual behaviour. Wiener and Doescher (1991) highlight the main problems with social marketing efforts aimed at achieving community rather than individual good: firstly, the low involvement barrier as consumers are not highly involved with the product or resource (such as energy and water consumption) and, secondly, the low benefit-cost ratio of the actions needed to preserve or achieve the community good.

Water conservation is faced with both of these problems. Water is readily available and very little (if any) consumer decision making is involved in its consumption. Furthermore, attempts at water conservation will inconvenience consumers and often extract additional monetary costs (such as retrofitting shower heads, repair leaks or drips, washing the car less often and changing toilet flush mechanisms) (Trumbo & O'Keefe, 2001). Wiener and Doescher (1991) encapsulate such problems in terms of social dilemma theory: In a social dilemma, the person who contributes to the overall good receives fewer personal benefits than one who does not (Dawes, 1980). Thus the key concern in a social dilemma is gaining the widespread co-operation of a large number of consumers, who may or may not belong to the same membership group (Ellen *et al.*, 1991; Wiener & Doescher, 1991; 1994; Wiener, 1993; McCarthy & Hagan, 1998; Sen *et al.*, 2001; Dawes & Messick, 2000).

3.7. Chapter Summary

The current chapter dealt with defining social dilemmas and outlining their key components. This was done initially through an initial review of the rational man versus the social man perspectives of different researchers and an investigation of the payoff matrix involved. The payoff matrix indicated that there are four possible outcomes from individual choice in a social dilemma: both co-operate (CC); the

individual co-operates while the other defects (CD) – the sucker payoff; the other co-operates while the individual defects (DC) – the free rider and both defect (DD). Various combinations of these outcomes determine the type of two-person dilemma, whether it be the Prisoner's Dilemma (PD), a Chicken Game, an Assurance Game, an Altruist's Dilemma or a Privileged Game.

While two person dilemmas have been important to understand the dynamics involved in social conflicts, *N*-Person dilemmas have more real-world application. Two *N*-Person dilemmas were outlined: the Public Goods and the Resource Dilemma. The characteristics of each were discussed. Water conservation falls squarely into the latter type.

Influential variables were then reviewed. The most important of which were belief in the co-operation of others, termed Faith in Others (FIO), and perceived consumer effectiveness (PCE). The applications of these variables for real-world social dilemmas were discussed. The chapter then concluded with a review of possible solutions to social dilemmas, including a reflection on marketing's contribution.

In Chapter 4, the underlying dimensions of individualism and collectivism are discussed and their implications for social dilemma theory are delineated.

4. Chapter 4: Individualism and Collectivism

4.1. Chapter Overview

The current chapter deals with the role of individualism and collectivism in social co-operation. First the concepts individualism and collectivism are defined. The definition includes the terms used for an individual rather than a societal level of analysis, idiocentrism and allocentrism. Next Triandis' sub-dimensions of horizontal and vertical individualism and collectivism are discussed. The characteristics of the two concepts are then reviewed followed by a reflection of the origins of these in ecology. Next, the contribution of the two dimensions to social dilemma research is presented. This is then followed by a review of the use of the concepts in marketing in general and social marketing in particular.

4.2. Individualism and Collectivism Defined

The roots of individualism and collectivism are very deep and lie across many disciplines (Triandis, 1989). Individualism has been defined as "a belief that the individual is an end in himself, and as such ought to realize his 'self' and cultivate his own judgement, notwithstanding the weight of pervasive social pressures in the direction of conformity" (Gould & Kolb, 1964 in Triandis, 1989, p.52). In opposition, collectivism places greater emphasis on:

- *the views, needs and goals of the ingroup rather than oneself*
- *social norms and duty defined by the ingroup rather than behavior to get pleasure*
- *beliefs shared by the ingroup rather than beliefs that distinguish self from the ingroup; and*
- *great readiness to cooperate with ingroup members*

(Triandis, 1989, p.52)

Toennies (1957 in Triandis, 1989) contrasted *Gemeinschaft* (more collectivistic) with *Gesellschaft* (more individualistic). Individualism and collectivism are accordingly terms used to describe the relationship between individuals and society. Generally these terms are viewed as polarities on a single axis for a society and separate axes

for individuals (Triandis, 1995; Earley & Gibson, 1998; Triandis, 2001; Triandis & Suh, 2002). At an individual level of analysis the terms used are altered to *allocentric* (personal collectivism) and *idiocentric* (personal individualism). It is possible for individuals to be high or low on both constructs (Triandis & Suh, 2002). Individualism and collectivism can then be summated as the way in which individuals relate to themselves, their groups and the interaction between the two. The pattern of responses that individuals display when relating to their groups demonstrates their degree of each dimension (Earley & Gibson, 1998).

Each dimension describes a self- versus collectivity-orientation on the part of the individual (Earley & Gibson, 1998). These orientations govern what actions are permissible under various settings. A self-orientation entails that individuals are free to pursue private interests, whereas a collective-orientation demands that the interests and values of the collectivity are taken into account (Earley & Gibson, 1998).

4.2.1. Self/Other Priorities

Thus, these orientations have been viewed as the extent to which personal goals overlap with that of collectives (Triandis, 1989). Under Individualism it is considered acceptable for individualists to place personal goals ahead of collective goals; when a conflict arises between the two sets of goals, the 'natural' or expected choice is for the self (Triandis, 1989). Collectivists, conversely, place greater precedence to the goals of the collective and, should any conflict between personal and group goals arise, collective goals override those of the individual (Triandis, 1995). When the discussion of individual choice (outlined in Chapter 3, p.18) is viewed in the light of these orientations, the economists' perspective is revealed as very idiocentric: it is assumed that individuals will prioritise self interest. Thus the core payoff matrix (see p.18) does not account for the value of self/other priorities and the subjective weight function must be modified to include idiocentrism/allocentrism thus:

Equation 5: Subjective Weight Value Function Under Allocentrism/Idiocentrism

$$Q_T = IC (W_s * Q_{SELF}) + AC (W_o * Q_{OTHERS})$$

Where: Q = Outcome
 W = Weight
 IC = Idiocentric orientation
 AC = Allocentric orientation

Yamaguchi (1994 in Voronov & Singer, 2002), while agreeing that collectivist individuals are more other orientated, disputed the belief that this is not related to self interest, stating that:

Individuals may temporarily sacrifice their self-interest for the group so long as they can expect rewards from the group in the long run. The expectation of punishment by group members can also motivate an individual to abandon personal goals in favor of those of the group.' (p.464)

Yamaguchi's contention that collectivists (or allocentrics) are still self-interested adds the dimension of relationships and future payoffs into the discussion. Much of the debate regarding the conceptualisation of the individual in social dilemmas stemmed from the notion of 'rational man' (see Chapter 3, p.17). Ostrom (1998) debated the extent to which man could be rational, given that he lived in a bounded world; he was subject to cultural norms and he had to deal with continued interaction with group members. The inclusion, therefore, of idiocentrism/allocentrism in the debate allows for rationality, social relationships, and continued interactions with others, what Axelrod termed the 'shadow of the future' (1984, p.124).

4.2.2. Two Dimensions

At an individual level, tendencies towards both orientations are present. Brewer (1991) described this best through her Optimal Distinctiveness Theory, where all individuals across all cultures wish to be both similar to, and different from, an in-group. Should individuals feel included, their need for assimilation would be minimal; if they feel excluded, this need is maximal (Brewer, 1991). Hence the hugely positive cooperative response De Cremer (2002) uncovered when he investigated the influence of inclusion on the co-operation of community members who had been previously peripheral to the group.

These two dimensions to some extent mimic the processes of allocentrism and idiocentrism. Triandis (1995) extrapolated the implications of Brewer's Theory to the dimensions of individualism/collectivism. He thus concluded that in collectivist cultures the optimal distinctiveness point is close to the high-inclusiveness pole; whereas in individualist cultures this point is near to the low-inclusiveness pole. Triandis' elaboration of Brewer's Theory to individualism/collectivism is demonstrated in Figure 6, below. Figure 6 demonstrates that Triandis suggested that individualists have a sharp gradient for differentiation and a flat gradient for assimilation and the opposite holds for collectivists. Individuals, therefore, vary on both the degree to which they desire assimilation into the group (allocentrism) and the degree to which they wish to be separate (idiocentrism). Hence the inclusion of both *IC* and *AC* in Equation 5 as these constructs affect all actors. Furthermore, Triandis' conclusion here regarding the slopes of each function provides a strong indication of the relative values of *IC* and *AC* in Equation 5 (see p.60). Just as individuals can hold different values on the individualist/collectivist dimensions, societies are an accumulation of such more idiocentric or allocentric individuals and can thus contain a mix of the two orientations (Triandis, 1995). South Africa contains a wide variety of both (Eaton & Louw, 2000; Corder, 2001).

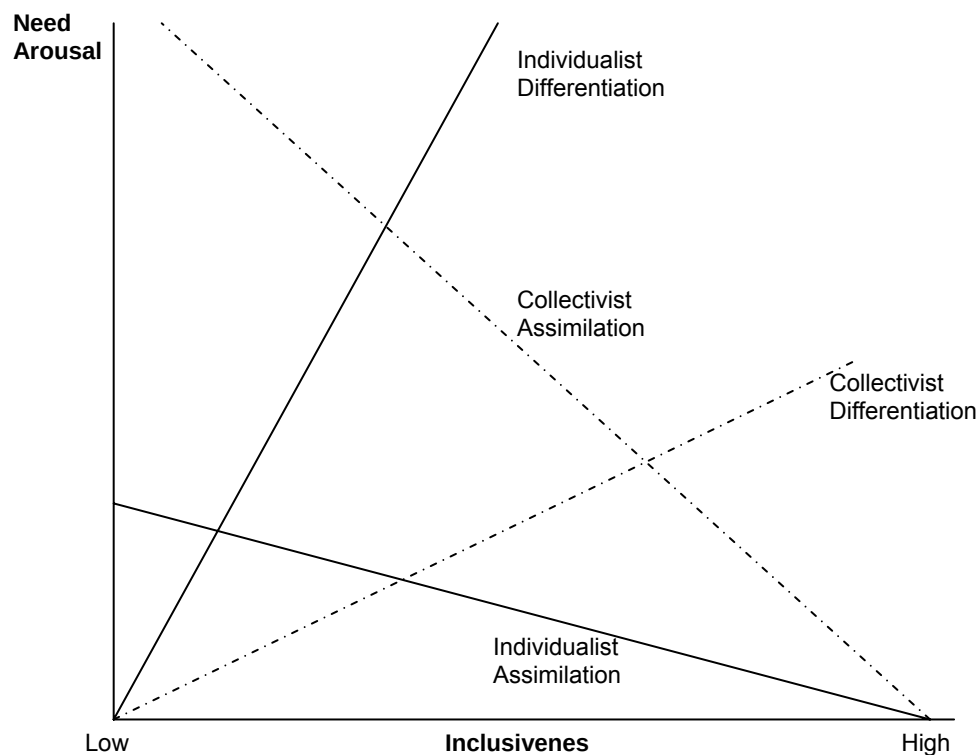


Figure 6: Brewer's Optimal Distinctiveness Theory and Individualism and Collectivism
Source: Triandis (1995, p.11)

4.2.3. Vertical and Horizontal

When Hofstede revitalised interest in individualism/collectivism in management studies in 1980 (Earley & Gibson, 1998; Kim & Choi, 2005), he did so in an international study of 117, 000 protocols IBM had collected from their employees (Triandis, 1995). A factor analysis revealed four key factors: *power distance*, *uncertainty avoidance*, *individualism* and *masculinity* (Triandis, 1995). Power distance refers to the shared view amongst people that those who are at the top of the social structure are very different from those at the bottom (Triandis, 1995). In societies with large power distance, the social hierarchy is very pronounced. The most dominant factors in Hofstede's study were power distance and individualism. When Brewer's Theory and individualism/collectivism are taken in conjunction with power distance, the rationale for Triandis' (1995) distinction of a *Vertical* and *Horizontal* dimension becomes clear. Collectivists or individualists can be either vertical or horizontal in their orientation, depending on their value of power distance (Chiou, 2001). Horizontal orientation emphasises equality, while vertical orientation stresses hierarchy (Chiou, 2001; Triandis & Suh, 2002). In horizontal patterns, one's self is approximately equal to all other selves; in vertical patterns, one's self is not equal to other selves (Chiou, 2001). Four types result: vertical individualism, horizontal individualism, vertical collectivism and horizontal collectivism.

Horizontal collectivists merge with in-groups (for example, family, tribe and nation); the well-being of these groups is important to them, but they do not feel subordinate to those groups (Chiou, 2001). Horizontal collectivists emphasise empathy, sociability and co-operation (Triandis & Suh, 2002). They would not approve of differential compensation and they have no need to be distinct from their in-group (Triandis, 1995). An Israeli kibbutz is seen to exemplify horizontal collectivism (Triandis & Suh, 2002). Horizontal individualists stress self reliance; they do not like to 'stand out', that is be unique and conspicuous (Triandis, 1995). Sweden and Australia are often held as examples of horizontal individualism. Australians refer to this as the 'tall poppy' syndrome: those who stand out in society need to be cut down to size. Sweden has received higher rankings of this attribute than Australia; in Sweden the elderly do not live with their children (to do so would be to be dependent), they take their own sheets when staying overnight at a friend's and they would like to live as they please (Triandis, 1995), all signifying an individualist

orientation. Swedes, nevertheless, do not desire to be distinctive or have high status: traits of horizontalism (Triandis, 1995).

Vertical cultures are traditionalist; they emphasise in-group cohesion and respect for norms and authorities. They have further been found to have a correlation with right wing authoritarianism, the tendency to submit to authority and sanction conventionalism (Triandis & Suh, 2002). Vertical collectivists submit to the norms of their in-groups and are willing to sacrifice their personal identity for those groups (Chiou, 2001). Vertical collectivism, along with right wing authoritarianism, has been observed to be positively correlated with age and religiosity and negatively correlated with education and diversity (Triandis & Suh, 2002). India is an example of vertical collectivism.

The United States of America (USA) has been noted as high on vertical individualism (Triandis, 1995; Chiou, 2001). Americans have been found to be offended when told they are 'average' and they desire status, both of which are indicative of verticality and individualism (Triandis, 1995). There are large socio-economic inequalities in the USA which the bulk of the population is unwilling to address through taxation, unlike the Swedes who pay up to 70% tax to distribute wealth and foster equality (Triandis, 1995). Americans have a great respect for authority, as 65% of the American sample obeyed the distasteful instructions in Milgram's experiments to harm others as opposed to only 40% in Australia (Kilham & Mann, 1974 in Triandis, 1995). Power distance is conventionally associated with collectivism (Triandis, 1989; Midgley & Tang, 2002), however the vertical dimension accounts for the presence of this factor in individualistic nations, such as America. Characteristics of each cultural type are discussed in the section of that title below (see p.64).

4.2.4. Dynamic Nature of Individualism/Collectivism in Cultures

Culture is not static. Levels of individualism/collectivism and their corresponding allocentrism/idiocentrism both wax and wane in populations. Many Chinese and Japanese researchers note greater mixing of the two types in their own populations and movements towards one axis over another according to social and economic change (Kurosawa, 1992; Chiou, 2001; Midgley & Tang, 2002). Likewise, there may be periods in an individual's life where he or she has greater desire for and places emphasis on allocentrism over idiocentrism and vice versa. The section on Ecology below provides some discussion of how this may come about (see p.68).

Moreover, the components within individualism or collectivism change over time. The individualism of Plato's *Republic* was far more paternalistic and collectivistic than the Greek Sophists of the same time (Triandis, 1995). The Sophists followed the Machiavellian 'any means to success is good' and charged high fees for training young men to be successful; Plato viewed this as immoral and thought one should adhere to truth at all costs, even if it meant failure. Plato also included place for his philosopher kings in his *Republic*; figures not unlike the in-group authorities found in collectivism (Triandis, 1995).

De Tocqueville, the 19th century social theorist who coined the term 'individualism', voiced a concern that the democratic individualism he applauded in the USA and saw in embryonic form in France after the revolution, had within it the potential to turn into 'narcissistic individualism' (Watson & Morris, 2001). De Tocqueville warned of selfishness that was "a passionate and exaggerated love of the self, which leads man to connect everything with himself and to prefer himself to everything in the world" (Tocqueville 1840/1945b in Watson & Morris, 2001, p.264). Thus De Tocqueville distinguished between different types of individualism and wondered where unbridled individualism may lead. He stressed that the principle of self interest had to be rightly understood and believed that women were instrumental in maintaining morality as they traditionally have greater focus on relationships and others (Watson & Morris, 2001). Triandis (1995) concluded thus that neither undiluted individualism nor undiluted collectivism is good for society.

4.3. Characteristics of Individualism/Collectivism

The polarities of individualism/collectivism have a well established associated set of characteristics that have been associated with each over time. Many of these (summed in Table 3, p.67) can be conceptualised in terms of:

- Role and power of the individual
- Role and power of the group
- Status and role of the in-group
- Cultural looseness/tightness
- Cultural complexity/cultural simplicity

Collectivist cultures afford very little power to individuals, thus people in collectivist societies have been reported to have low self-esteem and personal efficacy, but high group efficacy (Triandis, 1995; 2001; Triandis & Suh, 2002). Collectivist roles are clearly defined in terms of the situation or context, so there is a split between public and private selves; furthermore, the self is seen as malleable and adaptive to situation (Triandis, 1995, 2001). Lying is not interpreted as negative in collectivist cultures, provided that the social context calls for it in order for the other party to save face or to preserve the harmony of the group (Triandis, 1995, 2001; Leung, Au, Fernández-Dols & Iwawaki, 1992). Head-on conflict is to be avoided (Leung *et al.*, 1992). Collectivism has a strong correlation with outer-directedness, where the locus of control is external (Triandis, 2001). People high in allocentrism tend to have low self esteem (associated with 'getting along' rather than 'getting ahead'), high embarrassment; high in agreeableness; pay attention to context over language and emphasise morality (community and divinity) (Hart & Poole, 2001; Koole, Jager, Van Den Berg, Vlek & Hofstee, 2001; Triandis, 2001). Collectivists or allocentrics are motivated by receptivity to others and restraint of own needs and prefer the division of resources to be done on an equitable rather than an equity basis (Triandis, 2001).

Individualism, conversely, affords more power and importance on the individual; hence these cultures tend to be inner-directed with an internal locus of control (Triandis, 1989, 1995, 2001; Triandis & Suh, 2002). Along with a strong focus on the individual, that individual is seen to have enduring personal traits that remain consistent whatever the situation. Thus individualists seek consistency between public and private selves (Triandis, 1995, 2001). Situations and groups can be changed, not the self; hence when things are going poorly in a work environment, individualists are more likely to change the environment than themselves (Triandis, 1995; Earley & Gibson, 1998; Gómez, Kirkman & Shapiro, 2000). Correspondingly, it is important for the consistent self to be truthful (Leung *et al.*, 1992; Triandis, 1995). Individualists or idiocentrics have high self esteem and normlessness; they pay more attention to language rather than context; they are motivated by their own needs, rights and capacities and prefer equity based division of resources to that of equality (Triandis, 1995). Some Chinese theorists have criticised individualists for paying too much attention to the rights of man rather than his obligations and duties (Voronov & Singer, 2002).

Cultures that are collectivist in nature tend to be *tight*, a term defined as the extent members of a culture agree on firstly, what actions are correct; secondly, deviation

from such actions is allowed and thirdly the degree and magnitude to which divergence from accepted actions is sanctioned (Triandis, 1995; Chan, Gelfand, Triandis & Tzeng, 1996). The tightness found in collectivistic cultures is reflected in the lower crime rates, lower delinquencies and lower substance abuse figures (Triandis, 1995). While collectivist cultures are viewed as high on tightness, they are seen as generally low on *complexity*. Complexity, often crudely ascertained through the gross national product per capita (GDP/cap) (Triandis, 1995), measures the heterogeneity of the economic and ethnic composition of a population. Thus lower income countries, rural areas, homogeneous and older populations tend to be less complex and more collectivistic, an inference supported by data gathered by Triandis (1989, 1995, 2001) and Corder (2001).

Individualistic cultures tend to be loose and complex (Triandis, 1995). These cultures are heterogeneous with often multiple and conflicting norms about behaviour, and punishment does not necessarily follow deviation (Triandis, 1995). Individuals are presented with a large number of choices that they must make on a personal level. Increasing affluence generally provides greater choice and societal heterogeneity (Earley & Gibson, 1998). Poor people tend not to have a great deal of choice; hence the correlation between GDP and complexity. Triandis provides evidence that warm climates tend to be loose and cold tend to be tight; deviation from norms in very cold climates could mean frostbite or death. Theorists have conjectured that greater control of self may result from tightness, hence the lower homicide but higher suicide rates (Triandis, 1995). While tightness is associated with law and order, looseness is associated with creativity; hence tighter and thus more collectivistic cultures have greater respect for authority and norms and thus have less crime, but they pay the price in creativeness.

	<i>Individualism/Idiocentric</i>	<i>Collectivism/Allocentric</i>
Unit of Analysis	Individual	Group
Values	Self-reliance Competitiveness Aggressive creativity Accomplishment Enjoyment of life/happiness Exciting and varied life Insecurity Large military expenditures Prejudice towards racial and religious groups Assertive Internal locus of control Personal achievement Emotions as strong predictors of satisfaction	Reciprocity Pro-social Restricted conformity Self-discipline Obligation Harmony Low creativity Security Duty; Tradition Dependence Attentive Obedience to authority External locus of control Social norms as strong predictors of satisfaction
Emotional Drives	Guilt Libido (sexual activity)	Shame Filial piety Performing one's duty - Proper action
Imperatives	Conquer frontiers Make the world adopt one's own religion and political system; Dominate others or things (such as pets or possessions)	Cultivate own habitat
Emphasis	Self-interest	Proper Relationships
Societal Economic Basis	Logic	Holistic thinking
Child rearing	Hunting, gathering, fishing, foraging, trading	Agricultural; not much trade
Use of Property	Children encouraged to be adults as soon as possible	Children allowed to be adults at their own pace
In-Groups	Self-glorification	Good of the group
Self Construct	Many; easy to enter and exit; impermanent; weak attachment; extensive skills for entering new groups Independent self Seek consistent self in all occasions and situations Self is based on long term dispositional traits; self is fixed, environment is changeable	Few; difficult to enter and exit; longstanding/permanent; usually from birth, right or marriage; Hostile towards out-groups; strong attachment; in-groups provide protection Interdependent self Public self separate from private self Self is based on situation or context Environment is fixed; self is malleable
Age	Focus on youth; reverence for individual birthdays	Focus on old; particular reverence for ancestors
Communication	Direct, use of word 'I'; Take pride in honesty, 'speaking one's mind'	Indirect, face-saving; use of word 'we'; Lies accepted
Societal development	Economically successful; high GDP	Economically unsuccessful; low GDP
Societal pathologies	High rates of homicide, suicide, crime, delinquency, divorce, drug abuse, abuse of women and children; poor mental health	Low homicide, high suicide, Excessive demands of families; can classify all others as out-groups
Time perspective	Short term	Long term

Table 3: Comparison of Core Attributes of Individualism and Collectivism

Source: Constructed from Triandis (1989) and Triandis & Suh (2002)

4.3.1. Role of the In-group

The role of the in-group plays a distinct difference in collectivist and individualist societies. In-groups are defined as membership groups about whose welfare an individual is concerned (Triandis, 1995). These groups are usually characterised by similarities among the members and individuals have a sense of common fate (Earley & Gibson, 1998). Clear out-groups are viewed as competition for resources; a threat in some way, or as possessing different values (Triandis, 1995). Collectivists react more negatively towards out-groups; thus they are often more ethnocentric (Triandis, 2001). A common threat or shared fate increases levels of allocentrism. As noted in Table 3, p.67, allocentrics belong to fewer in-groups but are more tightly bound to them; idiocentrics belong to many groups yet these tend to be impermanent and loosely bound (Triandis & Suh, 2002). Allocentrics prioritise in-groups and will often inflict harm on out-groups when faced with conflict (Bornstein & Ben-Yossef, 1994; Dawes & Messick, 2000)

4.4. Ecology

“[C]ulture is to society what memory is to individuals” (Kluckhohn, 1954 in Triandis & Suh, 2002, p. 135) thus culture is the result of a group's collective historical experience of their environment. Cultures develop conventions for sampling information from the environment and determine how much to weight the sampled elements to the population (Triandis, 1989). Hence the amalgamation of these conventions are a reflection of a group's: firstly, ecology (terrain, climate, flora and fauna and natural resources) and secondly, the maintenance system (subsistence and settlement patterns, social structures and means of production) that they have had over time (Triandis & Suh, 2002).

As societies move from nomadic to agricultural to industrial and then information, a corresponding movement in their levels of collectivism/ individualism is evidenced (see Figure 7, p.69). Triandis (1989) performed a factor analysis on Mead's anthropological data, where he discovered that the primitive societies that were hunter-gatherers were some of the poorest. Nevertheless, they possessed many of the characteristics that would make for good individualists, as hunters are largely independent; operate in open environments where they must make their own choices amongst many options (Triandis, 1989; Triandis & Suh, 2002). The benefits of settled living in agricultural communities reinforced a different set of norms. People

had to co-operate to produce food, build communities and ensure that sufficient food was stockpiled. Common fate was clearer to a group of people who depended on the weather (Triandis, 1989). Hence, agricultural societies tend to be tight (Chan *et al.*, 1996). Affluence increased in a more settled society and accumulation of stockpiles led to social class and inequality (Triandis & Suh, 2002).

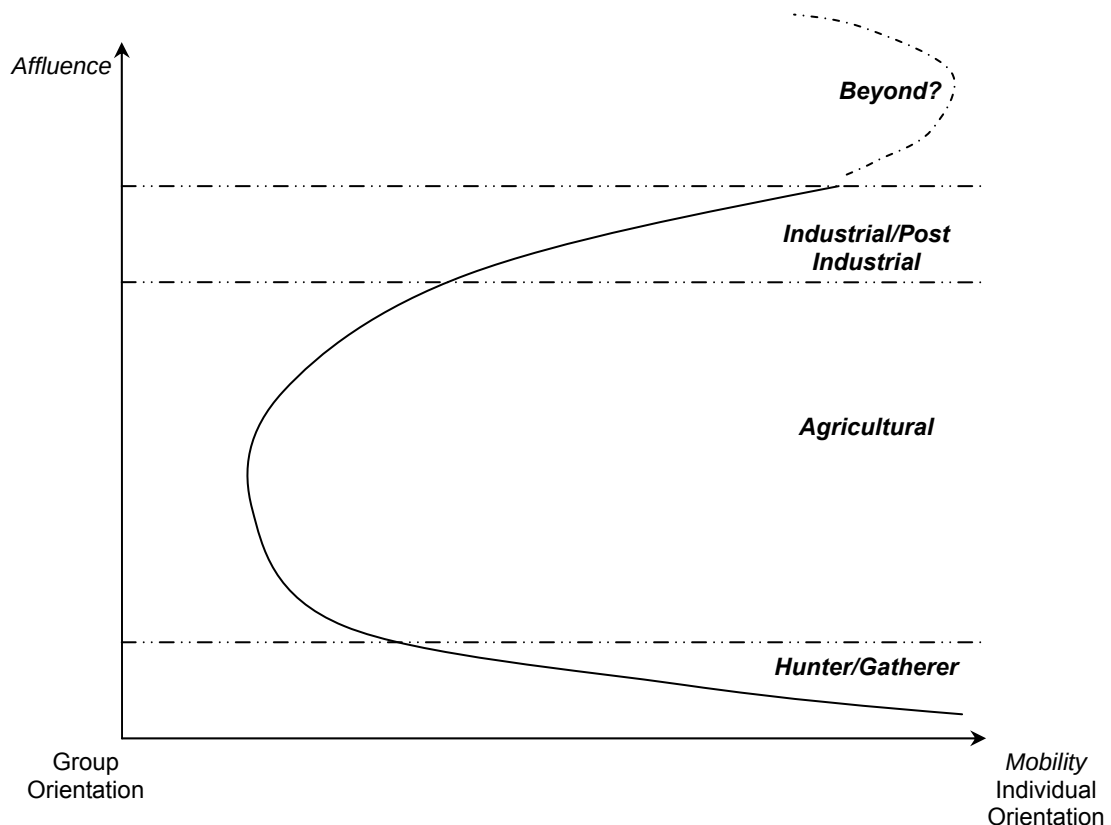


Figure 7: The Evolution of Societal Social Value Orientation

The industrial revolution, the political upheaval heralded by the French Revolution and Protestantism presaged a move back to individualism. The industrial revolution led to the division of labour, increased wealth disparities and the creation of increased choice. The French Revolution destroyed the last vestiges of Feudalism whose structures had served as intermediaries between individual and government; just as Protestantism removed the strictures of the Catholic Church as intercessors between the individual and God (Watson & Morris, 2001). Greater mobility also coincided with this period; though collectivists wished to stay at home, trader-individualists wanted to go to market and many were happy to take part in the colonising enterprise that followed in the 19th and 20th centuries. Mobility has been associated across time with individualism (Triandis, 1989). Urbanisation further

enhanced the trend towards complex, loose societies that were heterogeneous (Triandis, 1989).

In modern societies, individuals are faced with lax and multifarious cultures; there are many ways of doing things and many choices. Thus it remains the individual's prerogative when deciding on action, much like the early hunters, as the rules in their environment are less fixed and the sanctioning systems of others are less intrusive. Yang (1988 in Triandis, 1995) speculated that modernisation could eliminate cross cultural differences as the 20 characteristics he found across modern societies had 12 that overlapped with individualism. In Yang's study, there was specific emphasis on personal efficacy, low integration with relatives, equalitarian attitudes, openness to innovation, sexual equality, achievement motivation, independence, self-reliance, active participation, risk taking and a non-local legal orientation. Exposure to the mass media further propels society towards individualism, as it focuses on individual pleasure, is mostly Western in content, and is delivered and often consumed on a personal basis (Triandis, 1989).

There is some concern that the dutiful individualist who understood the "principle of self-interest rightly served" (Tocqueville in Watson & Morris, 2001, p.265), where the demands of individual self interest were weighed against community interests, as "it is held that man serves himself in serving his fellow creatures and his private interest is to do good" (Tocqueville in Watson & Morris, 2001, p.264), is becoming a narcissistic individualist. Tocqueville envisioned a thoughtful individualist who was cognisant of duty to others, which prevented him from becoming a pure hedonist *über alles*. The current trends towards a 'what's in it for me' culture (Triandis, 1989, p.51) and a move from 'what is good?' to 'does it feel good?' (Triandis, 1995, p.29) raises the alarm that Hardin (1968) may be right. A society focussed entirely on the narcissistic individual may indeed face "[r]uin [as] the destination toward which all men rush, each pursuing his own best interest" (Hardin, 1968, p.1244). Individualism over history has had the shortest periods of dominance, and, with the growing threat of global warming, overpopulation and resource limitations, society may move back towards collectivism again (Lesse, 1984).

Support for the ecological perspective and the continued evolution of individualism (at the expense of collectivism) with affluence, complexity, mobility and heterogeneity, has come from many quarters. The Japanese and Chinese have done much to map the changing levels of these dimensions in their culture

(Kurosawa, 1992; Chiou, 2001; Voronov & Singer, 2002). Chiou (2001) correctly predicted levels of horizontal and vertical individualism and collectivism in Taiwanese, Argentinean and US samples based on the variables of economic growth, rapid social change and the degree of pluralism in the society.

4.5. Social Dilemma Theory: Social Value Orientations

4.5.1. Individualistic/ Collectivistic Ideology and Social Dilemmas

Given the focus on co-operation and the self versus other directives of individualism and collectivism, these constructs appear to be appropriate lenses through which to view social dilemmas. Heckathorn (1998) viewed individualism and collectivism to be inextricably linked to social dilemmas, as the dimensions provided a guide for participants as to how to value individual and collective interests, especially when these goals are in conflict. His matching of ideology to solutions to social dilemmas are presented in Table 4, p.72. While Heckathorn (1998) only dealt with Two Person's or Small Group Dilemmas (as evidenced in Table 4), some extrapolation to N-Persons Dilemmas can be made.

The Prisoner's Dilemma is one where joint co-operation is preferred and free-riding is a problem, thus everyone would prefer it if there is universal co-operation (Heckathorn, 1998). Similarly, all would favour co-operation in a Resource Dilemma, but free-riding is a problem. Hence Resource Dilemmas could be easier to solve under collectivism, particularly as social dilemma studies have shown that when members of an in-group are over-harvesting the commons, participants attempted to compensate by harvesting less (Dawes & Messick, 2000; Utz, 2004). Thus fostering the allocentric tendencies within groups (as Table 4 suggests) may be a means to solve a Resource Dilemma within one group (as De Cremer, 2002 found). Van Vugt (2002) also noted increased co-operation amongst water users in England when they felt attached to their community. In situations where there is more than one in-group, this may be more difficult.

Type of Dilemma	Type of Ideology	Path to Optimality (i.e. Virtue)	Path to Suboptimality (i.e. Vice)
Prisoner's Dilemma	Collectivism	Serve not your own interests, but the interests of others (i.e. altruism)	Follow your own preferences, rather than others (i.e. egotism)
Chicken (bargaining game)	Pluralism	Demand concessions from others, but also remain willing to make concessions (pragmatic egoism)	Give in too easily, or make unrealistic demands, i.e. excessive compliance or rigidity
Assurance Game	Authoritarianism	If leadership exists, follow it; if no leadership exists, create it so others can follow	Failure to respect leaders; defiance
Privileged Game	<i>Laissez-faire</i>	Allow everyone to do as they wish so the invisible hand can work its magic, i.e. individual freedom	Regulations that impair people's ability to act consistent with their preferences, i.e. constraint

Table 4: Type of Ideology by Type of Social Dilemma

Source: Heckathorn (1998, p.466)

Nevertheless, when dealing with two groups competing over the same resource, a Chicken Game may be in place. A Chicken Game could be appropriate as collectivists favour the in-group at the expense of the out-group (Triandis, 1995). When an out-group is present, even individualists become very cooperative with each other and the out-group effect is further enhanced amongst those high in allocentrism (Bornstein & Ben-Yossel, 1994; Sell *et al.*, 2002). Not surprisingly, then, dilemmas between groups are found to be the most extreme (Dawes & Messick, 2000), calling for the use of pluralism just as in Heckathorn's (1998) solution to the Chicken Game (see Table 4, p.72). Alternatively, in-group bonds should be lessened so that individuals see themselves as part of a larger in-group, which was what Baron (2001) was seeking when he attempted to reduce the parochialism effects of in-groups. As highlighted earlier (see the discussion on group identity, p.43) parochialism, closely related to 'in-group bias', occurs as people favour groups that include themselves, even at the expense of their own self-interest and co-operate when the insider's gain is the outsider's loss (Baron, 2001). Parochialism is a particular problem amongst vertical individualists (Baron, 2001).

An Assurance Game is one where participants are fearful of being suckers and will only co-operate if they believe others will too (see Chapter 3, p.24). Sell *et al.* (2002) and Yamagishi, Cook and Watabe (1998) found trust in non-ingroup members to be an issue for allocentrics. Sell *et al.* (2002) conducted a study in America and China where respondents were placed into groups to play a Resource Dilemma game and a Public Goods game over a number of iterations. The most remarkable aspect of this study was that the Chinese, unlike the Americans, contributed progressively **less** to both Resource and Public Goods Dilemmas over the number of trials. Sell *et al.* (2002) attributed this result to the strength of social ties in collectivist societies to be restricted within a kinship structure rather than extending to the experimental groups. Work by Triandis (1989; 1995) supports this conclusion; hence collectivists find it difficult to trust out-group members. When Yamagishi, Cook & Watabe (1998) had similar less cooperative results by Japanese in comparison to Americans, they statistically controlled for the influence of general trust and found that the effects of nationality disappeared, lending credence to Sell *et al.*'s (2002) conclusions. Hence FIO (Faith In Others) may be a more salient variable for mixed societies where allocentrics do not trust others in the population. Heckathorn (1998) suggests the use of a leader in such situations, a remedy that would be accepted by collectivists as they have a higher regard than individualists towards leaders (see Table 4, p.72).

A Privileged Game is one where the collective interest is served by the individual interest (see Chapter 3, p.25), hence it is not seen as a dilemma at all; it can be solved by the 'invisible hand' of the market (Heckathorn, 1998). It becomes a dilemma when 'Spite' occurs (Heckathorn, 1998), as one group or member acts to disadvantage another.

4.5.2. Co-operation Levels Amongst Individualists/Collectivists

The discussion on individualism/collectivism above has highlighted the overriding importance of group over individual goals for collectivists, hence they would be expected to be more cooperative when tasked with producing a group good. This indeed proved to be the case for Wagner (1995), who found collectivism to be the best predictor of co-operation for collectivists and not the mediating variables of group size, identifiability and shared responsibility that the social dilemma literature calls attention towards. Individualists were more likely to free ride (Wagner, 1995). It should be noted, however, that Wagner's (1995) groups ranged in size from two to eight, limiting the applicability of his results to large scale social dilemmas such as Resource Dilemmas.

Larger groups of cross-cultural natures were studied by Sell *et al.* (2002) who established that the effects of Prospect Theory, that is framing dilemmas in terms of gains and losses, held across individualistic (USA) and collectivistic (China) cultures. Thus, requests for restraint when harvesting a commons was more effective than requests for contributions to a Public Goods Dilemma (Sell *et al.*, 2002).

Triandis (1989) subdivided individualism and collectivism into different modes of how the self is construed. Collectivists have an interdependent self, whilst individualists have an independent self (Triandis, 1989; Utz, 2004). Utz (2004) explicitly tested the impact of manipulating the self-construal of subjects by priming them with either interdependence or independence. Her results showed that priming positively promotes co-operation, even amongst individuals with vertical individualistic, or a competitive, outlook.

4.5.3. Social Value Orientation

While individualism/collectivism or its associated constructs (such as horizontal and vertical individualism/collectivism) have not had much direct focus in the social

dilemma literature, the dispositional variable of what has been termed 'social value orientations' has received much attention. Values in this context are viewed "as beliefs pertaining to desirable end states or modes of conduct" (Gärling, 1999, p.398). Social value orientations are viewed as relatively stable preferences for certain distribution of outcomes between self and other (Gärling, 1999; Utz, 2004). The origins of social value systems were in individual versus collective rationality, as some individuals favoured personal outcomes while others favoured collective; hence there was no predictable results as people value, and express preference for, different end states (Van Lange, 1992). In addition, a moral issue was also felt to be present: individual gain, when purchased at cost to others, or collective gain, purchased at cost to self, was a question of fairness, or morality (Van Lange, 1992). Hence the persistent interest in social value orientations amongst social dilemma researchers.

Researchers divided social value orientations into three types: pro-social/cooperative, where the preference is to maximise joint outcomes; pro-self/individualism, where the preference is to maximise own outcomes without any regard for others; competitive, where the difference between own and others outcomes needs to be maximised (Kuhlman, Brown & Teta, 1992). Competitive has strong correlations with vertical individualism. Social value orientations have been used to re-assess the core payoff matrix (see Chapter 3, p.18), as these would change preference for outcomes to self and others (see Equation 5, p.60). Cooperators/pro-socials transform the matrix by assigning positive values to both own and other's outcomes; individualists do so by placing the heaviest weight to the self and competitors do so by computing the difference between own and others' outcomes, favouring outcomes that provide the self with the greatest relative advantage (Van Lange, 1992).

All value orientations perceive others to be like themselves; thus pro-socials expect cooperative behaviour, pro-selfs expect self-interested behaviour and competitors expect others to also seek to maximise own relative gain; defectors expect defection from others and co-operators tend to expect co-operation (Camac, 1992; Van Lange, 1992; Parks & Rumble, 2001). Evidence from various studies has lent support to this. Camac (1992) established that individuals seek information that bolsters their existing intentions. Pro-socials were the least focussed on greed information, that is, the possibility that they could free ride, and more focussed on information relevant to mutual co-operation or mutual defection (Camac, 1992). Thus pro-socials focussed

on the CC and DD aspects of the payoff matrix (see Chapter 3, Table 1, p.18), while pro-selves focussed on the possibility to free ride (greed information) or be a sucker (fear information), represented by CD and DC on Table 1, p.18. Camac (1992) did, however, find evidence of pro-social interest in fear information in some conditions, which supports Yamagishi's (1998) and Sell *et al.*'s (2002) findings that collectivists do not trust out-group members.

In three studies carried out by Kuhlman *et al.* (1992), Van Lange (1992) and Gärling (1999), the following characteristics were found to be prominent amongst pro-socials. Firstly, pro-socials were cooperative and tend to view others as such. Secondly, pro-socials also viewed co-operation to be a moral choice and were correspondingly influenced greatly by morality information (Van Lange, 1992; Kuhlman *et al.* 1992). Thirdly, they perceived people who co-operated as intelligent, unlike pro-selves and competitiveness who perceived defectors to be intelligent (Van Lange, 1992). Fourthly their reasons for cooperating were found to differ to those of competitiveness and pro-selves, as they had a stronger moral basis. Gärling (1999) differentiated between collectivist values stemming from benevolence (true friendship, good relations with others, being liked) and universalism (institutional collectivism, linked to equality, social justice and solidarity). In the benevolence condition, in-group members are known; in the universalism, group members are unknown strangers who are part of the same system (Gärling, 1999). Co-operation was found to be based on universalism (and not benevolence), which was uncorrelated with individualism (Gärling, 1999). Thus respondents co-operated because it was fair or the morally 'right thing to do'. Nevertheless, all three studies were conducted amongst Western Europeans and, in Gärling's case, the Swedes who are horizontal individualists concerned with equality and fairness.

Other studies on the motivation of pro-socials returned different results. Camac's (1992) pro-socials viewed cooperative behaviour to be in line with self benefit, as did those in Yamagishi (1994 in Voronov & Singer, 2001). Pro-socials in these studies were not concerned with moral 'rightness' but long-term self interest, as in the long run, the interests of the group and the individual coincide. Thus group interest is an expression of self interest and is not so much a moral choice but a rational imperative. Pro-socials were found to be more sensitive to costs of a sanctioning system (Van Vugt *et al.*, 1996). Price sensitivity may also come from the fact that collectivists have access to fewer resources (Triandis, 1989; 1995) and have lower financial satisfaction (Dutta-Bergman & Wells, 2002). They may thus be more

sensitive to personal loss and thereby be more reluctant to provide public goods and more prepared to demonstrate restraint in Resource Dilemmas, as it involves no cost to the self.

Not surprisingly, when an intermittent sanctioning system is in place, one which punishes only the offenders caught (such as a ticketing system), it has a greater impact amongst pro-socials than pro-selfs or competitors (Eek, Loukopoulos, Fujii & Gärling, 2002). Under an intermittent sanctioning system, punishment is meted out to some, not all, and the system works through the risk perception it creates amongst defectors. This is known as the 'spill-over' effect (Eek *et al.*, 2002). It serves also to reduce the fear concerns of being a 'sucker' (Eek *et al.*, 2002). Thus it is not surprising that this was very effective amongst the pro-socials, as fear concerns have been found to be more prevalent amongst collectivists (Yamagishi *et al.*, 1998; Sell *et al.*, 2002). The impact of the system was negligible for the other two value orientations (Eek *et al.*, 2002)

4.5.4. Reformulation of Utility Functions Under Individualism/ Collectivism

Thus, just as the subjective weight function had to be adjusted to reflect individualism and collectivism, so must the utility function. To recall, the utility (U) of preserving a resource or the benefit to any individual depends on the level of resource preserved (L), which is a proportion of the total amount that could potentially be preserved, and the value (V) which is the full preservation of the resource, less the cost of the individual's co-operation (K) (Heckathorn, 1998). From the preceding discussion, the following considerations can be made: personal cost (K) is less of a factor for allocentrics than idiocentrics for Resource Dilemmas; allocentric utility is transformed from that of the individual to that of the in-group; the presence of out-groups are a greater factor for allocentrics than idiocentrics and the individual's U is the same as the in-group U , thus the utility function (provided on Equation 1 p.19, reproduced below for ease of reference) becomes Equation 7:

Equation 6 (1): Utility Function

$$U = VL - K$$

Equation 7: Utility Function Under Allocentrism/Collectivism

$$U = ((V - (U_{\text{Out-group}} \times A)) L - K / (1 - A))$$

Where

U	=	Utility
V	=	Full preservation of resource
L	=	Level of resource preserved
D	=	Number of defectors
K	=	Cost to individual member
A	=	Level of allocentrism

The level of free-riders was seen to be a greater problem amongst individualists; hence the number of defectors D would be expected to be a greater problem in dilemmas where a greater proportion of the population have an idiocentric orientation, and F (or the number of cooperators required before the public good is produced or the resource is preserved), would be harder to attain in individualistic societies than collectivist ones; hence the preservation function

Equation 8: Preservation Function Under Allocentrism/Collectivism

$$L = 1 - (D/N^{F^A})$$

Where

L	=	Level of resource preserved
F	=	Return for each unit of co-operation
A	=	Level of allocentrism

Note:

$$F^*A$$

4.6. Individualism/Collectivism in Marketing

4.6.1. Consumer Behaviour

Individualism/collectivism and cross-cultural consumer behaviour has only recently come to the focussed attention of marketing academics and, of late has contrasted individualism and collectivism as broad cultural types (Shavitt & Lee, 2002). Triandis (1989, 1995, 2001) warned against this, as the concepts have been criticised as too vague and all encompassing (Voronov & Singer, 2002). Shavitt and Lee (2002) call for the use of sub-dimensions of the expansive individualism/collectivism, such as

vertical and horizontal categories (Shavitt, Zhang & Johnson, 2002) or self-concept, goal-orientation, cognition and relationship value (Lee, Marmorstein & Brislin, 2002).

The influence of individualism and collectivism on persuasion has been investigated. Differences have been found in the effectiveness of persuasive appeals, with subjects differing along the vertical/horizontal axis (Shavitt *et al.*, 2002). Vertical collectivists preferred status appeals; horizontal ones chose appeals that stressed relationships; vertical individualists also opted for status while horizontal ones favoured self-reliance and uniqueness appeals and disliked references to status (Shavitt *et al.*, 2002).

Some consumer behaviour theorists have investigated the impact of the individualist/collectivist dimension on the influence of reference groups. Lee (2000) evidenced that referent expectations, purchase attitudes, sole- and shared-use purchases and affordability were all determined by subjects' levels of allocentrism/ idiocentrism. Referent expectations were seen to have greater impact on purchase intentions for allocentrics than idiocentrics; moreover referent past experience proved to be vital (Lee, 2000). Thus the effect of a first mover advantage may have a greater impact with allocentrics, as they purchase products that are well known and used by their referent group and are loathe to change (Lee, 2000). Lee *et al.* (2002) found collectivists to be closer to their families, ask their advice on products more frequently and moreover, take the advice when offered.

Marked differences in the values and lifestyles of idiocentrics and allocentrics were found in a study by Dutta-Bergman and Wells (2002). These authors found idiocentrics to have a higher level of personal happiness, self-esteem, internal locus of control and financial satisfaction. Idiocentrics were more likely to eat at restaurants, be workaholics, travel abroad, be fashion conscious, have a home computer, enjoy sports and adventure, gamble, attend entertainment events, be innovative and opinion leaders (Dutta-Bergman & Wells, 2002). Allocentrics had higher levels of health consciousness, were more likely to prepare food at home, performed more domestic chores, read more books, were more brand loyal and were more resource conscious as they felt less certain about money management (Dutta-Bergman & Wells, 2002). The preferred medium of allocentrics was television, while idiocentrics preferred magazines (Dutta-Bergman & Wells, 2002).

4.6.2. Social Marketing

McCarty and Shrum (2001) have been the predominant contributors in applying the two dimensions to social marketing. They expressed concern that the large pro-environmental attitudes displayed by consumers towards environmentally friendly products and actions contrasted sharply with the lack of action by those same people. Thus they believe that the reason for this is that social marketing efforts aimed at understanding pro-environmental behaviours have failed to understand consumer behaviour in this area as the motivations and antecedents in the field itself are fundamentally different to those used in the consumption of goods and services.

McCarty and Shrum therefore identified and researched three “fundamental beliefs” or “value orientations” (2001, pp. 93-94) that relate to people’s interaction with the world and others and would influence pro-environmental behaviour. The basic values studied were individualism, collectivism and locus of control. They sought to establish if there was a relationship between these values and pro-environmental beliefs, namely the inconvenience and importance of recycling. The findings indicated that reducing the perceived inconvenience of recycling was a critical mediator for individuals high in individualism, whilst stressing the importance of recycling was a considerable mediator for individuals high in collectivism. They recommended that persuasive communication should be designed with the cultural value orientation (individualism/collectivism) of the target audience in mind. Their study, however, did not place these values within a framework such as that of social dilemmas.

In the search of the literature, a few authors were found who had included collectivism or individualism in their studies on the environment, the most recent of whom were Kim and Choi (2005). These authors used structural equation modelling to ascertain that the influence of collectivism on pro-environmental behaviour flows through Perceived Consumer Effectiveness (PCE). Subjects who were high in PCE and collectivism were more likely to engage in pro-environmental behaviour (Kim & Choi, 2005). The result is not surprising given earlier evidence that collectivists tend to have low self-efficacy and PCE is an important factor in contributing to solving social dilemmas. Pro-socials were also more likely to engage in pro-environmental behaviours (Stern, 2000).

4.7. Chapter Summary

The long-standing line of research into individualism and collectivism has produced an understanding of these dimensions as meaningful moral choices, societal norms and cultural value orientations. Sub-dimensions, such as those of vertical and horizontal collectivism and individualism, have shed much light on the variance within individualistic and collectivistic societies. Moreover, these societies are not static; their levels of individualism or collectivism changes with social mobility, affluence, heterogeneity and increasing levels of economic development.

Social dilemma theory has incorporated these dimensions to some extent. The power of in-groups and increased co-operative behaviour on the part of collectivists was noted. Nevertheless, collectivists demonstrate lower levels of trust and a greater reluctance to pay for sanctioning systems. Generally, research in this area has not been cross-cultural in nature; most has investigated three social value orientations in Western populations. The three orientations are conceived as pro-selfs, pro-socials and competitors. Pro-socials and competitors are sensitive to the outcomes of others, although for different reasons: pro-socials seek equal outcomes while competitors seek to maximise the difference between their own and others' outcomes. Pro-selfs are more independent and seek to maximise own outcomes without any concern regarding the outcomes of others.

Consumer behaviour has only recently focussed on cross-cultural issues and when it has, these have been broad. Recently, use of Triandis' sub-dimensions of the two constructs, idiocentrism and allocentrism, has increased. In social marketing, current research has established the link between pro-environmental behaviour and individualism and collectivism.

Chapter 5 delineates research on water conservation.

5. Chapter 5: Water

5.1. Chapter Overview

The current chapter first reviews the two dominant strategies in water management: water supply management and water demand management. Then the principal tools water utilities have used are reviewed: pricing structures and informational campaigns. The chapter then deals with current thinking in environmentalist research, followed by a review of marketing efforts in the same paradigm. It concludes with a brief review of water marketing research in South Africa.

5.2. Water Supply Management versus Water Demand Management

Traditionally water supply management was the dominant paradigm in water strategies. Ensuring that the public, including business, had sufficient water at any level of demand has increasingly been perceived as impossible and self-defeating. The era of water supply management has come to an end. Public and private utilities, governments and international water organisations are increasingly aware that the former solution is no longer viable (Anton, 1995; Beekman, 1998; Hou, 1991; Roy & Tisdell, 1999; Rodgers, 1996). Indeed, many large water schemes have created major problems in themselves (Roy & Tisdell, 1999; Vyas, 2001). Furthermore, the increasing cost associated with these projects is progressively being counted in terms of environmental impact in the extinction of fish, falling levels of natural dams and rivers, displacement of people and deforestation, to name but a few, and is attracting less international aid and, in the USA, Federal funding (Dutton, 1995; Postel, 1986). Presently the trend of over consumption, waste and pollution of current water resources needs to be urgently reversed. Available fresh water constitutes only 0.7% of all water, while the worldwide demand for water is expected to increase by an overwhelming 650% in the next 30 years (Roy & Tisdell, 1999). Most water is either in the sea, polar icecaps or too deep in the ground to be accessed (Roy & Tisdell, 1999).

The current imperative is towards water demand management, a strategy successfully employed in Southern California and Melbourne, Australia (Beekman, 1998), although it has been found that of the demand reduction strategies social marketing has not featured high on many agendas (Anton, 1995). Nevertheless, the Association of Metropolitan Water Agencies (AMWA) in the USA reported in a survey that 66% of their members had engaged in moderate efforts in demand reduction programmes, even if these were mainly in the drier western states (Dutton, 1995).

South Africa has witnessed similar trends in the move from water supply management to water demand management. South Africa is a water scarce country, which has a low rainfall index and a variability that exceeds that of the Sahel (Calow, Robins, MacDonald, MacDonald, Gibbs, Orpen, Mtembezeka, Andrews & Appiah 1997), being the boundary zone between the Sahara in the North and the Sudan. To make matters worse, the country's average rainfall of 500 mm (well below the world average) is afflicted by severe and prolonged droughts, often terminated by severe flooding. As a result, in order to guarantee supplies of water, various South African governments have embarked on many expensive and sometimes controversial water schemes, the latest of which is the Lesotho Highlands Water Project (Connolly, 1999). To date, two of the four envisaged dams, *Katse* and *Mohale*, are completed. Two further dams are planned, a policy disputed by several important water stakeholders, such as water utilities, NGOs and municipalities (McKay, 2000). These stakeholders have successfully managed to get the South African government (and in particular, the national Department of Water Affairs and Forestry – DWAF) to focus on reducing demand for water supplies by changing patterns of water use (Connolly, 1999; Cowie, 1999; Naidoo, 1999). Naturally there are opponents to this, because it would result in money being diverted from dam building to fixing leaks and changing consumer behaviour.

Reducing demand will result in many environmental benefits; most especially it will reduce the pressure on freshwater ecosystems in South Africa. Socially, the benefits could be high, because it could ensure that everyone has access to clean, affordable water and sanitation services (Naidoo, 1999; McKay, 2000). But it is financially, that the greatest benefits will be reaped, as it is estimated that implementing water demand management in Gauteng alone will save the country roughly R20 billion over the next ten years (Connolly, 1999; McKay, 2000). Financial benefits have already been realised, as it has been agreed to delay building the two additional Lesotho Highlands Water Scheme dams for at least ten years, saving South Africa billions in

interest payments (Connolly pers. com, 2002). Indeed, Rand Water estimated in 1999 that once all four dams of the Lesotho Highlands Water scheme come on line, the cost of raw water would be in the region of 181 SA cents a kilolitre (a 1000 litres), an increase of 250% on 1997 prices (McKay, 2000), further underlining the need to move away from water supply management.

All of these practices are top-down, with very little community buy-in sought. In a Resource Dilemma regarding Chilika Lake in India, state interventions to control and maintain the resource through access management systems failed, as these systems undermined the community's traditional management systems (Sekhar, 2004). Such a finding is in line with Ostrom's (1998) assertion that participation by locals who have real stakes in a resource, know it well and understand their future depends upon it, will have better resource management strategies than far away authorities. Nevertheless, this is only possible when the resource and the community are both small. Water in South Africa is no longer seen as a community resource but as an individual right and public service.

5.3. Management Strategies: Price and Public Awareness Campaigns

5.3.1. The Economic Value of Water

South Africa, like many countries worldwide, has to discontinue underpricing water resources, a practice that has led to water being treated as a free good, by consumers, industry and agriculture (Roy & Tisdell, 1999). Many countries subsidise water to such an extent that consumers pay a fraction of the transport costs, let alone the purification and dam construction costs (Malla & Gopalakrishnan, 1997). Indeed Postel (1986) reports that Tucson, an American city considered to be progressive in its water conservation, increased its water price by only 5% to 8% annually while its actual costs increased by 58% (the cost of water from the Federally built Central Arizona Project). A study conducted in Saudi Arabia reported that this country faced difficulties as, according to Islamic law, water was considered to be "God's gift to mankind and guaranteed access to water remains **free** to all in the Muslim community" (Surah Al-Anbiyaa, Ayah No. 30 in Abderrahman 2000, p 466, emphasis added). This problem was, however, solved by a *Fatwa*, which is a religious edict issued by a senior imam, and thus it carried a weighty religious authority. The *Fatwa* declared that access to water, while available to all, should be paid for by those who

are able to do so. Illegal connections are rife in South America, which compound the lack of pricing structures to recover the costs of developing, treating and distributing water and do not, therefore, provide an incentive for water conservation by inhabitants and industry (Rodgers, 1996).

Historically South Africa has been little different. Water's economic value is currently being increased from virtually nil, due to the new four-tiered pricing system, whereby those who use more pay more per litre than consumers who use less (Chand pers. comm, 2002). Furthermore, the Department of Water and Forestry (DWAF) is committed to increasing the cost of raw water by 100 percent in order to further give water an economic value (Naidoo, 1999). Although the price elasticity of demand for water has been generally found to be negative, most studies have witnessed water use to be negatively related to price but positively related to income (Avalos & De Young, 1995; Frederick, 2001; Malla & Gopalakrishnan, 1997). The new strategy, therefore, should help curb the wealthiest and most excessive consumers, but a programme for lower income earners is needed too.

5.3.2. Information Campaigns

Campaigns, both internationally and locally have been used to encourage voluntary water conservation by either the alteration of behaviour or adoption of more water efficient appliances (Syme, Nancarrow & Seligman, 2000). These campaigns are usually mounted at the onset of a drought and are often regarded as a 'desperation measure' (Syme *et al.*, 2000, p.540). Voluntary conservation resulting from the campaigns is likely to be temporary (Syme *et al.*, 2000) and, as Van Vugt (2001, 2002) found, individuals with a pro-self orientation are likely to harvest even more from a resource when it is perceived to be threatened. Few readily available formal evaluations of water campaigns are available and most are aimed at addressing the impact of the campaign (in water reduction) in relation to its PR budget (Syme *et al.*, 2000). These campaigns are not, therefore, marketing ones. Syme *et al.* (2000) decry the lack of individual variable analysis and point out that most evaluators call for greater understanding of consumer behaviour without supplying it. Syme *et al.* (2000) do provide some hope for advertising to promote long term behavioural change, as they cite a longitudinal campaign run in Melbourne, with subjects recalling water conservation practices over six months after the campaign was completed. An American longitudinal study by Trumbo and O'Keefe (2005) found that information campaigns were only effective for those with pro-environmental behaviour.

In South Africa, DWAF has a multitude of campaigns to target lower income users (Chipp & Morton-McKay, 2002), but most of these usually omit an extensive understanding of consumers and their consumption behaviour. Moreover, most are aimed at children, which presuppose that the child has power to change behaviour in the home (Chipp & Morton-McKay, 2002). Most blindly adhere to “getting the message out” without trying to understand other variables that drive consumers, especially in the consumption of public goods. Here marketing has the ability to contribute greatly. Not only have marketers developed and extended social dilemma theory into a social marketing framework, they have also highlighted the possible interaction of this framework and other environmental marketing efforts with key variables, such as individualism and collectivism (Wiener & Doescher, 1991, 1994)s.

Syme *et al.* (2000) call for greater scientific rigour in developing and applying models of informational campaigns and behaviour change. They delineate the following as important:

- Message source: the credibility of the source is important. Source preference is likely to differ between allocentrics and idiocentrics, with allocentrics favouring leaders (Triandis, 1989);
- Message: here particular attention should be placed on message frames. Klandermans (1992) pointed out that the frame of reference should be the same as that of the target market; hence allocentrics and idiocentrics would differ in terms of message frames. Moreover, framing dilemmas as Resource or Public Goods would have implications in terms of Prospect Theory (as demonstrated above);
- Channel: this would be dependent on what media are most effective. Dutta-Bergman and Wells (2002) illustrated that allocentrics and idiocentrics have different channel preferences. Currently the bulk of South African water efforts are directed through schools (Chipp & Morton-McKay, 2002).
- Receiver and destination: knowledge of consumer behaviour is critical. The target audience needs to be understood (Bator & Cialdini, 2000).

5.4. Environmental Behaviour across Disciplines

Many disciplines have looked at what determines pro-environmental behaviour. While many such studies are not directly on water, the subject does fall into their

gamut. Psychologists and sociologists have investigated 'environmentalism', defined as "the propensity to take actions with pro-environmental intent" (Stern, 2000, p.411).

Stern (2000) provides a Value-Belief-Norm (VBN) theory of environmentalism to encapsulate his multidisciplinary review of what he termed 'environmentally significant behaviour' literature (see Figure 8, p.89). What is of most interest are the variables highlighted in Figure 8: Stern denotes macro-level values, which can be construed as individualism/collectivism, although he terms them 'egoism' and 'altruism', and 'perceived ability to reduce threat', a twin of perceived consumer effectiveness (PCE), as causal variables of pro-environmental behaviours. In the consumer sphere, the focus is on what Stern terms 'private sphere behaviours' (pp. 409-411). In empirical studies, Van Vugt *et al.* (1996) and Van Vugt (2001) found both feelings of belongingness to community, a collectivist characteristic, and perceived efficacy to be predictive of environmentally conscious behaviour. Hence, it would seem the expansion of 'egoism' and 'altruism' to include feelings of belongingness or allocentric values to be justified. In a separate study, Kaplan (2000) criticised the altruism approach as contributing to perceived individual helplessness and its focus on sacrifice rather than life-enhancing solutions leaves the impression that virtue must be unpleasant and the realm of 'dour environmentalists' (p.495).

Stern (2000) does provide a good summary of variables found to be important when reviewing environmentally significant behaviours, demonstrated in Table 5 overleaf.

Causal Variables	Environmentally Significant Behaviours
Attitudinal General environmental predisposition Behaviour specific norms and beliefs Nonenvironmental attitudes (for example about product attributes) Perceived costs and benefits of action	Environmental Activism Non Activist public-sphere behaviours Private sphere environmentalism Consumer purchase behaviours Maintenance of household equipment Changes in equipment use, lifestyle (curtailment) Waste disposal behaviours “Green Consumerism”
Personal capabilities Literacy Social status Financial resources Behaviour specific knowledge and skills	
Contextual factors Material costs and rewards Laws and regulations Available technology Social norms and expectations Supportive policies Advertising	Other Behaviours affecting organisational decisions
Habit and Routine	

Table 5: Major Types of Environmentally Significant Behaviours and Causal Variables

Source: Stern (2000, p.421)

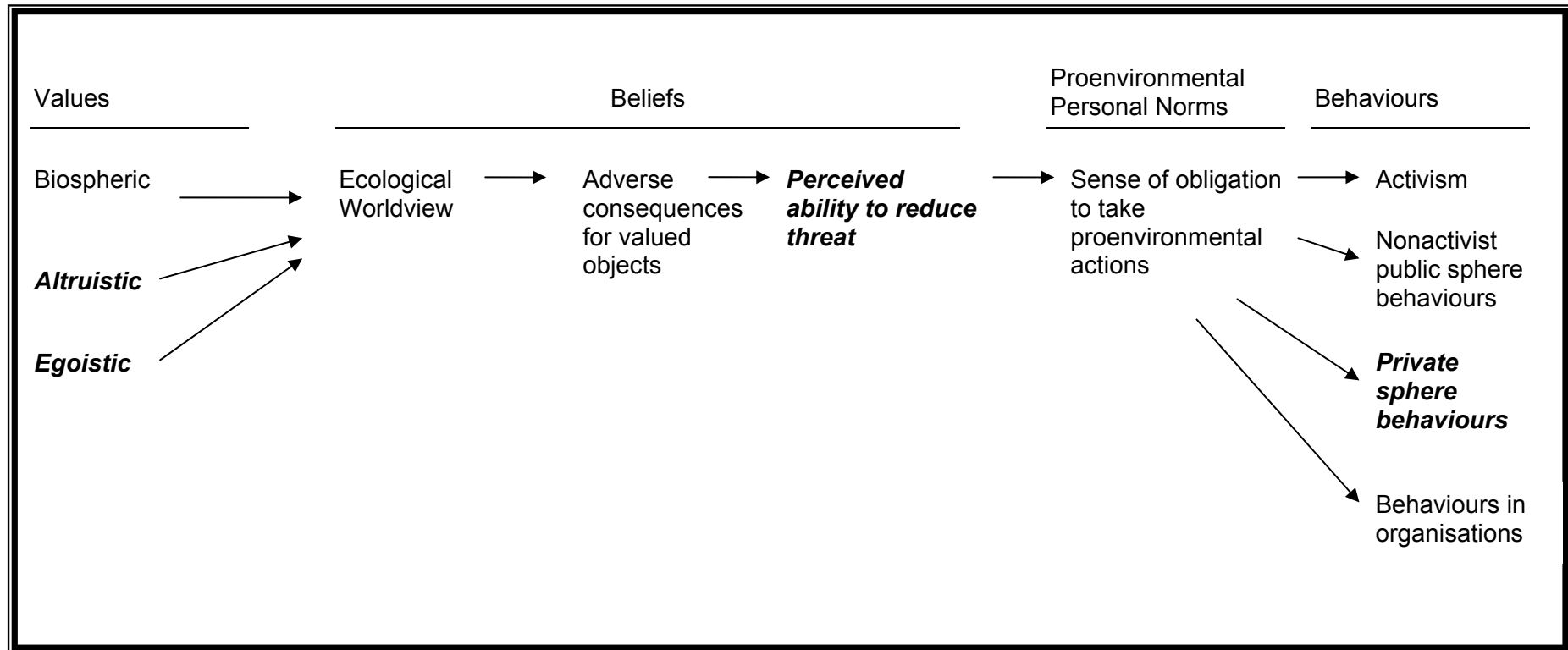


Figure 8: Schematic Representation of Variables in the VBN theory of environmentalism
 Source: Stern (2000, p.412)

5.5. Environmental Consciousness and Marketing

One of the greatest challenges to social marketing is the low involvement consumers have towards its efforts (Bloom & Novelli; 1981). Water falls squarely into this: consumers are not involved in its purchase, its consumption or its disposal. Indeed, it falls into what most consumer behaviour researchers would term a 'routine purchase', one for which little thought is given (Arnould, Price & Zinkhan, 2002). Although much research in social marketing has been directed towards pro-environmental behaviours (Kilbourne & Beckman, 1998; Peattie, 2001), most has been product centred: the environmental impact of products, consumer selection of environmental products, incorporating the full cost (including that to the environment) to product pricing and the elusive animal termed the 'Green Consumer' (Peattie, 2001).

Interest in perceived consumer effectiveness (PCE) started as early as 1972 and has spanned studies until present (Ellen *et al.*, 1991; Kilbourne & Beckmann, 1998). Interest in environmental values started in the early 1990s. Both De Young (2000) and Clancy and O'Loughlin (2002) found the value of frugality as predictive of pro-environmental behaviours. Granzin and Olsen (1991), for instance studied personal values and witnessed different pro-environmental behaviours related to these. Frugality was linked to avoidance of waste; recycling was linked to altruism and those who are religious and like helping others donate items for reuse (Granzin & Olsen, 1991). Although not studied as such, the notions of helping and religiosity are linked to collectivism. Not surprisingly then, there have been calls for a greater focus on macro-level constructs (Kilbourne & Beckman, 1998). Correspondingly, marketing academics have turned to individualism and collectivism, as seen in the work of McCarty and Shrum (2001) as well as Kim and Choi (2005), discussed earlier.

5.6. Water Marketing and South Africa

Preliminary social marketing studies into water conservation in South Africa revealed that consumers have low self efficacy, a great disbelief in the co-operation of others, a belief that water should be conserved and a frustration that structural solutions to the problem cannot or have not been enforced (Chipp & Morton-McKay 2002, 2003). Thus there is some initial evidence that South Africans are willing to conserve, but are largely hampered by individual lack of belief that they can impact on the problem

and their collective distrust of the pro-social actions of others. The studies conducted so far, however, were not designed with the social dilemma framework in mind. They were part of a “water audit”, an exploratory analysis of current water conservation and practice in Gauteng. In no way was perceived consumer effectiveness (PCE) empirically tested, nor were community co-operation levels manipulated to ascertain if changing the degree of perceived community co-operation would impact consumer behaviour. It is these issues that the current research seeks to address.

Furthermore, focus group research provided some suggestion of the potential moderating influence of individualism and collectivism on water conserving behaviours (Chipp & Morton-McKay, 2002). A large presence of empathy and support for fellow community members who suffered hardships when obtaining water was apparent amongst the lower income respondents. This is evidence of a high degree of collectivism in this population. As McCarty & Shrum (2001) identified collectivism as an antecedent to pro-environmental behaviour, this cultural trait needs to be explored further in order to utilise its potential impact on pro-social behaviours. This approach is very much in line with Wiener and Doescher’s directive to explore the impact of individualism and collectivism on their social dilemma framework.

5.7. Chapter Summary

Water utilities are no longer in a position to match increasing consumer demand for water by upping the supply; this is a costly exercise that has implications for resource management. Hence there has been a move in recent years towards water demand management rather than water supply management. This move correlates with a realisation that more effective behavioural influence techniques are needed. The old techniques of price and PR or informational campaigns do not deliver the desired results. Moreover, it is impossible to regulate water demand through price alone as water is an inalienable right, enshrined in the South African constitution. Thus consumer behaviour needs to be studied and more refined tools for behavioural change developed. Work in other disciplines reinforces variables outlined in the social dilemma and individualist/collectivist literature, as does recent work in understanding consumer pro-environmental behaviour by marketers, both abroad and locally. Thus the tentative threads are in place for a greater understanding of water conservation in South Africa. Chapter 6 moves onto the research methodology of the current study.

6. Chapter 6: Research Methodology

6.1. Chapter Overview

Chapter 6 outlines the research methodology used in the current investigation. The study's objectives are covered first, followed by the hypotheses and the proposed model. The discussion then turns to the research design, which is followed by a review of sampling. Next the chapter deals with the measurement instruments selected and how these were adapted for use. The data analysis techniques are presented, followed by an overview of the two pilot studies.

6.2. Objectives

6.2.1. Primary objective:

To establish if the belief that others will cooperate (Faith in Others) regarding level of group co-operation and individual perceived consumer effectiveness influence pro-environmental behaviours, and to ascertain if these relationships are moderated by individual value orientation. This to be done in the context of water conservation.

6.2.2. Secondary objectives

- To determine if individuals, when led to believe that others in their group will co-operate, will meet co-operation with co-operation and defection with defection. Thus if consumers witness and hear that others will conserve water by engaging in a number of practical actions this will lead to an increase in the practical actions they employ and vice versa.
- Similarly, to establish if individuals, who have high perceived consumer effectiveness (PCE), will exhibit more behaviours towards conserving water.
- To uncover the interplay of individual value orientation with co-operation beliefs and perceived consumer effectiveness.

- To develop a model that will test empirically the direction and strength of the relationships between co-operation beliefs, PCE, individualism and collectivism and pro-environmental actions (water conserving behaviours).
- To ascertain the interplay between value orientation and preference for structural solutions.
- To determine if perceptions of resource abundance affect harvesting behaviour.

6.3. Research Questions

Against this background, the following research questions are proposed:

- Will individuals co-operate (engage in water conserving activities, such as turning off taps) if they believe that others will co-operate, termed faith in others (FIO)?
- To what extent does perceived consumer effectiveness (PCE) influence water conservation behaviours?
- How does individual orientation towards collectivism or individualism influence the belief in the co-operation of others and one's own PCE?
- How do all of these variables (PCE, FIO, HC, VC, HI, VI) interact to influence behaviour? (Note: HC is horizontal collectivism, VC is vertical collectivism, HI is horizontal individualism and VI is vertical individualism).
- What is the impact of value orientation (idiocentric/allocentric, horizontal and vertical) on PCE, FIO, preference for structural solutions?
- What influence does perception of resource level have on harvesting behaviour?

6.4. Hypotheses and Proposed Model

Much of the social dilemma literature reflects that co-operation is met with co-operation and defection with defection. Axelrod (1984) was one of the first to establish this as the norm of reciprocity. Berger and Corbin (1992), Wiener and

Doescher (1994), Wiener (1993) all reported supportive data that FIO is positively related to conserving behaviour, hence:

H₁: Consumers' beliefs that others co-operate will influence the number of water conserving actions they exhibit;

Respondents with high levels of allocentrism are more likely to co-operate with others, particularly those in their in-group (Bornstein & Ben-Yossef, 1994; Van Vugt, 2002). They are thus more likely to be pro-social, while respondents with high levels of idiocentrism are more likely to be competitive or pro-self (Camac, 1992; Wagner, 1995).

H₂: Consumers' degree of collectivism/individualism will influence their belief that others will co-operate;

Respondents will differ along the Vertical/Horizontal dimension. Vertical individualists are the most concerned with competition, hence they are most likely to be competitive and not co-operate (Triandis, 1995). Horizontal individualists are more likely to co-operate as they are found to be extremely concerned with equality and fairness, hence they think co-operation is the correct thing to do (Triandis, 1995; Gärling, 1999). This will also impact on their behavioural co-operation.

H_{3a}: Consumers' degree of vertical/horizontal **allocentrism** will influence their belief that others will co-operate;

H_{3b}: Consumers' degree of vertical/horizontal **idiocentrism** will influence their belief that others will co-operate;

H_{3c}: Belief in co-operation of others (FIO) and its influence on behaviour will be moderated by degree of horizontal/vertical idiocentrism/allocentrism;

Perceived consumer effectiveness has been found in many studies to be influential in pro-environmental behaviour. Ellen *et al.* (1991), Berger and Corbin (1992), Wiener and Doescher (1994) and Kim and Choi (2005) all reported results that support this. Hence:

H₄: Perceived consumer effectiveness will influence the number of water conserving actions consumers exhibit;

People high in idiocentrism have been found to have greater self-efficacy (Triandis, 1989; 1995; McCarty & Shrum 2001) and the impact of collectivism/allocentrism was found to be moderated by PCE in terms of its impact on pro-environmental behaviour (Kim & Choi, 2005). Thus idiocentrism/allocentrism will be a moderator of PCE.

H₅: Perceived consumer effectiveness and its influence on behaviour will be moderated by degree of horizontal/vertical idiocentrism/allocentrism;

Individuals with high PCE have a strong belief in the impact of their own actions; correspondingly, they are likely to believe that the actions of others will have greater impact too:

H₆: Perceived consumer effectiveness will influence consumers' belief that others will co-operate;

Affluence has been strongly tied to higher levels of idiocentrism (Triandis, 1995), hence, correspondingly levels of PCE and FIO may also be affected:

H_{7a}: Consumers in lower socio-economic backgrounds will exhibit greater degrees of collectivism than individuals from higher socio-economic backgrounds.

H_{7b}: Consumers in lower socio-economic backgrounds will exhibit different levels of degrees of PCE and FIO than individuals from higher socio-economic backgrounds.

Consumer rights emerged in Chipp and Morton-McKay (2002; 2003) as an important variable. The literature suggests that individualists are more concerned with the rights of man than collectivists (Triandis, 1995; Voronov & Singer, 2002).

H₈: Consumer rights are more important for idiocentrics than allocentrics.

Preference for structural solutions was found in the literature to be greater amongst people with low levels of trust in others (Yamagishi, 1992; Ostrom, 1998). Indeed,

low trusters were more supportive of policing and punishment and demonstrated a willingness to contribute towards a sanctioning system (Yamagishi, 1992).

H_{9a}: Consumers low in FIO will display greater preference for structural solutions.

Chipp and Morton-McKay (2002) found a high preference for structural solutions amongst lower income earners, hence:

H_{9b}: Consumers from Township areas will display greater preference for structural solutions.

Perceptions of the level of a resource have been seen to affect harvesting behaviour, as harvesting was less in times of crisis (Budescu & Au, 2002), but only amongst those who identified with their communities (Van Vugt, 2001).

H_{10a}: Consumers who believe the resource is plentiful will display greater harvesting behaviour.

A diagram of the proposed model is outlined below:

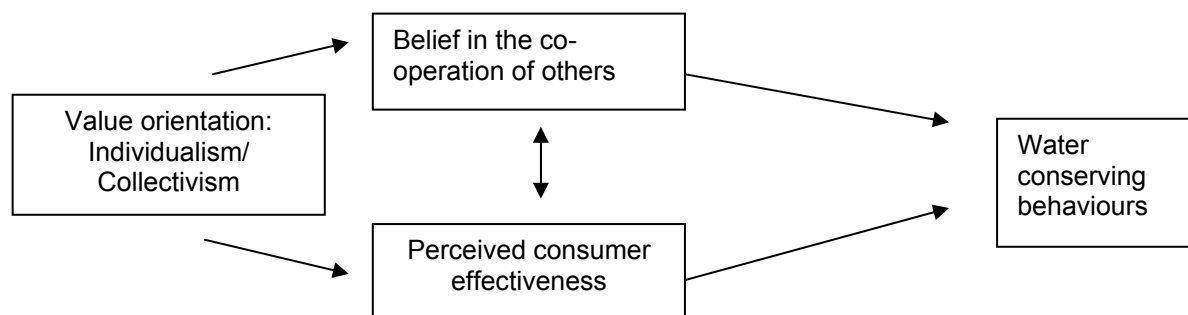


Figure 9: Proposed Model

6.5. Research Design

Conclusive research seeks to examine specific relationships and test various hypotheses (Churchill & Iacobucci, 2002). It is quantitative in nature and has two predominant types: descriptive and causal designs (Churchill & Iacobucci, 2002). Descriptive designs seek to describe the characteristics of a population or phenomenon, while causal designs attempt to ascertain causality (Zikmund, 2003). As no variables were manipulated or controlled and causality was not established, the current study was descriptive in nature.

A descriptive survey of schools in the Gauteng area was undertaken. Schools in Gauteng have been frequently used for water interventions. In order to generate awareness, most Gauteng water conservation campaigns and programmes have actively concentrated on school children and, despite being “green or social marketing in nature”, have taken on an educational focus, by using school visits, tours, poster campaigns, water mascots and “train the trainers” workshops. The reasons for this focus on a young audience are: children are a primary market (they continually make water consumption decisions); they are perceived as influential in parent and sibling behaviour; children do not naturally conserve water and they constitute the future market whose outlook will shape the generation to come (Strong, 1998; Sha & Haines, 2002). Moreover, internationally school age children are often the target of social marketing interventions (Fullilove, Scrimshaw, Fielding, Normand, Sanchez-Way & Richardson, 2002). The former minister of Water and Forestry, Ronnie Kasrils, has said on several occasions that children are the mechanism for taking behavioural change into the home.

6.6. Sampling

6.6.1. Universe

The universe was learners at schools in the Gauteng area who are over the age of 14 in grades seven to nine during the fieldwork.

6.6.2. Unit of Analysis

The unit of analysis specifies at what level the data will be analysed (Zikmund, 2003). Individuals, the learners themselves, formed the unit of analysis in the current study.

6.6.2.1. Primary Unit

A sampling unit is a single element or group of elements subject to selection in the sample (Zikmund, 2003). If the target population must be first stratified into units at different stages in the sample, additional terminology must be used for each stage (Zikmund, 2003). The primary unit is the unit of selection at the first stage of sampling; in this study this is the school attended.

6.6.2.2. Secondary Unit

The sample was then selected according to grade at school; hence school grade was the secondary sampling unit.

6.6.3. Sampling Frame

Schools were divided into affluent and non-affluent schools. Classification was done on location of school (suburb versus township). Suburb was seen as a proxy for affluence as suburbs contain mainly of private or former Model C schools. At each sample school, classes were selected by grade and learners in each class were sampled.

6.6.4. Sampling Procedure

The study employed a nonprobability sampling method, namely quota sampling. Probability sampling was envisaged, but obtaining an up-to-date list of all schools in Gauteng proved to be difficult. In nonprobability sampling the probability of any particular member of the population being included in the sample is unknown; selection of units is arbitrary and dependent on the researcher's judgement (Zikmund, 2003). Quota sampling is a nonprobability sampling procedure that ensures that certain characteristics of a population will be represented in the proportion that the researcher requires (Zikmund, 2003). In the current study, the participating schools were divided into high income and low income schools, predominantly through geographical location of the school. Schools in township

areas were classified as 'low income' and schools in suburban areas were classified as 'high income'. This division of schools was done in order to ensure a spread of individualism and collectivism. A previous study done by Eaton and Louw (2000) was limited to university students and used language to differentiate between students to ascertain levels of individualism and collectivism. Although language may have a high correlation with these constructs, social mobility and wealth were highlighted in the earlier discussion to foster individualism. Thus the Township/Suburb distinction accounts for this more than does language. Learners were sampled as classes and, in order to ensure age parity between the different types of school, higher grades were sampled from suburban schools, as in lower income schools learners tended to be older in the lower grades (see Table 6, p.99.)

6.6.5. Sample Size

The sample constituted three stages: selection of schools, selection of classes by grade and then a census of learners in each class. Ten schools were selected; five of each type, that is high and low income. Table 6 below lists the schools sampled with high income schools highlighted. The sample size was set at 50 respondents per school. The final sample size was 444, indicating a response rate of 88% (see Table 6). The high response rate was most likely due to the co-operation of the principals and teachers who responded positively to the initial contact and covering letter (see Appendix 2, p.172) and the school environment in which learners are accustomed to answering questions and completing forms in class. Two schools requested additional questionnaires to ensure that no class member felt excluded.

School	Grade					Grand Total	Response Rate (%)
	9	10	11	12	Missing		
Erasmus Monareng High School	50					50	100
Illinge High School	58					58	116
King David Victory Park	12		35			47	94
Krugersdorp High School		49				49	98
La Salle College		25	19	3	1	48	96
Lethulwazi Comprehensive Secondary School	42					42	84
P.T Xulu Secondary School	33					33	66
St Martins High School		1	19			20	40
The Hill High School	24	22				46	92
Thuto-Lesedi Secondary School	51					51	102
Grand Total	270	97	73	3	1	444	89

Table 6: Schools and Grades Sampled

6.7. Data collection

6.7.1. Fieldwork

Pen and paper self-completion interviews were conducted. Interviewers were recruited from Vista University's (now incorporated into the University of Johannesburg) Geography Honours programme and the University of the Witwatersrand's Business Sciences' Honours programme and trained by the researcher. Vista's students were able to communicate with second language English speakers in their home tongue. Thus should the learners have experienced any problems with the questionnaire, trained interviewers were on hand to assist. Interviewers were supplied with an introductory letter (see Appendix 2, p.172).

6.8. Measurement and Research Instruments

The survey focused on respondents' beliefs regarding the variables outlined in the research problem. Well established scales of the variables concerned were sourced and tested on a five point Likert scale. Churchill and Iacobucci (2002) and Malhotra (1999) assert that a five point Likert scale can be considered interval in nature if it is represented on a Thurston Equal Appearing Interval continuum or if the categories representing each number are clearly indicated on the questionnaire. As the categories were noticeably designated on the questionnaire, the data can be considered interval in nature.

6.8.1. Perceived Consumer Effectiveness

For PCE, well established scales were available and used. Ellen *et al.* (1991) and Berger and Corbin (1992) both used a two item measure that formed the basis of the items used in the current study. Ellen *et al.* (1991) obtained a Cronbach's coefficient alpha of 0.55 with the measure. They also found it to be distinct from concern for the environment through using LISREL IV. Berger and Corbin (1992) incorporated similar questions to those of Ellen *et al.*'s (1991) PCE, together with other environmental items in a study of 1521 Canadians. In a factor analysis of all items in the study, the PCE items loaded on a single factor together, with loadings of 0.5778 and 0.5393. Berger and Corbin did not report Cronbach's alpha for their study. Lord and Putrevu (1998) reported a Cronbach alpha of 0.69 for the three items they used

to determine PCE. More recently, Kim and Choi (2005) had a Cronbach alpha of 0.74 for an extended scale. For the current study a composite was created and pilot tested on a sample of 23. The Cronbach alpha was 0.45. The low Cronbach alpha may have been a reflection of the limited variance in the low income sample used for the pilot. Table 7 below illustrates the variations of the scale.

<i>Ellen et al. (1991)</i>	<i>Berger & Corbin (1992)</i>	<i>Lord & Putrevu (1998)</i>	<i>Current Study</i>
There is not much any one person can do about the environment	I don't have enough environmental knowledge	I feel personally helpless to have much of an impact on a problem as large as the environment	There is not much that any one person can do about water conservation
The conservation efforts of one person are useless as long as other people refuse to conserve	I feel personally helpless	I don't feel I have enough knowledge to make well informed decisions on environmental issues	Nothing that I can do will make a difference to saving water in this country
		I expect the environment to continue to deteriorate until it is almost unliveable before enough attention is paid to improve it	It is useless if one person tries to use less water and other people do not try to use less water.
			I don't know how to use less water.
Alpha 0.55	Factor loadings 0.5778 and 0.5393	Alpha 0.69	Pilot test 2: alpha 0.45 n = 23

Table 7: Measures of PCE

6.8.2. Co-operation of Others (FIO)

Most previous studies in this area included some indicator of co-operation of others, but this was usually only through one or two items. Ellen *et al.* (1991) used one item “Most people are not willing to make sacrifices to protect the environment” and Berger and Corbin (1992) claimed that the statements “the next generation will be more careful” and “science and technology will solve environmental problems” represented FIO. The item in the current study: “most people don’t do much to use less water” reflected Ellen *et al.*’s item. Berger and Corbin’s items were not used as it was felt that these did not represent faith in the co-operation of others (FIO) but rather faith in the future and science. Wiener and Doescher (1991) developed a scale for co-operation which had a reliability of 0.73. These items were:

- In time, most utility customers will permit the installation of load control devices
- Most people are willing to make sacrifices to overcome peak load demands

Wiener and Doecher’s items were fashioned to reflect FIO in the current study:

- Most people won't save water
- Soon, most people will save water
- I am sure that most people will sacrifice to save water

When tested in the first pilot study the overall Cronbach's alpha was 0.438 (n=23).

	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
Most people don't do much to use less (reverse coded)	7.87	4.391	.167	.529
Most people will save soon	7.35	4.692	.248	.374
Most people will sacrifice to use less water	7.74	3.474	.404	.061

Table 8: Item Total Statistics for FIO scale

The final items were then modified after these results and discussions with the interviewers to:

- Most people don't do much to use less water.
- Soon, most people will use less water if they can.
- I am sure that most people will sacrifice to use less water.

However, it was felt that these items were not fully comprehensive and aspects from Chipp and Morton-McKay (2003) were added. The further items probed cooperative water use, behaviour of communities and schools as noted by respondents (see Appendix 1, Questionnaire, p.167.)

6.8.3. Individualism and Collectivism

In terms of individualism and collectivism, Triandis (1995) developed the INDCOL95, a scale of 32 items scored on a nine-point scale. The scale is designed to assess the four constructs (eight items each) of Horizontal Individualism (HI), Horizontal Collectivism (HC), Vertical Individualism (VI) and Vertical Collectivism (VC). This scale has been widely used cross-culturally and has reported acceptable reliabilities of VC 0.72, HI 0.80, HC 0.71 and VI 0.75 (Parkes, Schneider & Bochner, 1999). Chiou (2001) used INDCOL95 in a study with students from the US, Taiwan and Argentina. A confirmatory factor analysis established that the four factor model was a better fit than the two factor model (Chiou, 2001). Reliabilities for the Americans in the sample were VC 0.74, HI 0.69, HC 0.75 and VI 0.74; the Taiwanese were VC

0.83, HI 0.63, HC 0.84 and VI 0.61 and the Argentineans VC 0.70, HI 0.66, HC 0.60 and VI 0.70 (Chiou, 2001).

Triandis (personal communication, 2003) advised that the scale items be checked for cultural understanding before use. Table 9, p.104, demonstrates how the final scale was based on three iterations. Changes to wording have been highlighted. The first column represents Triandis' initial items; column two the alteration of items after discussion with experts and column three the final items used, based on the results of the pilot test and discussions with the interviewers. Triandis (1989; Triandis, Chan, Bhawuk, Iwao and Sinha, 1995; Triandis, Chen & Chan, 1998) recommends that multiple measures of the individualism/collectivism construct be used. Consequently the final questionnaire was then piloted again and an additional six items were added as a cross-check. These items come from Lewis, Maras and Simonds (2000) who developed them for school children in the UK. Lewis, Maras and Simonds (2000) formulated questions along two axes, individualism/collectivism and altruism and reported a Cronbach α of 0.65 and 0.39 for each respectively. The items are as follows:

- I prefer to do things by myself (***individualism/collectivism***)
- I like working with all the other learners in the class (***altruism***)
- I feel happy when my best friend wins a race (***altruism***)
- I prefer to play by myself at home (***individualism/collectivism***)
- I prefer to work by myself in class (***individualism/collectivism***)
- I prefer playing by myself in general (***individualism/collectivism***)
- I will give my pocket money to my friends if they need it (***altruism***)
- I prefer working by myself in general (***individualism/collectivism***)

Original Items	Piloted Items	Final Questionnaire
My happiness depends very much on the happiness of those around me	I am happy when people around me are happy.	I am happy only if the people around me are happy.
Winning is everything	To win is the most important thing in life.	To win is the most important thing in life.
I usually sacrifice my self-interest for the benefit of my group	It is better to make the group win than for me to win.	I would give up things so that the group can gain.
It annoys me when other people perform better than I do	I hate it when people do better than me.	I don't like it when other people do better than me.
It is important for me to maintain harmony within my group	I am happy when the whole group agrees.	It is important that I keep my group agreeing on things.
It is important to me that I do my job better than others	It is important to do better than other people.	It is important to do better in my schoolwork than other people.
I like sharing little things with my neighbours	I like sharing little things with my neighbours	I like sharing little things with my friends at school
I enjoy working in situations involving competition	I like to compete against other people.	I like events where I can compete against other people, like exams and sport.
The well-being of my classmates is important to me	It is important to me that other people feel okay.	It is important to me that other people are doing well.
I often do "my own thing"	I like to do stuff that is important just for me.	I like doing things by myself.
If a family member were in financial difficulty, I would help as much as I could	I will help my family if they need money.	I will help my relatives if they need money, as much as I can.
Competition is the law of nature	To compete against someone is natural.	To compete against someone is natural.
If a classmate gets a prize I would feel proud	I am proud if another member of my class gets a prize.	I am proud if another member of my class gets a prize.
Being a unique individual is important to me	I feel special because I am unique.	It is important to me that I am different to others.
To me, pleasure is spending time with others	I like to spend time with other people.	The best way to spend time is with other people
When another person does better than I do, I get tense and stirred up	I get angry if someone does better than me.	I get annoyed if someone does better than me in school.
Children should be taught to place duty before pleasure	Family and community duty is more important than personal pleasure.	Duty to family is more important than personal fun.
Without competition it is not possible to have a good society	Society needs competition.	We need competition because it makes us better.
I feel good when I co-operate with others	It feels good to work well with other people.	I feel good when I work with other people.
I am a unique person, separate from others	I am a unique person, separate from others.	I am a unique person, separate from others.
Some people emphasize winning; I am not one of them	Winning is not important to me.	Winning is not important to me.
It is important to me that I respect decisions made by my groups	I will follow whatever decision the group makes.	It is important that I respect community decisions
I rather depend on myself than on others	I am the only person I can depend on.	I would rather depend on myself than on other people.
Family members should stick together, no matter what sacrifices are required	Family duty comes above all else.	Family must stick together, no matter what problems there are
I rely on myself most of the time; I rarely rely on others	I cannot rely on another person/ someone else.	I usually rely on myself, rather than on other people
Parents and children must stay together, as much as possible	Families must stay together.	Family must stay together.
My personal identity is very important to me	It is important that people see my personality.	It is important to me that I am different to other people and my own person
It is my duty to take care of my family, even when I have to sacrifice what I want	I am happy to make sacrifices to take care of my family.	It is my duty to take care of my family, no matter how hard it is
My personal identity independent from others is very important to me	My personal identity (as unique) is very important to me	My personal identity (as unique) is very important to me
I respect the majority's wishes in groups of which I am a member	If I am a member of a group, then I will respect the decisions that the group makes.	When I am in a group, I will go along with what most of the others want
I enjoy being unique and different from others	I am glad that I am different from other people.	I am glad that I am different from other people.
It is important to consult close friends and get their ideas before making a decision	I do not make a decision without talking to my friends.	It is important to speak to my friends before I make a decision

Table 9: INDCOL95 Adaptation of Items

6.8.4. Behaviour

Water conservation behaviour was measured through activities. McKay (personal communication, 2003) confirmed that all the activities listed were used in water information campaigns in the schools. Spring Day emerged as an irresponsible behaviour cited by learners in Chipp and Morton-McKay (2002). Questions used were as follows:

- Do you ever see dripping taps
- Do you ever stop taps from dripping
- Do you ever see leaking pipes
- I use a hosepipe to clean the car
- It is okay to wet people on Spring Day or during Spring week
- It is okay to wet people on hot days
- It is okay to water gardens with a hosepipe

6.8.5. Other Variables

Other questions concerned firstly, the preference for structural solutions: “the government must make people use less water”, secondly, attitudes towards consumer rights: “everybody must have water even if they cannot pay for it” and “water should not be cut off if people don’t pay for it” and thirdly, perceptions of resource abundance “South Africa is a water rich country”. These questions were required to test hypotheses eight to ten.

6.9. Data Analysis

The raw data was cleaned, checked and entered into Excel. Questionnaires were numbered for referencing purposes, thus the exact questionnaire could be located and any responses verified. The data was then transferred into SPSS.

6.9.1. Statistical Techniques

A Cronbach’s alpha, Pearson correlation, multiple regression and MANOVA were used. Cronbach alpha assessed the internal reliability of each of the scales used. Correlations were done to establish the presence of relationships along with multiple regression analysis, which was used in order to determine the importance of each attribute in the model. Multiple regression involves a single dependent variable, in this case water conserving behaviour, and two or more independent variables

(Malhotra & Birks, 2003), in this case value orientation, belief in the co-operation of others and perceived consumer effectiveness.

MANOVA, multiple analysis of covariance, was used to determine the difference between area types, where the categorical independent variables were horizontal collectivism and individualism and vertical collectivism and individualism, two indicators of high or low perceived consumer effectiveness (PCE) and belief in the co-operation of others. The PCE and FIO categorisation were based on mean splits. The dependent variable was individual defecting behaviour. Differences between two samples, such as the Suburban and Township were assessed through independent sample *t*-tests.

6.10. Pilot Studies

Piloting of questionnaires is strongly recommended by many researchers, especially when the questions have not been widely tested in the country of interest (Churchill & Iacobucci, 2002). Piloting was done twice, as there were two iterations of INDCOL95. Furthermore, the behavioural items, in terms of the learners', schools' and communities' positive and negative actions were refined over two iterations. These items were initially sourced from Chipp and Morton-McKay (2003) and were aimed at measuring perceived co-operation of others and respondent water conscientious behaviours. Two groups of subjects were drawn from the target population and the research process was simulated in all respects (from sample selection to data collection). In this way any misunderstandings, language problems and interviewer questions were dealt with. The pilots were as similar as possible to the low-income sample, both were non-English because they would have had the greatest difficulty with the language. The groups consisted of 33 and 23 learners from low income schools. The first pilot was conducted at Vosloorus High School, where most learners speak seSwati or isiZulu ($n = 33$). The second pilot was sampled at East Rand School of the Arts, where the predominant languages are isiXhosa and isiZulu ($n = 23$).

6.11. Chapter Summary

The current chapter reviewed the methodology employed in the current study. The research questions, their associated hypotheses and the proposed model were

reviewed and the supporting literature for these was presented. The research design was descriptive in nature and consisted of a quota sample of school learners in Gauteng. Much attention was paid to measurement of the variables of the model, with established measures used wherever possible. These measures were checked through two pilot studies. The second pilot study was felt essential as the INDCOL95 is sensitive to interpretation by different groups. A brief review of the data analysis process was provided.

Chapter 7 provides the results of the study, the sample obtained, reliability of the scales used and hypothesis testing.

7. Chapter 7: Results

7.1. Chapter Overview

The current chapter deals with the results obtained from the survey. First the sample obtained is viewed through descriptive statistics and then each scale used is assessed in terms of its reliability. All changes to scales formed are noted. The validity of Triandis' INDCOL95 is also established. The chapter then turns to the testing of each hypothesis set out in Chapter 5 and concludes whether these are accepted or rejected.

7.2. Sample Obtained

The sample was evenly stratified by suburban and township schools. Some schools did have higher response rates than others (as set out in Table 6, p.99). The suburban sample had a slight male and the township sample a female bias. The predominant home language spoken in the suburban sample was English, with some Afrikaans and Chinese speakers. Six respondents, who were classified as English/Other European, gave their home languages as Hungarian, Italian, Macedonian, Norwegian, Polish, Portuguese and Russian. A number of suburban learners also spoke an African language. In the township sample all respondents spoke the vernacular (see Table 10, p.109).

<i>High/Low Income School</i>		<i>Suburban</i>		<i>Township</i>	
		Count	Column N %	Count	Column N %
Gender	Male	110	54.5%	104	45.8%
	Female	92	45.5%	123	54.2%
Language Vernacular/ English	English/Other language	175	83.3%	0	.0%
	African language	35	16.7%	234	100.0%
Language	Afrikaans	4	1.9%	0	.0%
	Chinese	5	2.4%	0	.0%
	English/Other European	166	79.0%	0	.0%
	North Sotho	2	1.0%	9	3.8%
	Pedi	0	.0%	20	8.5%
	Sesotho	2	1.0%	6	2.6%
	Shangaan	1	.5%	0	.0%
	South Sotho	7	3.3%	41	17.5%
	Swati	0	.0%	2	.9%
	Tsonga	2	1.0%	16	6.8%
	Tswana	5	2.4%	8	3.4%
	Xhosa	3	1.4%	26	11.1%
	Zulu	13	6.2%	105	44.9%
	Ndebele	0	.0%	1	.4%
School	Erasmus Monareng HS	0	.0%	50	21.4%
	Illinge HS	0	.0%	58	24.8%
	King David Victory Park	47	22.4%	0	.0%
	Krugersdorp HS	49	23.3%	0	.0%
	La Salle HS	48	22.9%	0	.0%
	Lethulwazi HS	0	.0%	42	17.9%
	P T Xulu Secondary	0	.0%	33	14.1%
	St Martins	20	9.5%	0	.0%
	The Hill HS	46	21.9%	0	.0%
	Thuto-Lesedi HS	0	.0%	51	21.8%

Table 10: Respondent Demographics

At the level of descriptive statistics, the Township and the Suburban samples had different representation across the scales. The Suburban learners were, on average, older (16) and in Grade 10. In comparison with Township learners they had a greater sense of their own efficacy (the lower mean for PCE), and saw their schools as being more cooperative but did evidence some defecting behaviours. Suburban respondents scored higher on Horizontal Individualism than any other dimension of the idiocentrism/allocentrism construct. They scored higher on the BEHAV scale, meaning that their reported water use behaviour defected was more than for the Township group. Township learners were high on VI and HC. Suburban schools were more co-operative and less defective. Suburban communities were also less defecting in their water conservation behaviour (see Table 11).

High/Low Income School	Suburban (n = 210)		Township (n = 234)	
	Mean	Standard Deviation	Mean	Standard Deviation
Age	16	1	15	1
Grade	10	1	9	0
PCE Composite Score	9.11	3.06	11.79	3.27
School Defection Behaviours	20.23	4.98	22.27	6.69
School Co-operation Behaviours	28.77	5.15	24.56	7.10
Community Defection Behaviours	24.52	5.77	31.49	6.87
Horizontal Collectivism (HC)	-1.34	3.51	1.35	4.13
Horizontal Individualism (HI)	1.05	3.55	-.80	4.73
Vertical Collectivism (VC)	-.75	3.91	.69	3.61
Vertical Individualism (VI)	-1.78	4.54	1.75	3.40
Individualism (Lewis <i>et al.</i> , 2000)	14.40	3.80	15.26	4.40
Altruism (Lewis <i>et al.</i> , 2000)	11.21	1.80	12.11	2.17
Defecting Behaviour (Behav)	13.67	3.80	11.56	4.08
Overall Individualism (INDCOL95)	-.77	5.78	1.18	6.75
Overall Collectivism (INDCOL95)	-2.16	6.27	2.13	6.61

Table 11: Descriptive Statistics for Key Scales

Not surprisingly, the community development level between the two locations was markedly different, with only 68% of the Township learners reporting that everyone has a flushing toilet (91% for the Suburban learners). A high 30% of Township learners believed that it does not cost money to clean water and 42% believed that there were no costs involved in transporting water, hence there is no Public Good to be contributed towards. Table 12 documents these results.

High/Low Income School		Suburban		Township	
		Count	Column N %	Count	Column N %
COMM DEVEL LEVEL Everyone has a flushing toilet.	No	19	9.5%	73	32.2%
	Yes	182	90.5%	154	67.8%
COST OF WATER It costs money to clean water before it goes into the tap	No	13	6.4%	68	29.8%
	Yes	191	93.6%	160	70.2%
COST OF WATER It costs money to get water from dams to taps.	No	9	4.5%	94	42.0%
	Yes	193	95.5%	130	58.0%

Table 12: Community Development Level and Beliefs about Costs

Most variables are based on a five point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5) (see Appendix 1, Questionnaire). Suburban learners had a greater belief in the quality of water they received. The Township learners were firm in the assertion that everyone has a right to water and water should not be cut off (see Table 13).

High/Low Income School	Suburban (n = 210)		Township (n = 234)	
	Mean	Standard Deviation	Mean	Standard Deviation
WATER QUALITY Tap water is clean and safe to drink.	4.49	.93	4.07	1.33
STRUCTURAL The government must make people use less water	3.47	1.05	3.77	1.35
RESOURCE ABUNDANCE South Africa is a water rich country	2.83	1.15	3.24	1.46
RIGHTS Everybody must have water even if they cannot pay for it	3.63	1.16	4.21	1.10
RIGHTS Water should not be cut off if people don't pay for it	3.04	1.31	3.79	1.36
PAY People must pay for the water they use.	4.11	1.04	4.11	1.20

Table 13: Attitudes Towards Water Use

The manner in which the various scales used were generated and checked for reliability is detailed in that section.

7.3. Scale Transformations and Variable Respectification

Scales were transformed along the guidelines of their original authors. Reverse coding was required in a total of three instances. One item of the FIO scale, one from INDCOL95 and one from BEHAV (dependent variable) were reversed. In all three instances the items with reverse coding proved to be slightly problematic, probably because they contained negatives which would be harder to comprehend by respondents. Once the scales had been checked, variables were created for all those that proved reliable. The following scales were created:

- HI, HC, VC and VI from the INDCOL95;

- PCE (perceived consumer effectiveness);
- SCHO COOP (the co-operative behaviour of the school);
- SCHO DEFECT (the defecting behaviour of the school);
- COMM COOP (the co-operative behaviour of the community);
- A total INDIVIDUALISM and COLLECTIVISM score from INDCOL95;
- A 'Indiv' and 'Altrusim' score from Lewis *et al.*(2002);
- BEHAV (the number of defecting behaviours on the part of respondents, maximum four);
- FIO (belief in the co-operating behaviours of others)

7.4. Reliability Statistics

7.4.1. Perceived Consumer Effectiveness

The four item scale had a Cronbach alpha of 0.57, which, although low, is approaching the 0.6 criterion set by Malhotra (1999). It is also an improvement on the alpha from the second pilot ($\alpha = 0.45$, $n = 23$) and the first ($\alpha = 0.19$, $n = 33$). The pilots engendered a change in language used. In the final survey, an item by item analysis reveals that the most problematic item was "it is useless if one person tries to use less water and other people do not try to use less water." (see Table 14, p.113 below). Nevertheless, the item does contribute to the overall scale reliability, as without it the reliability drops slightly. A closer examination reveals that respondents tend to strongly disagree with all the other items, while agreeing with this one. Table 15, (p.113) demonstrates that the first two items "there is not much one person can do about water conservation" and "it is useless if one person tries to use less water and other people do not try to use less water", (the communally phrased items) elicit less disagreement than the personally phrased items "nothing that I can do..." and "I don't know how to...."

<i>Item</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
PCE There is not much that any one person can do about water conservation.	7.96	7.297	.424	.436
PCE It is useless if one person tries to use less water and other people do not try to use less water.	7.22	8.002	.259	.571
PCE Nothing that I can do will make a difference to saving water in this country.	8.05	7.396	.360	.487
PCE I don't know how to use less water.	8.28	7.757	.368	.483

Table 14: Item Total Reliability Statistics for PCE

<i>Item</i>	<i>Mean</i>	<i>Mode</i>	<i>Standard Deviation</i>	<i>Count</i>
PCE There is not much that any one person can do about water conservation.	2.54	3.00	1.28	444
PCE It is useless if one person tries to use less water and other people do not try to use less water.	3.28	5.00	1.35	444
PCE Nothing that I can do will make a difference to saving water in this country.	2.45	1.00	1.34	444
PCE I don't know how to use less water.	2.23	1.00	1.24	444

Table 15: Item Statistics for PCE

It was decided to keep all the items as this resulted in the highest reliability. If the personal items were grouped together, reliability drops to 0.41 and the communal items have a reliability of 0.37 when tested together. When the sample is spilt into high and low income schools, the Cronbach's alpha for the high income schools is 0.61 but is 0.39 for the low income schools. A closer look at the descriptive statistics for PCE by school location (see Table 16, p.114) reveals that the Suburban learners consistently have a lower mean and standard deviation for all the items. This means that the Suburban learners have greater confidence in their own abilities while the Township learners do not. The mode for the communal items is far higher for the

Township sub-sample and even '5' – strongly agree – for the item “it is useless if one person tries to use less water and other people do not try to use less water.” A histogram comparison of the two sub-samples for each item appears in Appendix 3, p.173. Box and Whisker plots (see Figure 10 below) reveal a similar distribution, albeit in a staggered level between the school types of responses, hence it was felt that the scale was usable.

<i>High/Low Income School</i>		<i>Mean</i>	<i>Mode</i>	<i>Standard Deviation</i>	<i>Count</i>
PCE There is not much that any one person can do about water conservation.	Suburban	2.19	1.00	1.11	210
	Township	2.87	3.00	1.33	234
PCE It is useless if one person tries to use less water and other people do not try to use less water.	Suburban	2.97	2.00	1.34	210
	Township	3.57	5.00	1.29	234
PCE Nothing that I can do will make a difference to saving water in this country.	Suburban	2.20	2.00	1.14	210
	Township	2.68	1.00	1.46	234
PCE I don't know how to use less water.	Suburban	1.77	1.00	.87	210
	Township	2.66	1.00	1.37	234

Table 16: Comparison of School Type and Item Statistics for PCE

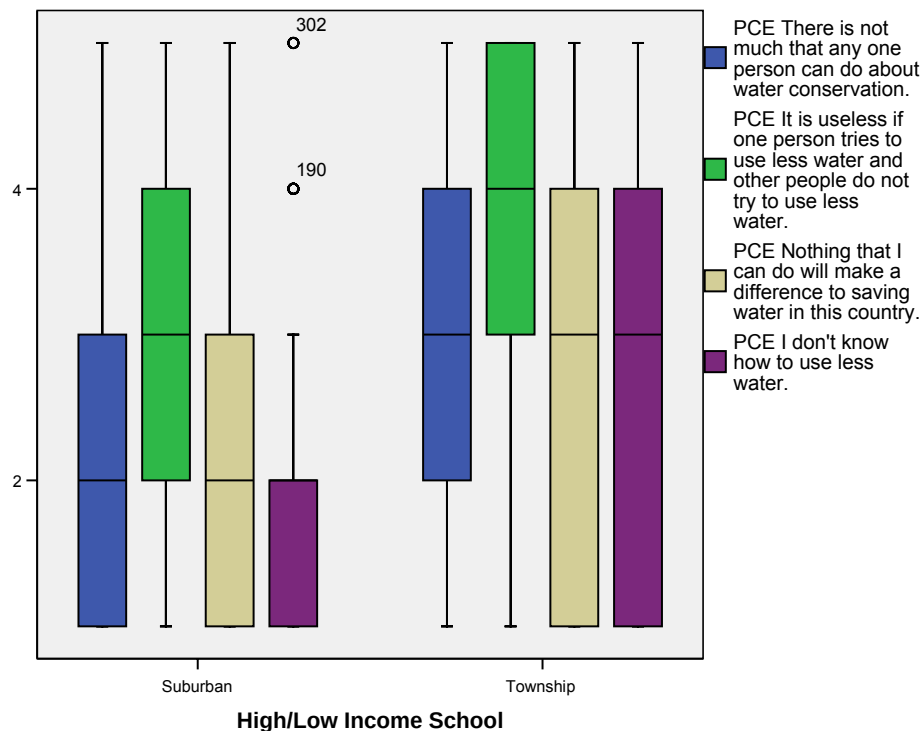


Figure 10: Box and Whisker Plot of PCE scale variables

7.4.2. Faith In Others

Once the item “Most people don’t do much to use less water” was reverse coded, the scale reliability for FIO was calculated. The Cronbach alpha was a low 0.256. (See Table 17 for individual item results). This was in contrast to the second pilot that recorded an alpha of 0.438 (n = 33) and the first ($\alpha = 0.56$, n = 23). The final survey’s α increases to 0.53 if the item “Most people don’t do much to use less water” is removed.

<i>Item</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
FIO Most people don't do much to use less water. (Reversed)	6.58	3.695	-.060	.554
FIO Soon, most people will use less water if they can.	5.62	2.432	.247	-.073(a)
FIO I am sure that most people will sacrifice to use less water.	5.93	2.241	.264	-.138(a)

a The value is negative due to a negative average covariance among items. This violates reliability model assumptions.

Table 17: Item total reliability statistics for FIO

These results suggest that the negatively coded item “Most people don’t do much to use less water” caused great confusion. Other studies in South Africa have experienced similar problems with negatively coded items (Corder, personal communication, 2006). When the reverse coding is undone, the Cronbach’s alpha increases to 0.37. If the item is omitted, the reliability increases to 0.55. The Township sub-sample has a reliability of 0.426 with the item as is (not reverse coded) and an alpha of 0.112 if the item is reverse coded. Clearly, this sub-sample has particular difficulty with the item. The Suburban sub-sample fares a little better, with 0.13 with the item as is (not reverse coded) and 0.353 with the item reverse coded. Thus, of the two sub-samples, the Suburban learners understood the directionality of the question, but the Township learners did not. The item was not, however, a reasonable measure for either sample. It was decided to omit the item from any further analyses.

Suburban/Township comparison of the items demonstrates very little variance amongst the Suburban sample (all standard deviations are less than 1). The

Township sub-sample is more optimistic than the Suburban learners about their fellow citizens, as their scores on the other two items are higher (see Table 18, below)

<i>High/Low Income School</i>		<i>Mean</i>	<i>Mode</i>	<i>Standard Deviation</i>	<i>Count</i>
FIO Most people don't do much to use less water. (Reversed)	Suburban	2.52	2.00	.94	210
	Township	2.46	3.00	1.16	234
FIO Soon, most people will use less water if they can.	Suburban	3.18	3.00	.96	210
	Township	3.69	5.00	1.21	234
FIO I am sure that most people will sacrifice to use less water.	Suburban	2.69	3.00	.98	210
	Township	3.54	3.00	1.19	234

Table 18: Comparison of School Type and Item Statistics for FIO

Omission of the item “Most people don’t do much to use less water”, while improving the overall reliability of the scale (0.55) does not fully satisfy queries with the FIO scale. A Pearson correlation between the remaining two items “Soon most people will use less water if they can” and “I am sure that most people will sacrifice to use less water” revealed a significant ($p = 0.000$) correlation coefficient of 0.382. Thus there is a positive relationship between the items. When an item by item analysis is requested for the Cronbach alpha, a negative item covariance is reported. These results confirm the initial concern that the FIO items were too abstract. Indeed, frequency counts of the remaining two items show that most respondents selected ‘3’ or neutral (see Appendix 3, p.175, for the frequency counts and histograms of these variables).

The Box and Whisker plot (see Figure 11, p.117) reveals three outliers for the Suburban schools and little relationship between the scale items. The only item to have any relationship between the two sub-samples was “soon most people will use less water if they can.” Thus, despite the promising results of the two pilots, the scale was deemed unusable and the two items were used separately in the analysis. The results confirmed concerns that were noted at the outset of the study, namely that the items had little practical reality for the learners.

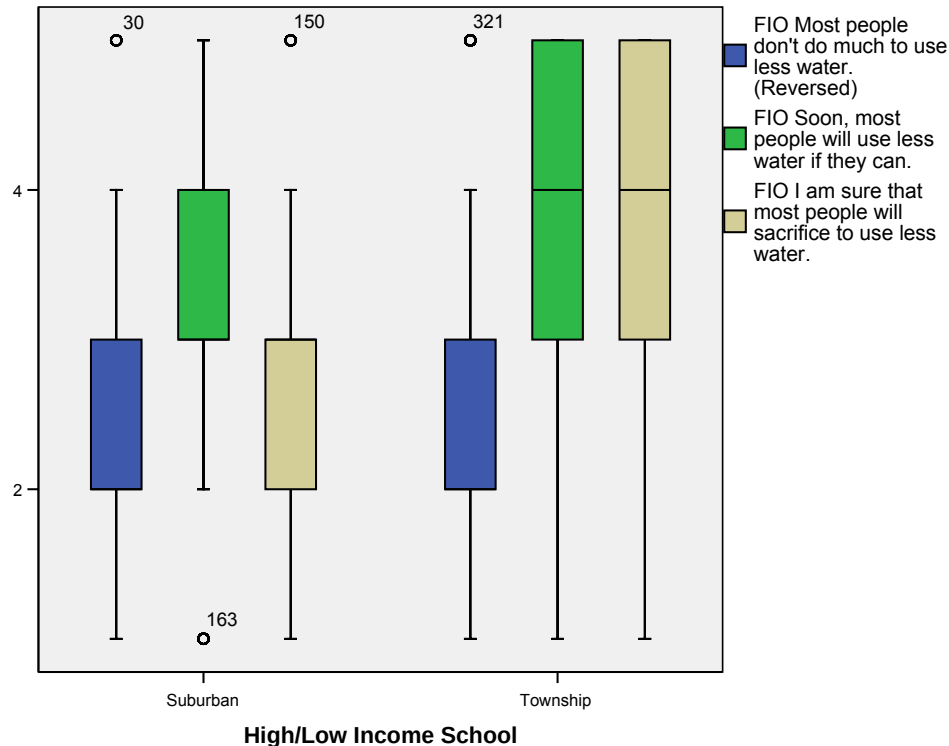


Figure 11: Box and Whisker Plot of FIO Scale Variables

7.4.3. Perceived Co-operation of Influential Others

Items from Chipp and Morton-McKay (2002) were included in the questionnaire for this scale. These items rested on the observed co-operative or defection behaviour of influential others, that is, the school and the community. Each scale was divided into 'co-operative' and 'defection' behaviours. The Cronbach alphas of these are reviewed next. Only the second pilot study's alpha results are used as a comparison for this scale. The first pilot had a much abbreviated scale which did not distinguish between community and school cooperative and defective behaviour, hence only the second pilot's alphas can be used as a cross comparison.

7.4.3.1. Co-operation of Others: School Behaviour

a) School Defection Behaviour (SCHO DEFECT)

The observed defection sub-scale of school behaviour reported a Cronbach alpha of 0.64. An item by item analysis of the scale reveals that the most problematic question was "hosepipes are used to water the school garden." (See Table 19, p.118). The extent to which learners could interpret this behaviour as neutral rather

than negative begs the question of whether the item should be included. Its omission increases the Cronbach alpha to a respectable 0.71. Thus when the variable of SCHO DEFECT was calculated, the hosepipe item was omitted. This confirms that the improvements to the scale after the second pilot, which had an alpha of 0.348 (n=23), were effective.

<i>Item</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
SCHO DEFECT The taps at school drip and leak.	22.41	28.551	.432	.585
SCHO DEFECT The school has broken water pipes.	23.14	28.787	.420	.588
SCHO DEFECT The school has leaking water pipes.	22.96	27.358	.508	.565
SCHO DEFECT The school toilets leak.	22.75	28.209	.415	.587
SCHO DEFECT The school toilets are broken.	22.65	28.309	.376	.597
SCHO DEFECT Learners leave taps running	22.17	29.226	.373	.599
SCHO DEFECT Learners break the toilets	22.23	28.036	.441	.581
SCHO DEFECT Hosepipes are used to water the school garden	21.27	35.947	-.113	.706
SCHO DEFECT Hosepipes are used all day	22.63	32.502	.102	.662

Table 19: Item total reliability statistics for SCHO DEFECT

b) School Co-operation Behaviour (SCHO COOP)

The observed co-operative behaviour on the part of the school was measured in the sub-scale of SCHO COOP. The Cronbach alpha here was 0.75. An item by item analysis of the scale is presented in Table 20, p.119. The composite measure of SCHO COOP was created using all the items. This reflects that the improvements to the scale after the pilot were effective. The second pilot had an alpha of 0.57.

<i>Item</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
SCHO COOP Leaking taps are fixed.	23.42	32.398	.542	.699
SCHO COOP Dripping taps are closed properly.	23.69	36.873	.270	.749
SCHO COOP Broken or leaking pipes are fixed.	23.14	31.331	.584	.690
SCHO COOP The school has flushing toilets.	22.75	34.902	.382	.730
SCHO COOP Leaking toilets are fixed.	23.33	29.872	.694	.666
SCHO COOP Broken toilets are fixed.	23.37	30.228	.643	.676
SCHO COOP There is soap in the learner's toilets.	24.77	38.639	.129	.775
SCHO COOP There is a basin or bucket for learners to wash their hands	22.24	36.902	.296	.743

Table 20: Item total reliability statistics for SCHO COOP

7.4.3.2. Community Behaviour

a) Community Defection Behaviour (COMM DEFECT)

The observed defection behaviour on the part of the community was measured in the COMM DEFECT sub-scale. The Cronbach alpha here was 0.70. An item by item analysis of the scale is presented in Table 21 below. The composite measure of COMM DEFECT was created using all the items. Community defecting behaviours had a high Cronbach α of 0.816 in the second pilot.

<i>Item</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
COMM DEFECT Taps drip or leak.	20.79	28.296	.449	.663
COMM DEFECT Most people ignore dripping or leaking taps.	20.45	27.656	.468	.658
COMM DEFECT Most people use hosepipes are used to wash cars.	19.78	30.920	.241	.706
COMM DEFECT Most people use the toilet as a dustbin.	21.14	28.583	.377	.678
COMM DEFECT Water pipes are broken or leaking.	20.79	28.562	.414	.670
COMM DEFECT Most people you know brush their teeth while the tap is running	20.08	29.533	.337	.687
COMM DEFECT Most people wash their dishes under a running tap	20.66	29.094	.356	.683
COMM DEFECT Most people rinse their clothes under a running tap	20.39	26.438	.503	.648

Table 21: Item total reliability statistics for COMM DEFECT

b) Community Co-operation Behaviour (COMM COOP)

The observed co-operation behaviour on the part of the community was measured in the COMM COOP sub-scale. The Cronbach alpha here was 0.47. An item by item analysis of the scale is presented below. The second pilot reported an acceptable alpha of 0.63 for this scale (n = 23). Since the piloting was done on lower income respondents, a cross comparison of the two sub-samples was undertaken. The Township sample consistently reflects greater variance in the data (see Table 22, below) and the trend across Table 22 and Table 23 suggests that the scale has greater reliability amongst the Township sample than the Suburban one. An item by item review (see Table 23) demonstrates that different items fare well and poorly across sub-samples. Thus as a measure of the construct COMM COOP, the items need further refinement. A summated scale for this variable was not created.

High/Low Income School		Mean	Mode	Standard Deviation	Count
COMM COOP Most people close taps properly.	Suburban	3.79	4.00	1.08	210
	Township	3.47	3.00	1.27	234
COMM COOP Most adults fix broken or leaking toilets.	Suburban	3.66	5.00	1.27	210
	Township	3.26	3.00	1.31	234
COMM COOP People in the neighbourhood pay the water account. NOTE	Suburban	4.28	5.00	1.05	210
	Township	3.22	3.00	1.30	234
COMM COOP Adults/ parents try to use less water.	Suburban	3.44	3.00	1.12	210
	Township	3.46	5.00	1.34	234

Table 22: Item total reliability statistics for COMM COOP

Item	Cronbach's Alpha if Item Deleted			
	Pilot 2	Final Survey	Township School	Suburban School
COMM COOP Most people close taps properly.	.530	.464	.517	.353
COMM COOP Most adults fix broken or leaking toilets.	.594	.321	.363	.205
COMM COOP People in the neighbourhood pay the water account. NOTE	.609	.347	.393	.258
COMM COOP Adults/ parents try to use less water.	.500	.457	.370	.459
OVERALL ALPHA	.630	.473	.487	.395

Table 23: Comparison of School Type and Item Statistics for COMM COOP

7.4.4. Individualism and Collectivism

7.4.4.1. INDCOL95

The effectiveness of INDCOL95 was assessed in a number of ways. The language involved was subject to a number of discussions and two pilot tests (see Table 9, p.104). Triandis (personal communication, 2003) recommended standardisation to be done within each participant. He asserted that the reference effect must be accounted for, and this would be done through computation of the mean and standard deviation *per respondent* (rather than per variable) and using these to calculate a within individual z score. The reliabilities for the scale based on the pilots, the final survey (unstandardised items), Triandis' standardisation and Z scores are presented in Table 24 below.

<i>Alpha</i>	<i>Pilot 1</i>	<i>Pilot 2</i>	<i>Final Survey</i>	<i>Triandis Stdisation</i>	<i>Z-Score</i>
Horizontal Collectivism	0.59	0.58	0.59	0.31	0.59
Horizontal Individualism	0.46	0.38	0.60	0.60	0.65
Vertical Collectivism	0.42	0.63	0.47	0.21	0.51
Vertical Individualism	0.43	0.55	0.66 (0.69)**	0.27	0.66
Collectivism		0.74	0.66	0.34	0.69
Individualism		0.51	0.54 (0.61)*	0.13	0.65

Table 24: INCOL95 Reliabilities

Note: *if item "it is important to me that I am different to other people and my own person" is removed

** if reverse coded item "winning is not important to me" was omitted

Substantial improvement in reliability between iterations is established, with the standardised Z score reflecting the best result. Triandis' standardisation appears not to have worked for any of the sub-scales apart from Horizontal Individualism. On this basis it was decided to use the Z scores in the computation of the four dimensions. It should be noted that slight difficulty was registered with the reverse coded item "winning is not important to me", but its overall impact was small, so the item remained. See Appendix 3 for item by item tables (p.177).

7.4.4.2. Lewis, Maras and Simmonds' (2000) Measure

The eight items from Lewis *et al.* (2000) outlined under Chapter 5, had results that echoed those in the original study, where the individualism/collectivism items scored $\alpha = 0.65$ there, they had an alpha of 0.72 here. The altruism items registered a low 0.39 in Lewis *et al.* (2000) which is on a par with the current study ($\alpha = 0.38$). The scale, therefore, appears to be working in much the same way for a South African as for the British sample. The low Cronbach is of concern, yet Lewis *et al.* (2000) still asserted the scale's usefulness. Hence the global individualism and altruism measures for these items were created with their α of a similar low value. The main purpose of including these items was as a cross-check to see if the INDCOL95 could be used amongst South African learners. A scale's concurrent validity is ascertained to the extent it displays variation in the expected direction with other measures of the same construct (Malhotra, 1999). Thus a Pearson correlation matrix between the two measures, INDCOL95 and Lewis *et al.* (2000), was examined. Columns entitled 'Indiv' and 'Altruism' are of the most interest as it is the intersection of these with Triandis' dimensions that establishes the concurrent validity of the scale. The 'Indiv' measure of Lewis *et al.* (2000) has a positive correlation with both sub-dimensions of Triandis' individualism (HI $r = 0.208$ and VI $r = 0.165$). Altruism loads significantly on HC ($r = 0.421$) and VC ($r = 0.383$). Hence the scales are both reliable and valid (see Table 25).

		<i>Indiv</i>	<i>Altruism</i>	<i>HC_Overall</i>	<i>HI_Overall</i>	<i>VC_Overall</i>
<i>Indiv</i>	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	417				
<i>Altruism</i>	Pearson Correlation	-.043	1			
	Sig. (2-tailed)	.386				
	N	399	424			
<i>HC_Overall</i>	Pearson Correlation	-.039	.421(**)	1		
	Sig. (2-tailed)	.454	.000			
	N	379	385	401		
<i>HI_Overall</i>	Pearson Correlation	.208(**)	.002	.053	1	
	Sig. (2-tailed)	.000	.973	.312		
	N	386	392	373	410	
<i>VC_Overall</i>	Pearson Correlation	.039	.383(**)	.479(**)	.112(*)	1
	Sig. (2-tailed)	.448	.000	.000	.028	
	N	386	393	377	385	410
<i>VI_Overall</i>	Pearson Correlation	.165(**)	.153(**)	.191(**)	.058	.191(**)
	Sig. (2-tailed)	.001	.003	.000	.262	.000
	N	375	383	366	377	377

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 25: Correlation Matrix Between Measures of Individualism/Collectivism

7.4.5. Individual Behaviour

Measurement of individual socially responsible behaviour is plagued by social desirability bias. Hence the current study elected to place a few key behaviours that were not clearly loaded in one way or another, but were included in the informational campaigns that DWAF and other water organisations had used. The initial set of items included observations ("Do you ever see taps leaking" and "Do you ever see leaking pipes") and one reverse coded item ("Do you ever stop taps from dripping"). The initial $\alpha = 0.51$ increased to 0.58 if the reverse coded item was omitted. Upon closer appraisal of the scale, it was decided to rather focus on behaviour rather than observation, as viewing other people's behaviour was more in the realm of co-operation of others. By leaving out the two observational items, the scale's reliability increased to a respectable 0.678. The dependent variable of individual cooperative behaviour was thus calculated on the abbreviated scale.

7.5. Hypothesis Testing

7.5.1. Definition of Terms

For ease of reading, below is a summation of the terms used in testing the hypotheses and the model.

- FIO: Faith in Others – the belief that others will act positively
- PCE: Perceived Consumer Effectiveness – the belief in the efficacy of one's own actions with regard to the environment
- SCHO DEFECT: Defecting behaviours displayed by the school – perceived negative water usage by the school
- SCHO COOP: Co-operative behaviours displayed by the school – perceived positive water usage behaviours demonstrated by the school
- COMM DEFECT: Defecting behaviours displayed by the community – perceived negative water usage by the community
- HI: Horizontal Individualism – degree to which a person is individualistic and non-hierarchical. These individuals value self-reliance and equality.
- HC: Horizontal Collectivism – degree to which a person is collectivistic and non-hierarchical. These individuals value conformity to the group, relationships with others and equality.
- VI: Vertical Individualism – degree to which a person is individualistic and hierarchical. These individuals value individual prominence and status and are the most competitive.
- VC: Vertical Collectivism – degree to which a person is collectivistic and hierarchical. These individuals value group norms and classes within society.
- BEHAV: defecting behaviours displayed by the individual (dependent variable).

All the relationships between these variables are indicated in the diagram below will be tested in the proposed model is outlined below:

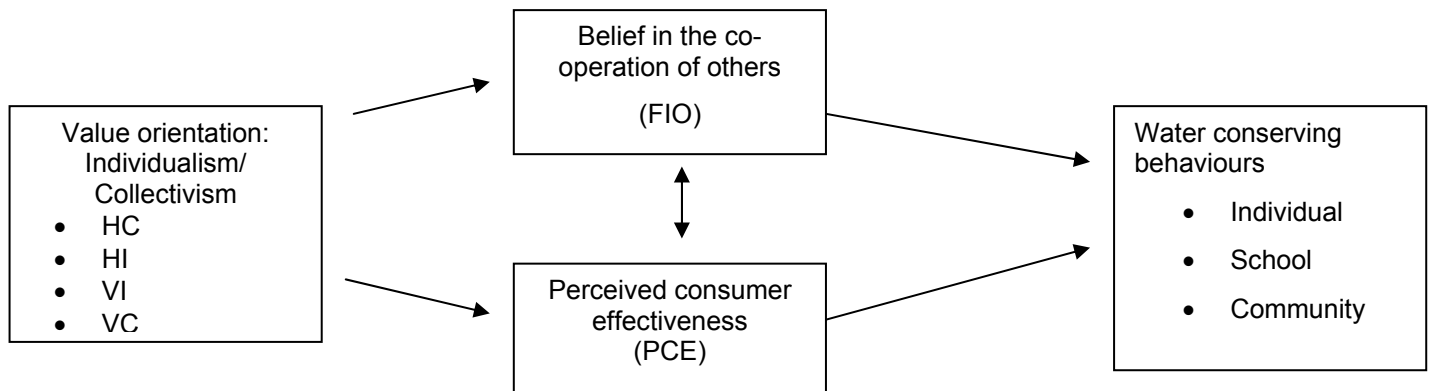


Figure 12: Proposed Model

7.5.2. Hypothesis 1

H₁: Consumers' beliefs that others co-operate will influence the number of water conserving actions they exhibit;

The first hypothesis dealt with the relationship between perceived co-operation of others and consumer willingness to co-operate (FIO and witnessed co-operation). This was testing using a Pearson correlation coefficient. Those with high perceived co-operation of others should exhibit low defecting behaviour. Thus a negative correlation between the two would be sought. Although the FIO scale did not emerge as intended from the reliability checks, there were still variables available to test the first hypothesis. All the items of FIO were independently entered into a correlation with BEHAV, the measure of defecting behaviour. The correlation matrix is presented in Table 26. Thus FIO 'soon use less' and FIO 'sacrifice' have the following significant negative relationships with defecting behaviour $r = -0.132$ ($p = 0.007$) and $r = -0.226$ ($p = 0.000$) respectively. As there is a significant negative relationship between the two FIO items and number of defecting behaviours exhibited by the respondents, thus the first hypothesis is supported.

		(Defecting) Behaviours	FIO Soon, most people will use less water if they can.	FIO I am sure that most people will sacrifice to use less water.
FIO Soon, most people will use less water if they can.	Pearson Correlation	-.132(**)	1	
	Sig. (2-tailed)	.007		
	N	420	433	
FIO I am sure that most people will sacrifice to use less water.	Pearson Correlation	-.226(**)	.382(**)	1
	Sig. (2-tailed)	.000	.000	
	N	428	431	441
FIO Most people don't do much to use less water. (Reversed)	Pearson Correlation	-.016	-.065	-.034
	Sig. (2-tailed)	.737	.179	.473
	N	428	429	438

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 26: Correlation Matrix Between Defecting Behaviours and Co-operation of Others

7.5.3. Hypothesis 2

H₂: Consumers' degree of collectivism/individualism will influence their belief that others will co-operate;

A Pearson correlation matrix was calculated to test the relationship between collectivism/individualism and FIO. As Table 27, p.127, demonstrates, there is a positive relationship between individualism and FIO “soon most people will use less water if they can” (hereafter referred to as ‘soon use less’) ($r = 0.157$, $p = 0.002$) and FIO “I am sure that most people will sacrifice to use less water” (hereafter referred to as ‘sacrifice’) ($r = 0.119$, $p = 0.021$). A much stronger positive relationship is evidenced between collectivism and FIO, with “soon use less” ($r = 0.243$, $p = 0.000$) and FIO “sacrifice” ($r = 0.289$, $p = 0.000$). Thus the hypothesis is supported.

		<i>FIO I am sure that most people will sacrifice to use less water.</i>	<i>School Defection Behaviours</i>	<i>School Co- operation Behaviours</i>	<i>Community Defection Behaviours</i>	<i>Lewis et al. (2000) Indiv</i>	<i>Lewis et al. (2000) Altruism</i>	<i>Triandis INDCOL95 Individualism</i>	<i>Triandis INDCOL95 Collectivism</i>
FIO Soon, most people will use less water if they can.	Pearson Correlation	.382(**)	-.106(*)	-.053	.033	.019	.083	.157(**)	.243(**)
	Sig. (2-tailed)	.000	.037	.303	.518	.701	.093	.002	.000
	N	431	390	380	385	407	415	369	372
FIO I am sure that most people will sacrifice to use less water.	Pearson Correlation	1	-.040	-.055	.124(*)	.038	.188(**)	.119(*)	.289(**)
	Sig. (2-tailed)		.426	.279	.014	.435	.000	.021	.000
	N		396	387	393	414	421	375	374
School Defection Behaviours	Pearson Correlation		1	-.389(**)	.406(**)	.077	.104(*)	.032	.003
	Sig. (2-tailed)			.000	.000	.135	.042	.549	.958
	N			359	365	375	383	344	344
School Co-operation Behaviours	Pearson Correlation			1	-.330(**)	-.053	-.011	-.023	.005
	Sig. (2-tailed)				.000	.311	.833	.668	.926
	N				352	369	374	337	339
Community Defection Behaviours	Pearson Correlation				1	.123(*)	.145(**)	.118(*)	.160(**)
	Sig. (2-tailed)					.018	.005	.030	.003
	N					371	377	340	344
Indiv (Lewis <i>et al.</i> , 2000)	Pearson Correlation					1	-.043	.258(**)	.004
	Sig. (2-tailed)						.386	.000	.934
	N						399	353	357
Altruism (Lewis <i>et al.</i> , 2000)	Pearson Correlation						1	.109(*)	.490(**)
	Sig. (2-tailed)							.038	.000
	N							359	363
Individualism (INDCOL95)	Pearson Correlation							1	.191(**)
	Sig. (2-tailed)								.000
	N								333

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 27: Relationship between FIO and Individualism and Collectivism

7.5.4. Hypothesis 3a and 3b

H_{3a}: Consumers' degree of vertical/horizontal allocentrism will influence their belief that others will co-operate;

H_{3b}: Consumers' degree of vertical/horizontal idiocentrism will influence their belief that others will co-operate;

Hypotheses 3a and 3b were assessed firstly in terms of a Pearson correlation matrix (Table 28, p.129) in order to investigate the relationships between HC, HI, VC and VI and the measures of co-operation of others, that is the two FIO measures.

A firm positive relationship was present between FIO (soon use less) and FIO (sacrifice) and HC ($r = 0.212$ and $r = 0.273$ respectively; $p = 0.000$ for both). The two FIO items also had a positive relationship with VC ($r = 0.159$ for 'soon use less' and $r = 0.212$ for 'sacrifice', $p < 0.01$). The positive relationship was present for VI and these items: FIO 'use less' ($r = 0.137$, $p = 0.007$) and FIO 'sacrifice' ($r = 0.205$, $p = 0.205$).

In order to explore these somewhat staggered relationships, the second assessment of the hypotheses was done. As FIO 'soon use less' and FIO 'sacrifice' demonstrated a positive relationship with individualism/collectivism, stepwise regressions were run with these as the dependent variables and the dimensions of individualism/collectivism as the predictors to see the relative influence of the independent variables in relation to each other. The results of these are presented below in Table 29, p.129.

		<i>FIO Soon, most people will use less water if they can.</i>	<i>FIO I am sure that most people will sacrifice to use less water.</i>
FIO Soon, most people will use less water if they can.	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	433	
FIO I am sure that most people will sacrifice to use less water.	Pearson Correlation	.382(**)	1
	Sig. (2-tailed)	.000	
	N	431	441
Horizontal Collectivism (HC)	Pearson Correlation	.212(**)	.273(**)
	Sig. (2-tailed)	.000	.000
	N	395	398
Horizontal Individualism (HI)	Pearson Correlation	.065	-.033
	Sig. (2-tailed)	.196	.510
	N	401	408
Vertical Collectivism (VC)	Pearson Correlation	.159(**)	.212(**)
	Sig. (2-tailed)	.001	.000
	N	400	407
Vertical Individualism (VI)	Pearson Correlation	.137(**)	.205(**)
	Sig. (2-tailed)	.007	.000
	N	391	399

** Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed).

Table 28: Relationship between Horizontal and Vertical Collectivism and Individualism and Co-operation

<i>Dependent Variable</i>	<i>Adjusted R Square</i>	<i>Final Stepwise Model</i>	<i>β Coefficients</i>	<i>Significance</i>
FIO 'Soon use less'	0.07**	HC	0.165	0.000
		VC	0.149	0.000
FIO 'Sacrifice'	0.12**	VC	0.180	0.004
		HC	0.162	0.009
		VI	0.125	0.019

**Model is significant at 0.01

Table 29: Stepwise Regression of Horizontal/Vertical Collectivism/Individualism on FIO

Table 29 above indicates that there is a relationship between collectivist tendencies, and faith in others. Horizontal orientations tend to be associated with co-operation in both models. Thus support for the hypotheses is found.

7.5.5. Hypotheses 4 and 6: Influences of PCE

H₄: Perceived consumer effectiveness (PCE) will influence the number of water conserving actions consumers exhibit (BEHAV);

H₆: Perceived consumer effectiveness (PCE) will influence consumers' belief that others will co-operate (FIO);

The scale of PCE is in the negative and this should be borne in mind when reviewing the relationships. In order to test these hypotheses, a correlation was run between PCE, FIO ('soon use less' and 'sacrifice'), SCHO COOP, SCHO DEFECT, COMM DEFECT and BEHAV. The results are shown in Table 30 below. As this table demonstrates, PCE has no relationship with individual defecting behaviours ($r = 0.012$, $p = 0.8$), but a positive relationship with school defection behaviours ($r = 0.123$, $p = 0.16$) and community defection behaviours ($r = 0.285$, $p = 0.000$) and a negative relationship with school co-operative behaviours ($r = -0.212$, $p = 0.000$). Thus low PCE coincides with school and community defection behaviours (as the scale is negative) and high PCE coincides with school co-operative behaviours. PCE also had a positive relationship with FIO 'sacrifice' ($r = 0.158$, $p = 0.001$). Hence individuals high in PCE tend to have low FIO. Thus hypothesis 4 is not supported at the level of the individual. PCE is, however, related to perceptions of school and community defection behaviours. Some support for Hypothesis 6 is found.

PCE Composite Score		
PCE Composite Score	Pearson Correlation	1
	Sig. (2-tailed)	
	N	427
School Defection Behaviours	Pearson Correlation	.123(*)
	Sig. (2-tailed)	.016
	N	387
School Co-operation Behaviours	Pearson Correlation	-.212(**)
	Sig. (2-tailed)	.000
	N	376
Community Defection Behaviours	Pearson Correlation	.285(**)
	Sig. (2-tailed)	.000
	N	382
FIO Soon, most people will use less water if they can.	Pearson Correlation	.075
	Sig. (2-tailed)	.127
	N	419
FIO I am sure that most people will sacrifice to use less water.	Pearson Correlation	.158(**)
	Sig. (2-tailed)	.001
	N	426
Individual Defecting Behaviours (BEHAV)	Pearson Correlation	.012
	Sig. (2-tailed)	.803
	N	416

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 30: PCE and its Relationship with Defecting Behaviours and FIO

7.5.6. Hypotheses 3c, 5 and 6: Interaction of PCE, FIO and BEHAVIOUR

H_{3c}: Belief in co-operation of others (FIO) and its influence on behaviour will be moderated by degree of horizontal/vertical idiocentrism/allocentrism;

H₅: Perceived consumer effectiveness and its influence on behaviour will be moderated by degree of horizontal/vertical idiocentrism/allocentrism;

H₆: Perceived consumer effectiveness will influence consumers' belief that others will co-operate;

These hypotheses lies at the core of the proposed model. The interrelationships between PCE, FIO, HC, HI, VC and VI and the impact of these variables and behaviour are best investigated through a MANOVA. MANOVA or multivariate analysis of variance enables the impact and interactions of multiple independent

variables on single or multiple dependent variables to be assessed (Hair, Anderson, Tatham & Black, 1998). In an ANOVA the equality of the dependent variable means across groups is tested, while in a MANOVA the equality of vectors of means is assessed (Hair, *et al.*, 1998). Most importantly, a MANOVA enables the interaction effects between factors (or independent variables) to be ascertained. Hence should the value of the dependent variable at different combined levels of the independent variables change, the inter-related impact of the independent variables is revealed. A multiple regression enters variables separately into the equation. A MANOVA was deemed more suitable than a multiple regression, as the interaction of the independent variables could be determined.

Despite problems highlighted in the reliability results, the two positively worded FIO items have demonstrated predictive patterns with other variables, indicating that these have predictive validity as a scale. Based on this accumulated evidence from the other hypothesis tests, it was decided to form a scale of the two, as initially intended. The interaction factors, PCE, HI, HC, VI and VC, together with the summated FIO, form the independent variables. An analysis with more than two treatments is termed a factorial design (Hair *et al.*, 1998). A 4 x 2 x 2 factorial design was thus conceptualised, with the independent factors as shown in Table 31 below:

<i>Variable</i>	<i>Number of Levels</i>	<i>Level 1</i>	<i>Level 2</i>	<i>Level 3</i>	<i>Level 4</i>
Individualism/ Collectivism	4	HC	VC	HI	VI
PCE	2	Low	High	N/A	N/A
FIO	2	Low	High	N/A	N/A

Table 31: Factorial Design

Respondents were then classified into one of the individualist/collectivist value orientations based on their highest score across all four (HC, HI, VC, VI). Two new variables were created. PCE was split into Hi/Lo conditions, as was FIO, where individuals scoring above the mean on both were classified as 'high' on that factor and those below were classified as 'low'. The mean for PCE was 10.5 and 6.7 for FIO.

The main effects and the interaction effects of the independent variables were reviewed. In factorial designs, the individual effect of each treatment (independent) variable on the dependent variable is term a *main effect* (Hair, *et al.*, 1998). The joint effects of two treatment variables, that is, the difference between the groups due to one independent variable fluctuates depending on the level of another independent variable, is termed an *interaction effect* (Hair *et al.*, 1998). This is thus an indication of the moderating influence of one variable on another. Table 32 indicates the four main tests for significant differences among the vectors in the MANOVA calculation. All tests calculate an *F* statistic much like conventional ANOVA. But, since the difference is among vectors and not groups, there are four different theories how this may be done: Pillai's Trace; Wilk's Lamda, Hotelling's Trace and Roy's Largest Root (Hair *et al.*, 1998). The variables with significantly different vectors on all four measures are illustrated in Table 32. Significant variables were FIO and Individualism/Collectivism as main effects ($p = 0.032$ and the marginal $p = 0.051$ respectively). The interaction of PCE and FIO approached significance at $p = 0.071$, as did the interaction between PCE and Individualism/Collectivism ($p = 0.081$). The r^2 was a 0.109 and adjusted $r^2 = 0.056$.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Paramete r	Observed Power(a)
Model	501.070(e)	15	33.405	2.035	.014	30.530	.959
Intercept	36264.351	1	36264.351	2209.56	.000	2209.562	1.000
FIO_Factor	76.143	1	76.143	4.639	.032	4.639	.574
PCE_factor	.789	1	.789	.048	.827	.048	.055
Indiv_Col_Classification	129.059	3	43.020	2.621	.051	7.863	.638
FIO_Factor * PCE_factor	54.008	1	54.008	3.291	.071	3.291	.439
FIO_Factor * Indiv_Col_Classification	29.657	3	9.886	.602	.614	1.807	.175
PCE_factor * Indiv_Col_Classification	111.701	3	37.234	2.269	.081	6.806	.569
FIO_Factor * PCE_factor * Indiv_Col_Classification	10.664	3	3.555	.217	.885	.650	.090
Error	4086.703	249	16.412				
Total	47444.000	265					
	4587.774	264					

a Computed using alpha = .05

b R Squared = .109 (Adjusted R Squared = .056)

Table 32: Tests of Between Subjects Effects: Dependent Variable BEHAVIOUR

The plots of the impact of these variables on behaviour as estimated by the model are represented in Figure 13 and Figure 14. As FIO increases, as expected, defecting behaviour decreases (see Figure 13). A large number of defective

behaviours are exhibited by those respondents classified as horizontal individualists and collectivists (see Figure 14). Vertical individualists (township schools) are shown by the solution to have the lowest levels of defecting behaviour, an unexpected result given that these respondents have the lowest levels of community spirit.

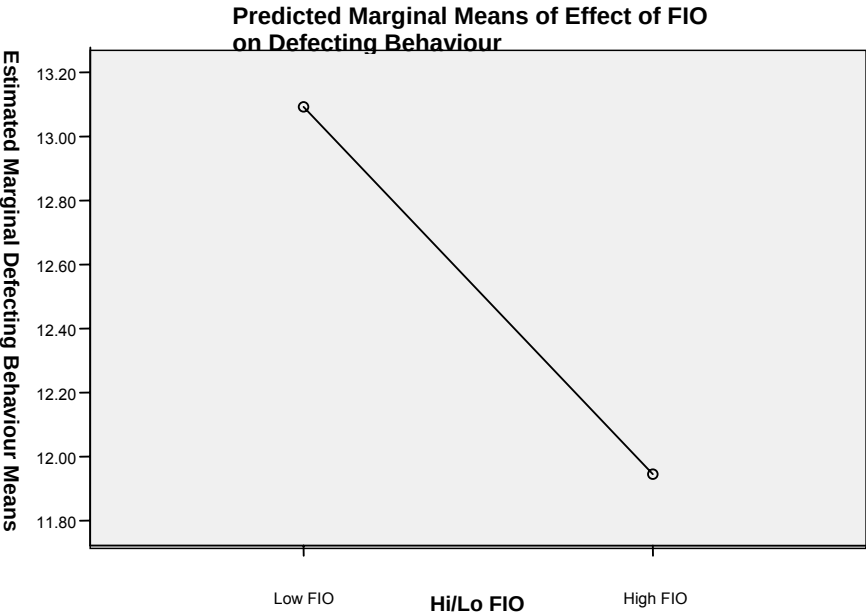


Figure 13: Profile Plot of the influence of FIO and BEHAVIOUR

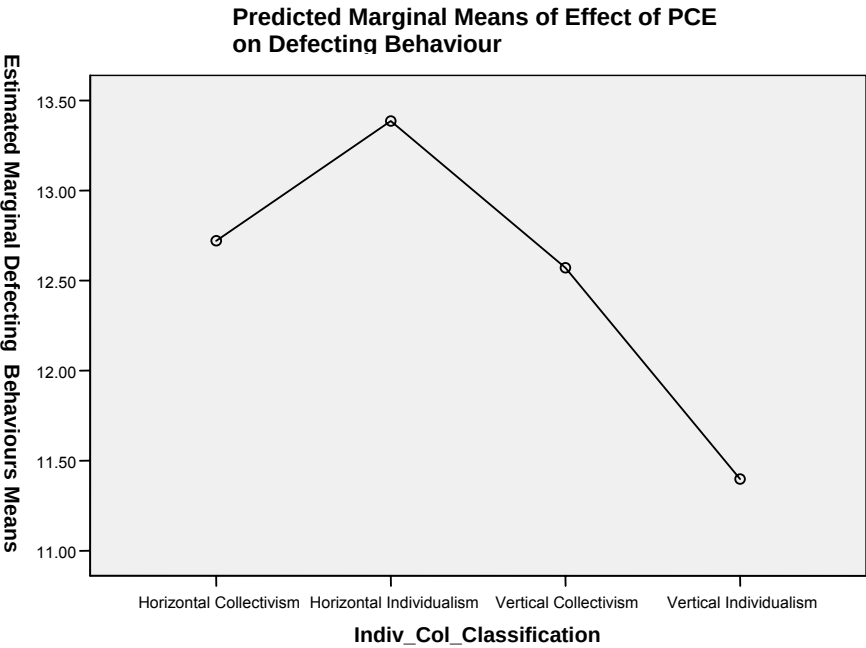


Figure 14: Profile Plot of the influence of Indiv/coll and BEHAVIOUR

In terms of the interaction variables, the following plots demonstrate that their effects were largely as expected (see Figure 15 and Figure 16). Low FIO coupled with high PCE resulted in the most defecting behaviour, high PCE and high FIO saw the most co-operative behaviour. Respondents with low PCE were largely unaffected by FIO (see Figure 15). This interaction is termed a disordinal interaction effect. In a disordinal interaction the effects of one treatment are positive for some levels and negative for others (Hair *et al.*, 1998).

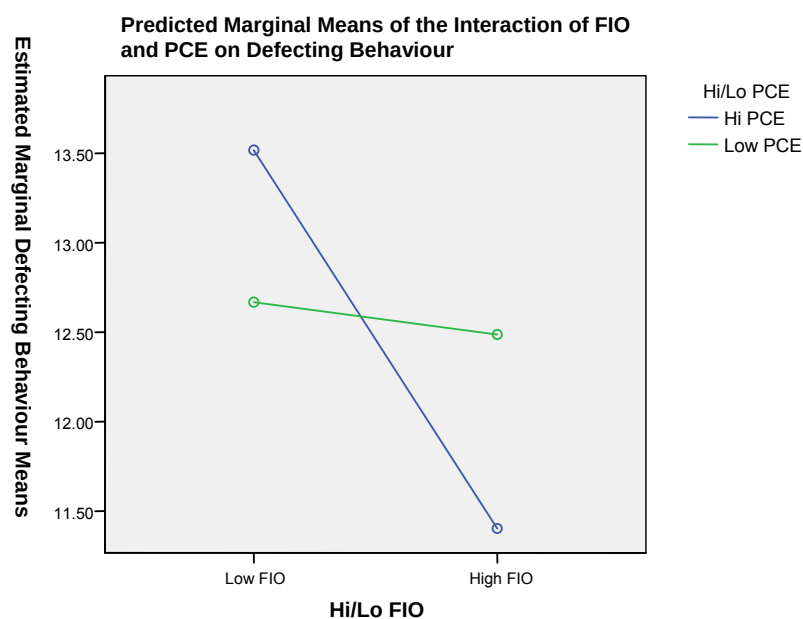


Figure 15: Profile Plot of the influence of FIO and PCE

The other interaction variable, PCE and Indiv/Coll, returns some expected and some unexpected results. PCE demonstrates a disordinal interaction with individualism/collectivism. Individuals defect more at higher levels of PCE for all individualist/collectivist types apart from vertical individualists, who defect markedly less at high PCE and more at low PCE.

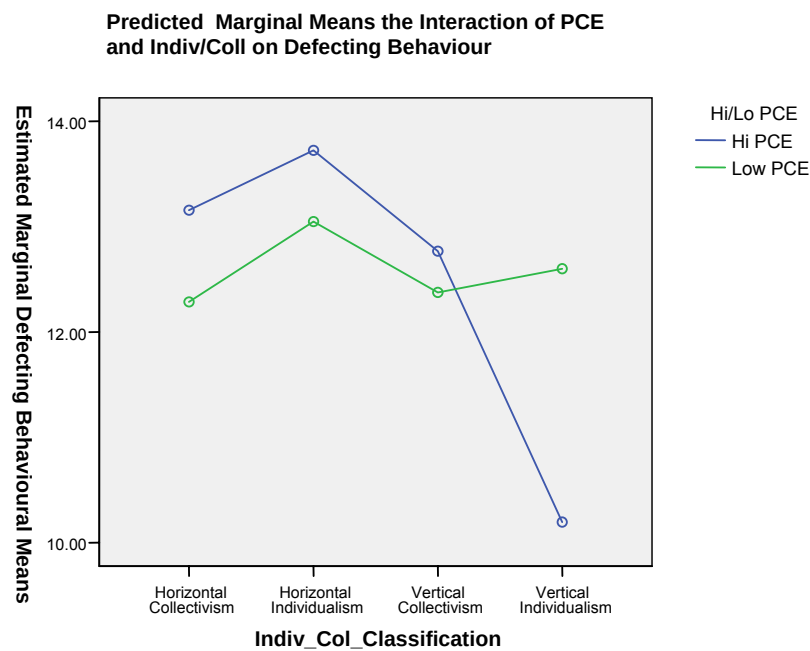


Figure 16: Profile Plot of the influence of PCE and Indiv/Coll

There is thus some support for hypotheses 3b to 6.

7.5.7. Hypothesis 7: Influence of Socio-economic Background

H_{7a}: Consumers in lower socio-economic backgrounds will exhibit greater degrees of collectivism than individuals from higher socio-economic backgrounds.

H_{7b}: Consumers in lower socio-economic backgrounds will exhibit different levels of degrees of PCE and FIO than individuals from higher socio-economic backgrounds.

An independent samples *t*-test was used to test hypotheses 7a and 7b. Table 33 below demonstrates that the Township learners are significantly different from the Suburban learners on all the variables. Township learners exhibit a greater degree of horizontal and vertical collectivism, vertical individualism, a greater faith in others (FIO) and a lower degree of perceived consumer effectiveness (PCE) (note the scale is on the negative). Suburban learners possess more horizontal individualism, less faith in others (FIO) and more PCE (indicated by the lower score). Thus both sub-hypotheses of hypothesis 7 are supported.

	<i>High/Low Income School</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Signif (2 Tailed)</i>	<i>Std. Error Mean</i>
Horizontal Collectivism	Suburban	202	-1.3386	3.51389	0.000	.24724
	Township	199	1.3531	4.13265	0.000	.29296
Horizontal Individualism	Suburban	206	1.0522	3.55438	0.000	.24765
	Township	204	-.7975	4.72623	0.000	.33090
Vertical Collectivism	Suburban	206	-.7489	3.90932	0.000	.27238
	Township	204	.6872	3.60840	0.000	.25264
Vertical Individualism	Suburban	202	-1.7845	4.54188	0.000	.31957
	Township	199	1.7478	3.40051	0.000	.24106
Faith in Others (FIO)	Suburban	207	5.8647	1.56449	0.000	.10874
	Township	224	7.2589	1.97403	0.000	.13190
Perceived Consumer Effectiveness (PCE)	Suburban	205	9.1073	3.05797	0.000	.21358
	Township	222	11.7928	3.26954	0.000	.21944

Table 33: T-Test of Differences between Township and Suburban Learners

7.5.8. Hypothesis 8: Consumer Rights

H₈: Consumer rights are more important for idiocentrics than allocentrics.

The relationship between consumer rights and individualism/collectivism was assessed by means of a Pearson correlation coefficient between the two questions on right to water and the four levels of individualism/collectivism and the overall measure of individualism/collectivism. A relationship was found to exist, but in the opposite direction: collectivists were more concerned with rights (see, for example, the statement “everybody must have water even if they cannot pay for it” registered correlations of: HC $r = 0.194$, $p = 0.000$; VC $r = 0.183$, $p = 0.000$ and overall Collectivism $r = 0.231$, $p = 0.000$). Vertical individualists do show some concern with rights ($r = 0.120$, $p = 0.000$) on this question. The strong association of the same cultural value orientations (HC, VC and VI) with lower socio-economic status (see Table 33) may mean that the concern with rights is confounded with affordability, especially as the question was asked in terms of costs. The hypothesis is rejected.

		RIGHTS Everybody must have water even if they cannot pay for it	RIGHTS Water should not be cut off if people don't pay for it
RIGHTS Everybody must have water even if they cannot pay for it	Pearson Correlation	1	.454(**)
	Sig. (2-tailed)		.000
	N	441	432
RIGHTS Water should not be cut off if people don't pay for it	Pearson Correlation	.454(**)	1
	Sig. (2-tailed)	.000	
	N	432	434
Horizontal Collectivism	Pearson Correlation	.194(**)	.207(**)
	Sig. (2-tailed)	.000	.000
	N	399	391
Horizontal Individualism	Pearson Correlation	.031	.032
	Sig. (2-tailed)	.532	.528
	N	408	403
Vertical Collectivism	Pearson Correlation	.183(**)	.176(**)
	Sig. (2-tailed)	.000	.000
	N	407	400
Vertical Individualism	Pearson Correlation	.120(*)	.121(*)
	Sig. (2-tailed)	.016	.016
	N	399	393
INDIVIDUALISM	Pearson Correlation	.101	.109(*)
	Sig. (2-tailed)	.051	.037
	N	375	370
COLLECTIVISM	Pearson Correlation	.231(**)	.231(**)
	Sig. (2-tailed)	.000	.000
	N	375	367

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 34: Correlation between Concern for Rights and Individualism/Collectivism

7.5.9. Hypotheses 9: Preference for Structural Solutions

H_{9a}: Consumers low in FIO will display greater preference for structural solutions.

A Pearson correlation was used to assess the relationship between FIO and preference for structural solutions, as the question regarding structural solutions: “the government must make people use less water” was asked on a scale of ‘1’ (strongly disagree) to ‘5’ (strongly agree). Surprisingly there was a significant positive relationship in the reverse direction, as higher FIO coincided with a greater preference for structural solutions ($r = 0.215$, $p = 0.000$). Hence this hypothesis is not supported.

H_{9b}: Consumers from Township areas will display greater preference for structural solutions.

An independent samples *t*-test was used to determine if there was a greater preference for structural solutions amongst Township rather than Suburban learners. This was indeed found to be the case. Suburban had a mean of 3.47 and Township learners reported a mean of 3.77 with the difference between the two at $p = 0.009$. Thus this hypothesis is supported.

7.5.10. Hypothesis 10: Perceptions of Resource Abundance and Harvesting Behaviour

H₁₀: Consumers who believe the resource is plentiful will display greater harvesting behaviour.

A Pearson correlation was used to verify the relationship between defecting behaviour and perception of resource abundance. The question “South Africa is a water rich country” was used as a proxy for resource abundance. There was a significant positive correlation between resource abundance and harvesting behaviour (individual defection behaviours) as $r = 0.114$ and $p = 0.019$. Support is therefore found for this hypothesis.

7.6. Chapter Summary

The chapter opened with a review of the differences between the Township and the Suburban learners. These differences confirmed the decision to stratify the sample along the dimension of location. A review of the scales used then followed. Most scales were usable, apart from some problems with reverse coded items and faith in others (FIO). Although the FIO scale demonstrated some problems, analysis using the two remaining items at an individual level demonstrated that they worked in unison. Hence the decision was made to convert the two FIO items into a summated scale for testing the model.

<i>Hypothesis</i>	<i>Relationships in Model</i>	<i>Supported/Not Supported</i>
Hypothesis 1	FIO influences individual co-operative behaviour	Supported
Hypothesis 2	Collectivism/Individualism influences FIO	Supported
Hypothesis 3a	Vertical/horizontal allocentrism influences FIO	Supported
Hypothesis 3b	Vertical/horizontal idiocentrism influences FIO	Supported
Hypothesis 3c	FIO and its influence on behaviour moderated by HI, HC, VI and VC	Not Supported
Hypothesis 4	PCE influences individual cooperative behaviour	Supported
Hypothesis 5	The influence of PCE is moderated by HI, VC, VI and HC	Supported
Hypothesis 6	PCE influences FIO	Supported
Hypothesis 7a	Lower socio-economic consumers will be more collectivistic	Supported
Hypothesis 7b	Lower socio-economic backgrounds will have different levels of PCE and FIO	Supported
Hypothesis 8	Consumer rights are more important for idiocentrists than allocentrists	Not Supported
Hypothesis 9a	Low FIO consumers prefer structural solutions	Not Supported
Hypothesis 9b	Township consumers prefer structural solutions	Supported
Hypothesis 10	Consumers who believe the resource is plentiful will harvest more	Supported

Table 35: Summary of Hypothesis Testing

Table 35 above provides a summary of the findings of the hypothesis testing in Chapter 7. Chapter 8 discusses these findings and their implications, as well as provides suggestions for future research and delineates the limitations of the study.

8. Chapter 8: Discussion

8.1. Chapter Overview

The current chapter outlines the research process followed thus far and presents the degree to which the proposed model was validated. A reformulated model in the light of the findings is presented. The results are discussed in terms of their implications for the model, the literature and the equations. Most importantly, the implications for the marketing of water conservation are presented. The limitations of the study, suggestions for future research and conclusion is provided.

8.2. Review of Research Process

The literature enabled a model to be developed that would explain consumer behaviour when faced with the Resource Dilemma of conserving water. A Resource Dilemma involves consumers deciding between self- and other-interest when faced with the impasse of harvesting for self or sacrificing for the benefit of the group. There has been evidence that consumers will conserve when they believe their actions have an effect and when others will sacrifice as well. Nevertheless, under both conditions they are faced with the twin problems of free-riding and being 'suckered'. If an individual sacrifices and no one else does, they risk being a 'sucker' but also endanger the resource. If everyone else sacrifices and he or she does not, he or she could 'free-ride' and obtain the best of both worlds.

A descriptive research design was employed where 444 learners from 10 schools in Gauteng completed pen and paper interviews. Questions tapped key areas isolated in the literature as vital in the study of social dilemmas: cultural value orientation (individualism/collectivism), perceived consumer effectiveness (PCE), faith in others (FIO) and co-operative behaviours (saving water). Learners were selected as they are the target for most informational or government advertising campaigns in this area. Hence they should have had a high knowledge of water conservation. The extent to which knowledge and attitudes have converted into behavioural change has long been a quandary in social marketing. Thus investigation of variables associated with behavioural choice in social dilemmas, as the preservation of water resources is a Resource Dilemma, would shed light on ways to effect greater behavioural change.

8.3. Summary of Research Findings: Implications for the Model

An overview of research findings is best presented in Figure 17 below. Support for most hypothesised relationships was found, apart from a direct link between PCE and individual behaviour. There was, however a direct relationship between PCE and the behaviour of others. All relationships were in the expected direction.

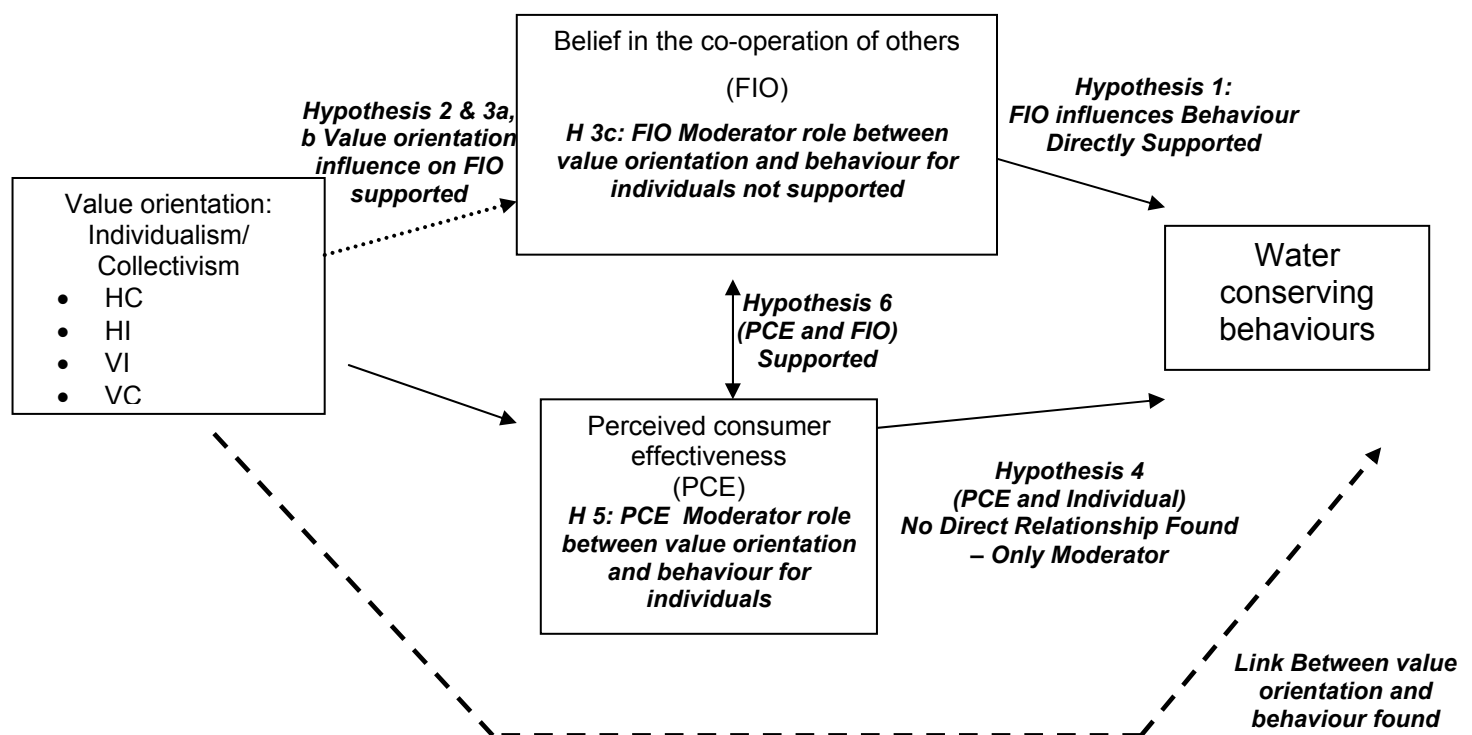


Figure 17: Validated Model

Four hypotheses were supplemental to the model: H₈: individualists would be more concerned with consumer rights. H_{9a} respondents low in FIO and (H_{9b}) Township respondents would prefer structural solutions to social dilemmas, that is, the government should intervene. H₁₀ consumers who believed the resource was plentiful would harvest more. Two of these were supported: Township respondents favour structural solutions and those who believed the resource was abundant harvested more.

8.4. Discussion

8.4.1. Individualism/Collectivism and its interaction with FIO and PCE

The relationship between FIO, or faith in others, was directly influenced by individual value orientation and had a direct impact on individual behaviour. Respondents who had higher degrees of faith in others were more likely to be collectivists and exhibit more co-operative behaviours. This is in line with the literature as researchers found that pro-socials were more co-operative (Wagner, 1995) and selecting the group over others is a collectivist trait (Triandis, 1995). What was unexpected was the lack of interaction effect found between FIO and individualism/collectivism on individual behaviour. Thus the lack of interaction effect (FIO x Individualism/Collectivism) means that each variable (FIO and Individualism/Collectivism) has a separate impact on consumer behaviour, meaning that the impact of one does not depend on the level of another. Their influences are separate. A possible reason for this lies in social mobility and growing affluence across the major metropolitan areas of South Africa. If one reviews Triandis' ecological perspective (1989, 1995; 2001), the changing social circumstances should lead to a change in cultural value orientation. As a consequence, the Township learners displayed the greatest variability in terms of orientations. They were high in vertical individualism, vertical collectivism and horizontal collectivism. Based on Eaton and Louw (2000) one would expect more collectivism amongst speakers of African vernacular languages, which was indeed the case, apart from the high rate of vertical individualism. The diversity of orientations implied that these are becoming distinguished in their impact on individual behaviour.

Hypothesis two dealt with the direct relationship of individualism/collectivism on FIO. A significant relationship was present. Vertical collectivists displayed extremely low co-operation when their FIO was low, while horizontal collectivists and horizontal individualist reported high rates of co-operation when FIO was high. Vertical individualists registered very little impact of FIO on behaviour. The dimension of horizontality rests along a belief that all members of society are equal and equal outcomes for all is best (Triandis, 1995; Parks & Rumble, 2001) and pro-socials meet co-operation with co-operation (Camac, 1992; Parks & Rumble, 2001). Thus it is not surprising that HI and HC believe more in their fellow citizens and respond co-operatively. Conversely, individualists take their behavioural cues internally and

should, therefore be influenced more by internal drives. Hence self-efficacy should be more important for them, as the study did find.

PCE, although not directly affecting behaviour at an individual level, (H_4) acted as a moderator for individualism/collectivism. Thus there is an interaction between PCE and individualism/collectivism. Hence each variable's impact is affected by the presence of the other. This is termed a moderator effect. Therefore, using more than one variable in combination would be more effective in understanding and impacting behaviour. Most importantly, collectivism is associated with low self-efficacy and high group efficacy (Triandis, 1989; Chiou, 2001). Collectivists should, therefore, be hampered by low PCE when faced with a social dilemma, as Kim and Choi (2005) found. The current study corroborates these results. Low PCE coincides with high rates of defection for horizontal collectivists and vertical individualists. Horizontal individualists were the only group to display high rates of co-operation under conditions of low PCE. Such a result is not unforeseen when one considers that horizontal individualists value equality and co-operate because they believe it is universally the 'right thing to do' rather than because it is a group norm or because their action will have a large impact (Gärling, 1999).

A direct relationship between individualism/collectivism and co-operative behaviour was present. Horizontal collectivists defected the most, followed by horizontal individualists. This direct relationship validates the proposed subjective weight value function represented in Equation 5, reproduced for ease of reference below:

Equation 9 (5): Subjective Weight Value Function Under Allocentrism/Idiocentrism

$$Q_T = IC (W_s * Q_{SELF}) + AC (W_o * Q_{OTHERS})$$

Where: Q = Outcome
 W = Weight
 IC = Idiocentric orientation
 AC = Allocentric orientation

8.4.2. PCE and FIO

The preservation function rests a great deal on F , which is the number of people required before a public good is produced or a resource is preserved. A related

concept to Wiener & Doescher's (1991) demonstration of the importance of scale, reproduced below for ease of reference:

Equation 10: Factor of Scale

$$U(C, T) > T \text{ for some } C > n^*$$

Where:	U	=	Amount of utility from resource preservation
	C	=	Number of community members who sacrifice
	n	=	number of people in the population
	n*	=	Threshold number of people required before the resource is preserved
	T	=	Temptation to defect

If less than n^* people co-operate, the resource is destroyed and the individual is a 'sucker'. People are wary of conditions where an insufficient number of people will not co-operate (n^*) and thus are fearful (McCarthy & Hagan, 1998; Simpson, 2003). Thus individuals would be tempted to defect when n^* is perceived. Such conditions would occur when FIO is low. The model predicted, and found, low FIO to correspond with low levels of co-operation.

The interaction between FIO and PCE is of great interest, as both are required in the F function and both are affected by the factor of scale. The F function represents the impact of one individual's action on the production of the public good. If F is small, the number of people required to preserve the resource is large, as the impact of individual action is small. Thus the F function accounts for both actions of others and of self, represented in the model as FIO and PCE. Crucially, the results demonstrate an interaction between these two variables (H_6) and a corresponding impact on behaviour, as the interaction was found to significantly impact on co-operative behaviour. Thus low conditions of both FIO and PCE resulted in the lowest levels of co-operation. The results, therefore, have validated the conceptualised role of F .

The contribution of the model towards understanding F is in the finding that there is a significant moderating impact individualism/collectivism by PCE. As evidenced earlier, PCE is required before collectivists co-operate. Kim and Choi (2005) had a similar result. Thus the F value would vary according to the varying degrees of collectivism and individualism that a group has. Equally importantly, PCE had no direct impact on co-operative behaviour. Thus PCE is needed but not sufficient in itself to induce co-operative behaviour. Similarly, Kim and Choi (2005) found

concern for the environment to operate separately from PCE, and PCE only to play a role between co-operative action and collectivism. Thus PCE interacts with individualism and collectivism to impact behaviour, but it is faith in others and individualistic/collectivistic value orientations that directly impact co-operation. Just as individualists have higher self-efficacy (Triandis, 1995) this variable is not important for advertising attention for this market segment. The most important implication of these findings would be that marketers can manipulate the perception of F through PCE mainly for collectivists. FIO is more important for individualists.

The number of defectors D would be expected to be a greater problem in dilemmas where a greater proportion of the population have an idiocentric orientation, as was found to be the case. Therefore the conjecture that F (or the number of cooperators required before the public good is produced or the resource is preserved), would be still harder to attain in individualistic societies than collectivist ones is held, thus the preservation function is supported:

Equation 11: Preservation Function Under Allocentrism/Collectivism

$$L = 1 - (D/N^{FA})$$

Where	L	=	Level of resource preserved
	D	=	Number of defectors in a population
	F	=	Return for each unit of co-operation
	A	=	Level of allocentrism
Note:	F^*A		

8.4.3. Reformulation of the Model

The findings above imply a reformulation of the proposed model. PCE was found to be a moderator of individualism/collectivism, as well as to interact with FIO. PCE did not have a direct impact on behaviour. Individualism/collectivism was found to have a direct impact on behaviour, not specified in the original model. This construct also influenced FIO, but FIO did not act as a moderator between individualism/collectivism and behaviour. Both FIO and individualism independently influenced co-operative behaviour. Figure 18 below represents the reformulated model.

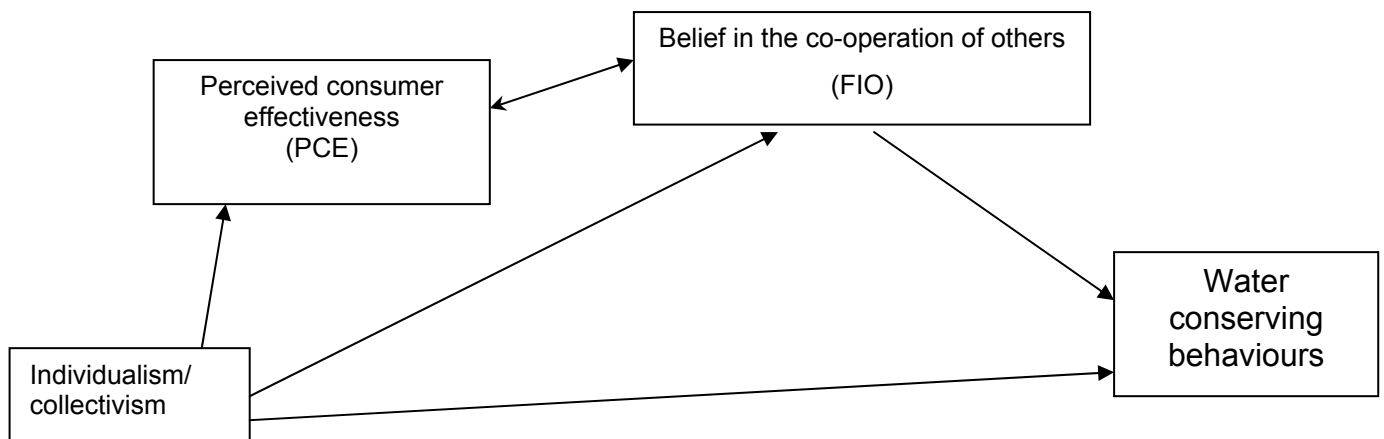


Figure 18: Reformulated Model

8.4.4. Supplementary Results

The question of consumer rights should be discussed in conjunction with preferences of Township respondents for a structural solution. It was hypothesised that idiocentrics should favour consumer rights more than allocentrics, as rights rather than obligations are a priority for individualists (Voronov & Singer, 2002). The opposite was found: respondents high in horizontal and vertical collectivism and vertical individualism corresponded with concern for rights. This group coincided with the Township learners. The phrasing of the question may be a driving factor here, as it centred on *cost*. Allocentrics have been found to be more sensitive to the costs of a sanctioning system (Van Vugt *et al.*, 1996), as they have lower financial satisfaction (Dutta-Bergman & Wells, 2002) and they often have less affluence than idiocentrics (Triandis, 1995, 2001). The Township respondents were less convinced of the quality of water they received and were more likely not to perceive costs involved in water provision. Thus it follows that this group believed that water was a right and non-payment should not be met with termination of the water service.

The utility function conceptualised in the literature review was seen as being influenced by the key variables of personal utility (U), the value of the resource (V) the level of the resource preserved (L), the cost to the individual member (K) and the level of allocentrism (A). As allocentrics value outcomes of others more than outcomes for self (Triandis, 1995; Gärling, 1999), the cost for this group was thought

to be less of a factor. The findings of the current study, coupled with evidence from Van Vugt *et al.* (1996) demonstrate that costs are an important factor for allocentrics, especially if they are monetary in nature. The sensitivity to cost reverses the impact of allocentrism in the proposed utility function under allocentrism/collectivism, as monetary cost for allocentrics is important. Hence:

Equation 12: Utility Function Under Allocentrism/Collectivism

$$U = ((V - (U_{\text{Out-group}} \times A)) L - K / (1 - A))$$

Where	U	=	Utility
	V	=	Full preservation of resource
	L	=	Level of resource preserved
	K	=	Cost to individual member
	A	=	Level of allocentrism

Becomes the following as individual costs are prohibitive for allocentrics:

Equation 13: Utility Function Under Allocentrism/Collectivism

$$U = ((V - (U_{\text{Out-group}} \times A)) L - K^* A)$$

The implications of this show that when marketing to allocentrics non-monetary solutions have to be promoted. Van Vugt *et al.* (1996) made a similar observation in their study. Thus the revised utility function, as set out in the Equation 13 above should have greater use. Note, however, that the role of the out-group was not tested empirically in the current study and no adjustments can be made to this section of the equation.

8.4.5. Supplementary Hypotheses

Just as in Chipp and Morton-McKay (2002), there was a marked preference for structural solutions amongst the Township sample. This group had higher levels of collectivism and lower PCE. As collectivists believe more in the efficacy of leaders and have lower levels of individual effectiveness (Triandis, 1996), it is not surprising that Township learners elected for a structural solution. The extent to which the same group believed water payment should not be enforced and no value was added through the water delivery system highlights important implications for municipalities and government. Framing effects could come into play. Collectivists will show more

restraint in a Resource Dilemma as they do not have to pay, but merely use less (Sell *et al.*, 2002). Moreover, informational campaigns should look towards providing information to change beliefs regarding the quality of water and its cost. Informational campaigns are the most useful when they are on par with community values (Trumbo & O'Keefe, 2005), thus these must be designed with community concerns and not simply be 'getting the message out'.

Similarly the need for consumer education comes with the finding that perceptions of resource abundance enhance harvesting behaviour. A large number of learners believed South Africa is a water rich country; hence they feel no need to engage in any conserving behaviours. It is up to marketers to disillusion them from this belief.

The most unlooked for finding was the lack of relationship between low FIO and preference for structural solutions. A possible reason for this could be lack of faith in structural solutions in general, as enforcement is not very effective currently, as Chipp and Morton-McKay (2002) found. The entire sample was used for this analysis: both Suburban and Township learners who were low in FIO elected not to have a sanctioning system. The Township learners did, however. This reflects the collectivist morality of what is right, the vertical desire for leadership intervention and, the lack of importance amongst collectivists for individual freedom. Triandis (1989, 1995) demonstrated that individualists value freedom while collectivists value duty. The Suburban sample, with its high payment levels and individualistic tendencies, may not see the need or desire to have their behaviour controlled by government.

8.5. Implications for Marketing Water Conservation

8.5.1. Market segmentation

Target markets for water conservation drives a need to be segmented along social value orientation (individualism/collectivism), as each group has different needs and would respond to different media appeals. McCarty and Shrum (2001) urged marketers to design environmental messages around the 'right thing to do' for collectivists and to reduce personal inconvenience for individualists. The current study highlights that, while the literature finds messages based on morality may work for collectivists, collectivism is a moving target in an emerging market. Township consumers were found to be very diverse in their value orientation. Moreover, Suburban consumers scored high on horizontal individualism. Gärling (1999)

demonstrated that perceptions of equality and fairness were important for this group. Thus a review of both horizontal and vertical dimensions of individualism and collectivism reveals that the blanket message of 'right imperatives' may be more applicable to horizontal dimensions than vertical ones.

Greater defection may be expected from individualists, as found to be the case in the current research. A different strategy for these target groups is required, one that could focus on status for vertical individualists. For example, having water conservation devices, such as low-flow showerheads could be seen as a status symbol, marking the users out as 'special' as they are 'unique' in the sense that they care about the environment. Such associations would do well for a group who value social distinction.

8.5.2. Message Appeals

Dividing individualism and collectivism into sub-dimensions as set out by Triandis (1989, 1995) has borne fruit. Correspondingly the use of other sub-dimensions, such as independent and interdependent selves could too. Utz (2004) framed messages to evoke interdependent or independent selves. Messages of interdependent selves increased co-operation even among vertical individualists. A similar approach could be tried in South Africa.

Collectivists need increased levels of PCE. This of Kim and Choi (2005) has been borne out in the current study. Thus marketing campaigns to target markets high on allocentrism should focus on increasing the power of individual action. Individualists required increased levels of FIO, as the current study found allocentrism to be related to FIO. FIO, in turn, has a large impact on behaviour. Thus the reformulation of Wiener and Doescher's (1991) message frames (see Table 36 overleaf) focus on ease of action, high impact of individual behaviour and small scope problems for collectivists. Horizontal collectivists and individualists can be approached more through the 'right thing to do' avenue.

Allocentrism and FIO could be fostered through marketing campaigns that stress the shared nature of the resource and also foster ownership of the dilemma as a community problem. This would build strong in-groups, in which even actors with competitive orientations would co-operate, as Bornstein and Ben-Yossef (1994) asserted. Collectivists value relationships, especially horizontal collectivists.

Appeals could be formulated on the role of good water practice as an asset to the community. Chipp and Morton-McKay (2002) found a high level of recall for an advertising campaign run by a popular disc jockey, who asked the community to use water carefully as their brethren in the rural areas had to walk miles to get one solitary bucket. The use of reference groups, therefore, for collectivists would also be beneficial, as Lee *et al.* (2002) discovered. Thus these implications have been taken into account in the annotation of Table 36 below.

Barriers to Cooperation	Information That Should Be Emphasized to Overcome the Barrier		Strategies for Overcoming the Barriers ^a	
Reactance				
One-group case	Importance of reaching the goal	<i>Emphasise shared resource</i>	Starving baby appeal	<i>Build community pride</i>
Multigroup or individual case	None suggested	<i>Common fate</i>	None suggested	
Sucker	Goal will be reached		Well baby appeal	<i>HC/VI</i>
Self-interest	Size of dilemma is small		Scope-reduction approach, civic pride approach	<i>HC/VI</i>
	Your contribution will make the difference		Leadership appeal, phased segmentation approach	<i>VC, VI</i>
	Social payoff is larger, but not more important		Emphasize ease of cooperation	<i>HI</i>
	Nonsocial payoff is larger and more important		Ethical appeal	<i>VC/VI</i>
Mistrust	Others are cooperating or will cooperate		Survey results approach, positive feedback appeal	<i>VI</i>
	Group identification		Civic pride approach, common fate appeal	<i>VI</i>
No reinforcement	Use mistrust and sucker information		Use mistrust and sucker strategies	<i>VI</i>

Table 36: Adapted Message Frames – Overcoming the barriers to co-operation

Source: Adapted from Wiener & Doescher (1991, p.43)

8.5.3. Problem Diagnosis and Programme Approach

The levels of allocentrism/idiocentrism in a target group is important. But so is the problem itself. Water as a Resource Dilemma would gain greater co-operation than water as a Public Goods Dilemma. This applies particularly with reference to Prospect Theory. Prospect theory has been validated internationally and demonstrates that people are more sensitive to losses rather than gains and would sacrifice more to keep a resource than lose it (Sell *et al.*, 2002). More importantly, subjects also harvest less if the resource is in threat and under-harvesting is an easier achievement than payment, according to the same theory. The current study found allocentrics to be sensitive to payment; thus conservation may be a better goal than account payment. Once co-operation for conserving behaviours is gained, then the authorities could pursue payment. This follows marketing's well used foot-in-the-door technique: consumers wish to be consistent in their behaviour, so they extrapolate co-operation on small requests to entail co-operation on larger ones.

In addition, the value of the F function would be very instructive. The F function outlines the impact of one individual's behaviour and how many individuals in a population are needed to co-operate before the desired level of the resource is saved. Water conservation needs large numbers to comply and the value of individual action is accelerating rather than decelerating (Heckathorn, 1998). That is, the more people who co-operate, the greater the impact there is, much in the same way as the fewer people who litter, the larger extent of the environment is pristine. Thus individuals need to be made aware of this, as the F function in such cases is small.

8.5.4. Promotion of Sanctioning Systems

The study did not replicate the international experience of low trusters to opt for sanctioning systems. Nevertheless, there was a desire for a sanctioning system among the Township learners, whose payment levels are the lowest. Eek *et al.* (2002) recorded that intermittent sanctioning systems work best for pro-socials. Given the high payment compliance amongst the Suburban learners and the large degree of collectivism present in the Township sample, an intermittent sanctioning system may work. The role of marketing in the system would be to broadcast its use and the wide reach, hence this could induce the large 'spillover' effect. The 'spillover' effect reflects increased compliance from individuals not sanctioned, but who know that an intermittent system is in place, such as traffic fines for people who speed (Eek *et al.* 2002).

Although outside the gamut of the current study, anecdotal evidence points to poorly marketed and received sanctioning systems in townships (McKay, personal communication, 2006). Careful marketing of these systems should build on the positive sentiment that exists towards them in principle.

8.6. Limitations of the Study

The greatest limitation of the study lies in the behavioural questionnaire. Although tested over three samples, the final behavioural measure proved to be less effective than the measure used in the second pilot study. Behavioural items were

streamlined between the studies, but unfortunately, the lower number of items resulted in less efficacy of the scale.

The study was descriptive in nature, hence the manipulation of in-group and out-group effects could not take place. This would have served to check the influence of out-groups on the utility function under allocentrism and idiocentrism more fully.

Learners were the focus of the current study as they form the basis for informational programmes. The extent to which they can alter behaviour in the home is questionable, thus a wide age range in future would be preferable. Moreover, the study was conducted on teenagers. This age group has particular idiosyncrasies regarding identity, ideas regarding self and other and group attachment. Their orientations are, to some extent, in flux. Thus it would be impossible to generalise to a wider population.

8.7. Suggestions for Future Research

The current study opens up a myriad of possibilities for future research. As the relationships between the key variables were found, now marketers can concentrate on efforts to manipulate these variables and measure the corresponding impact on behaviour. The results of message framing (as laid out above) could be explored with the added weight of insights gleaned from individualism/collectivism. Collectivists are suggested to be more concerned with fear appeals and more motivated by intermittent sanctioning systems. What would the impact of different types of appeals be in our environment? Thus a host of causal designs are possible, especially with regard to the marketing and acceptance of sanctioning systems, such as water metering, which are currently being rolled out on a neighbourhood-by-neighbourhood basis.

The survey should also be extended into the general population to see if the relationships hold. Such a focus may well encourage the government to extend their campaigns to a wider audience. Moreover, the question of costs and payment is a pressing one, thus a larger survey of the general populace may aid officials in designing strategies to reduce this problem.

Attitude theory, as developed in both Psychology and Marketing could provide additional depth to the model. Social marketers, as a whole, have used attitude theory extensively in the 'traditionalist' school of thought (Alcalay & Bell, 2000). What has been well documented is the 'attitude-practice' gap in such approaches, often termed KAP or 'Knowledge – Attitude – Practice' theory (Alcalay & Bell, 2000). Social dilemma theory as well as individualism/collectivism could help explain why an attitude – practice gap is present.

8.8. Conclusion

The current study has demonstrated the validity and reformulation of the proposed model. Thus Resource Dilemmas and individualism/collectivism are indeed appropriate lenses to view water conservation in South Africa. Most importantly, the key variables of PCE and FIO have been demonstrated to have an impact and interact with individualism and collectivism. These are variables on which marketing efforts can focus to effect a positive change in consumer behaviour. The results also demonstrate that PCE is more of an issue and more effective for inducing behavioural change among collectivists. Hence market segmentation should help design messages promoting PCE in a certain section of the market. The study is in line with trends in marketing towards more socially responsible and culturally aware behaviour. Both are topics of vital importance in emerging markets. As marketing has been shown here to affect and be affected by both social issues and changing cultural values, the next step would be to extend marketing theory and practice along both lines. For instance, multinationals in emerging markets must deal with varying degrees of allocentrism and idiocentrism, where personal levels of both traits are in flux. The Township sample's unexpected levels of vertical individualism point to the amplified importance of status appeals. Multinationals are often also required to engage in socially responsible behaviour, a prerogative that is louder in developing markets. Understanding the social processes that engender action in social marketing would make sure those efforts are not in vain. The overall topic is also highly relevant. As calls come for action to collective problems, such as water conservation and global warming, marketers need to discover how their efforts can best be used towards a solution.

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Appendix 1: Questionnaire



School Of Economic And Business Science
University Of The Witwatersrand

Questionnaire

Age: _____ Grade: _____ Home language _____

School _____

Gender: (please tick)

Male	Female
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This is not a test or an exam. There are no wrong or right answers.

Read each statement.

Decide how much you agree or disagree with the statement. Circle the relevant number.

For example:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Holidays are fun	1	2	3	4	5

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I am happy only if the people around me are happy.	1	2	3	4	5
2	To win is the most important thing in life.	1	2	3	4	5
3	I would give up things so that the group can gain.	1	2	3	4	5
4	I don't like it when other people do better than me.	1	2	3	4	5
5	It is important that I keep my group agreeing on things.	1	2	3	4	5
6	It is important to do better in my schoolwork than other people.	1	2	3	4	5
7	I like sharing little things with my friends at school	1	2	3	4	5
8	I like events where I can compete against other people, like exams and sport.	1	2	3	4	5

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9	It is important to me that other people are doing well.	1	2	3	4	5
10	I like doing things by myself.	1	2	3	4	5
11	I will help my relatives if they need money, as much as I can.	1	2	3	4	5
12	To compete against someone is natural.	1	2	3	4	5
13	I am proud if another member of my class gets a prize.	1	2	3	4	5
14	It is important to me that I am different to others.	1	2	3	4	5
15	The best way to spend time is with other people	1	2	3	4	5
16	I get annoyed if someone does better than me in school.	1	2	3	4	5
17	Duty to family is more important than personal fun.	1	2	3	4	5
18	We need competition because it makes us better.	1	2	3	4	5
19	I am a unique person, separate from others.	1	2	3	4	5
20	I feel good when I work with other people.	1	2	3	4	5
21	Winning is not important to me.	1	2	3	4	5
22	It is important that I respect community decisions	1	2	3	4	5
23	I would rather depend on myself than on other people.	1	2	3	4	5
24	Family must stick together, no matter what problems there are	1	2	3	4	5
25	I usually rely on myself, rather than on other people	1	2	3	4	5
26	Family must stay together.	1	2	3	4	5
27	It is important to me that I am different to other people and my own person	1	2	3	4	5
28	It is my duty to take care of my family, no matter how hard it is	1	2	3	4	5
29	My personal identity (as unique) is very important to me	1	2	3	4	5
30	When I am in a group, I will go along with what most of the others want	1	2	3	4	5
31	I am glad that I am different from other people.	1	2	3	4	5
32	It is important to speak to my friends before I make a decision	1	2	3	4	5
33	I prefer to do things by myself	1	2	3	4	5
34	I like working with all the other learners in class	1	2	3	4	5
35	I feel happy when my best friend wins a race	1	2	3	4	5
36	I prefer to play by myself at home	1	2	3	4	5
37	I prefer to work by myself in class	1	2	3	4	5
38	I prefer playing by myself in general	1	2	3	4	5
39	I will give my pocket money to my friends if they need it	1	2	3	4	5
40	I prefer working by myself in general	1	2	3	4	5

School

Think about your school.

Read the questions.

Decide if they are true for your school or not.

If it is true all the time circle number 5.

If it is not true at all, circle number 1.

		Never	Now and then	Sometimes	A lot	Always
1	The taps at school drip and leak.	1	2	3	4	5
2	Leaking taps are fixed.	1	2	3	4	5
3	Dripping taps are closed properly.	1	2	3	4	5
4	The school has broken water pipes.	1	2	3	4	5
5	The school has leaking water pipes.	1	2	3	4	5
6	Broken or leaking pipes are fixed.	1	2	3	4	5
7	The school has flushing toilets.	1	2	3	4	5
8	The school toilets leak.	1	2	3	4	5
9	The school toilets are broken.	1	2	3	4	5
10	Leaking toilets are fixed.	1	2	3	4	5
11	Broken toilets are fixed.	1	2	3	4	5
12	There is soap in the learner's toilets.	1	2	3	4	5
13	There is a basin or bucket for learners to wash their hands	1	2	3	4	5
14	Learners leave taps running	1	2	3	4	5
15	Learners break the toilets	1	2	3	4	5
16	Hosepipes are used to water the school garden	1	2	3	4	5
17	Hosepipes are used all day	1	2	3	4	5

Community

Think about the people who live in your area or the houses of your friends who live near you.

Read the questions.

Decide if they are true for your area or not.

If it happens all the time circle number 5.

If it does not happen at all, circle number 1.

		Never	Now and then	Sometimes	A lot	Always
1	Taps drip or leak.	1	2	3	4	5
2	Most people ignore dripping or leaking taps.	1	2	3	4	5
3	Most people close taps properly.	1	2	3	4	5
4	Most people use hosepipes are used to wash cars.	1	2	3	4	5
5	Most people use the toilet as a dustbin.	1	2	3	4	5
6	Water pipes are broken or leaking.	1	2	3	4	5
7	Everyone has a flushing toilet.	Yes			No	
8	Most flushing toilets leak.	1	2	3	4	5
9	Most flushing toilets are broken.	1	2	3	4	5
10	Most adults fix broken or leaking toilets.	1	2	3	4	5
11	People in the neighbourhood pay the water account.	1	2	3	4	5
12	Tap water is clean and safe to drink.	1	2	3	4	5
13	It costs money to clean water before it goes into the tap	Yes			No	
14	It costs money to get water from dams to taps.	Yes			No	
15	Adults/ parents try to use less water.	1	2	3	4	5
16	Most people you know brush their teeth while the tap is running	1	2	3	4	5
17	Most people wash their dishes under a running tap	1	2	3	4	5
18	Most people rinse their clothes under a running tap	1	2	3	4	5

This is not a test or an exam. There are no wrong or right answers.

Read each statement.

Decide how much you agree or disagree with the statement. Circle the relevant number. If you agree, tick 5, if you disagree, tick 1

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	There is not much that any one person can do about water conservation.	1	2	3	4	5
2	Most people don't do much to use less water.	1	2	3	4	5
3	People must pay for the water they use.	1	2	3	4	5
4	It is useless if one person tries to use less water and other people do not try to use less water.	1	2	3	4	5
5	Nothing that I can do will make a difference to saving water in this country.	1	2	3	4	5
6	I don't know how to use less water.	1	2	3	4	5
7	Soon, most people will use less water if they can.	1	2	3	4	5
8	I am sure that most people will sacrifice to use less water.	1	2	3	4	5
9	The government must make people use less water	1	2	3	4	5
10	South Africa is a water rich country	1	2	3	4	5
11	Everybody must have water even if they cannot pay for it	1	2	3	4	5
13	Water should not be cut off if people don't pay for it	1	2	3	4	5
		Never	Now and then	Sometimes	A lot	Always
14	Do you ever see dripping taps	1	2	3	4	5
15	Do you ever stop taps from dripping	1	2	3	4	5
16	Do you ever see leaking pipes	1	2	3	4	5
17	I use a hosepipe to clean the car	1	2	3	4	5
18	It is okay to wet people on Spring Day or during Spring week	1	2	3	4	5
19	It is okay to wet people on hot days	1	2	3	4	5
20	It is okay to water gardens with a hosepipe	1	2	3	4	5

Appendix 2: Introductory Letter

School of Economic and Business Science

University of the Witwatersrand

Tel: 011 717 8080

Fax: 011 717 8081

20th October 2003

The Principal:

Research into water conservation

I am a lecturer and masters student at the University of the Witwatersrand. My thesis centres on social marketing in general and water conservation in particular. I am currently conducting research into how best to promote water conservation in schools.

The study is investigating the influence of concepts of individualism versus concepts of collectivism on water conservation. This research is supported and sponsored by the Department of Water and Forestry (DWAF), in a joint initiative with the DoE, under NEEP (the national environmental education project). As NEEP targets schools and learners, the input of learners in the research is of great importance. Thus, I would be most grateful if you can assist me in this research by allowing a group of your Grade 9 learners to complete a survey. Naturally, the survey is confidential.

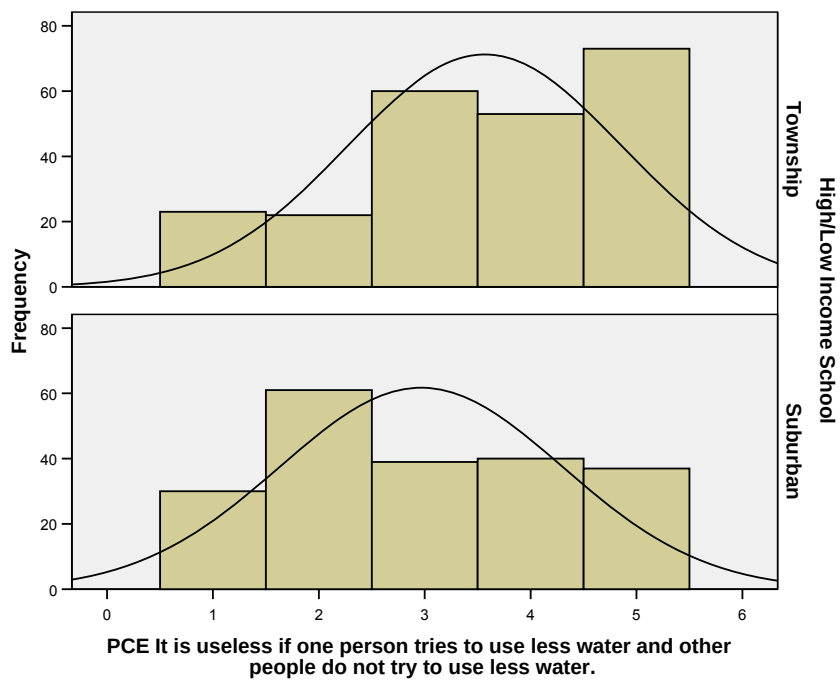
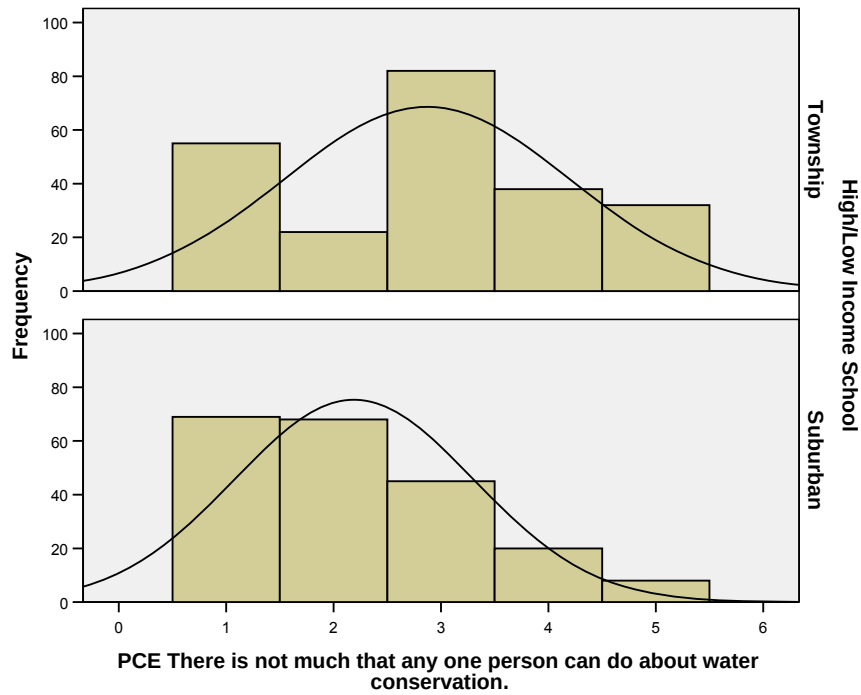
If you have any comments or queries, please do not hesitate to contact me, Kerry Chipp, at the School of Economic and Business Science on 011 717 8080 or 082 330 8759.

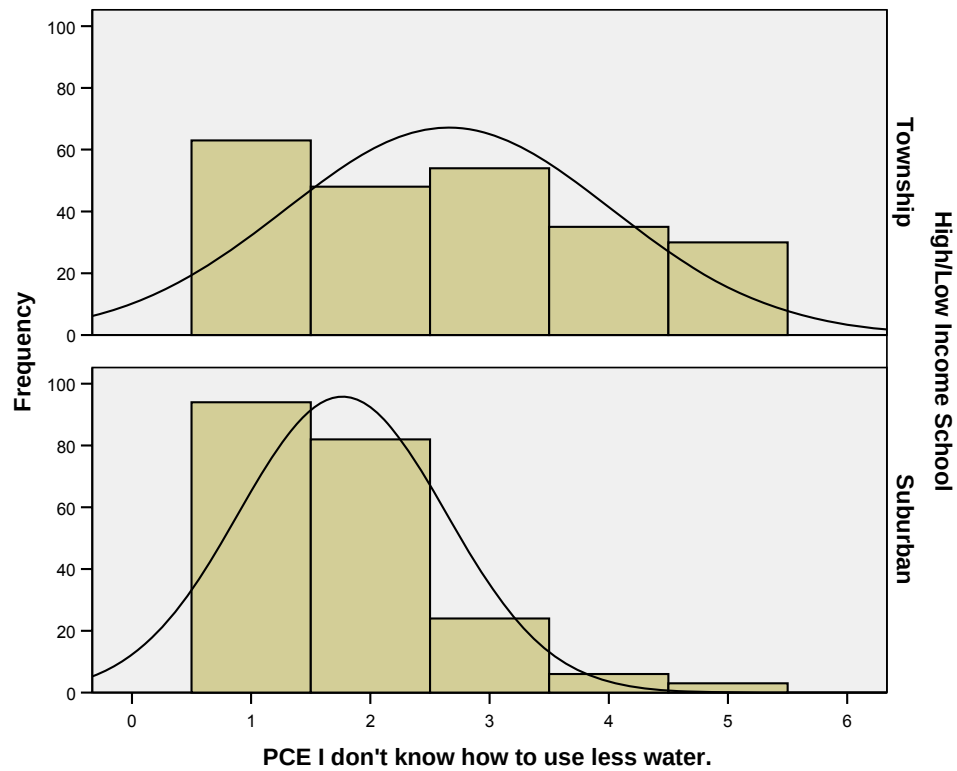
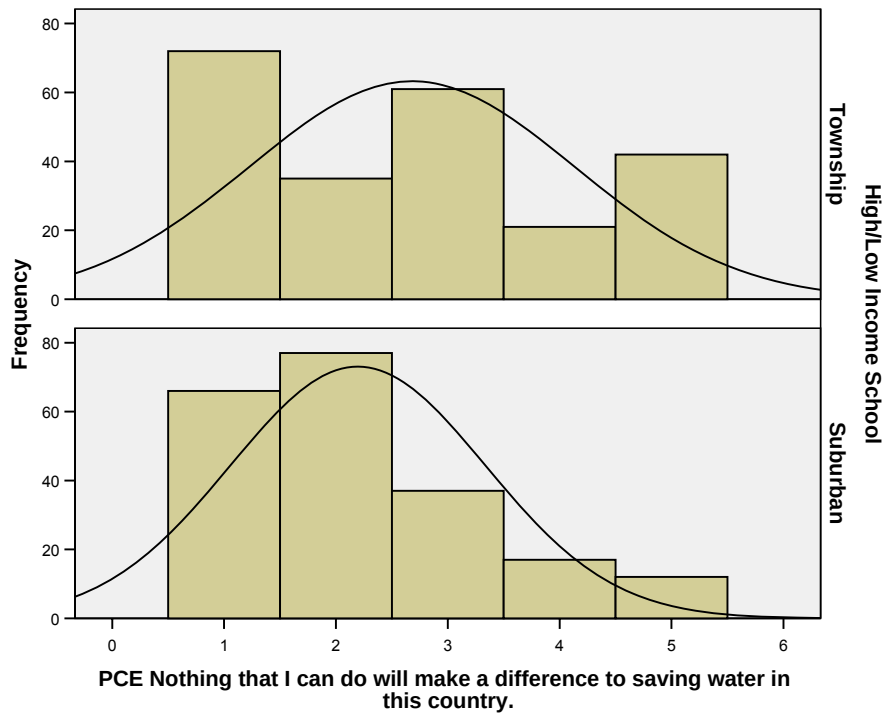
Thanking you very much for your assistance.

Kerry Chipp

Appendix 3: Reliability Statistics

Perceived Consumer Effectiveness





Faith In Others

FIO Most people don't do much to use less water. (Reversed)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	5.2	5.2	5.2
	Disagree	42	9.5	9.5	14.8
	Neutral	143	32.2	32.5	47.3
	Agree	151	34.0	34.3	81.6
	Strongly Agree	81	18.2	18.4	100.0
	Total	440	99.1	100.0	
Missing	System	4	.9		
Total		444	100.0		

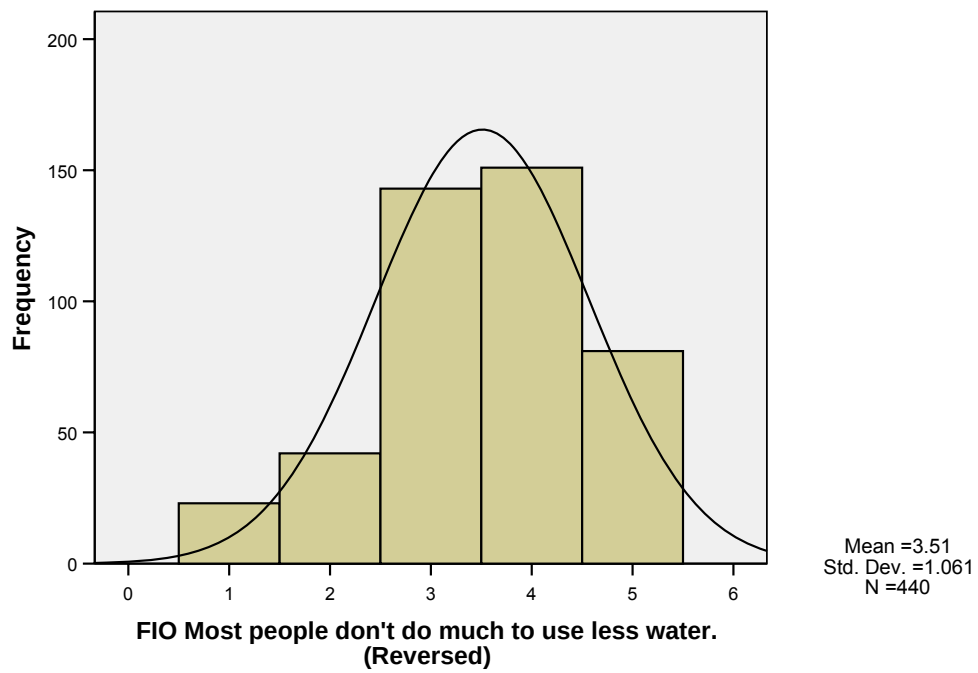
FIO Soon, most people will use less water if they can.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	29	6.5	6.7	6.7
	Disagree	45	10.1	10.4	17.1
	Neutral	150	33.8	34.6	51.7
	Agree	121	27.3	27.9	79.7
	Strongly Agree	88	19.8	20.3	100.0
	Total	433	97.5	100.0	
Missing	System	11	2.5		
Total		444	100.0		

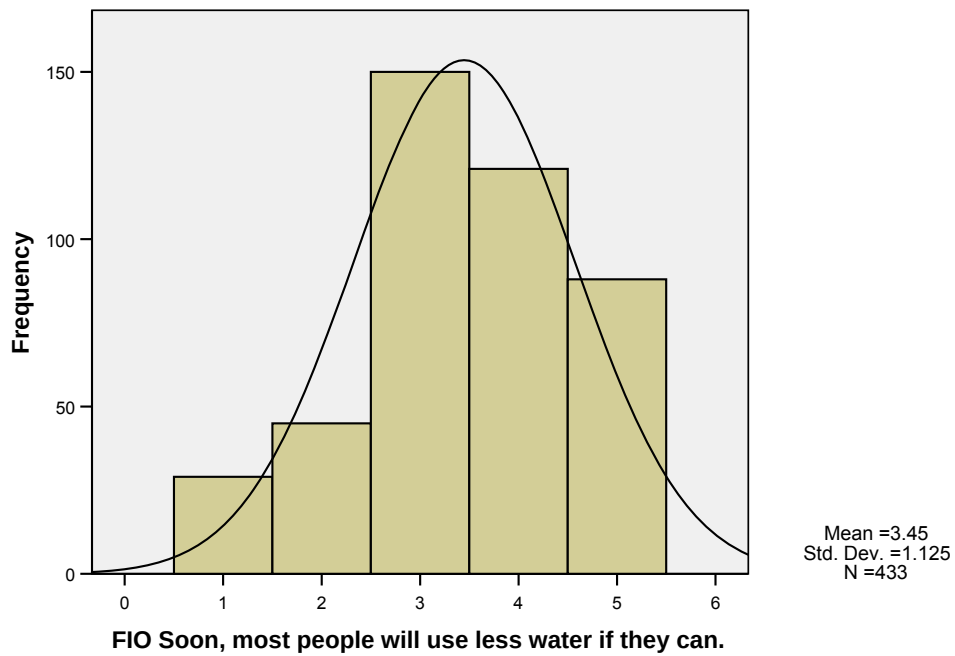
FIO I am sure that most people will sacrifice to use less water.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	41	9.2	9.3	9.3
	Disagree	85	19.1	19.3	28.6
	Neutral	158	35.6	35.8	64.4
	Agree	87	19.6	19.7	84.1
	Strongly Agree	70	15.8	15.9	100.0
	Total	441	99.3	100.0	
Missing	System	3	.7		
Total		444	100.0		

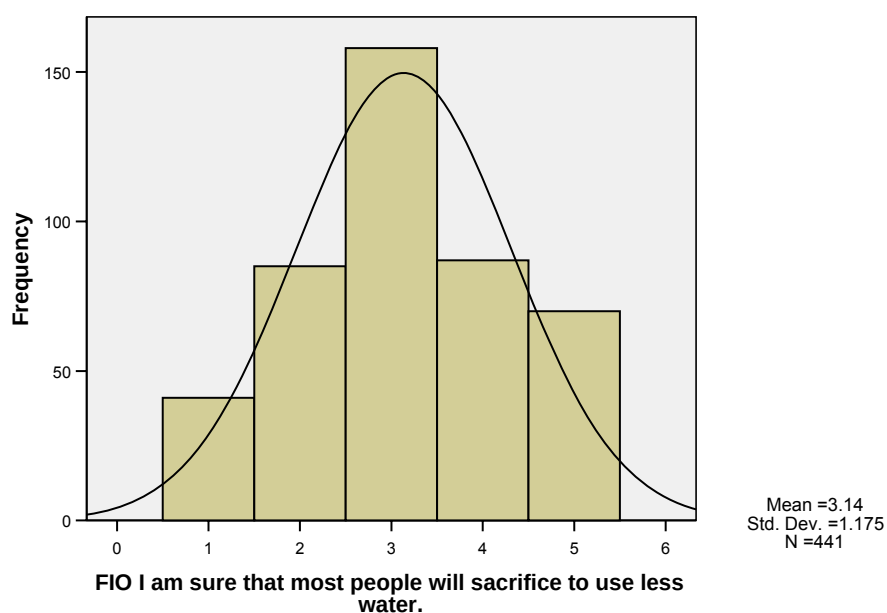
FIO Most people don't do much to use less water. (Reversed)



FIO Soon, most people will use less water if they can.



FIO I am sure that most people will sacrifice to use less water.



Individualism/Collectivism

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
HC I am happy only if the people around me are happy.	28.20	13.392	.267	.107	.570
HC It is important that I keep my group agreeing on things.	28.31	14.045	.260	.102	.568
HC I like sharing little things with my friends at school	27.80	14.237	.328	.132	.548
HC It is important to me that other people are doing well.	28.00	13.677	.376	.204	.532
HC I will help my relatives if they need money, as much as I can.	27.64	14.976	.231	.078	.574
HC I am proud if another member of my class gets a prize.	27.95	14.150	.341	.163	.544
HC The best way to spend time is with other people	27.93	14.789	.210	.098	.582
HC I feel good when I work with other people.	27.94	13.736	.350	.143	.539

Horizontal Collectivism Item Analysis

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
HI I like doing things by myself.	28.67	28.509	.112	.059	.578
HI It is important to me that I am different to others.	28.67	25.345	.406	.274	.508
HI I am a unique person, separate from others.	28.90	24.185	.400	.266	.500
HI I would rather depend on myself than on other people.	28.70	25.773	.324	.228	.526
HI I usually rely on myself, rather than on other people	28.78	26.415	.344	.231	.526
HI It is important to me that I am different to other people and my own person	28.62	18.447	.215	.063	.656
HI My personal identity (as unique) is very important to me	28.32	27.959	.262	.182	.549
HI I am glad that I am different from other people.	28.69	23.768	.505	.410	.474

Horizontal Individualism Item Analysis

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VI To win is the most important thing in life.	24.31	26.023	.411	.317	.541
VI I don't like it when other people do better than me.	24.77	27.352	.350	.214	.560
VI It is important to do better in my schoolwork than other people.	23.86	26.315	.468	.341	.530
VI I like events where I can compete against other people, like exams and sport.	23.90	26.598	.478	.287	.531
VI To compete against someone is natural.	23.83	29.861	.242	.147	.589
VI I get annoyed if someone does better than me in school.	24.86	28.129	.326	.224	.568
VI We need competition because it makes us better.	23.77	28.915	.295	.180	.577
VI Winning is not important to me (reverse)	24.39	24.788	.133	.043	.690

Vertical Individualism Item Analysis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VC I would give up things so that the group can gain.	27.55	19.539	.009	.029	.488
VC Duty to family is more important than personal fun.	27.12	17.972	.199	.050	.417
VC It is important that I respect community decisions	26.96	17.253	.324	.153	.375
VC Family must stick together, no matter what problems there are	26.23	18.068	.309	.312	.390
VC Family must stay together.	26.24	17.935	.352	.310	.381
VC It is my duty to take care of my family, no matter how hard it is	26.38	12.697	.213	.058	.450
VC When I am in a group, I will go along with what most of the others want	27.79	17.465	.189	.054	.420
VC It is important to speak to my friends before I make a decision	27.24	17.797	.198	.074	.417

Vertical Collectivism Item Analysis