

DOCTORAL THESIS

A social dilemma perspective on socially responsible consumption

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Date of Award:
2016

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HONG KONG BAPTIST UNIVERSITY
Professional Doctorate Degree

THESIS ACCEPTANCE

DATE: August 29, 2016

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**A Social Dilemma Perspective on
Socially Responsible Consumption**

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A thesis submitted in partial fulfilment of the requirements

for the degree of

Doctor of Business Administration

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August 2016

DECLARATION

I hereby declare that this thesis represents my own work which has been done after registration for the degree of Doctor of Business Administration at Hong Kong Baptist University, and has not been previously included in a thesis or dissertation submitted to this or any other institution for a degree, diploma or other qualifications.

A handwritten signature in black ink, consisting of a large, stylized 'S' followed by a vertical line and a horizontal stroke at the top right.

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ABSTRACT

Recent research on corporate social responsibility has focused on the corporate level, whereas limited research has been conducted at the individual level most commonly referred to as socially responsible consumption. Recycling is a kind of socially responsible consumer behaviour because it benefits the society as a whole in the long term but involves a personal cost and does not benefit the individual consumer directly. Previous studies on recycling have used theories such as the theory of interpersonal behaviour, means-end chain theory, theory of planned behaviour or norm activation model. However, these theories have only explained part of recycling behaviour and are inadequate because they have not explained it from a social dilemma perspective. A social dilemma is a situation in which there is conflict between an individual's self-interest and the collective interest of the group. Will consumers pursue their own interests or will they act for the good of the entire society? This study takes an innovative approach to explain recycling behaviour through the lens of social dilemma theory. It uses a mixed methods approach that combines both qualitative and quantitative elements in the research design. A phenomenological approach is used to gain a deeper understanding of the recycling experiences of individuals, and survey data is used for quantitative analyses. In the qualitative study, 142 significant statements and eight themes were identified from 20 in-depth interviews. In the quantitative study, data were collected from 332 respondents. Based on the data analysis, the central relationships in the model are supported. There is a positive relationship between the expectation that others will participate in recycling and the likelihood of personal participation in recycling, and there is also a positive relationship between the likelihood of personal participation and recycling behaviour. Of the four moderators considered, only social value orientation is significant. In the latter part of this thesis, the theoretical and methodological contributions and practical implications of the study are discussed.

ACKNOWLEDGMENTS

First and foremost, I wish to thank my two supervisors, Professor Gerard Prendergast and Dr Frederick Yim. They are both very nice and resourceful, and they tirelessly and patiently guided me through the dissertation. Professor Prendergast inspired me to study the socially responsible consumption habits of consumers and coached me on how to work on the research. Dr Yim always found very useful journal articles for me. Every time my supervisors reviewed my thesis, they would come up with insights and ideas for me to improve my work. Without them, it would have been difficult for me to complete my thesis.

I would also like to express my heartfelt gratitude to Professor Snape, Professor Tiger Wu and Professor Lin. My sincere thanks also go to all of the Professors who have taught me in this DBA programme.

I owe an intellectual debt to Dr Morgan Yang, Dr Paul Tsui, Dr Chris Lau, Eric Wong and Stephen Yeong.

Deep appreciation goes to the DBA Programme Officer, Claudia Tsui, for her caring and efficient administrative support to facilitate the coordination of the DBA programme.

I was also helped by many DBA classmates such as Dr Victor Ng, Defmond Hung, Duncan Wong, Lillian Lee, Alex Tang, Benny Tse, Kenneth Chiu, Tony Lee, Dr Richard Yee, Dr Helen Chau and Raine Ng for providing insights that helped to develop the thesis.

Particular gratitude goes to my colleagues Florence Chau, Vicky Lee, CY Chan, Gary Ho, Candice Lau, Phyllis Tsang of Vocational Training Council, and my friends Dicky Leung, Louisa Leung, Raymond Kwok, Selina Chan, Esther Ho, Teresa Kwok, Fiona Lai, Cherry Lau, who always encouraged me and prayed for me. Some of them also provided insights into my thesis.

Of equal importance are the hundreds of respondents in the interviews.

Last but not least, I would like to thank my parents who have always trusted me, and given me a lot of freedom and support to do what I want. Deep appreciation to my brother Simon, my sister Cindy, my brother-in-law Charles, my niece June, and nephews Oscar and Winston, who gave me laughter and spiritual support. Writing a thesis was a very big challenge for me. I thank God that I had so many helpful people around me, and that I could persist in completing the thesis.

DECLARATION		i
ABSTRACT		ii
ACKNOWLEDGMENTS		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		vii
LIST OF FIGURES		viii
CHAPTER 1 INTRODUCTION		1
1.1	Research Background	1
1.2	Significance of the Research – Theoretical and Managerial Perspectives	5
1.3	Research Objectives	7
1.4	Organisation of the Thesis	7
CHAPTER 2 LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES		9
2.1	Social Dilemma Theory	9
2.1.1	The Concept of Social Dilemma	10
2.1.2	Evolution of Social Dilemma Theory	13
2.1.3	Theoretical Framework	14
2.1.4	Types of Social Dilemmas	17
2.2	Socially Responsible Consumption	23
2.2.1	Recycling	26
2.3	Reference Group Theory	29
2.4	Cooperation in Socially Responsible Consumption	30
2.5	Theoretical Framework	31
CHAPTER 3 RESEARCH METHODOLOGY		40
3.1	Research Design	40
3.2	Qualitative Research – Phenomenological Study	41
3.2.1	Sample	42

3.2.2	Interview Procedure	42
3.2.3	Validation Procedure	44
3.3	Quantitative Research – Survey	45
3.3.1	Sample Size	45
3.3.2	Sampling Method	47
3.3.3	Questionnaire Design and Measures	48
3.3.4	Validation	51
3.3.5	Briefing and Pilot Test	52
3.3.6	Data Collection	52
3.3.7	Data Analysis	54
CHAPTER 4	RESEARCH RESULTS	55
4.1	Qualitative Research Results	55
4.1.1	Key Themes	56
4.1.2	Composite Description	67
4.1.3	Importance of Qualitative Findings on Quantitative Research	69
4.2	Quantitative Research Results	69
4.2.1	Respondents' Profile	69
4.2.2	Reliability Tests	71
4.2.3	Common Method Bias	73
4.2.4	Control Variables	75
4.2.5	Hypotheses Testing	75
CHAPTER 5	DISCUSSION AND CONCLUSIONS	88
5.1	Summary	88
5.2	Theoretical Contributions	91
5.3	Practical Implications	93
5.4	Limitations and Future Research	96
5.5	Conclusion	97

REFERENCES	100
APPENDICES	114
Appendix 1: Consent Letter	115
Appendix 2: Interview Protocol	116
Appendix 3: Modified vs Original Questions/Measurement Scales	117
Appendix 4: Survey Questionnaire	120
Appendix 5: List of Shopping Malls for the Quantitative Study	126
CURRICULUM VITAE	127

LIST OF TABLES

TABLES

Table 1: Participants' Profile for Qualitative Interviews	55
Table 2: Summary of Key Themes in the Qualitative Research	56
Table 3: Respondents' Profile for the Quantitative Survey	70
Table 4: Scales and Reliability	72
Table 5: Means, Standard Deviations, and Intercorrelations for Social Desirability Scale and Seven Other Measures	74
Table 6: Intercorrelation for Control Variables, Expectation of Overall Participation, Four Moderating Variables and the Dependent Variables	77
Table 7: Regression Results of Expectation of Overall Participation and Likelihood of Personal Participation in Recycling	79
Table 8: Results of Hierarchical Regression Analyses	82
Table 9: Regression Results of Likelihood of Personal Participation in Recycling and Recycling Behaviour	86
Table 10: Summary of Hypotheses Testing	87

LIST OF FIGURES

FIGURES

Figure 1: Structure of Interdependence Theory	16
Figure 2: Structure of Appropriateness Framework	17
Figure 3: Payoff Structure in a Prisoner's Dilemma	18
Figure 4: Theoretical Framework	39

CHAPTER 1: INTRODUCTION

1.1 Research Background

Governments and companies are increasingly concerned about environmental and societal issues. They are stepping up their efforts to turn their ideas into action and to fulfil their responsibilities in this area. Many people also understand that recycling is good for the environment and the society. However, people may face a dilemma over whether or not they should recycle if they discover that it is inconvenient. Schiller (October 25, 2010) interviewed a 16-year-old teenager named Jenny regarding her recycling behaviour. She wanted to be a neurosurgeon in the future and understood that recycling was good for the earth. However she pointed out that if she could not find a recycle bin nearby, she would consider not recycling. Jenny's experience is not uncommon in Hong Kong. It typifies the dilemma consumers face over socially responsible behaviour, that is, whether they are willing to do something to benefit the society even if it involves their personal cost.

Recent studies on social responsibility are more focused on the corporate level and there is an abundant amount of studies of corporate social responsibility. Aguinis and Glavas (2012) point out that a substantial number of published studies focus on the organisational level of analysis, addressing corporate social responsibility. However, few studies in the literature focus on socially responsible consumption at the individual level. Sen *et al.* (2001) suggest that social dilemma theory can be used to investigate any consumer behaviour involving a trade-off between

individual and group needs, including, for example, the 'reaction to shortage'. Recycling is related to the reaction to shortage in the context of natural resources. Recycling is the process of making disposable products available for re-use (Rao, 1994). The role of consumers in recycling is to bring the disposable products to their appropriate collection points (Anderson and Brodin, 2005).

With the growth of wealth and prosperity, the problem of waste generation is becoming more serious. Consumer recycling is now one of the most important environmental and societal issues, and this topic has been widely discussed in Hong Kong. According to the 'Hong Kong Blueprint for Sustainable Use of Resources 2013-2022' (2013), the region's average daily generation of municipal solid waste was about 9,000 tonnes in 2011, which was almost 80% higher than the rate seen 30 years earlier. The Hong Kong government has therefore stepped up its investment in recycling (Cheung, 2014, April 11). In accordance with this effort, researchers have become interested in examining consumer recycling behaviour from the social dilemma perspective to learn how to increase citizen participation in recycling. As Shrum, Lowrey and McCarty (1994) suggest, new studies can help to generate more significant implications from recycling to foster a more thorough understanding of consumers' recycling behaviour. Many consumer research studies indicate that consumers see themselves as being responsible. However, some consumers do not behave according to their alleged values. To consumers, recycling is a form of socially responsible behaviour because it does not

directly benefit them as individuals and involves a personal cost in terms of time and effort to benefit society as a whole (Smith, Haugtvedt and Petty, 1994). Thus, in making choices concerning their recycling behaviour, consumers face the social dilemma of deciding whether they should sacrifice their short-range self-interest (e.g. wasting time to categorise the rubbish and put it into the proper recycle bin) for the long-range well-being of society (e.g. reduce the use of natural resources).

A social dilemma is a situation in which there is conflict between individual self-interest and the collective interest of the group. As mentioned above, there is limited research on individual socially responsible behaviour, and recycling is a type of this behaviour. Furthermore, although previous research points out that consumers face a dilemma in recycling, few studies consider recycling from the social dilemma perspective. Thus, it is important to investigate the behaviour of individuals who are confronted with such dilemmas, particularly in situations related to issues of social responsibility. Will consumers pursue their own interests, or will they act for the good of the entire society? In this study, social dilemma theory is used to investigate the choices involved in socially responsible consumption, particularly in terms of the recycling practices of individual consumers. By examining individual recycling behaviour, it is possible to understand how consumers react to the dilemma of dealing with this type of social responsibility.

Previous studies on recycling use theories such as means-end chain theory, the theory of planned behaviour, and the norm activation model of altruistic behaviour. However, these theories only explain part of recycling behaviour. They do not explain it from a social dilemma perspective. Smith, Haugtvedt and Petty (1994) find that recycling is indeed a social dilemma for consumers, involving personal costs that do not benefit them directly. However, the consumers' socially responsible actions ultimately benefit the society as a whole. This study thus explains recycling behaviour through the lens of the social dilemma.

Hong Kong was chosen as the research location for this study because it is a Chinese society in which social expectations are commonly skewed towards a long-term orientation promoting future rewards (Hofstede, 2001). In addition, due to its background as a former British colony, Hong Kong is influenced by a Western political system and Western culture and values. Hong Kong people tend to be wealthy, pragmatic and adaptable when dealing with new environments and ideas (Itim International, 2016). One such idea that is new for most people in Oriental societies is the concept of recycling. Therefore, the cultural context of Hong Kong is highly suitable for this study. Most previous studies related to consumer behaviour and social dilemma theory have been conducted in the West (Komorita, Hilty and Parks, 1991; Van Lange, 1999; Utz, Ouwerkerk and Van Lange, 2004). Related studies in a non-Western context can help to test the generalisability of theories developed in Western countries.

1.2 Significance of the Research – Theoretical and Managerial Perspectives

This study fills a number of gaps in the literature and makes important contributions from a theoretical and practical perspective.

The first major contribution addresses the limitations of the social dilemma model developed by Sen *et al.* (2001). As Sen and colleagues note, individuals may respond differently to social dilemmas based on their social value orientation (SVO) and the propensity to trust. This study investigates these two new moderating variables (i.e., social value orientation and propensity to trust) using social dilemma theory.

In addition, Sen *et al.* (2001) suggest that their theory can be applied to the consumption of public utilities. Previous studies suggest that the recycling of waste is a phenomenon closely related to both public policy and the strategies of private organisations (Granzin and Olsen, 1991; Biswas *et al.*, 2000). Recycling is a kind of socially responsible behaviour involving choice. Nonetheless, previous recycling studies do not rely on social dilemma theory, but rather, use such theories as the theory of interpersonal behaviour (Ittiravivongs, 2012), the means-end chain theory (Bagozzi and Dabholkar, 1994), the theory of planned behaviour (Biswas *et al.*, 2000; Werder, 2002; Tonglet *et al.*, 2004; Wan, Shen and Yu, 2014) or the norm activation model (Wan, Shen and Yu, 2014). These theories, however, only explain part of recycling behaviour and are inadequate because they do not explain it from a social dilemma perspective. As mentioned earlier,

recycling involves a social dilemma for consumers (Smith, Haugtvedt and Petty, 1994) because this socially responsible behaviour benefits society, but has a personal cost to consumers, who do not benefit directly. Thus, it is significant that this study takes the innovative approach of explaining recycling behaviour through the lens of social dilemma theory.

The third contribution of this study is its fieldwork involving Hong Kong citizens. Previous studies in this area (Sen *et al.*, 2001; Van Lange *et al.*, 2013) use experimental research designs, and were conducted in universities where students were commonly selected as the subjects. Though these types of studies tend to have higher internal validity, their external validity has been rather low. By conducting field research, this study can help to improve external validity and the generalisability of the findings.

This study's fourth contribution is to the literature on socially responsible consumption and the relationship between individual human beings and the environment. Previous studies are more focused on social responsibility at the corporate level (Aguinis and Glavas, 2012). However, there is a growing interest in the literature on socially responsible consumption at the individual level (Green, Tinson, Peloza, 2016; Schlaile, Klein and Böck, 2016). In addition, social dilemma theory is a kind of psychological theory. Clayton and her colleagues (2016) point out that there is a compelling research interest in the relationship between humans and the environment from the perspective of psychological theories. By

applying the social dilemma theory to our research, we respond to the call from Clayton *et al.* (2016) and investigate the relationship between humans and the environment specifically within the context of recycling.

In terms of practical implications, this study provides the government or marketers with insight into designing marketing strategies that encourage consumers to participate in recycling.

1.3 Research Objectives

This study uses social dilemma theory to explain and predict consumer behaviour in the context of a social dilemma (specifically, recycling), and thus to generate insights that are of theoretical and practical value.

1.4 Organisation of the Thesis

This thesis is organised into seven sections. In Chapter 1, the research background and the significance of the research and its objectives are discussed. In Chapter 2, a literature review is conducted to cover the existing theories related to socially responsible consumption, recycling, social dilemmas and reference groups. In addition, the theoretical framework and hypotheses are given in this chapter. Chapter 3 explains the research design of the study. It includes the sampling method, sampling procedure, measurement tools, pilot tests, interview and data collection procedures, and the validation procedure for both the qualitative and quantitative research studies. Chapter 4 discusses the research results of both the qualitative and quantitative studies. Chapter 5

summarises the theoretical contributions, practical implications, limitations and future research, and then draws conclusions.

CHAPTER 2 LITERATURE REVIEW AND DEVELOPMENT OF THE HYPOTHESES

Recycling is a kind of socially responsible activity to which various theories of social behaviour can be applied. This chapter presents a review of the previous studies related to the theories of social dilemma, socially responsible consumption and reference groups.

2.1 Social Dilemma Theory

As Aristotle observed, the nature of our social interactions might be at the heart of the most serious and hindering problems in the civilised world today (Aristotle and Saunders, 1995). For example, abuse of the social welfare system, public health care problems and pollution all represent concerns that result from social dilemmas. Social dilemmas are so common that people are very often unaware that they are caught up in them. They arise when people are faced with a situation in which their immediate self-interest is in conflict with the collective long-term interest (Van Lange *et al.*, 2013).

The decision to act in a more socially responsible way commonly places individual consumers in a dilemma. As they face the choices involved, it is interesting to observe why different individuals choose or decline to cooperate with a specific social group. To introduce the implications of social dilemma theory, the basic concept of the social dilemma is first discussed. Thereafter, the evolution of social dilemma theory and the different types of social dilemmas are explained.

2.1.1 The Concept of Social Dilemma

The term 'social dilemma' generally refers to any situation in which there is a conflict between an individual's self-interest and the collective interest. It can be traced back to the concept of 'mixed motives' (Van Lange *et al.*, 2014, p. 13) with people trying to maximise their own gain and minimise their own pain. Ancient Greek scholars, Epicurus (341-270 BC) and Pyrrho (360-270 BC) both claimed that pleasure was the final goal of all organisms, including human beings. Therefore, people try to use any method available to realise pleasure and to avoid pain. However, where Pyrrho and Epicurus differed is Epicurus argued that people ought to be driven by long-term goals, performing current actions to produce long-term pleasure, even though these actions could lead to short-term pain. Epicurus posited that realising the benefits of long-term pleasure made this acceptable. Conversely, Pyrrho suggested that people should live for the moment and pursue immediate rewards. In his view, no one could guarantee that short-term pain resulted in long-term pleasure. This notion of people maximising their own gain and minimising their pain has subsequently become a basic component of human nature and a part of the social dilemma (Van Lange *et al.*, 2014).

Another principle related to human nature is that people want to do well for themselves. This also helps us to understand the origins of the social dilemma (Van Lange *et al.*, 2014), which can be traced back to Aristotle's writings on eudaimonia. Eudaimonia is a Greek concept referring to people living in a contented state of happiness. It is an objective rather than a

subjective assessment of the quality of life, and it also refers to the correct actions one must take to achieve well-being (Waterman, 1993). A key issue underlying the philosophy of Aristotle's time was how to achieve eudaimonia. Aristotle reported that if one shows moral virtue to another, both individuals benefit. This benefit, however, is not an immediate reward. Rather, it is an intangible life experience that may manifest in the future. In other words, people will find that cooperation is a good thing that ultimately benefits both parties (Van Lange *et al.*, 2014).

Thomas Hobbes (1588-1679) held a different point of view. He suggested that a central authority was essential to society because otherwise people could find it reasonable in doing whatever was necessary to protect themselves. According to Hobbes, people might believe they had a right to lay claim to anything. However, because all people are equal, it would not be possible for any one person to act with impunity. Some people might be strong or smart enough to oppose others' self-interest and battle for their own safeguards, which could ultimately lead to warfare. To avoid this, a social contract was required under which individuals ceded some freedoms to a central authority in exchange for protection and the maintenance of order. People would be forced to cooperate. Hobbesians viewed humans as creatures wanting to do right by others but who lacked the skill and insight to do so without external forces that produced cooperation. Contrary to the view of the Aristotelians, who asserted that people would cooperate with each other given the opportunity, Hobbesians posited that only a

limited number of people would be willing to cooperate with others. These differences help us to understand the origins of the social dilemma.

In essence, social dilemmas arise whenever people are faced with a situation in which their immediate self-interest is in conflict with the collective long-term interest. What is good for one person is not necessarily good for others. Social dilemmas are commonly related to social and/or environmental issues such as the effects of consuming natural resources or acquiring goods and services. The individuals involved in such activities tend to evaluate their own interests in determining whether or not to cooperate with other people or groups.

According to previous studies (Liebrand, 1986; Van Lange *et al.*, 2013) social dilemmas typically arise in the following three situations:

(1) An individual makes a non-cooperative decision. The outcome of this decision is in the best interest of that individual, and it is taken regardless of the decisions made by others.

(2) A non-cooperative decision is taken that has a negative effect on the interests of others.

(3) The harmful effects created by a collective choice favouring non-cooperation are greater than the benefits individuals receive from their non-cooperative decisions.

In other words, such social dilemmas entail a relationship between individual motives and the cooperative interests of the collective. In general,

a choice for collective cooperation needs individual sacrifice in the short-term to benefit society in the long-term (Sen *et al.*, 2001).

2.1.2 Evolution of Social Dilemma Theory

The social dilemma literature can be tracked down to Hardin's articles, 'The Tragedy of the Commons' (1968) and 'Extensions of "The Tragedy of the Commons"' (1998). In these articles, Hardin examines the negative effects on humanity created by the advance of technology, such as overpopulation, overexploitation of resources and pollution. These articles suggested that people in the modern world faced a dilemma over whether they should continue in the direction of modernisation and seek to maximise their own profits, or whether they should take a more ethical stance and focus more on the long-term benefits to society. This question is, in fact, the starting point for the social dilemma theory.

In a later development of this theory, Platt (1973) introduces the concept of 'social traps', which is also related to social dilemmas. In Platt's definition (1973), some situations are like fish traps in society. People place themselves into situations that they find increasingly unpleasant or dangerous at a later stage of development. In short, a 'social trap' might occur whenever behaviour yielding an immediate reward leads to increasingly difficult problems over the long-term.

The literature often links the social dilemma concept to game theory (Shubik, 1970; Kelly and Grzelak, 1972; Messick, 1973; Kahan, 1974;

Brechner, 1977; Pruitt and Kimmel, 1977; Edney and Harper, 1978; Liebrand, 1983). The relationship between these concepts is obvious in that people often face a situational dilemma when they participate in 'two-person, two-alternative games' such as the 'prisoner's dilemma'. In such games, individuals choose to either cooperate or compete with each other for the sake of maximising their own benefits (Kuhlman and Marshello, 1975).

Dawes (1980) points out two characteristics of a social dilemma: 1) each individual receives a greater gain by making a socially defecting option rather than making a socially cooperative option, and 2) all individuals achieve a greater gain if everyone chooses to cooperate rather than if everyone chooses to defect.

Van Lange *et al.* (2013) extend Dawes' social dilemma theory to circumstances in which 'a non-cooperative course of action' (p. 125) could be enticing to individuals because it gives way to better (usually short-term) outcomes for the self. However, if all of the participants pursued this 'non-cooperative course of action' (p.125), they would all be worse off (usually over the longer-term) than if they had all cooperated. This model included various types of dilemmas, and it took the time dimension into account because the consequences could be either instant (short-term) or postponed (long-term). This more comprehensive conceptualisation permits us to include public good dilemmas, resource dilemmas and social traps in our analysis.

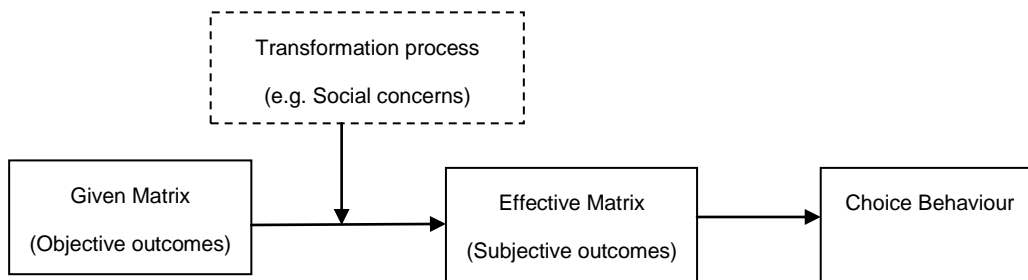
2.1.3 Theoretical Framework

Despite the substantial research on social dilemma theory, as pointed out by Van Lange *et al.* (2013), some researchers comment that the theory lacks a coherent, macro level theoretical framework. However, Van Lange *et al.* (2013) explain that the social dilemma theory is more focused on a particular set of variables and processes. Other key theories have explained the psychology of social dilemmas and have contributed to the model of social dilemma theory. These include interdependence theory (Kelley and Thibaut, 1978) and the appropriateness framework (Weber *et al.*, 2004).

Interdependence Theory

In Van Lange *et al.* (2013)'s article, they point out Keeley and Thibaut (1978) introduced interdependence theory, which focuses on the idea that cooperation needs decision makers to convert a 'given matrix of objective outcomes' (p. 127) into an 'effective matrix of subjective outcomes' (p. 127) more closely linked to behaviour. The 'given matrix' refers to immediate, self-interested preferences. It is affected by the circumstances in combination with the needs of individual. An 'effective matrix' emerges when decision makers take into consideration the wider social concerns, including others' well-being, and cognitive and affective states. It is more long-term, and based on group preferences. The model is shown in Figure 1.

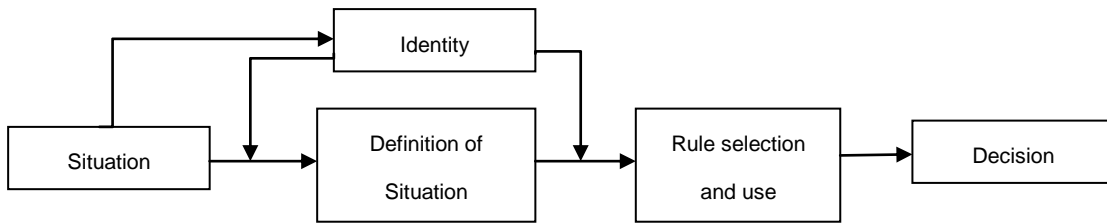
Figure 1: Structure of Interdependence Theory



Appropriateness Framework

Another theoretical framework associated with social dilemma is Weber, Kopelman and Messick's (2004) appropriateness framework. This framework posits that decisions are caused by three fundamental elements: 1) how people define (or recognise) a situation (e.g. what kind of situation is this? Is this a cooperative job?); 2) people's identity (e.g. police, Christianity); and 3) their application of decision rules or heuristics (e.g. codes of ethics, women and children first). These three elements are considered central to influencing how decision makers respond to the basic question: what does a person like me do in a condition similar to this? This framework recommends that the characteristics of an objective situation affect both the identity of decision makers and how the situation is perceived (see Figure 2 below). Meanwhile, the identity is supposed to be driven by the personal history of the decision maker, including his or her family and peer influences in the model. Furthermore, the decision maker's identity might change how the situation affects one's perception of the situation. In addition, the model presumes that how the situation is perceived affects the choice of the decision-making rules, which in the end affects the final decision.

Figure 2: Structure of Appropriateness Framework



Source: Weber, Kopelman and Messick (2004)

Social dilemma theory, as applied by Sen *et al.* (2013), is skewed towards adopting the explanatory approach of interdependence theory. It tries to explain the relationship of consumers' boycott behaviour and the expectation of other people's participation.

2.1.4 Types of Social Dilemmas

Previous studies indicate that there are three main types of social dilemmas. These are the prisoner's dilemma, the public goods dilemma and the resource dilemma.

Prisoner's Dilemma

The prisoner's dilemma is the most widely studied type of dilemma, especially in research considering the effects of communication on behaviour. This dilemma is a simple 2 x 2 matrix game first proposed by Merrill Ford and Melvin Dresher in 1950 (Kollock, 1998). The mathematician Albert Tucker created a story for this game that involved two prisoners, and therefore the game is named the 'prisoner's dilemma'. In the story, two prisoners are taken into custody and separated. There is insufficient evidence obtained by the district attorney to convict at trial. To

entice the suspects to admit guilt, the attorney offers them a deal. Each of the suspects has two choices: to admit guilt or not to admit guilt. If both suspects admit guilt, each of them will receive a five-year sentence. If neither suspect admits guilt, both of them will be arrested on fabrication of weapons possession resulting in a one-year light sentence. However, if one of them admits guilt and the other does not, the suspect who does not admit guilt will receive the full sentence of ten years in prison. The other one will receive a mild sentence of one month. In other words, each prisoner's decision will lead to a sentencing range from a minimum of one-month to a maximum ten-year sentence. This situation produces four possible outcomes as shown in Figure 3:

Figure 3: Payoff Structure in a Prisoner's Dilemma

		Prisoner B	
		Not admit guilt	Admit guilt
Prisoner A	Not admit guilt	one year each	ten years for A & one month for B
	Admit guilt	one month for A & ten years for B	five years each

If the other prisoner (B) admits guilt, he or she is also better off admitting to avoid the maximum sentence of ten-years. If Prisoner B does not admit guilt, Prisoner A will still have a more fortunate condition of admitting guilt to receive the minimum sentence at the expense of Prisoner B. If both of the prisoners choose to admit guilt, they will both receive five-year sentences, still better off than the maximum sentence of ten-years. Thus, it is better for both prisoners to 'admit' in this case.

Applied to a similar situation/game, two or more individuals are presented with a binary choice matrix. The participants are placed in separate rooms and are not allowed to communicate while making their decisions. Choosing to defect when the other person chooses to cooperate would achieve the best individual outcome. However, if everyone chooses to defect, the outcome would be worse than if each individual had chosen to cooperate (Balliet, 2010).

Public Goods Dilemma

The public goods paradigm has received the greatest concern over the last decade among all types of social dilemma (Suleiman *et al.*, 2004). Public goods are resources from which all people potentially benefit, whether or not they contribute to providing the goods. In other words, the public goods are 'non-excludable' (Kollock, 1998, p. 189) to everyone. As such, there is a great enticement to enjoy the goods without increasing their creation and/or maintenance. For instance, all Hong Kong citizens can enjoy the services of public hospitals regardless of whether they contribute to them or not. Most of the public hospitals are funded by the government. However, private donations are vital to their continuous existence. Thus, public goods are non-excludable (Kollock, 1998; Balliet, 2010). Those who enjoy the benefits of public goods without contributing to their creation are called 'free riders'. From the perspective of ordinary citizens, they do not need to contribute much money towards the public hospital even though they can enjoy the benefits from it. However, if all people refuse to contribute, and act as free riders, the public goods will be consumed without being

replenished until they ultimately disappear. Thus, the public goods dilemma refers to the relationship between the levels of resources contributed to creating the public goods and the levels of those goods provided to society.

Purely public goods possess two important elements that distinguish them from a resource dilemma (Kollock, 1998). First, the benefits from public goods are usually 'non-excludable' (Kollock, 1998, p. 189). For example, in the case of public hospitals, even if everyone goes to the hospital at the same time, the services provided to the citizens are the same. Second, public goods are 'non-rival' (Kollock, 1998, p. 189). When a person uses them that use does not affect the availability of the goods to others. For instance, when a person goes to a public hospital, it does not make the hospital less available to other people.

In a public goods dilemma, the key characteristic is not the carrying capacity of the common goods, but the relationship between the level of the public good supplied and the amount of resources allotted to the production of the public good (Kollock, 1998). According to Kollock (1998), this relationship is regarded as a 'production function'. There are four basic production functions: 1) decelerating, 2) linear, 3) accelerating and 4) step function.

In the decelerating production operation, the initial contributions are the largest. However, with extra contributions, the returns drop and stagnate. In a linear production operation, each resource unit provided produces the

same return. For an accelerating production operation, some returns are produced from the initial contribution however greater returns result as the contributions increase. Lastly, discontinuities in the production function, such as the step-level operation, create 'thresholds'. In this situation, little or no amount of public good can be made until a certain threshold is attained.

The public goods paradigm has been studied in the form of 'give-some' games in which group members are given an endowment from which they are asked to contribute towards a common pool. The common pool is then distributed equally among all group members regardless of each member's contribution. The investigator generally increases the magnitude of the pooled benefits. However, sometimes a minimum level of contribution is required for the additional benefits to be realised as a step-level public good. As such, it might be possible for groups to contribute too little if most people decide to be free riders. In contrast, groups may contribute too much when the minimum threshold for making the goods available is reached.

Resource Dilemma

This type of dilemma was first described by Lloyd in 1832 and then popularised by Hardin's 1968 article 'The Tragedy of the Commons' on the use of natural resources. Hardin describes the behaviour of a group of herdsmen who share a common piece of land for feeding their cattle. Although the common land is shared, the proceeds from the sale of the

cattle are not. Rather, the proceeds go to each individual herdsman who chooses to feed his/her cattle on the commons. Given this situation, each herdsman intends to maximise his or her monetary benefit. How do they do that? They try to raise as many cattle as they can within their land. The herdsmen who raise more cattle enjoy all of the benefits and assume the risks. However, the damage to the commons is spread over the whole group. Imagine if all of the herdsmen try to maximise their own profits, i.e. to raise as many cattle as they can. The cumulative result would be tragic. Too many cattle brought to the commons will destroy the quality of the commons. With more and more herdsmen adding cattle to their stock, the carrying capacity of the commons will soon be exceeded, leading to the tragic demise of the commons and the herds that graze on it. In another dilemma, some individuals have infinite access to a common pool of resources and they make the decision how much to reap. The resource pool may be topped up at a fixed rate over time, but it is in each individual's benefit to take as much as possible from the resources. If everyone seeks to maximise their harvests, the resource is soon depleted and everyone suffers. This dilemma, in combination with the prisoner's dilemma, is a commonly studied form of social dilemma.

Hardin (1968) posits that the end result of the commons dilemma was inevitable: 'each man is locked into a system that compels him to increase his herd without limits --- 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. Freedom in a commons

brings ruin to all' (p. 1244).

The subtractability of its benefits and its carrying capacity is the key characteristic of the commons dilemma. The grassland consumed by each additional head of cattle was not available to the other herdsmen for feeding until such time as the grassland was refilled. If the replenishment rate does not keep up with the additional cattle added, the carrying capacity of the commons is exceeded. Nowadays, the term is used more generally to reveal the issues that arise when a crowd depending on a common pool of resources arrive at a certain level where their joint demand exceeds the supply. Meanwhile, their consumption is so high that it endangers the future availability of the resource itself (Messick, 2004). Other examples of the commons dilemma are environmental pollution, energy conservation, population growth and the like. In all of these examples, there is a positive incentive to ignore the collective good. Individuals achieve personal gains from increasing their use of electricity and the like. Once these incentives are negative and discourage individuals from promoting the collective good, it results in the type of social dilemma Messick and Brewer (1983) pinpoint as 'fences', or generally the public goods dilemma mentioned above.

2.2 Socially Responsible Consumption

Socially responsible consumption refers to a type of consumer behaviour that is focused on social and environmental responsibility. Many studies have investigated the kinds of social responsibility practised by

corporations. Although in recent years increasing numbers of studies have focused on social responsibility at the personal level and have examined the socially responsible behaviour of individual consumers, the studies are still inadequate. Sen *et al.* (2001) suggest using social dilemma theory to examine consumer behaviour concerning the reaction to shortages because this involves a dilemma between individual and group needs. Recycling is one of the areas related to the reaction to shortages, in this case, natural resources.

The 'socially responsible consumption' (SRC) concept can be traced back to Anderson's article, 'The Socially Conscious Consumer' (1972), which initiated a discussion of consumer behaviour in response to corporate actions related to social issues such as pollution. Webster (1975) describes the socially conscious consumer as a consumer who considers the social effect of his or her personal consumption or who tries to use his or her purchasing power to achieve social change. Webster's definition of socially responsible consumption is based on the psychological aspect of social involvement, and he argues that socially conscious consumers are highly concerned about social problems. Such consumers are actively involved in community issues, and they believe that they can make a difference to the community.

Roberts (1993) defines socially responsible consumers as those who will purchase products and services that have a perceived positive influence on the environment. This group of consumers might also patronise those

businesses that take positive actions towards social responsibility in terms of environmental or other social concerns.

Three major approaches are used in defining the concept of the socially responsible consumer. One approach views socially responsible consumer behaviour in relation to the concept of corporate social responsibility (CSR) (Carroll, 1991; Kuhn and Shriver, 1991; Marcus, 1993). Corporate social responsibility is the study of social responsibility at the corporate level. Carroll (1991) examines corporate responsibility in terms of four different aspects, namely the economic, legal, ethical and philanthropic aspects. He points out that companies not only have legal and economic responsibilities, but also ethical and philanthropic responsibilities. Socially responsible consumption is more focused on investigating socially responsible behaviour at the individual level.

The second approach to defining socially responsible consumption is based on Kotler's (1991) societal marketing concept. According to this idea, one of the reasons companies conduct business is to maintain or improve the well-being of both their customers and society as a whole. Perkus and Woodruff (1992) expand this concept to include both the offering of benefits and the elimination of any harm to society. Mohr *et al.* (2001) builds on these ideas to suggest that a SRC person demonstrating SRC will try to 'minimize or eliminate any harmful effects and maximize the long-run beneficial impact on society' (p. 47).

A third approach views responsible consumption as a 'set of voluntary acts' (Özçaglar-Toulouse, 2009). In this view, responsible consumers are aware of the negative effects of waste and over-consumption, and they believe that they can bring about change that builds a better world (Micheletti, 2003; Özçaglar-Toulouse, 2009).

It should be noted that all of these studies on socially responsible consumption are still limited and inadequate. As Aguinis and Glavas (2012) point out, there is a considerable amount of research centered on the organisational level of analysis related to corporate social responsibility. Only limited studies on socially responsible consumption can be found at the individual level. Sen *et al.* (2001) suggest using social dilemma theory to examine consumer behaviour in reaction to shortages, which involves a dilemma between individual and group needs. Recycling is related to the reaction to shortages, in terms of natural resources.

2.2.1 Recycling

Recycling is often regarded as an emerging global trend. It is believed that recycling was started by green societies in the 1970s, and by the 1990s it was becoming popular in many parts of the world. However, recycling is an activity with a considerable history (Anderson and Brodin, 2005). For centuries, people needed to preserve their resources due to scarcity or wealth issues. This explains why many older generations are recycling experts, reusing clothes, composting their household waste, reusing papers, leaving nothing to waste. Bagozzi and Dabholker (1994) point out

that early in the 1960s, Vance Packard wrote a book entitled 'The Waste Makers' and warned the world that it was entering the 'throwaway age' at a swift pace. Thus, recycling is not a new trend. In recent years, more research has been conducted on recycling, with specific topics ranging from government policies and industrial processes to ordinary citizens. In this study, the focus is on consumers.

Recycling is a kind of socially responsible behaviour that involves efforts to 'collect and treat used objects and materials that are ready to be thrown out to produce materials that can be used again' (*Cambridge Dictionaries Online*). The *Oxford Advanced Learner's English-Chinese Dictionary* (2008) offers a similar meaning of the word 'recycle': 'to treat things that have already been used so that they can be used again'. In the academic literature, recycling refers to 'the process of putting otherwise disposable products to reuse' (Rao, 1994, p. iii). These definitions imply reuse of the many materials or substances produced and used by society. The process of recycling consists of three key steps. They are: 1) collection of recycled rubbish, 2) treatment of the rubbish and 3) turning the materials into new recycled products. In this process of recycling, the consumers' main role is to facilitate the collection of recycled rubbish, the *first step* in recycling. Normally, the second and third steps are handled by other organisations, not the consumers. Anderson and Brodin (2005) define the consumers' role in recycling as follows: 'consumers bring boxes and bags with rubbish and scrap to appropriate collection points' (p. 81). However, in reality consumers bring rubbish rather than 'boxes and bags' for recycling. Thus,

in this study, the consumers' role in recycling is defined as consumers bringing rubbish and scrap to appropriate collection points.

Why does recycling represent a social dilemma? Based on the above definition, recycling can be viewed as a social dilemma because:

- i) Not recycling provides more convenience to benefit the consumers' short-term self-interest.
- ii) However, this pursuit of immediate self-interest creates a negative effect on the interests of the general public, such as polluting the environment.
- iii) The pursuit of short-term gain by all of the citizens creates a more harmful effect on society in the long-run.

Using recycled materials is good for the environment because it can reduce waste and avoid pollution. However, people may find that the positive effects of recycling only appear over the long-term. They may not see the immediate benefits to society within a short period of time. Thus, people may be more concerned with the short-term benefits and seek products that are convenient (e.g., using plastic bags while shopping). They may also prefer the immediate gratification derived from buying excessive or unnecessary products. In such a situation, if people continuously pursue their personal self-interest it could lead to catastrophic outcomes for the public. However, people could face a social dilemma if they are told to practise recycling in their daily lives. It could be particularly difficult for them to behave in more socially responsible ways if this has not been their

previous habit (Ittiravivongs, 2012). It is therefore important to understand how people behave in such situations.

Prior studies use the theory of interpersonal behaviour (Ittiravivongs, 2012), means-end chain theory (Bagozzi and Dabholkar, 1994), theory of planned behaviour (Biswas, 2000; Werder, 2002; Tonglet *et al.*, 2004) or the norm activation model of altruistic behaviour (Wan, Shen and Yu, 2014) to explore recycling behaviour. These studies mainly focus on the traditional explanation of recycling behaviour or explored the determinants of attitudes towards recycling. There is only limited success in capturing the full dynamics of recycling behaviour. By using social dilemma theory, however, better explanations and prediction of recycling behaviour can be obtained. It is thus of theoretical and practical importance to use social dilemma theory to investigate consumers' recycling behaviour.

2.3 Reference Group Theory

Humans are social animals, and we always look to the behaviour of others as a benchmark in trying to please others or in seeking to associate with social groups. The term 'reference group' refers to people who significantly influence the attitudes and behaviour of other individuals (Bearden and Etzel, 1982; Dawson and Chatman, 2001). According to Blackwell, Miniard and Engel (2012), reference groups can be described in terms of various characteristics. Generally speaking, such groups may be primary or secondary, formal or informal, and aspirational or dissociative. In addition, reference groups can create normative influence and/or informational

influence. Various studies show that people's consumption decisions are often heavily affected by their reference groups (Childers and Rao, 1992).

In studying social dilemma theory, it is helpful to examine how various group characteristics (such as group size or style of communication) affect an individual's decision to cooperate. However, there has been limited discussion concerning the nature of group influence on the individual decision to cooperate. A discussion of reference group theory thus benefits the exploration of this aspect of group influence. Reference groups are expected to exert an influence on people's choices for socially responsible consumption and specifically on their decisions to participate in recycling.

2.4 Cooperation in Socially Responsible Consumption

In studies of social dilemma theory, it is always interesting to learn how people decide to cooperate or compete with each other. Previous studies show that people expect an effort for socially responsible consumption to succeed if they believe other people will also participate in it (van Lange *et al.*, 1992). Such studies also demonstrate that people's decisions are easily affected by normative influences. This study extends the model developed by Sen *et al.* (2001) to investigate recycling behaviour. Recycling is one form of socially responsible behaviours viewed from the consumption perspective. According to this model, people have a stronger intention to participate in recycling if they expect other people are also likely to participate. With a greater likelihood of recycling participation, each

individual has more potential for turning favourable attitudes towards recycling into actual recycling behaviour (see Figure 4).

2.5 Theoretical Framework

Expectation of Overall Participation

Social dilemma theory suggests that there is a strong positive link between people's expectations for overall cooperation and their own participation (Klanermans, 1992; Van Lange *et al.*, 2012). The theory further points out that people are more likely to cooperate when they anticipate widespread cooperation from the people surrounding them. Thus, this study predicts that people's intention to recycle will be higher when they expect others are likely to participate in recycling. Applying reference group theory, people might be affected by other reference groups and a desire to comply with social norms (Blackwell, Miniard and Engel, 2012). This study predicts that people might be affected by reference groups and expected social norms to change their recycling intention. This study thus applies these theories to the recycling situation and predicts that consumers' willingness to participate in recycling will vary positively with the expectation of overall participation. Hence, it is hypothesised that:

H1: There will be a positive relationship between the expectation that others will participate in recycling and the likelihood of personal participation in recycling.

Susceptibility to Normative Influence

As mentioned previously, pursuant to reference group theory, some

reference groups significantly influence people. 'Susceptibility to normative influence' refers to the tendency to be easily influenced by others. One of the most popular studies on reference group influence on one product and brand choice is that of Bearden and Etzel (1982), who reveal the importance of group influence on consumer behaviour. Reference group theory suggests that participation conformed to cultural norms is likely to be more noticeable for individuals who are more susceptible to that influence (Bearden, Netemeyer and Teel, 1989). Therefore, it is believed that if consumers are more susceptible to normative influences, the influence arising from their expectations of other people's overall participation and on their intention to participate in recycling will be stronger. It is thus hypothesised that:

***H2:** The positive effect of expectations that others will participate in recycling on the likelihood of personal participation in recycling will be stronger for people who are more susceptible to normative influence than for those who are less susceptible to such influence.*

Degree of Perceived Efficacy

Efficacy is defined as the belief in one's ability to produce the results that one wants (Bandura, 1977; Wood and Bandura, 1989; Perkins *et al.*, 2012). 'Perceived efficacy' refers to the perception that one can contribute significantly to the achievement of a goal (Sen *et al.*, 2001).

In terms of participation in recycling, consumers' perceptions of personal

efficacy are likely to interact with their expectations of overall group participation. When consumers have a low sense of efficacy (i.e., they believe that each individual can contribute little or nothing to the recycling outcome), they will be more likely to use other people's behaviour as a benchmark for their own recycling behaviour. Under conditions of low perceived efficacy, consumers will defer their recycling decisions to the people around them. For instance, when these consumers find that there are more people to participate in recycling, they will be more likely to participate in recycling. In short, the likelihood of a consumer's participation in recycling largely depends on their expectations for the overall participation of others (Sen *et al.*, 2001).

When consumers have a high sense of personal efficacy (i.e., they believe that they can individually make a difference to the recycling outcome), they are not likely to depend on other people's behaviour to make their own judgment. Their expectation of overall participation may then be less applicable to their inclination to engage in recycling. Put differently, when consumers think they can make a difference by personally participating in recycling, the likelihood of their participation will be less consistent with how others behave (Wiener, 1993). Drawing on the implications from these studies, it is hypothesised that:

H3: The positive effect of expectations of overall participation in recycling on the likelihood of personal participation in recycling will be stronger when the degree of perceived efficacy is low than when it is high.

Social Value Orientation

To further extend previous research, this study examines two additional moderating variables that affect the relationship between the expectation of overall participation and the likelihood of participation in recycling. These variables are social value orientation (SVO) and the propensity to trust. Sen *et al.* (2001) indicate that it is worthwhile investigating the effects of people's trust levels and social values (e.g., their emphasis on cooperation, individualism or competition) on social dilemma theory.

Social value orientation refers to a person's disposition or attitude when he or she faces social dilemmas. Some people tend to evaluate the situation in terms of their own benefits and therefore they are inclined to maximise their own interests (i.e. they are those individuals with a *pro-self* orientation). Some others tend to view the situation in terms of the collective interest. Thus, they will try to maximise the interests of others and minimise their own personal interests. In other words, these are the individuals with a more *pro-social* orientation (Van Lange *et al.*, 1998).

Social value orientation affects people's ways of thinking, and can account for their behaviour in different contexts of interpersonal decision-making (De Dreu *et al.*, 1998). There is a long history of social dilemma research showing that different people have various ways for approaching social dilemmas. Some people tend to base their decisions on calculations of personal self-interest. Others prefer to make decisions based on the collective well-being. These different approaches reflect the diverse kinds

of motivation, personality and social values that people rely on when unilaterally choosing between interdependent outcomes.

Previous studies develop models of social value orientation to measure the magnitude of concern that people have for specific patterns of outcomes for themselves and others (McClintock, 1972, Van Lange *et al.*, 1997, Murphy *et al.*, 2011). A great deal of current research has focused on comparing individuals who have a pro-social orientation (or who try to maximise outcomes for the benefit of society) and individuals who have a pro-self-orientation (or who are inclined to maximise outcomes for themselves, either in an absolute sense as individualists, or in a relative sense as competitors who prefer to seek relative advantages over others) (Kuhlman and Marshello, 1975; McClintock and Liebrand, 1988; Parks, 1994; Van Lange and Kuhlman, 1994). In addition, the extant research has studied social value orientation as an independent variable (McClintock and Liebrand, 1988; Van Lange *et al.*, 1997; Cameron, Brown and Chapman, 1998). Limited research considers social value orientation as a moderating role.

There is also an interesting view among some research findings (Kelley and Stahelski, 1970; Van Lange, 1999) that, for instance, if the pro-social individuals cooperate with other people, they would expect others to do the same for them (i.e. behave cooperatively) or they would expect those who are non-cooperative to be punished.

This study examines the moderating effect of social value orientation on the relationship between expectation of overall participation and the likelihood of personal participation in recycling. A higher degree of social value orientation for pro-social individuals might mean they are less influenced by others' participation in recycling as they are likely to depend on their own judgment in evaluating morality. In deciding whether or not to recycle they think more independently. Conversely, non pro-social individuals are more likely to be affected by others in their recycling behaviour. This study thus predicts that the influence of others might have a higher effect on the intention to recycle for individuals with a weaker pro-social orientation than those with a stronger pro-social orientation. It is therefore hypothesised that:

H4: *The positive effect of expectation for overall participation on the likelihood of personal participation in recycling will be higher for those with a weaker pro-social orientation than for those who have a stronger pro-social orientation.*

Propensity to Trust

Trust is another variable that is closely linked to cooperation. Trust is 'a psychological state comprising the intention to accept vulnerability based upon the positive expectations of the intentions or behaviour of another' (Rousseau *et al.*, 1998, p.395). Trust involves accepting the risk that other people have some control over one's own outcomes. A 'positive expectation' based on trust implies a belief in the cooperative intentions or behaviour of others (Rotter, 1967; Evans and Krueger, 2010). Therefore, it

is argued that individuals with more propensity to trust will augment the influence of the effect of expectation for overall participation. Pruitt and Kimmel's (1977) goal/expectation theory posits that the expectation of cooperation from others was important to achieving mutual cooperation. In fact, understanding a person's level of trust at which others will cooperate with him or her can help to explain that person's level of positive expectation (Yamagishi, 1988). Yamagishi indicates that pro-social and pro-self individuals did not significantly differ in terms of trust. Thus, the concepts of social value orientation and trust should be independent. Van Lange *et al.* (1998) also measure these two variables separately. Extant research has studied trust as an independent variable (Parks, Henager and Scamahorn, 1996; Van Lange *et al.*, 1998; Evans and Krueger, 2010). Limited research considers trust as a moderator. This study examines the effects of the propensity to trust on the likelihood of participation in recycling. Accordingly, it is suggested that:

H5: The positive effect of expectation for overall participation on the likelihood of personal participation in recycling will be stronger for people with high levels of propensity to trust than for people with low levels of propensity to trust.

The Likelihood of Personal Participation in Recycling and Recycling Behaviour

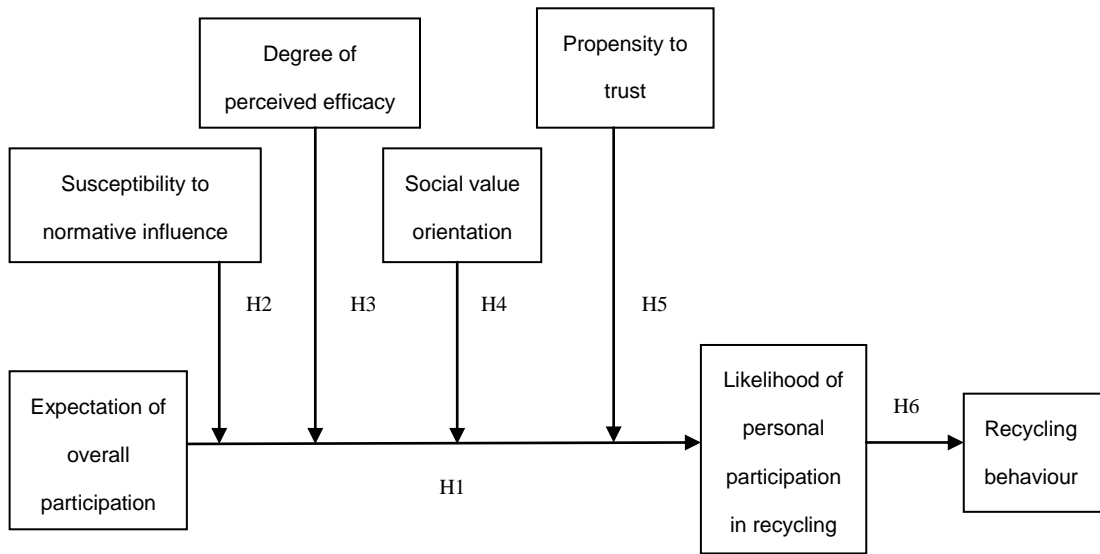
'The likelihood of personal participation in recycling' refers to one's intentions towards recycling. Many studies point out that there is a positive

relationship between intention and behaviour in different disciplines (Ajzen and Madden, 1986; East, 1993; Lucille Vessel, 2000; Tonglet, Phillips and Read, 2004; Smith *et al.*, 2008). This study examines the relationship between the likelihood of personal participation in recycling and recycling behaviour. The theory of planned behaviour (Ajzen, 1991) was chosen for this purpose. An extension of the theory of reasoned action, this theory suggests that an individual's intention will affect his behaviour. Ajzen (1991) further explains that 'the stronger the intention to engage in a behaviour, the more likely should be its performance' (p.181). The relationship between intention and behaviour has been demonstrated in many contexts and for different behaviour. Thus, in this study, it is expected that there will be a significant positive relationship between recycling intention and recycling behaviour. Based on the theory, it is proposed that:

H6: There will be a significant positive relationship between the likelihood of personal participation in recycling and recycling behaviour.

Sen *et al.* (2001) offer a model for social dilemma theory that was based on choices related to boycotting an issue. The model, shown in Figure 4, is an extension of the Sen *et al.*'s model and is designed to test several premises concerning recycling behaviour. In this model, it is assumed that all consumers are rational. Therefore, the researcher does not predict any reverse causalities.

Figure 4: Theoretical Framework



CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

Following the discussion from the previous chapters, social dilemma theory is adopted as the theoretical framework for this study. The research design follows a mixed methods approach combining both qualitative and quantitative elements.

The qualitative part of this study follows the research philosophy of interpretivism. Interpretivism encourages researchers to understand the differences between individuals in a society (Saunders *et al.*, 2012). This study, aims to gain a deeper understanding of Hong Kong people's recycling experiences. To do this, a phenomenological approach is adopted. Interpretivists propose that there are multiple realities and that these realities vary between different places and times. Unlike quantitative studies, the approach used in this portion of the study will be informal and subjective. Such a qualitative approach is very useful for building new theories, particularly for situations in which there is either limited information or a great deal of uncertainty.

In the quantitative part of the study, positivism is used as the research philosophy. Positivism is akin to natural science because it involves gathering facts and data rather than impressions. Positivists try to test hypotheses and analyse data to determine what is true or untrue. Such an approach allows researchers to reach agreement on the real reasons for a phenomenon (Saunders *et al.*, 2012). Quantitative research is an important technique for explaining phenomena, and in the quantitative part of this

study a survey was carried out to test several hypotheses regarding recycling behaviour (Sekaran and Bougie, 2009).

3.2 Qualitative Research – Phenomenological Study

As mentioned in the previous section, phenomenology formed the framework for the qualitative research. This qualitative technique tries to understand the meanings individuals ascribe to, and their lived experiences of, a phenomenon. Accordingly, it is an appropriate research method to understand in depth the recycling experiences of Hong Kong people. Other qualitative methods (such as narrative, case study, grounded theory and ethnography) are not able to achieve the research objectives of this study.

The phenomenological part of this study was conducted in spring 2015. It aimed to gain a deeper understanding of the recycling experiences of a group of individuals dispersed throughout Hong Kong. The core questions were as follows:

- What is your experience of recycling?
- How does the context or situation (e.g., the people you are with, the time, or the location) influence your recycling experience?

As Creswell (2007) suggests, selected participants should have had some experience in the particular phenomenon the researchers want to explore to enable the participants to share their feelings about the phenomenon. As such, the participants in this study had recycling experience, and they were interviewed to explore the essence of their experience. In the following

section, the sample, interview procedure and validation procedure for the phenomenological study are all discussed.

3.2.1 Sample

As mentioned, the phenomenological study focused on individuals who had previous recycling experience. Thus, purposeful sampling was used to select the participants. According to Creswell (2007), purposeful sampling specifically targets individuals who have had experience with a particular phenomenon so they can share their experience and help to answer the central questions. No age limit was applied when choosing the participants to be interviewed. The individual in-depth interviews continued until a saturation point was reached (Strauss and Corbin, 1998) and no new information could be found. In Creswell's (2007) view, the sample size for a phenomenological study should be within the range of 5 to 25 participants. In this study, 20 individuals participated in the interviews. As such, the number of participants fulfilled the requirement.

3.2.2 Interview Procedure

The phenomenological study was conducted in Chinese because the respondents were all local Hong Kong citizens and Cantonese speakers. The questions were first written in English. As suggested by Brislin (1976), an English to Chinese translation-back-translation process was undertaken, translating the study instruments (including the interview protocol and consent letter), to assure that identical procedures were followed and identical constructs were measured. The researcher wrote both the

interview protocol and consent letter in English and then translated them into Cantonese. A professional was then invited to back translate the Chinese script back into English. Another third-party professional was invited to check and see if there were any differences in the meanings between the two English scripts and any differences between the English and Chinese versions. Some adjustments to the interview protocol and consent letter were made as a result of this effort.

In addition, the interview protocol was pre-tested before it was implemented, to check for inappropriate content or errors. Three targeted participants participated in the pre-test. Following the pre-test, some minor amendments to the interview protocol were made to ensure the final interview would work smoothly and would generate quality information.

Face-to-face or telephone interviews were carried out from 15 to 26 February 2015. Each interview lasted for about 30 minutes, until no new themes emerged. The interviews were conducted in several locations, which were chosen to convenience the participants. All of the locations selected were relaxing environments such as coffee shops, club houses and meeting rooms. Such natural settings allowed the participants to feel more comfortable and were chosen to encourage the participants to speak more freely about their recycling experiences.

Nine participants chose to conduct the interview over the telephone. The interview protocol and consent letter were given to the participants in

advance of their interviews. If the participant agreed to the interview, he or she was asked to sign a consent letter. Prior to commencing the interview, the researcher also explained its purpose and the process. After obtaining the consent of the participants, the researcher asked for some background information on the participants such as their age, marital status, number of children, religious background, and whether or not they had studied abroad. After that, each participant was asked to verbally respond to the two core questions. All of the interviews were tape-recorded and transcribed verbatim.

3.2.3 Validation Procedure

Three approaches were used for validation. First, an extensive literature review was conducted on the research topic. The researcher used the in-depth interviews to provide 'corroborating evidence' in relation to previous studies. Second, the interview protocol was pre-tested by three participants. Following Creswell's (2007) suggestion, the researcher followed the systematic phenomenological research method. She kept detailed interview notes and followed up with the participants to clarify any doubts. The researcher also used the 'member checking' technique, in which the transcripts were sent back to all of the participants to check and validate whether the researcher's interpretations of their remarks were correct. All of the transcripts were confirmed.

In analysing the data, the scripts analysis procedure proposed by Creswell (2007) was followed. The researcher went through the scripts line by line.

The most significant statements from each interview transcript were identified. Meanings were then formulated from these statements, and the formulated meanings were clustered into key themes. The themes were classified into both textual descriptions (descriptions of what the participants experienced) and structural descriptions (descriptions of the contexts or settings that influenced the participants' experiences). The results were integrated into a more in-depth composite, describing the recycling phenomenon. Details of the results are discussed in Chapter 4.

3.3 Quantitative Research – Survey

As previously explained, a survey was used for the quantitative study. In the following section, the sample size, sampling method, questionnaire design, pilot test, data collection, measurement method and data analysis are discussed.

3.3.1 Sample Size

A sample is a subset of a target population that is selected to generalise the findings of a research study (Sekaran and Bougie, 2009). The sampling frame of this study was all Hong Kong citizens aged 18 or above. This population group accounted for 89% of Hong Kong's total population (Hong Kong Monthly Digest of Statistics, March 2014) at the time the research was executed. The reasons for choosing respondents who were at least 18 years old were, 1) 18 is regarded as the official age of adulthood in Hong Kong, and 2) 18-year-olds are assumed to have sufficient experience and intellectual training to form their own judgements.

Considering the number of variables and the expectation of applying regression analysis to the results, a ratio of 15 or 20 participants for each variable was preferred (Hair *et al.*, 2010). As such, a minimum of 120 responses was sought through personal interviews conducted through a structured questionnaire. Based on the population, the planned sample size was estimated at 200 (Malhotra, 2006). The steps of the estimation were as follows. First, the desired precision was that the allowable interval be set as ± 0.05 . Second, the level of confidence was specified at 95 per cent. The z value associated with the confidence level was 1.96. After that, the population proportion was calculated as 0.86. Finally, the formula for the standard error of the proportion was used to determine the sample size.

$$n = \pi (1-\pi) z^2 / D^2$$

$$n = 0.86 (1 - 0.86)(1.96)^2 / (0.05)^2$$

$$n = 185$$

The planned sample size was therefore set at 185. In the actual field study, 332 respondents were interviewed. There were several reasons for interviewing more respondents. First, a larger sample size can usually increase precision and therefore identify significant differences (Bartlett, Kotrlik and Higgins, 2001). Furthermore, some unreliable or incomplete questionnaires can result from the interviews. Thus, oversampling was considered prudent. Apart from this, the chance of having Type I and Type II error is small. The reason is that the actual sample is 332 which is much larger than the minimum required sample size.

3.3.2 Sampling Method

The mall intercept method was selected to collect data for this study. This is a kind of systematic random sampling (Sudman, 1980) and it is one of the most popular methods used in survey research (Bush and Hair, 1985; Nowell and Stanley, 1991). The mall intercept method is a face-to-face personal interview. As mentioned, it is a random systematic sampling technique used to infer the population. It is understood that random sampling allows all elements in the population to have an equal chance to be chosen as participants. The greater the sampling error, the less accurate the estimate of the population value will be (Sekaran and Bougie, 2009, Saunders *et al.*, 2012). Thus, random sampling was preferable in this study because the sampling error was smaller. In addition, many Hong Kong people pass through the shopping malls after work on weekdays (public transportation stations are close to the malls and restaurants are also inside the malls) and they like to shop in the malls over the weekend. Thus, this method was appropriate to randomly selecting the sample for the survey.

In total, twenty-seven shopping malls on Hong Kong Island and in Kowloon and the New Territories were randomly selected as locations to conduct the survey. The details of the shopping malls are listed in Appendix 5. The surveys were carried out during two to three weeks between mid-August to early September 2015.

3.3.3 Questionnaire Design and Measures

A structured questionnaire was used because this is an efficient data collection mechanism. Interviewers read the same questions to all respondents and the choices of answers are fixed. This ensures that interviewers ask the same questions and the answers are more reliable. It also reduces the potential problem of time pressure and exhaustion, which can occur during in-depth interviews (Sekaran and Bougie, 2009).

The questionnaire was divided into eight sections. To measure the constructs in the model, several measurement items were adopted from the extant literature (Folkman *et al.*, 1986; Van Lange *et al.*, 1997; Sen *et al.*, 2001; Batra, Homer and Kahle, 2001; Webb *et al.*, 2004; Thompson and Phua, 2005). Some items were slightly modified to fit the recycling context.

In the introduction, some counter-biasing statements were included in the questionnaire. These statements were designed to make the respondents feel more comfortable and willing to tell the interviewer the truth. This introductory section was therefore intended to reduce the possibility of 'socially desirable responses' (Podsakoff and Organ, 1986) that could affect the findings.

In Parts 1 to 3, the questions concerned the expectations for overall participation in recycling and the perceived efficacy and likelihood of participating in recycling. The questions in these sections were modified

from those proposed by Sen *et al.* (2001) (See Appendix 3). The ratio scale developed by Sen and his associates were also used to assess the 'expectations of overall participation in recycling', and the respondents' answers were provided in percentages. The degree of perceived efficacy also followed the measurement of Sen *et al.* (2001) to conduct a single-item measure on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Some researchers (Scarpello and Campbell, 1983; Wanous, Reichers and Hudy, 1997) suggest that the reliability of single-item measurement is reasonable and acceptable, and there is no empirical evidence indicating that it is not. In fact, in some cases a single-item measure is preferable to a scale (e.g. respondents may resent being asked questions that appear to be redundant). The measurement on the likelihood of personal participation in recycling, with 5 items, was also borrowed from Sen *et al.* (2001). Each item used a 7-point response scale ranging from 1 (definitely will not participate/very negative/not at all favourable/very bad idea/not at all useful) to 7 (definitely will participate/very positive/very favourable/very good idea/very useful) (See Appendix 3).

Part 4 measured respondents' susceptibility to normative influences. This was assessed by seven items developed by Batra, Homer and Kahle, (2001). Each item was measured on a 7-point rating scale ranging from 1 (not at all important/do not like at all/strongly disagree) to 7 (extremely important/ extremely well/strongly agree).

Part 5 measured respondents' propensity to trust. It was assessed using Rotter's Interpersonal Trust Scale – Short Form, from Folkman *et al.* (1986). The short form of the interpersonal trust scale consists of nine items and they were rated on a 5-point response scale ranging from 1 (strongly disagree) to 5 (strongly agree).

In Part 6, the questions focused on recycling behaviour. Eight items drawn from the socially responsible purchase and disposal scale of Webb *et al.* (2004) were used to measure this. Items were rated on a 5-point response scale ranging from 1 (never true) to 5 (always true).

Part 7 categorised the respondents in terms of their level of social value orientation (SVO): pro-social group or non prop-social group. In this part, the measurement scale of Van Lange *et al.* (1997) was used and it consisted of nine items. Respondents were asked to envisage they were paired with another person (named 'other') whom they did not know. They were then asked to distribute money between themselves and the 'other' person (see Appendix 4).

Part 8 measured the respondents' social desirability responses. A shorter form of Strahan-Gerbasi's social desirability scale was used (Thompson and Phua, 2005). Using this scale, 10 items were assessed (see Appendix 4) as true or false (T = true, F = false). The reason for adding a social desirability scale was that although some studies suggest that face-to-face interviewing has the potential to provide in-depth responses, other studies

suggest that such interviews might lead to more socially desirable answers (Bush and Hair, 1985). Where research involves societal issues, people could have a tendency to provide more socially desirable responses, that is, answers that are favourable to the interviewers. Thus, it is important to control for the social desirability response (Mick, 1996; Thompson and Phua, 2005). The purpose of this section was to countercheck the issue of the social desirability response.

Finally some basic demographic information on the respondents, in such areas as their gender, age, education level and monthly income, were collected (see Appendix 4).

3.3.4 Validation

Some measures were taken to validate the questionnaires and the data received. The first relates to the translation of the questionnaire. As the survey was conducted in Chinese, a back-translation technique was used to cross check the accuracy of the questionnaire items as Brislin (1976) suggests. The questionnaire was first translated from English to Chinese. Then an external bilingual professional was invited to translate the Chinese version of questionnaire back into English. The two sets of original English language questionnaires were then compared and a judgement was made on the quality of the translated questionnaire before moving to pilot testing. The second measure was to carry out the pilot test. The purpose of the pilot test was to make a final check of the questionnaire. During the pilot interviews, the interviewers collected information and feedback for the

researcher. The researcher then checked to see if the questionnaire needed any further amendment. This is discussed in more detail in the next section. Finally, the interviewers asked the respondents if they agreed to leave their personal phone contacts for the researcher to counter check the answers they provided during the interviews. This aimed to ensure the answers collected were accurate.

3.3.5 Briefing and Pilot Test

Before the pilot test and the final survey implementation, the interviewers were briefed on the details of the interview and trained on how they should conduct the interviews. A pilot test then was organised and twelve samples were collected from three selected shopping malls (one located in Hong Kong, one located in Kowloon and the other located in the New Territories). The pilot test was arranged in the same way as the final survey. The interviewers collected the information and feedback was provided to the researcher if there were any problems during the interviews. Based on the feedback, some wording was adjusted in the questionnaire. Appendix 4 shows the final version of the questionnaire.

3.3.6 Data Collection

As mentioned earlier, face-to-face interviews were conducted at the entrances to selected shopping malls in Hong Kong, Kowloon and the New Territories. The shopping malls are generally located near transportation centres and commercial or residential areas where the level of passenger traffic is very high. Nine shopping malls from each of the three districts

(Hong Kong Island, Kowloon and the New Territories) were randomly selected to conduct the survey (i.e., in total twenty-seven shopping malls were selected) (see Appendix 5). The data were collected between August 17 and September 8, 2015. The interviews were conducted between 4:30pm to 7:30pm on weekdays and 2pm to 5pm on weekends. The reason for choosing these times was that people would normally be shopping, leaving the office or dining out.

To control for self-selection bias, the respondents were systematically selected. The researcher randomly selected the number 'three' for the survey. The interviewers then counted and interviewed every third passer-by (Sudman, 1980). If a non-Cantonese speaker was chosen, they were skipped and the next third passer-by was selected. The interviewers first of all asked the respondents if they agreed to participate in the interview, in return for an incentive. The respondents were told that the interview would take about 15 minutes. There was no right or wrong answers. Thus, they should answer as honestly as they could. They were also told that all the information collected would be used for academic purposes only and the data collected would be kept confidential. If the respondents completed the survey successfully, they were given a HK\$50 supermarket cash coupon in appreciation of their time and willingness to participate in the interview.

3.3.7 Data Analysis

All data were coded, analysed and summarised using SPSS software. Before the descriptive analysis was run, data cleaning was conducted. This process aimed to ensure that there was no missing data. Descriptive information on the sample were calculated and summarised. The details are discussed in Chapter 4.

Reliability tests were carried out to measure the consistency of the measurement items. The general acceptable lowest threshold level of Cronbach's alpha is 0.60 to 0.70 (Hair *et al.*, 2010).

Simple linear regression analysis was applied to testing H1 and H6. Hierarchical moderated regression was used for the moderation hypotheses, i.e. H2 to H5 (Cohen *et al.*, 2003). Interaction terms often relate to multicollinearity problems because of their correlations with the main effects. The hierarchical moderated regression approach permits the control variables, main effect, and interaction effect to be entered in a stepwise fashion. In this manner, the effects of the control variables were partitioned out before the main effects were entered.

CHAPTER 4 RESEARCH RESULTS

In this chapter, the research results of both the qualitative and quantitative studies are discussed.

4.1 Qualitative Research Results

As mentioned in the previous chapter, 20 in-depth interviews on recycling were conducted from late January to February 2015. Among the 20 participants, 11 were male and 9 were female. Table 1 below summarises the key particulars of the participants:

Table 1: Participants' Profile for Qualitative Interviews

No.	Gender	Age	Marital status	Children	Studied aboard	Religious	Years of recycling experience
01	Female	44	Married	2	Y (Canada)	N	Over 10 years
02	Female	52	Single	0	N	Y	3-4 years
03	Male	62	Married	2	Y (U.S.)	Y	Over 10 years
04	Male	43	Married	1	Y (U.S.)	Y	12 years
05	Female	53	Single	0	Y (Canada)	N	10 years
06	Female	52	Married	1	Y (Canada)	Y	8-10 years
07	Male	52	Married	2	N	N	10 years
08	Female	48	Married	0	N	Y	5 years
09	Male	51	Single	0	N	Y	10 years
10	Male	60	Married	2	N	Y	4 years
11	Female	47	Single	0	N	Y	5-6 years
12	Male	49	Married	2	Y (U.S.)	Y	5-6 years
13	Male	57	Married	1	Y (Canada)	N	Over 10 years
14	Male	59	Married	0	N	N	5-6 years
15	Female	23	Single	0	Y (U.K.)	N	Over 5 years
16	Male	33	Single	0	N	N	3-4 years
17	Female	33	Single	0	N	Y	10 years
18	Female	39	Single	0	N	N	10 years
19	Male	41	Single	0	N	Y	4-5 years
20	Male	51	Married	1	Y (U.K.)	N	20 years

From the analysis of the transcripts, 142 significant statements and 8 themes were identified. The themes were classified into either textual or structural descriptions. Textual descriptions refer to themes that describe the participants' common experience of recycling, whereas structural themes describe the contexts or settings that influence the respondents' recycling behaviour.

4.1.1 Key Themes

A summary and explanation of the eight key themes is as follows.

Table 2: Summary of Key Themes in the Qualitative Research

Key Themes
<p><u>Textual description</u></p> <p>Theme 1: Participants who recycle usually want to do something for the benefit of society or the world</p>
<p>Theme 2: Participants do not mind sacrificing their time and effort to recycle</p>
<p>Theme 3: Participants do not share their decision to recycle with others in advance</p>
<p><u>Structural description</u></p> <p>Theme 4: There is a positive relationship between the availability of recycling facilities in the living environment and people's recycling behaviour</p>
<p>Theme 5: Participants' experience in overseas countries is positively associated with their recycling behaviour</p>
<p>Theme 6: Promotions on recycling motivate respondents to recycle</p>
<p>Theme 7: The motivation for recycling is related to family and peer influences</p>
<p>Theme 8: The motivation for recycling is related to participants' work environments or companies</p>

Textual description – themes

Theme 1: Participants who recycle usually wanted to do something for the benefit of society or the world.

Many participants who recycled shared a feeling that they would like to do something good for society or the world. They understood that their efforts were minimal but they tried their best to recycle. This view is reflected in the words of a 23-year-old woman (No. 15):

'... I also have great passion to recycle. ... I really want to protect the environment...I know the landfills will be saturated very soon. Thus, I try to recycle as much as I can'.

Similarly, two other female participants (aged 44, No. 1 and aged 52, No. 6) had the same feeling:

'When I recycle, I would like to do something good to the society and to the next generation'. Also, 'I think recycling is very important. It's a matter of sustainability. It will affect our next generation. The rubbish will create global warming. It will lead to less land, less species of animals, less agricultural land, and the temperature will be so extreme that all the human beings and animals in the world can't survive' (No. 1).

'By reducing rubbish, we can help to improve the environment... I want to do good things to the environment and to our future generations' (No. 6).

A 60-year-old man also said (No. 10):

'The benefits of recycling are to reduce waste, reduce pollution of the environment. I think it's good to try my best to recycle and protect the world'.

Another male participant (aged 57, No. 13) also expressed his view:

'It is also my philosophy to be a socially responsible person. We need to do something for the good of the society. Thus, I will try my best to recycle'.

Theme 2: Participants do not mind sacrificing their time and effort to recycle

Some participants pointed out that they were willing to sacrifice their own time and effort to recycle. A female participant (aged 44, No. 1) stated that:
'For the clothes, I will drive and bring the unwanted clothes to the Salvation Army every 2 to 3 months'.

The participants said that they were willing to undertake preparation work before recycling. For instance, some would make the effort to clean their bottles or cans before they recycled. A male participant (aged 62, No. 3) and another female respondent (aged 48, No. 8) shared a similar point of view:

"If the bottles or cans are dirty, I'll clean them (the bottles or cans) before putting into the recycle bins' (No. 3).

'For plastic bottles or aluminium cans, I'll clean them before putting into the recycle bins' (No. 8).

Another male participant (aged 52, No. 7) said:

'I'll use water to clean the plastic bottles of shower gels, Yakult etc. And then put them in my collection bags for recycling... For some plastic bottles, I'll take out the paper label and recycle separately. For the tissue boxes, I'll tear off the plastic window and recycle it separately.'

One more male participant (aged 51, No. 20) also reported:

'For glass, I'll use detergent to clean them. I'll try my best to recycle.'

Some other participants mentioned that they would clean their clothes before recycling. A 53-year-old female participant (No. 5) said:

'For the clothes, I'll clean them, group them together and send them to the recycle bins downstairs. For the cans and plastic bottles, I'll clean them before putting into the recycle bins.'

The participants' recycling behaviour showed no expectation for a reward.

The following two statements reflect this theme. A 23-year-old woman (No. 15) said:

'...I don't expect any reward for my recycling behaviour. I really want to protect the environment.'

Another 52-year old female participant (No. 6) noted:

'I just try my best to recycle. It can help to reduce rubbish and protect the environment. I don't mind if I do more preparation work for recycling.'

Theme 3: Participants do not share their decision to recycle with others in advance.

When the participants made the decision to start recycling, they seldom discussed it with others or even with their family members in advance. They made their own judgment regarding the decision of when to start recycling. The following three participants shared a similar attitude.

A 47-year-old female participant (No. 11) said,

'The decision to recycle is my own decision. I won't discuss it with my family before I recycle.'

Another male participant (aged 62, No. 3) pointed out:

'I started to recycle on my own. I don't need to discuss with my family on this. It's not necessary.'

A 43-year-old male participant (No. 4) also indicated:

'I recycle myself. I'll educate my son and my maid to recycle. But I won't discuss with my family in advance about my recycling behaviour at home.'

Structural description – themes

Theme 4: There is a positive relationship between the availability of recycling facilities in the living environment and people's recycling behaviour.

Most of the participants said that the recycling facilities in their housing estates motivated them to recycle. They found that there were more and more recycling facilities around them, providing convenience and

encouraging them to recycle. Below are some of the statements of respondents who shared this state of mind:

A male participant (aged 43, No. 4) explained:

'Recycling facilities are more convenient now. There are a lot of recycle bins in the exit areas in our building. It's very convenient for everyone in my estate to recycle. It also creates the atmosphere of recycling in our estate. Thus, the recycling facilities are very important to trigger more people to participate in recycling'.

A 60-year-old male participant (No. 10) pointed out:

'I have started to recycle since I moved to Ma Wan. That was around 4 years ago. I see the recycle bins every day when I walk through the lobby.... The recycling facilities are very convenient to us. I'll feel guilty if I don't recycle'.

A female participant (aged 48, No. 8) had a similar point of view:

'I think the facilities (i.e. the recycle bins) in the housing estate are important. Once there are recycle bins, I will start recycling... I notice there are more and more recycle bins in society now...I will recycle only when the recycle bins are within walking distance'.

Other participants also stated that if there were no recycling facilities, they would not recycle. It was not because they did not want to. It was that they did not know how to recycle their rubbish.

A male participant (aged 49, No. 12) said:

'There are more recycling facilities (i.e. recycle bins) in society now. I think this is very important. My housing estate started to have recycling bins 5-6 years ago. With the availability of recycling facilities, I also started to recycle. Without recycling facilities, I wouldn't and I couldn't recycle.'

Other participants shared a similar feeling:

A female participant (aged 47, No. 11) mentioned:

'...recycling facilities are very important. If there were no recycling facilities, I couldn't recycle.'

A male participant (aged 59, No. 14) said:

'If there are recycling facilities, I'll recycle. If not, I won't recycle.'

A female participant (aged 33, No. 17) also claimed that:

'Recycling facilities affect my recycling behaviour. Otherwise, I can't recycle.'

Theme 5: Participants' experience in overseas countries is positively associated with their recycling behaviour.

The participants stated that their experiences in overseas countries had an effect on their recycling behaviour. Some of them said that when they studied or lived overseas, they observed the recycling practices of their host countries. These experiences had a great effect on them. When they returned to Hong Kong, some started to recycle.

A female participant (aged 44, No. 1) said:

'When I was young, I studied in Toronto and lived in an apartment. There were some 'blue boxes' for recycling. I didn't understand why we needed to recycle at that time but I followed the regulations to recycle the rubbish. I think this instilled the concept of recycling in my mind. As I've grown older, I've become more concerned about the environment; e.g. I read lots of articles related to global warming issues.'

A male participant (aged 62, No. 3) shared that,

'I studied for my undergraduate degree in the US. At that time, I lived with a local America family, which had a great impact on my recycling behaviour. I started to be more concerned about environmental issues.'

Another male participant (aged 60, No. 10) disclosed that:

'My experience in a foreign country had some impact on my recycling behaviour. It provided me with a lot of information on protecting the environment and it increased my awareness on recycling.'

A 23-year-old female participant (No. 15) had a similar point of view,

'When I was in the UK, there were no regular bins. We were forced to classify the rubbish and put the rubbish in the recycle bins. So I got used to recycle too.'

Other participants were inspired by the recycling environment when they travelled abroad. A female participant (aged 48, No. 8) stated that:

'I like travelling. I think my travelling experiences also have some impact on my recycling behaviour, e.g. I found that the Japanese are doing very well in recycling. They are trained to recycle when they are small'.

Another female participant (aged 39, No. 18) noted that:

'...I always travel. I also lived in Australia for a while. I find that Australians usually have a box at home to keep rubbish for recycling. There was a truck to come to collect recycled rubbish. People overseas look for some ways to reduce waste'.

Theme 6: Promotions on recycling motivate the respondents to recycle

During the interviews, many participants stated that their recycling behaviour had also been motivated by the promotions of the Hong Kong government, media and/or other organisations. In the past, recycling had not been heavily promoted. However, in recent years, the situation had been different and the Hong Kong government had spent more money to promote recycling habits. The respondents indicated that media and other environmentally friendly organisations had also discussed recycling more.

A female participant (aged 39, No.18) revealed that:

'The promotion by the government and some other organisations on environmental protection also affect my recycling behaviour. I know that the landfills in HK are going to be saturated very soon. Thus, I'll try my best to recycle and reduce waste'.

Another female participant (aged 47, No.11) stated:

'Promotion has increased my awareness of recycling. More people talk about recycling. In the past, no one talked about recycling.'

Similarly, a female participant (aged 33, No.17) said:

'Government promotion also influences my recycling behaviour. More people will talk about this.'

Theme 7: The motivation for recycling is related to family and peer influences

Some participants indicated that they were motivated by their family and friends to recycle and that they had started to recycle as a result. In fact, it had even become a habit. The participants said they had also influenced their family members to recycle. Below are some of their comments illustrating this theme:

A female participant (aged 23, No. 15) said:

'...I'll scold my brother (my parents will do the same) if he didn't clean the bottles for recycling'. 'My family motivates my recycling behaviour. All my family members have high awareness of recycling. We influence each other.'

Another female participant (aged 52, No. 6) pointed out:

'Some of my family members and friends recycle. They affect my recycling behaviour. When I started my family, I gradually recycled more.'

A 33-year-old male participant (No. 16) expressed the following view:

'3 to 4 years ago, I moved out from my parents' home and started to live with my girlfriend. She has the habit of recycling. I therefore follow her practice and start recycling'.

Another male participant (aged 41, No. 19) said:

'(Why recycling?) It's because of my mother. She wants to keep the unwanted papers for a neighbour to sell to the recycle centre. For the plastic bottles, we'll put them in the recycle bin... My mum influences me a lot in my recycling behaviour'.

Theme 8: The motivation for recycling is related to participants' work environment or companies.

In the interviews, some participants reported that their work environment or companies affected their recycling behaviour. Their reasons varied. One said the company' policies on recycling and nearby recycling facilities affected their recycling behaviour. Another said the nature of her job motivated her to set a recycling benchmark for others.

A female participant (aged 52, No. 2) noted:

'I think my company also affects my recycling behaviour... There are auditors who come and check us (e.g. if there are any papers in our litter bins, not recycled. The auditor will check how we recycle.) We also have a recycle bin for batteries in my office. Meanwhile, there are lots of recycle points in my office building too. There is a recycle cart with 4 boxes on

every floor of our building. We can put our recyclable materials in different boxes’.

Another female participant (aged 47, No. 11) said:

‘My career also has had an impact on my recycling behaviour. I’m a primary school teacher. In the school, we encourage students to put the plastic bottles in special recycled bags. I think I need to set a benchmark for my students to follow’.

4.1.2 Composite Description

Integrating the eight themes, a composite description was developed to represent the ‘essence’ of the shared recycling experiences of the respondents, as follows:

Most of the participants who recycled conveyed that they wanted to do something for the benefit of society or the world. They said they might have felt guilty if they did not recycle. The participants also showed that they were willing to sacrifice their own time and effort to do more for recycling. They said they believed they could help to build a better world. Many of the participants decided to recycle on their own. They stated they did not discuss their recycling decisions with others in advance.

Most of the participants found that the recycling facilities around their living environment encouraged their recycling behaviour. Some even revealed that if there had been no recycling facilities, they would not have been able

to recycle. Some participants, who studied or travelled abroad, experienced the recycling practices of their host countries. These experiences had an effect on their subsequent recycling behaviour. When they returned to Hong Kong, they said they tried to recycle.

In addition, some of the participants reported that the recycling promotions of the Hong Kong government, media and or other organisations motivated their recycling behaviour. In recent years, they said there had been more promotion of recycling, and the Hong Kong government had spent more money to promote recycling habits. These participants indicated that the media and other environmentally friendly organisations had also begun to discuss recycling more. In their view, all of these had created a positive atmosphere in which to cultivate recycling behaviour.

Apart from this, some of the participants noted that their family members and friends' recycling behaviour had affected their intention to recycle because they often interacted with their family members in their daily lives. A similar situation was found with other participants, who pointed out that their working environment or companies had affected their recycling behaviour.

Having explored the qualitative results, the results of the quantitative study shed more light into the phenomenon of recycling, and are discussed in the following section.

4.1.3 Importance of Qualitative Findings on Quantitative Research

The qualitative research study informed the quantitative research in two ways. First, it re-confirmed the choice of social dilemma theory in the quantitative research. Many participants expressed that they faced a dilemma when they found the situation was inconvenient for them to recycle. Second, the findings of the qualitative research were used to fine tune the design of the questionnaire used in our quantitative research, for example, based on the qualitative findings the researcher adjusted the options for recycling frequency (i.e. item 6.9).

4.2 Quantitative Research Results

A total of 332 respondents completed the questionnaire. This section first discusses the participants' profile and then presents the descriptive statistics, reliability test and common methods variance issues. Thereafter, the hypotheses are tested.

4.2.1 Respondents' Profile

With regard to the socio-demographic profile, 46.7% of the respondents in this sample were male (n=155) and 53.3% were female (n=177). In terms of age, 39.5% of the respondents were 20-29, with the remaining participants being 18-19 (16.9%), 30-39 (21.1%), 40-49 (12.0%), 50-59 (8.4%), 60-69 (1.8%) and 70-79 (0.3%). With regard to education level, 55.4% of the respondents possessed a tertiary education, 40.1% had a secondary school education and the remaining 4.5% had a primary level education. In terms of personal monthly income, 59.4% of the respondents

earned a monthly income of HK\$10,001 or more. Below is the summary of the respondents' profile.

Table 3: Respondents' Profile for the Quantitative Survey

Demographic variable	Current study		Population profile
	N	%	
<i>Gender</i>			
Male	155	46.7%	46.1%
Female	177	53.3%	53.9%
<i>Age</i>			
18-19	56	16.9%	2.5%
20-29	131	39.5%	16.3%
30-39	70	21.1%	19.3%
40-49	40	12.0%	19.6%
50-59	28	8.4%	21.3%
60-69	6	1.8%	13.8%
70-79	1	0.3%	7.2%
<i>Highest education level attained</i>			
Primary school level	15	4.5%	19.6%
Secondary school level	133	40.1%	50.5%
Tertiary education level	184	55.4%	29.9%
<i>Personal monthly income (HKD)</i>			
\$5,000 or below	71	21.4%	
\$5,001-\$10,000	64	19.3%	
\$10,001-\$30,000	173	52.1%	
\$30,001-\$50,000	20	6.0%	
\$50,001-\$70,000	3	0.9%	
\$70,001- \$90,000	0	0.0%	
\$90,001 or above	1	0.3%	

N = 332

Source of population profile: 2014 population data in Census and Statistics Department, HKSAR (Dec 2015) Hong Kong Digest of Statistics.

Personal monthly income is not monitored by the Census and Statistics Department, HKSAR.

Simple Chi-square tests on gender, age and education were conducted to compare the current study and the Hong Kong population. The Chi-square test for gender indicated there is no significant association between the current study and the Hong Kong population, $X^2 = (1, n = 332) = .029$, $p = .866$, >0.05 . The sample profile in this study is similar to the population profile of Hong Kong in terms of gender. For the Chi-square tests for age and education, results indicated there is a significant association between the current study and the Hong Kong population. In particular, for the Chi-square test for age, $X^2 = (6, n = 332) = 490.841$, $p = .000$, >0.05 . For the Chi-square test for education, $X^2 = (2, n = 332) = 118.733$, $p = .000$, >0.05 . Relative to the population, the sample profile is skewed towards younger age groups and higher education levels.

The data indicates that most of the survey respondents (83.7%) recycled at least once every month. This includes 6.3% of the respondents who recycled every day, 29.5% who recycled every week and 47.9% who recycled every month. Other than this, 4.2% of the respondents reported that they did not recycle and 12% of the respondents reported that they recycled either every day or every week.

4.2.2 Reliability Tests

Reliability assesses the consistency of the variables with respect to what they are intended to measure (Hair *et al.*, 2003). Cronbach's alpha is commonly used to measure the internal stability and consistency of the measurement items (Sijtsma, 2009). Scale internal consistency was

checked first by computing Cronbach's alpha. If Cronbach's alpha for the measuring item is 1, it shows that the results have perfect internal reliability. If the alpha value is 0, it means there is no internal reliability. An alpha value of 0.7 or higher indicates a good level of internal reliability and an alpha value of 0.6 indicates a moderate level of acceptance (Churchill, 1979, Shin, Collier and Wilson, 2000; Hair *et al.*, 2003).

The Cronbach alpha scores for the scales of '*likelihood of personal participation in recycling*', '*normative influence*', '*propensity to trust*' and '*recycling behaviour*' in the study were all calculated. For the scale of '*propensity to trust*', after deleting five items with low loadings, the four items retained had a Cronbach alpha score of .61 and met the moderate level of internal reliability (Hair *et al.*, 2003). For the other three scales, all of the items were retained while calculating the Cronbach alpha. The alphas of the four scales ranged from 0.61 to 0.89 (see Table 4) and met the acceptable level.

Table 4: Scales and Reliability

Scale	Items	Cronbach's alpha (α)	M	SD
Likelihood of personal participation in recycling	5	0.89	29.98	17.93
Susceptibility to normative influence	7	0.82	4.14	1.0

Propensity to trust	4 (retained)	0.61	3.96	0.58
	9 (original)			
Recycling behaviour	8	0.84	2.78	0.84

4.2.3 Common Method Bias

To reduce the possibility of the common method bias, the recommendations of Podsakoff, MacKenzie and Podsakoff (2003) were followed. In terms of procedural remedies, all of the participants' answers were kept anonymous. Before the survey was administered, the interviewers explained to the respondents that there were no right or wrong answers. The respondents were instructed to answer the survey as honestly as they could.

Taking another remedial action, the counterbalancing technique was applied to the questionnaire design, meaning that some items were changed from affirmative to negative statements. In this way, the questionnaire controlled for acquiescent responses made by the respondents. In this questionnaire, items 4.6, 5.2 and 5.7 were counterbalancing statements. After data collection, the coding of these three items was reversed in the SPSS software before analysis.

In terms of statistical remedies, a social desirability test was conducted to address issues of measurement error. Table 5 below presents the correlations between the '*social desirability scale*' and the other variables. It indicates that the '*likelihood of personal participation in recycling*' and

'degree of perceived efficacy' were positively correlated with the social desirability scale. However, the coefficients ranged between $\pm.01$ to $\pm.20$. According to Hair *et al.* (2003), this is regarded as a 'slight' or 'almost negligible' strength of association. For 'recycling behaviour', a positive correlation with the social desirability scale was shown and the coefficient ranged between $\pm.21$ to $\pm.40$, which meant that there was a 'small but definite relationship' (Hair *et al.*, 2003) between the two variables. Meanwhile, Harman's single factor test, recommended by Podsakoff, MacKenzie and Podsakoff (2003), was conducted to test if common method variance constituted a problem in this study. The result indicated that there was a 14.66% variance. As this result is less than 50% variance, the common method variance was not considered to be a problem.

Table 5: Means, Standard Deviations, and Intercorrelations for Social Desirability Scale and Seven Other Measures

Scale	M	SD	1	2	3	4	5	6	7	8
1.Expectation of overall participation	29.98	17.93								
2.Susceptibility to normative influence	4.14	1.0	-.040							
3.Degree of perceived efficacy	5.28	1.26	.100	.079						
4.Social value orientation	.66	.47	.057	-.074	.186**					
5.Propensity to trust	3.96	.58	-.001	.099	.207**	.040				

6.Likelihood of personal participation in recycling	5.23	1.09	.124 [*]	.049	.499 ^{**}	.267 ^{**}	.144 ^{**}			
7.Recycling behaviour	2.78	.84	.075	-.017	.268 ^{**}	.145 ^{**}	.094	.501 ^{**}		
8.Social desirability scale	.533	.21	-.024	-.021	.113 [*]	.052	-.012	.135 [*]	.214 ^{**}	---

*p < 0.05; **p < 0.01

4.2.4 Control Variables

Gender (0 = female; 1 = male), age (0 = age 18-29; 1 = 30-79), education (0 = primary and secondary school levels; 1 = tertiary education level), income (0 = HK\$10,000 and below; 1 = HK\$10,001 and above) and location (1 = HK Island; 2 = Kowloon; 3 = New Territories) were controlled to rule out their possible effect on the four moderating variables, i.e. susceptibility to normative influence, degree of perceived efficacy, social value orientation and propensity to trust. The means and standard deviations of the control variables are shown in Table 6. The means of the control variables ranged from 0.44 to 2.02 while the standard deviations ranged from 0.49 to 0.82.

4.2.5 Hypotheses Testing

Prior to hypotheses testing, the descriptive statistics and correlations of the control variables, independent variable and moderators were set forth, as presented in Table 6. The means of the variables in Table 6 ranged from 0.44 to 29.98 whereas the standard deviations ranged from 0.47 to 17.93.

Correlation and regression were used to test Hypotheses 1 and 6. According to Hair *et al.* (2003), correlation analysis indicates if there is a relationship between the two constructs and also reveals the overall strength of the relationship. Regression analysis is the most broadly applied data analysis technique for measuring linear relationships between two or more constructs.

For hypotheses 2 to 5, direct and moderator relationships were studied by applying hierarchical regression analysis. This was used to predict the relationship between the consumers' '*expectation of overall participation*' and their '*likelihood of personal participation in recycling*', particularly examining the moderation effect of '*susceptibility to normative influence*', '*degree of perceived efficacy*', '*social value orientation*' and '*propensity to trust*'.

To avoid the problem of multicollinearity, we looked into the correlation coefficient and the variance inflation factors (VIF) among the control variables, the independent variable ('*expectation of overall participation*') and the moderators of '*normative influence*', '*degree of perceived efficacy*' and '*propensity to trust*'. VIF was used to measure how much the variance of the regression coefficients was inflated by multicollinearity problems (Hair, *et al.*, 2003).

Table 6: Intercorrelation for Control Variables, Expectation of Overall Participation, Four Moderating Variables and the Dependent Variables

Measures	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1.Gender	.47	.50												
2.Age	.44	.50	.004											
3.Education	.55	.50	.074	-.383**										
4.Income	.59	.49	.062	.370**	.072									
5.Location	2.02	.817	.020	-.143**	.135*	-.007								
6.Expectation of overall participation	29.98	17.93	-.028	-.030	-.028	.068	.185**							
7.Normative influence	4.14	1.00	-.063	.038	-.002	.037	-.102	-.040						
8.Degree of perceived efficacy	5.28	1.26	-.028	.106	-.102	.065	-.113*	.100	.079					
9.SVO	.66	.47	.004	-.001	.001	.071	-.002	.057	-.074	.186**				
10.Propensity to trust	3.96	.58	-.025	.062	-.031	.000	-.114*	-.001	.099	.207**	.040			
11.Likelihood of personal participation in recycling	5.23	1.09	-.159**	.054	-.019	.042	-.073	.124*	.049	.499**	.267**	.144**		
12.Recycling behaviour	2.78	.84	-.104	.059	.027	-.001	-.042	.075	-.017	.268**	.145**	.094	.501**	---

*p < 0.05; **p < 0.01

In Table 6, a small correlation is shown between 'age' and 'education' ($r = 0.383$; $p = 0.000$, <0.01) and between 'age' and 'income' ($r = 0.370$; $p = 0.000$, <0.01). There is also a slight relationship between 'location' and 'age' ($r = -0.143$; $p = 0.009$, <0.01), between 'location' and 'education' ($r = 0.135$; $p = 0.014$, <0.05) and between 'location' and 'expectation of overall participation' ($r = 0.185$; $p = 0.001$, <0.01). As Hair et al. (2003) suggest, coefficients ranging between ± 0.01 and ± 0.20 , are slight and can be regarded as almost negligible. Hair et al. (2003) also suggested that if the correlation coefficient between two independent variables is less than .70, there is no potential problem with multicollinearity. The VIF in the regression model of hypotheses 2, 3 and 5 was checked and it was found that the VIFs were around 1, indicating that there was some association between the predictor variables but generally not enough to cause a problem (Hair, et al., 2003). With regard to the moderator, 'social value orientation', it is a categorical moderator instead of a scale (0 = non pro-social; 1 = pro-social).

Hypothesis 1

Hypothesis 1 proposed that there would be a positive relationship between the expectation that others would participate in recycling and the likelihood of personal participation in recycling. The result shows that 'expectation of overall participation' and 'likelihood of personal participation in recycling' are positively correlated ($r = 0.124$; $p = 0.024$, <0.05) (see Table 5). Simple linear regression was also performed to test the relationship between 'expectation of overall participation' (independent variable) and 'likelihood of personal participation in recycling' (dependent variable). In the regression analysis, the control

variables (gender, age, education, income and location) were all entered before regressing '*likelihood of personal participation in recycling*'. As shown in Table 7, '*expectation of overall participation*' is positively related to '*likelihood of personal participation in recycling*' ($\beta = 0.008$; $p = 0.014$, <0.05). Thus, hypothesis 1 is supported.

Table 7: Regression Results of Expectation of Overall Participation and Likelihood of

Personal Participation in Recycling				
	Likelihood of personal participation in recycling			
	M	SD	Model 1	Model 2
<u>Step 1</u>				
Gender	.47	.50	-.351	-.342
Age	.44	.50	.081	.104
Education	.55	.50	.030	.056
Income	.59	.49	.081	.048
Location	2.02	.82	-.088	-.123
<u>Step 2</u>				
Expectation of overall participation	5.23	1.09		.008*
Adjusted R ²			.019	.034
F statistics			2.263*	2.940**

* $p < 0.05$; ** $p < 0.01$

For hypotheses 2 to 5, the moderating effects of '*susceptibility to normative influence*', '*degree of perceived efficacy*', '*social value orientation*' and '*propensity to trust*' on the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*' were tested.

With the set up of the hypotheses, the hierarchical moderated regression was the appropriate test to be used in testing these four hypotheses. The

independent variable, '*likelihood of personal participation in recycling*', and the moderators of '*susceptibility to normative influence*', '*degree of perceived efficacy*' and '*propensity to trust*' were first standardised for further calculation. In line with the hypothesising, the researcher tried to assess the unique variance that was explained by each moderator in our dependent variable. Therefore, each moderator variable was entered separately for analysis.

Hypothesis 2

Hypothesis 2 predicted that '*susceptibility to normative influence*' would moderate the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*'. If people were more susceptible to normative influences, then that would have a stronger moderating effect on the relationship between the expectation that others will participate in recycling and the likelihood of personal participation in recycling.

In constructing the hierarchical regression analysis for hypothesis 2, the '*likelihood of personal participation in recycling*', as the dependent variable, and the five control variables (i.e. *gender, age, education, income* and *location*) were entered in the first step of the model. Thereafter, the main effects variable of '*expectation of overall participation*' was entered at the second step. In the third step, the moderating variable '*susceptibility to normative influence*' was entered into the model. In the fourth step, the interaction term '*susceptibility to normative influence*' and '*expectation of overall participation*' was entered to study the moderating effect. The results show that hypothesis 2 is not supported (see Table 8) ($\beta = 0.042$; $p = 0.618$, >0.05). Susceptibility to

normative influence does not strengthen the relationship between the expectation of overall participation and the likelihood of personal participation in recycling.

Hypothesis 3

Hypothesis 3 predicted that one's *'perceived efficacy'* moderates the relationship between *'expectation of overall participation'* and *'likelihood of personal participation in recycling'*. Lower *'perceived efficacy'* should strengthen the relationship between *'expectation of overall participation'* and *'likelihood of personal participation in recycling'*.

To test hypothesis 3, the *'likelihood of personal participation in recycling'*, as the dependent variable, and the five control variables were entered in the first step. After that, the main effects variable *'expectation of overall participation'* was entered. In the third step, the moderator, *'degree of perceived efficacy'* was entered into the model. In the fourth step, the interaction term *'degree of perceived efficacy'* and *'expectation of overall participation'* was entered to study the moderating effects. Hypothesis 3 is not supported as $\beta = 0.051$; $p = 0.343$, >0.05 (see Table 8). This implies that people's perceived efficacy does not influence the relationship between the expectation of overall participation and the likelihood of personal participation in recycling.

Table 8: Results of Hierarchical Regression Analyses

	Likelihood of personal participation in recycling															
	Step no.				Step no.				Step no.				Step no.			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Gender	-0.351**	-0.342**	-0.337**	-0.338**	-0.351**	-0.342**	-0.320**	-0.318**	-0.351**	-0.342**	-0.343**	-0.372**	-0.351**	-0.342**	-0.336**	-0.338**
Age	0.081	0.104	0.102	0.096	0.081	0.104	0.047	0.054	0.081	0.104	0.126	0.122	0.081	0.104	0.087	0.092
Education	0.030	0.056	0.055	0.059	0.030	0.056	0.124	0.119	0.030	0.056	0.066	0.060	0.030	0.056	0.054	0.052
Income	0.081	0.048	0.046	0.051	0.081	0.048	0.003	0.002	0.081	0.048	0.001	0.023	0.081	0.048	0.055	0.054
Location	-0.088	-0.123	-0.118	-0.118	-0.088	-0.123	-0.046	-0.044	-0.088	-0.123	-0.118	-0.130	-0.088	-0.123	-0.104	-0.104
% of HK citizens to participate in recycling in the past month (PR)		0.150*	0.151*	0.148*		0.150*	0.087	0.083		0.150*	0.135*	0.303*		0.150*	0.147*	0.147*
Susceptibility to normative influence (NI)			0.057	0.060												
Perceived efficacy (PE)							0.531**	0.535**								

Social value orientation (SVO)											0.600**	0.591**				
Propensity to trust (PT)															0.204*	0.201*
PR x NI				-0.042												
PR x PE								0.051								
PR x SVO													-0.247*			
PR x PT																0.041
Adjusted R ²	0.019	0.034	0.032	0.030	0.019	0.034	0.263	0.263	0.019	0.034	0.099	0.108	0.019	0.034	0.047	0.045
F-statistics	2.263	2.940	2.579	2.283	2.263	2.940	17.883	15.755	2.263	2.940	6.220	5.997	2.263	2.940	3.334	2.940

*p < 0.05; **p < 0.01

Hypothesis 4

Hypothesis 4 proposed that 'social value orientation' would moderate the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*'. A weaker pro-social orientation would strengthen the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*'.

To test hypothesis 4, the '*likelihood of personal participation in recycling*', as the dependent variable, and the five control variables were entered first. After that, the main effects variable, '*expectation of overall participation*', was entered. The participants were categorised into two groups: 1 = 'pro-social group' and 0 = 'non pro-social group' in the '*social value orientation*' variable. The classification of the 'pro- social group' and 'non pro-social group' was based on the 9 questions from Section 7 (see Appendix 4), which were consistent with Van Lange *et al.* (1997). The respondents were classified when they made 6 or more consistent choices. The pro-social choices were 1c, 2b, 3a, 4c, 5b, 6a, 7a, 8c and 9b. The rest of the choices were classified as non pro-social choices. This moderator of '*social value orientation*' was then put into the model. In the last step, the interaction term, '*social value orientation*' and '*expectation of overall participation*', was entered to study the moderating effect. Table 8 indicates that $\beta = -0.247$; $p = 0.045$, <0.05 . Hence, hypothesis 4 is supported. This implies that the influence of others on recycling intention is higher for those who have a weaker pro-social orientation than those with a stronger pro-social orientation. In addition, a simple effect test was conducted. The sample was split into two groups, the pro-social and the non pro-social

groups for analysis. Consistent with the hypothesizing, it was noticed that the non pro-social group had a stronger relationship ($\beta = -0.192$; $p = 0.043$, <0.05) than the pro-social group ($\beta = -0.064$; $p = 0.348$, >0.05) when it comes to the influence of expectation of overall participation on the likelihood of personal participation in recycling.

Hypothesis 5

Hypothesis 5 predicted that one's '*propensity to trust*' moderates the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*'. A higher level of propensity to trust will strengthen the relationship between '*expectation of overall participation*' and '*likelihood of personal participation in recycling*'.

To test hypothesis 5, '*likelihood of personal participation in recycling*' as the dependent variable and the five control variables were entered at the first step. After that, the main effects variable of '*expectation of overall participation*' was entered. In the third step, the moderator, '*propensity to trust*' was entered into the model. The interaction term, '*propensity to trust*' and '*expectation of overall participation*', was entered to study the moderating effect in the fourth step. Table 8 indicates that hypothesis 5 is not supported as $\beta = 0.041$; $p = 0.628$, >0.05 . A higher level of propensity to trust does not influence the relationship between expectations others will participate in recycling and their likelihood of personal participation in recycling.

Hypothesis 6

The same procedures, correlation and linear regression analysis, were used to test whether there was a positive relationship between '*likelihood of personal participation in recycling*' (independent variable) and '*recycling behaviour*' (dependent variable). The results show that '*likelihood of personal participation in recycling*' and '*recycling behaviour*' are positively correlated ($r = 0.501$; $p = 0.000$, <0.01) (see Table 5). Linear regression was performed to test the relationship between '*likelihood of personal participation in recycling*' (independent variable) and '*recycling behaviour*' (dependent variable). Using the same procedure that was used to test hypothesis 1, the four control variables were entered and then '*recycling behaviour*' was regressed. The results are presented in Table 9 and indicate that '*likelihood of personal participation in recycling*' is positively related to '*recycling behaviour*', ($\beta = 0.382$; $p = 0.000$, <0.01). Thus, Hypothesis 6 is also supported. Consumers who have a higher intention to participate in recycling are more likely to turn their intention into real recycling action.

Table 9: Regression Results of Likelihood of Personal Participation in Recycling and Recycling Behaviour

	Recycling behaviour			
	M	SD	Model 1	Model 2
Step 1				
Gender	.47	.50	-.181	-.047
Age	.44	.50	.166	.136
Education	.55	.50	.136	.124
Income	.59	.49	-.064	-.095
Location	2.02	.82	-.038	-.004
Step 2				
Likelihood of personal participation in recycling	2.78	.84		.382**

Adjusted R ²	.006	.244**
F statistics	1.378	18.826**

*p < 0.05; **p < 0.01

Table 10 summarises the hypotheses testing. It is noted that the central relationships in the model, i.e. hypotheses 1 and 6 are supported. For the four moderators, only 'social value orientation' exhibits a significant moderating influence on our focal relationship.

Table 10: Summary of Hypotheses Testing

Hypotheses	Results	Supported/ Rejected
H1	$\beta = 0.008$; $p = 0.014$, <0.05	Supported
H2	$\beta = 0.042$; $p = 0.618$, >0.05	Rejected
H3	$\beta = 0.051$; $p = 0.343$, >0.05	Rejected
H4	$\beta = -0.247$; $p = 0.045$, <0.05	Supported
H5	$\beta = 0.041$; $p = 0.628$, >0.05	Rejected
H6	$\beta = 0.501$; $p = 0.000$, <0.01	Supported

CHAPTER 5: SUMMARY AND CONTRIBUTIONS

5.1 Summary

This study was undertaken to understand Hong Kong people's recycling behaviour. Extant studies on recycling use a variety of theories to explain this phenomenon, such as the theory of interpersonal behaviour, means-end chain theory or theory of planned behaviour. However, these theories only explain part of recycling behaviour and are inadequate in that they do not consider the social dilemma perspective. This study uses social dilemma theory to explain and predict consumer behaviour in the context of recycling, thereby generating insights that have theoretical and practical value.

As Aguinis and Glavas (2012) suggest, recent research is more focused on the corporate level within the realm of corporate social responsibility. However, few studies consider socially responsible consumption at the individual level. Social dilemma theory was thus used in this study to investigate the social responsibility issue at the individual level. In particular this study examines the social dilemma that consumers face when considering recycling. Recycling is one of the topics related to socially responsible consumption.

Both qualitative and quantitative methods were applied in this study. Qualitatively, there were two central questions relating to the experiences of recycling. The responses suggest that most of the participants who recycled wanted to do something for the benefit of society, and might feel guilty if they did not recycle. The participants also shared the commitment to sacrifice their time and effort to do more for recycling. They expressed the belief that they

could help to build a better world. Furthermore, they shared a motivation to recycle on their own. They did not discuss their recycling decisions with others in advance.

With regard to the situations that motivate their recycling behaviour, most of the participants found that having recycling facilities around their living environment encouraged their recycling behaviour. Some even said that if there were no recycling facilities, they would not have been able to recycle. Some participants stated that when they studied or travelled abroad, they participated in the recycling practices of their host countries and that these experiences affected their recycling behaviour. When they returned to Hong Kong, they tried to recycle. In addition, some participants found that the recycling promotions of the Hong Kong government, media and or other organisations motivated their recycling behaviour. The promotions created a positive atmosphere in which to cultivate recycling behaviour. Finally, some participants reported that their family members and friends' recycling behaviour affected their intention to recycle because they often interacted with family members in their daily lives. A similar situation was found with other participants, whose work environments or companies affected their recycling behaviour.

In the quantitative study, hierarchical regression analysis was used to analyse the model. Based on the findings, the two main hypotheses, H1 and H6, were supported. This implies that the expectation that other people will participate in recycling is positively related to one's own intention to recycle. There is also a

strong relationship between one's intention to participate in recycling and actual recycling behaviour.

Testing the four moderating hypotheses (hypotheses 2 to 5), it was found that susceptibility to normative influence, degree of perceived efficacy and the propensity to trust do not have a moderating effect on the relationship between people's expectation of overall participation and their intention to participate in recycling. Only social value orientation is a salient moderator that can influence this relationship. Social value orientation seems to have some buffering effect because people with higher pro-social orientation tend to seriously evaluate morality and equality during cooperation (Kelley and Stahelski, 1970; Van Lange, 1999). As such, the pro-social individuals will assess if other people behave cooperatively or not. If they find other people behave competitively, these pro-social individuals might change to behave less cooperatively. As suggested by Van Lange (1999, p.347), the pro-social individuals will behave in a 'less forgiving manner'. Conversely, a weaker pro-social orientation could strengthen the relationship between the expectation of overall participation and the intention to participate in recycling. This implies that non-pro-social individuals might be more likely to be influenced by others when it comes to recycling.

As mentioned previously, the extended model of social dilemma theory as tested here was proposed by Sen *et al.* (2001). The weak results suggest that Sen's model is not entirely relevant to recycling. For the two moderators of 'susceptibility to normative influence' and 'degree of perceived efficacy', they

were tested in the western context in previous studies. As this study was conducted in Hong Kong, an Eastern cultural setting, the different cultural context might affect the results. For the moderator of 'propensity to trust', this is a newly added moderator in the social dilemma theory. The weak result might demonstrate that this moderator might not be suitable for explaining recycling behavior in a social dilemma context.

5.2 Theoretical Contributions

Several important theoretical contributions have been generated from this study. In much of the previous literature, research on recycling has focused on the theory of interpersonal behaviour (Ittiravivongs, 2012), the means-end chain theory (Bagozzi and Dabholkar, 1994), the theory of planned behaviour (Biswas *et al.*, 2000; Werder, 2002; Tonglet *et al.*, 2004) or the norm activation model (Wan, Shen and Yu, 2014). However, these theories only explain part of recycling behaviour and neglect the social dilemma perspective. As suggested by Smith, Haugtvedt and Petty (1994), recycling involves a social dilemma for consumers as this socially responsible behavior benefits society but has a personal cost to consumers. This study thus contributes to the literature by demonstrating that social dilemma theory can be used to examine recycling behaviour. It is, in fact, the first study to apply social dilemma theory to explain and predict recycling behaviour. This study also extends the social dilemma model developed by Sen and his associates (2001) to the context of recycling.

The study also makes an important contribution from a theoretical perspective by identifying a new moderator, social value orientation, which can be suitably

appended to social dilemma theory. Sen *et al.* (2001) suggest that examining the effects of social value orientation and trust in social dilemma theory is worthwhile. Although the hypothesis on propensity of trust was rejected in this study, the hypothesis on social value orientation was accepted. It supports previous studies (Kelley and Stahelski, 1970; Van Lange, 1999) that pro-social individuals will sometimes become less cooperative if they find that they are not treated fairly by others. Meanwhile, social value orientation is included only as an independent variable in previous studies (Van Lange and Van Vugt, 1998; Van Lange, 1999). This is the first study to identify social value orientation as a moderator.

Furthermore, this study makes a theoretical contribution by adding to the literature on socially responsible consumption at the individual level. As mentioned, extant studies have been more focused on social responsibility at the corporate level (Aguinis and Glavas, 2012). However, there is a noticeable growing interest in socially responsible consumption at the individual level (Green, Tinson, Peloza, 2016; Schlaile, Klein and Böck, 2016). This study aims to study the recycling behavior of consumers. As discussed, recycling is a kind of socially responsible behavior involving choice. The study therefore fills this knowledge gap by examining socially responsible consumption.

This study has applied social dilemma theory to study consumers' recycling behaviour. Social dilemma theory is a kind of psychological theory to investigate how consumers react when they face a conflict between the collective interest and their self-interests. Researchers have pressed for

further studies on the relationship between humans and the environment from the perspective of psychological theories and research methods so as to understand the human behavior and contribute to the human well-being and the society (Clayton *et al.*, 2016). The study of recycling is related to the collective environmental benefits as well as the protection of natural resources. As such, this study of recycling from the social dilemma perspective makes a theoretical contribution by adding to the literature related to the human-environment relationship.

Finally, this study, although not a theoretical contribution, fieldwork was undertaken to examine social dilemma theory. Previous studies (Van Lange and Van Vugt, 1998; Van Lange, 1999; Sen *et al.*, 2001; Van Lange *et al.*, 2013) use an experimental approach conducted in universities with student subjects. This study was conducted in a more natural setting, with participants selected in the field, i.e. the ordinary citizens in Hong Kong shopping malls. The study thus makes a significant methodological contribution because it enhances external validity. In other words, the research results are more generalisable to similar societal settings (Hair *et al.*, 2003; Sekaran and Bougie, 2009).

5.3 Practical Implications

The results of this study should be particularly important to the government and marketing practitioners. Indeed, they have the following practical implications for public policy and managerial practice.

The first implication is based on the positive relationship between the expectation of overall participation in recycling and the individual intention to participate in recycling. Simply put, if the expectation of other people to participate in recycling could be increased it would positively enhance people's intentions to recycle. This intention could also easily be transformed into real recycling behaviour. At the society level, public policy makers could find ways of enhancing the expectation of overall participation in recycling to increase the likelihood of actual participation in the society. For example, the Hong Kong government is currently promoting a 'less-waste campaign' to reduce solid waste. Apart from policy-making, the public policy makers might consider using a spokesperson, such as a celebrity, to promote recycling. In addition, recycling could be promoted on a more long-term, continuous basis. If more momentum for overall participation in recycling could be generated, the intention of people to participate in recycling would increase. At the firm level, marketers could organize promotions to encourage consumers to participate in recycling after consumption.

A second practical implication is associated with the moderating role played by social value orientation in the relationship between the expectation of overall participation and the intention to participate in recycling. More promotional events on recycling could be carried out and focused on those who have a weaker pro-social orientation. In terms of recycling, this group of people is easily influenced by others. If they were surrounded by more promotional messages, they might be motivated to recycle. The more frequent the

promotions, the higher the intention for weaker pro-social individuals to participate in recycling.

The findings of this study suggest that higher pro-social people seem to be more concerned about morality and fairness during recycling. As such, marketers need to consider how to position recycling behaviour. Public policy makers must be made aware that this group of consumers has a strong desire for equality and fairness in recycling. Thus, public policy makers may put emphasis on cooperation and equality in positioning recycling to stimulate recycling behavior of this pro-social group.

Another practical implication is that there is a strong, positive relationship between people's intention to participate in recycling and their actual recycling behaviour. Thus, public policy makers should formulate some promotional strategies to turn recycling intention into action at the society level. For instance, the government and/or private companies could make it more convenient for consumers to recycle through, for example, increasing the recycling facilities in housing estates, or developing packaging that is easy to recycle. For the marketers, they can design the product packaging which is easy to recycle. This would provide a good motive for consumers to turn their recycling intentions into actual recycling behaviour.

5.4 Limitations and Future Research

Although this study has generated a number of important theoretical contributions and practical implications, the findings are subject to several limitations.

The first limitation is that the scales adopted were originally developed in the West. Further refinement of the measures might be needed to render them suitable for studies in Asia. Second, this study has a cross-sectional research design. It aimed to measure established relationships. Relationships, however, can change over time and causality cannot be determined unambiguously. Third, the use of student interviewers might have posed some limitations to this study. Although the students were trained before they carried out the actual survey, hiring more experienced interviewers might have been preferable. Despite these limitations, the findings of this study make a significant contribution to understanding consumer recycling behaviour in Hong Kong, and they offer a platform for future research.

Future research could build on this study by adding other variables to test their moderating or mediating effects (e.g. feelings of personal responsibility as suggested by Sen *et al.* 2013) to further understand social dilemma theory in the context of socially responsible consumption. Researchers might also consider other potentially important situations with similar trade-offs, such as organ donating behaviour, offering priority seats to others, energy saving behaviour, charitable acts and the like. In addition, future researchers could consider using a longitudinal design. This study was cross-sectional.

Long-term research could monitor relationship changes rather than only measuring established relationships. Furthermore, future studies could implement this model in other non-Western cities, for example communities in mainland China, to understand their recycling behaviour. Finally, this study's sample was skewed toward those who were younger and those with higher education compared to the Hong Kong population profile. Further studies could be based on a sample that more closely mirrors reality.

5.5 Conclusion

To conclude, this study represents one of the first attempts to use social dilemma theory to explain and predict consumer behaviour in the context of recycling, and to generate insights that are of theoretical and practical value.

Previous studies on recycling used theories such as means-end chain theory, the theory of planned behaviour, and the norm activation model of altruistic behaviour. However, these theories only explain part of recycling behaviour. They do not explain it from a social dilemma perspective. Smith, Haugtvedt and Petty (1994) find that recycling is indeed a social dilemma for consumers, involving personal costs that do not benefit them directly. However, the consumers' socially responsible actions ultimately benefit the society as a whole. This study thus explains recycling behaviour through the lens of a social dilemma. All in all, we believe we have shed some new insights into the phenomenon of recycling, in accordance with the social dilemma theory.

Addressing gaps in existing knowledge, this study has contributed to the literature by applying social dilemma theory to examine recycling in Hong Kong. It also makes a theoretical contribution by adding to the literature related to the human and environment relationship. It has offered support to the notion that social value orientation moderates the relationship between the expectation of overall participation in recycling and the individual intention to recycle. This extends social dilemma theory. Additionally, this study was conducted in the field, facilitating more generalisable research results. Finally, this study has offered insight into socially responsible consumption at the individual level.

In terms of the study's practical implications, the government is encouraged to find ways of increasing the expectation of overall participation in recycling to bolster people's intention to recycle. More promotional activities on recycling could be carried out to target those who have weaker pro-social orientation. In this study, there are significant findings that suggest this group is easily influenced by others. Thus, greater promotion might help them to develop greater recycling intention. For those with higher pro-social orientation, promotion should emphasize on cooperation and fairness in recycling campaigns. Finally, the government or marketers could formulate promotional strategies to turn recycling intention into action, e.g. to provide more convenient facilities for consumers to recycle at. This study also clearly indicates that people with a greater intention to recycle will have greater recycling behaviour.

To conclude, this study enhances the understanding of consumers' socially responsible consumption, in particular the recycling behavior, from the perspective of social dilemma theory.

References

Aguinis, H. and Glavas, A. (2012). What We Know and Don't Know About Corporate Social Responsibility: A Review and Research Agenda. *Journal of Management*, 38(4), 932-968.

Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In Juhl & J. Beckman (Eds.), *Action Control: From Cognition to Behavior*, 11-39. Heidelberg, Germany: Springer.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.

Ajzen, I. and Thomas J. Madden (1986). Prediction of Goal-Directed Behavior: Attitudes, Intentions and Perceived Behavioral Control. *Journal of Experimental Social Psychology*, 22, 453-474.

Anderson, H. and Brodin, M.H. (2006). The Consumer's Changing Role: The Case of Recycling. *Management of Environmental Quality*, 16(1), 77-86.

Anderson, W.T., Jr and Cunningham, W.H. (1972). The Socially Conscious Consumer. *Journal of Marketing*, 36, July, 23-31.

Aranoff, D. and Tedeschi, J.T. (1968). Original Stakes and Behaviour in the Prisoner's Dilemma Game. *Psychonomic Science*, 12, 79-80.

Aristotle (1934). *Politics: Books I and II*. Translated by and Saunders, T. J. New York: Clarendon Press, 1995.

Bagozzi, R.P. and Dabholkar, P.A. (1994). Consumer Recycling Goals and Their Effect on Decision to Recycle: A Means-End Chain Analysis. *Psychology and Marketing*, July/August, 11(4), 313-341.

Balliet, D. (2010). Communication and Cooperation in Social Dilemmas: A Meta-Analytic Review. *Journal of Conflict Resolution*, 54(1), 39-57.

Bandura, A. (1977). Self-efficacy: Toward a Unifying of Behavioural Change. *Psychological Review*, 84(2), 191-215.

Bartlett, J.E., Kotrlik, J.W. and Higgins, C.C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50.

Batra, R., Homer, P.M. and Kahle, L.R. (2001). Values, Susceptibility to Normative Influence, and Attribute Importance Weights: A Nomological Analysis. *Journal of Consumer Psychology*, 11(2), 115-128.

Bearden, W.O. and Etzel, M.J. (1982). Reference Group Influence on Product and Brand Purchase Decisions. *Journal of Consumer Research*, 9 (September), 183-194.

Bearden, W.O., Netemeyer, R.G. and Tell, J.E. (1989). Measurement of Consumer Susceptibility to Interpersonal Influence. *Journal of Consumer Research*, 15 (March), 473-481.

Beutel, A. and Marini, M. (1995). Gender and Values. *American Sociological Review*, 60, 436-448.

Biswas, A., Licata, J.W., McKee, D., Pullig, C. and Daughtridge, C. (2000). The Recycling Cycle: An Empirical Examination of Consumer Waste Recycling and Recycling Shopping Behaviours. *Journal of Public Policy & Marketing*, Vol. 19(1), Spring, 93-105.

Blackwell, R.D., Miniard, P.W. and Engel, J.F. (2012). *Consumer Behaviour*. Singapore: Cengage Learning.

Brechner, K.C. (1977). An Experimental Analysis of Social Traps. *Journal of Experimental Social Psychology*, 13, 552-564.

Brislin, R.W. (1976). Comparative Research Methodology: Cross-Cultural Studies. *International Journal of Psychology*, 11(3), 215-229.

Bush, A.J. and Hair J. F. (1985) An Assessment of the Mall Intercept as a Data Collection Method. *Journal of Marketing Research*, XXII (May), 158-67.

Carroll, A.B. (1991). The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders. *Business Horizons*, July-August, 39-48.

Cadsby, C. and Maynes, E. (1998). Gender and Free Riding in a Threshold Public Goods Game: Experimental Evidence. *Journal of Economic Behaviour and Organization*, 34(4), 603-620.

Cambridge Dictionaries Online. (2014). Retrieved September 28, 2014 from <http://dictionary.cambridge.org/dictionary/american-english/recycle?q=recycling>

Census and Statistics Department, HKSAR (Dec 2015). Hong Kong Monthly Digest of Statistics.

Cheung, C.F. (2014, April 11). Recycling Firms to Get Up to HK\$5 Million to Divert Waste from Landfills. *South China Morning Post*. Retrieved from <http://www.scmp.com>

Childers, T. and Rao, A.R. (1992). The Influence of Familial and Peer-Based Reference Groups on Consumer Decisions. *Journal of Consumer Research*, 19 (September), 191-211.

Churchill, Gilbert A, Jr. (1995). *Marketing Research Methodological Foundations*, 6th Edition. USA: The Dryden Press.

Churchill, Gilbert A, Jr. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 56 (February), 64-73.

Clayton, S., Devine-Wright, P., Swim, J., Bonnes, M., Steg, L. and Whitmarsh, L. (2016). Expanding the Role for Psychology in Addressing Environment Challenges. *American Psychologist*, 71(3), 199-215.

Creswell, J.W. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 2nd Edition. London, UK: Sage.

Cooper, H.M. (1979). Statistically Combining Independent Studies: A Meta-Analysis of Sex Differences in Conformity Research. *Journal of Personality and Social Psychology*, 37(1), 131-146.

Cox, J.C. and Deck, C.A. (2006). When are Women More Generous Than Men? *Economic Inquiry*, 44(4), 587-598.

Dawes, R.M. (1980). Social Dilemmas. *Annual Reviews Inc.*, 31, 169-193.

Dawes, R.M. and Messick, D.M. (2000). Social Dilemmas. *International Journal of Psychology*, 35(2), 111-116.

Dawson, E.M. and Chartman, E.A. (2001). Reference Group Theory with Implications for Information Studies: A Theoretical Essay. *Information Research*, 6(3). Available at: <http://InformationR.net/6-3/paper105.html>

De Dreu, C.K.W. and Boles, T.L. (1998). Share and Share Alike or Winner Take All: The Influence of Social Value Orientation Upon Choice and Recall of Negotiation Heuristics. *Organizational Behaviour and Human Decision Processes*, 76, 253-276.

Detlon, A.W., Cosmides, L., Guemo, M., Robertson, T.E. and Tooby, J. (2012). The Psychosemantics of Free Riding: Dissecting the Architecture of a Moral Concept. *Journal of Personality and Social Psychology*, June, 1252-1270.

Eagly, A.H. (1978). Sex Differences in Influenceability. *Psychological Bulletin*, 85(1), 86-116.

Eagly, A.H. (1987). *Sex Differences in Social Behaviour: A Social Role Interpretation*. Hillsdale, N.J.: Erlbaum.

Eagly, A.H. and Chryala, C. (1986). Sex Differences in Conformity: Status and Gender Role Interpretations. *Psychology of Women Quarterly*, 10, 203-220.

East, Robert (1993). Investment Decisions and The Theory of Planned Behavior. *Journal of Economic Psychology*, 14, 337-375.

Eckel, C.C. and Grossman, P.J. (1998). Are Women Less Selfish Than Men? Evidence from Dictator Experiments. *The Economic Journal*, 108 (May), 726-735.

Edney, J.J. and Harper, C.S. (1978). The Commons Dilemma: A Review of Contributions from Psychology. *Environmental Management*, 2, 491-507.

Environmental Bureau (2014). *Hong Kong Blueprint for Sustainable Use of Resources 2013-2022*, March, 1-26.

Evans, A.M. and Krueger, J.I. (2011). Elements of Trust: Risk and Perspective-taking. *Journal of Experimental Social Psychology*, 47, 171-177.

Fleishman, J.A. (1980). Collective Action as Helping Behavior: Effects of Responsibility Diffusion on Contributions to a Public Good. *Journal of Personality and Social Psychology*, 38(4), 629-637.

Folkman, S., Lazarus, R.S., Gruen, R.J. and DeLongis, A. (1986). Appraisal, Coping, Health Status, and Psychological Symptoms. *Journal of Personality Social Psychology*, 50(3), 571-579.

Granzin, K.L. and Olsen, J.E. (1991). Characterizing Participants in Activities Protecting the Environment: A Focus on Donating, Recycling, and Conservation Behaviors. *Journal of Public Policy & Marketing*, 10(2), 1-27.

Green, T., Tinson, J. and Peloza, J. (2016). Giving the Gift of Goodness: An Exploration of Socially Responsible Gift-Giving. *Journal of Business Ethics*, 134, 29-44.

Gilligan, C. (1982). *In a Different Voice*. Cambridge, MA: Harvard University Press.

Hair, J.F., Babin, B., Money, A.H. and Samouel, P. (2003). *Essentials of Business Research Methods*, U.S.A.: John Wiley & Sons, Inc.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). *Multivariate Data Analysis*, London: Pearson Prentice Hall, 174-176.

Hamburger, H. (1994). N-person Prisoner's Dilemma Game. *Journal of Mathematical Sociology*, 3, 27-48.

Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162 (3859): 1243-1248.

Hardin, G. (1998). Extensions of 'The Tragedy of the Commons'. *Science*, 280(5364), 682-683.

Hofstede, G. (2001). *Culture's Consequences*, Thousand Oaks, CA: Sage.

Hong Kong Monthly Digest of Statistics (March 2014), Census and Statistics Department of HKSAR

Itim International. (2016). *The Hofstede Centre*. Available at: <https://geert-hofstede.com/hong-kong.html> (Accessed: 21 May 2016).

Ittiravivongs, A. (2012). Recycling as Habitual Behaviour: The Impact of Habit on Household Waste Recycling Behaviour in Thailand. *Asian Social Science*, 8(6), 74-81.

Jaworski, B.J. and Kohil, A.K. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing*, 57, July, 53-70.

Johnathan. (2008, May 16). *Mall Intercept Surveys*. Retrieved 20 February, 2015 from <http://mallinterceptbmkt360.blogspot.ca/>

Kahan, J.P. (1974). Rationality, the Prisoner's Dilemma and Population. *Journal of Social Issues*, 30(4), 189-209.

Kelley, H.H. and Stahelski, A.J. (1970). Social Interaction Basis of Cooperators' and Competitors' Beliefs about Others. *Journal of Personality and Social Psychology*, 16(1), 66-91.

Kelley, H.H. and Grzelak, J. (1972). Conflict between Individual and Common Interest in an N-person Relationship. *Journal of Personality and Social Psychology*, 21, 190-197.

Kelley, H.H. and Thibaut, J.W. (1978). *Interpersonal Relations: A Theory of Interdependence*, New York: Wiley.

Kollock, P. (1998). Social Dilemmas: The Anatomy of Cooperation. *Annual Review of Sociology*, 24, 183-214.

Komorita, S.S., Hilty, J.A. and Parks, C.D. (1991). Reciprocity and Cooperation in Social Dilemmas. *The Journal of Conflict Resolution*, 35(3), 494-518.

Kuhlman, D.M. and Marshello, A. (1975). Individual Differences in Game Motivation as Moderators of Preprogrammed Strategy Effects in Prisoner's Dilemma. *Journal of Personality and Social Psychology*, 32, 922-931.

Kuhn, J.W. and Shriver, D.W., Jr (1991). *Beyond Success: Corporations and Their Critics in the 1990s*. New York: Oxford University Press.

Lee, K. (2009). Gender Differences in Hong Kong Adolescent Consumers' Green Purchasing Behaviour. *Journal of Consumer Marketing*, 26 (2), 87-96.

Liebrand, W.B.G. (1983). A Classification of Social Dilemma Games. *Simulation and Games*, 14(2), 123-138.

Liebrand, W.B.G. (1986). *The Ubiquity of Social Values in Social Dilemmas*. New York: Verlag Peter Lang, 2.

MacKenzie, S.B. and Podsakoff, P.M. (2012). Common Method Bias in Marketing: Causes, Mechanisms, and Procedural Remedies. *Journal of Retailing*, 88(4), 542-555.

Malhotra, Naresh K. (2006). *Marketing Research: An Applied Orientation*, 5th Edition. New Jersey: Pearson.

Marcus, A.A. (1993). *Business and Society: Ethics, Government and the World Economy*, Homewood, I.L.: Irwin.

McClintock, C.G. and Liebrand, W.B.G. (1988). The Role of Interdependence Structure, Individual Value Orientation and Other's Strategy in Social Decision

Making: A Transformational Analysis. *Journal of Personality and Social Psychology*, 55, 396-409.

Messick, D.M. (1973). To Join or Not To Join: An Approach To The Unionization Decision. *Organizational Behaviour and Human Performance*, 10, 145-156.

Messick, D.M. (2004). *Contemporary Psychological Research on Social Dilemma*, Cambridge University Press, London.

Messick, D.M. & Brewer, M.B. (1983). Solving Social Dilemmas: A Review, in Wheeler, L. and Shaver, P. (eds), *Review of Personality and Social Psychology*, Sage Publication, Beverly Hills, 4, 11-44.

Messick, D.M. and McClintock, C.G. (1968). Motivational Basis of Choice in Experimental Games. *Journal of Experimental Social Psychology*, 4, 1-25.

Meux, E.P. (1973). Concern for the Common Good in an N-person Game. *Journal of Personality and Social Psychology*, 20, 414-418.

Micheletti, M. (2003). *Political Virtue and Shopping: Individuals, Consumerism and Collective Action*. New York: Palgrave Macmillan.

Mick, D.G. (1996). Are Studies of Dark Side Variables Confounded by Socially Desirable Responding? The Case of Materialism. *Journal of Consumer Research*, 23(2), 106-119.

Mohr, L.A., Webb, D.J. and Harris, K.E. (2001). Do Consumers Expect Companies to be Socially Responsible? The Impact of Corporate Social Responsibility on Buying Behaviour. *The Journal of Consumer Affairs*, 35(1), Summer, 45-71.

Mostafa, M.M. (2007). Gender Differences in Egyptian Consumers' Green Purchase Behaviour: The Effects of Environmental Knowledge, Concern and Attitude. *International of Consumer Studies*, 31(3), 220-229.

Murphy, R.O., Ackermann, K.A. and Handgraaff, M.J.J. (2011). Measuring Social Value Orientation. *Judgment and Decision Making*, 6(8), 771-781.

Nowell, C. and Stanley, L.R. (1991). Length-Biased Sampling in Mall Intercept Surveys. *Journal of Marketing Research*, 28(4), 475-479.

Nowell, C. and Tinkler, S. (1994). The Influence of Gender on the Provision of a Public Good. *Journal and Economic Behavior and Organization*, 25, 25-36.

Oxford Advanced Learner's English-Chinese Dictionary. (2008). 7th ed., Oxford, UK: Oxford University Press.

Özçaglar-Toulouse, N. (2009). What Meaning Do Responsible Consumers Give to Their Consumption? An Approach by Narratives. *Recherche et Applications en Marketing*, 24(3), 3-22.

Rao, U.H. (1994). Guest Editorial: Psychology, Marketing & Recycling. *Psychology and Marketing*, 11(4), iii-iv.

Parks, C.D., Henager, R.F. and Scamahorn, S.D. (1996). Trust and Reactions to Messages of Intent in Social Dilemmas. *The Journal of Conflict Resolution*, 40(1), March, 134-151.

Parks, C.D., Joireman, J. and Van Lange, P.A.M. (2013). Cooperation, Trust, and Antagonism: How Public Goods are Promoted. *Psychological Science in the Public Interest*. 14(3), 119-165.

Perkins, K.A., Melissa Mercincavage, C.P., Conklin, C.A. and Fonte, C.A. (2012). Is Self-Efficacy for Smoking Abstinence a Cause of, or a Reflection on Smoking Behaviour Change? *Experimental and Clinical Psychopharmacology*, 20(1), 56-62.

Perkus, E., Jr and Woodruff, R.B. (1992). A Model of the Socially Responsible Decision-Making Process in Marketing: Linking Decision Makers and Stakeholders. *American Marketing Association*, 194-161.

Platt J. (1973) Social Traps. *American Psychologist*, August, 641-651.

Podsakoff, P.M. and Organ, D.W. (1986). Self-Reports in Organizational Research: Problems and Prospects. *Journal of Management*, 12(4), 531-544.

Podsakoff, P.M., MacKenzie S.B. and Podsakoff, N.P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879-903.

Pointer, Lucille Vessel. (2000). Consumers' Coupon Use Behavior: A Theory of Planned Behavior Perspective. Texas A&M University: UMI Dissertations Publishing.

Pruitt, D.G. and Kimmel, M. (1977). Twenty Years of Experimental Gaming: Critique, Synthesis, and Suggestions for the Future. *Annual Review of Psychology*, 28, 363-392.

Roberts, J.A. (1995). Profiling Levels of Socially Responsible Consumer Behavior: A Cluster Analytic Approach and Its Implications for Marketing. *Journal of Marketing Theory and Practice*, 3(4), 97-117.

Roch, S.G., Lane, J.A.S., Samuelson, C.D., Allison, S.T. and Dent, J.L. (2000). Cognitive Load and the Equality Heuristic: A Two-Stage Model of Resource Overconsumption in Small Groups. *Organizational Behaviour and Human Decision Processes*, 83, 185-212.

Roch, S.G. and Samuelson, C.D. (1997). Effects of Environmental Uncertainty and Social Value Orientation in Resource Dilemmas. *Organizational Behaviour and Human Decision Processes*, 70, 221-235.

Robinson, J.P., Shaver, P.R. and Wrightsman, L.S. (1991). *Measures of Personality and Social Psychological Attitudes*. Academic Press.

Rotter, J.B. (1967). A New Scale for the Measurement of Interpersonal Trust. February, 651-665.

Rotter, J.B. (1971). Generalized Expectancies for Interpersonal Trust. *American Psychologist*, May, 443-452.

Rotter, J.B. (1980). Interpersonal Trust, Trustworthiness, and Gullibility. *American Psychologist*, 35(1), 1-7.

Rousseau, D.M., Sitkin, S.B., Burt, R.S. and Camerer, C. (1998). Not So

Different After All: A Cross-Discipline View of Trust. *Academy of Management Review*, 23(3), 393-404.

Samuelson, C.D. (1993). A Multiattribute Evaluation Approach to Structural Change in Resource Dilemmas. *Organizational Behaviour and Human Decision Processes*, 55, 298-324.

Saunders, M., Lewis, P. and Thronhill, A. (2012). *Research Methods for Business Students*, 6th Edition. Harlow: Financial Times Press.

Scarpello, V. and Campbell, J.P. (1983). Job Satisfaction: Are all the Parts There? *Personnel Psychology*, 36, 577-600.

Schlaile, M.P., Klein, K. and Bock, W. (2016). From Bounded Morality to Consumer Social Responsibility: A Transdisciplinary Approach to Socially Responsible Consumption and Its Obstacles. *Journal of Business Ethics*, 1-28. <http://dx.doi.org/10.1007/s10551-016-3096-8>.

Sekaran, U. and Bougie, R. (2009). *Research Methods for Business: A Skill Building Approach*, 5th Edition. John Wiley & Sons Ltd.

Sen, S., Gurhan-Canli, Z. and Morwitz, V. (2001). Withholding Consumption: A Social Dilemma Perspective on Consumer Boycotts. *Journal of Consumer Research*, 28(3), December, 399-417.

Shin, H., Collier, D.A. and Wilson, D.D. (2000). Supply Management Orientation and Supplier/ Buyer Performance. *Journal of Operations Management*, 18, 317-313.

Shrum, L.J., Lowrey, T.M. and McCarty, J.A. (1994). A Framework for Strategy Development. *Psychology and Marketing*, 11(4), 393-416.

Shubik, Martin (1970). Game Theory, Behaviour, and the Paradox of the Prisoner's Dilemma: Three Solutions. *The Journal of Conflict Resolutions*, 14(2), 181-193.

Sijmsma, K. (2009). On the Use, the Misuse, and the very Limited Usefulness of Cronbach's Alpha. *Psychometrika*, 74(1), 107-120.

Simpson, B. (2004). Social Values, Subjective Transformations, and Cooperation in Social Dilemmas. *Social Psychology Quarterly*, 67(4), December, 385-395.

Smith, J.R., Terry, D.J., Manstead, A.S.R., Louis, W.R., Kotterman, D., and Wolfs, J. (2008). The Attitude-Behavior Relationship in Consumer Conduct: The Role of Norms, Past Behavior and Self-Identity. *The Journal of Social Psychology*, 148(3), 311-333.

Smith, S.M., Haugtvedt, C.P. and Petty, R.E. (1994). Attitudes and Recycling: Does the Measurement of Affect Enhance Behavioral Prediction? *Psychology and Marketing*, 11(4), 359-374.

Strauss, A.L. and Corbin, J. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 2nd edition, London: Sage.

Sudman, Seymour. (1980). Improving the Quality of Shopping Center Sampling. *Journal of Marketing Research*, 17, November, 423-431.

Suleiman, R., Budescu, D.V., Fischer, I. and Messick, D.M. (2004). *Contemporary Psychological Research on Social Dilemmas*, Cambridge University Press, London.

Tazelaar, M.J.A, Van Lange, P.A.M. and Ouwerkerk, J.W. (2004). How to Cope with 'Noise' in Social Dilemmas: The Benefits of Communication. *Journal of Personality and Social Psychology*, 87(6), 845-859.

Thompson, E.R. and Phua, F.T.T. (2005). Reliability Among Senior Managers of the Marlowe-Crowne Short-form Social Desirability Scale. *Journal of Business and Psychology*, 19(4), 541-554.

Tonglet, M., Phillips, P.S. and Read, A.D. (2004). Using the Theory of Planned Behaviour to Investigate the Determinants of Recycling Behaviour, A Case Study from Brixworth, UK. *Resources, Conservations and Recycling*, 41, 191-214.

Van Lange, P.A.M. (1999). The Pursuit of Joint Outcomes and Equality in Outcomes: An Integrative Model of Social Value Orientation. *Journal of Personality and Social Psychology*, 77(2), 337-349.

Van Lange, P.A.M., Agnew, C.R., Harinck, F. and Steemers, G.E.M. (1997). From Game Theory to Real Life: How Social Value Orientation Affects Willingness to Sacrifice in Ongoing Close Relationships. *Journal of Personality and Social Psychology*, 73(6), 1330-1344.

Van Lange, P.A.M., Balliet, D., Parks, C.D. and Van Vugt, M. (2014). *Social Dilemmas: The Psychology of Human Cooperation*, Oxford: Oxford University Press.

Van Lange, P.A.M., Joireman, J., Parks, C.D. and Van Dijk, E. (2013). The Psychology of Social Dilemmas: A Review. *Organizational Behaviour and Human Decision Processes*, 120, 125-141.

Van Lange, P.A.M., Van Vugt, M., Meertens, R.M. and Ruiters, R.A. (1998). A Social Dilemma Analysis of Commuting Preferences: The Roles of Social Value Orientation and Trust. *Journal of Applied Social Psychology*, 28(9), 796-820.

Wan, C., Shen, G.Q. and Yu, A. (2014). The Role of Perceived Effectiveness of Policy Measures in Predicting Recycling Behavior in Hong Kong. *Resources, Conservation and Recycling*, 83, 141-151.

Wanous, J.P., Reichers, A.E. and Hudy, M.J. (1997). Overall Job Satisfaction: How Good are Single-Item Measures? *Journal of Applied Psychology*, 82(2), 247-252.

Waterman, A.S. (1993). Two Conceptions of Happiness: Contrasts of Personal Expressiveness (Eudaimonia) and Hedonic Enjoyment. *Journal of Personality and Social Psychology*, 64(4), 678-691.

Webb, D.J., Mohr, L.A. and Harris, K.E. (2007). A Re-examination of Socially Responsible Consumption and Its Measurement. *Journal of Business Research*, 61, 91-98.

Weber, J.M., Kopelman, S. and Messick, D.M. (2004). A Conceptual Review of Decision Making in Social Dilemma: Applying a Logic of Appropriateness. *Personality and Social Psychology Review*, 8(3), 281-307.

Werder, O. (2002). *Understanding Values and Attitudes Toward Recycling: Predictions and Implications for Communication Campaigns*. University of Florida: UMI Dissertations Publishing.

Whetten, D.A. (1989). What Constitutes a Theoretical Contribution? *Academy of Management Review*, 14(4), 490-495.

Wood, R. and Bandura, A. (1989). Impact of Conceptions of Ability on Self-Regulatory Mechanisms and Complex Decision Making. *Journal of Personality and Social Psychology*, 56(3), 407-415.

Yamagishi, T. (1988). The Provision of a Sanctioning System in the United States and Japan. *Social Psychology Quarterly*, 51, 264-270.

Utz, S., Ouwerkerk, J.W. and Van Lange, P.A.M. (2004). What is Smart in a Social Dilemma? Differential effects of Priming Competence on Cooperation. *European Journal of Social Psychology*, 34, 317-332.

Zeelenberg, M., Nelissen, R.M.A., Breugelmans, S.M. and Pieters, R. (2008). On Emotion Specificity in Decision Making: Why Feeling Is for Doing. *Judgment and Decision Making*, 3, 18-27.

Zelezny, L. and Bailey, M. (2006). A Call for Women to Lead a Different Environmental Movement. *Organization & Environment*, 19(1), 103-109.

Zelezny, L., Chua, P. and Alrich, C. (2000). Elaborating on Gender Differences in Environmentalism. *Journal of Social Issues*, 56(3), 443-457.

APPENDICES



Appendix 1: Consent Letter

Hong Kong Baptist University

A Phenomenological Study on Recycling Experience

Consent Letter

Dear Participant,

We would like to invite you to participate in a research study. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship with the instructor or the Hong Kong Baptist University.

The purpose of this study is to understand the different recycling experiences of people in Hong Kong. If you agree to participate, we will arrange an individual in-depth interview with you that will last about 30 minutes. The whole conversation will be audio tape-recorded. However, your name will not be associated with the research findings. All of the information collected will be used for academic purpose only and the data collected will be kept confidential.

There are no known risks and/or discomfort associated with this study. However, do not hesitate to ask any questions about the study before participating. We would be happy to share our findings with you after the research is completed. If you have any inquiries about the research study itself, please contact Ada Lee via phone 9512 0360, or e-mail: adalylee@gmail.com.

Please sign your consent with full knowledge of the nature and purpose of the study. A copy of this consent form will be given to you to keep.

Thank you very much for your participation!

Signature of Participant

Date:

Researcher: Ada Lee
Dissertation for DBA
Hong Kong Baptist University

Appendix 2: Interview Protocol



Hong Kong Baptist University

Interview Protocol Project A Phenomenological Study on Recycling Experience

Time: Approximately 30 minutes

Date:

Place:

Interviewer: Lee Lai Yung, Ada

Interviewee:

The purpose of this interview is to understand the recycling experiences of people in Hong Kong. In this study, consumers' role in recycling refers to consumers bring rubbish and scrap to appropriate collection points.

Questions:

- 1) What does "recycling" mean to you?
- 2) How often do you go to recycle things?
- 3) What kinds of products do you usually recycle? Why?
- 4) Do you make any kind of preparation before you recycle?
- 5) How would you describe your recycling efforts?
- 6) How does the context or situation (e.g., the people you are with, the location or the time) influence your experience of recycling?

~ Thank you ~

Appendix 3: Modified vs. Original Questions/ Measurement Scales

Variables	Modified questions/ measurement scales	Original questions/measurement scales in the article by Sen <i>et al.</i> (2001)
Expectation of overall participation	What do you think is the percent of HK citizens that participated in recycling in the past month?	It indicated the percent of city residents who stated that they would boycott the movie theaters (p.404)
Degree of Perceived efficacy	The participation of each additional person in recycling will have a significant effect on the success of recycling in Hong Kong. (1=strongly disagree; 7=strongly agree)	It expressed their level of agreement (1=definitely disagree, 7 = definitely agree) with the statement;" According to the newspaper article, the participation of each additional person will have a significant effect on the likelihood of a successful boycott" (p.404-405)
Likelihood of personal participation in recycling	What is your intention to recycle in HK? (1=definitely not participate/ 7 =definitely participate) Your attitude toward recycling is: (1=Very negative/ 7=very positive; 1=Not at all favourable/ 7=very favourable, 1=Very bad idea/ 7=Very good idea, 1=Not at all useful/ 7=Very useful)	The first item assesses boycott intention (definitely not boycott/ definitely boycott). Your attitude toward boycotting: (1=Very negative/ 7=very positive, 1=Not at all favourable/ 7=very favourable, 1=Very bad idea/ 7=Very good idea, 1=Not at all useful/ 7=Very useful) (p.404).
Variables	Modified questions/ measurement scales	Original questions/measurement scales in articles by Batra, Homer and Kahle (2001), Folkman <i>et al.</i> (1986), Webb <i>et al.</i> (2004), Van Lange <i>et al.</i> (1997), Thompson and Phua (2005)
Susceptibility to normative influence	1) Features/ qualities important to you when you shop are... (1=not at all important, 7= extremely important): a) Friends must like it. b) Friends also have it. 2) How much do you like the following? (1=do not like at all, 7 = extremely well): Buying the same brands/ products your friends do	1) Features/ qualities important to me when I shop are... (1= not at all important, 7= extremely important): a) Friends must like it. b) Friends also have it. 2) How much do you like the following? (1=do not like at all, 7 = extremely well): Buying the same brands/ products your friends do.

<p>Susceptibility to normative influence</p>	<p>3) How strongly do you agree or disagree with the following statements? (1=strongly disagree, 7 = strongly agree):</p> <p>a) Your friends and you tend to buy the same brands.</p> <p>b) You buy brands which will make you look good in front of your friends.</p> <p>c) It is NOT important to have a lot of friends with whom you can do things. (counter-balancing sentence)</p> <p>d) When you buy the same things your friends buy, you feel closer to them.</p>	<p>3) How strongly do you agree or disagree with the following statements? (1=strongly disagree, 7 = strongly agree):</p> <p>a) My friends and I tend to buy the same brands.</p> <p>b) I buy brands which will make me look good in front of my friends.</p> <p>c) It is important to have a lot of friends with whom I can do things.</p> <p>d) When I buy the same things my friends buy, I feel closer to them.</p> <p>(Batra and Homer Kahle, 2001)</p>
<p>Propensity to Trust</p>	<p>Use the same shortened version of Rotter's (1980) Interpersonal Trust Scale (Folkman et al., 1986)</p> <p>a) In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.</p> <p>b) Most people CANNOT be counted on to do what they say they will do. (counter-balancing sentence)</p> <p>c) The judiciary is a place where we can all get unbiased treatment.</p> <p>d) It is safe to believe that in spite of what people say, most people are primarily interested in their own welfare.</p> <p>e) Most people would be horrified if they knew how much news that the public hears and sees is distorted.</p> <p>f) In these competitive times one has to be alert or someone is likely to take advantage of you.</p> <p>g) Most salesmen are NOT honest in describing their products. (counter-balancing sentence)</p>	<p>The shortened version of Rotter's (1980) Interpersonal Trust Scale (Folkman et al., 1986)</p>

Propensity to Trust	<p>h) Most repairmen will not overcharge even if they think you are ignorant of their specialty.</p> <p>i) Most elected officials are really sincere in their campaign promises.</p>	
Recycling behaviour	<p>You recycle cardboard.</p> <p>You recycle plastic containers.</p> <p>You recycle magazines.</p> <p>You recycle aluminium cans.</p> <p>You recycle steel/ tin cans.</p> <p>You recycle paper.</p> <p>(1 = never true, 5 = always true)</p> <p>(Webb <i>et al.</i>, 2004)</p>	<p>I recycle cardboard.</p> <p>I recycle plastic containers.</p> <p>I recycle magazines.</p> <p>I recycle aluminium cans.</p> <p>I recycle steel/ tin cans.</p> <p>I recycle paper.</p> <p>(1 = never true, 5 = always true)</p> <p>(Webb <i>et al.</i>, 2004)</p>
Social Value Orientation	Use the same questions/measurement scales proposed by Van Lange <i>et al.</i> (1997)	Original questions/measurement scales proposed by Van Lange <i>et al.</i> (1997)
Social Desirability scale	Use the same questions/measurement scales proposed by Thompson and Phua (2005)	Original questions/measurement scales proposed by Thompson and Phua (2005)



Survey Questionnaire

Introduction

I am Ada Lee, a DBA final year student from the Hong Kong Baptist University. I am doing a marketing research study on consumers' recycling behaviour.

We would like to invite you to participate in a research study. You should be aware that you are free to decide not to participate, or to withdraw at any time without affecting your relationship with the interviewer or the Hong Kong Baptist University. If you agree to participate, we will conduct a survey interview with you that will take about 15 minutes. All of the information collected will be used for academic purposes only and the data collected will be kept confidential. If you complete ALL the survey questions with our interviewer, we will give you one HK\$50 coupon to thank you for your support.

In this study, consumers' role in recycling refers to consumers bringing rubbish and scrap to appropriate collection points. These days the media talks quite a lot about recycling. However not every Hong Kong citizen participates in recycling. Some recycle and some do not. So there are no right or wrong answers to the questions.

Please answer the questions as honestly as possible. However, do not hesitate to ask any questions about the study before participating. If you have any questions on the research study itself, please contact me via e-mail to adalylee@gmail.com. Thank you.

No.: _____

Are you a Hong Kong citizen?

Yes: _____ (Continue the survey)

No: _____ (End of survey)

Part 1

1.1 What do you think is the percent of HK citizens that participated in recycling in the past month? Answer:

_____%

Part 2

	Strongly disagree						Strongly agree
2.1 The participation of each additional person in recycling will have a significant effect on the success of recycling in Hong Kong.	1	2	3	4	5	6	7

Part 3

	Definitely not participate						Definitely participate
3.1 What is your intention to recycle in HK?	1	2	3	4	5	6	7
	Very negative						Very positive
3.2 Your attitude toward recycling is ...	1	2	3	4	5	6	7
	Not at all favourable						Very favourable
	1	2	3	4	5	6	7
	Very bad idea						Very good idea
	1	2	3	4	5	6	7
	Not at all useful						Very useful
	1	2	3	4	5	6	7

Part 4

	Not at all important						Extremely important
Features/ qualities important to you when you shop are...	1	2	3	4	5	6	7
4.1 Friends must like it.							
4.2 Friends also have it.	1	2	3	4	5	6	7

	Do not like at all						Extremely well
How much do you like the following?							
4.3 Buying the same brands/ products your friends do	1	2	3	4	5	6	7
	Strongly disagree						Strongly agree
How strongly do you agree or disagree with the following statements?							
4.4 Your friends and you tend to buy the same brands.	1	2	3	4	5	6	7
4.5 You buy brands which will make you look good in front of your friends.	1	2	3	4	5	6	7
4.6 It is NOT important to have a lot of friends with whom you can do things.	1	2	3	4	5	6	7
4.7 When you buy the same things your friends buy, you feel closer to them.	1	2	3	4	5	6	7

Part 5

	Strongly disagree				Strongly agree
5.1 In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.	1	2	3	4	5
5.2 Most people CANNOT be counted on to do what they say they will do.	1	2	3	4	5
5.3 The judiciary is a place where we can all get unbiased treatment.	1	2	3	4	5
5.4 It is safe to believe that in spite of what people say, most people are primarily interested in their own welfare.	1	2	3	4	5

5.5 Most people would be horrified if they knew how much news that the public hears and sees is distorted.	1	2	3	4	5
5.6 In these competitive times one has to be alert or someone is likely to take advantage of you.	1	2	3	4	5
5.7 Most salesmen are NOT honest in describing their products.	1	2	3	4	5
5.8 Most repairmen will not overcharge even if they think you are ignorant of their specialty.	1	2	3	4	5
5.9 Most elected officials are really sincere in their campaign promises.	1	2	3	4	5

Part 6

	Never true				Always true
6.1 You recycle cardboard.	1	2	3	4	5
6.2 You recycle plastic containers.	1	2	3	4	5
6.3 You recycle magazines.	1	2	3	4	5
6.4 You recycle aluminum cans.	1	2	3	4	5
6.5 You recycle steel/tin cans.	1	2	3	4	5
6.6 You recycle paper.	1	2	3	4	5
6.7 You recycle glass.	1	2	3	4	5
6.8 You recycle clothes.	1	2	3	4	5

6.9 Roughly, how often do you recycle?

- Never
 every day
 every week
 every month
 Other: _____

Part 7

In this task, imagine you are paired with another person (named 'Other') who you do not know. How will you distribute money between you and the 'Other' person in the following situations?

Please circle the answer (either A, B or C) that best represents you in each situation.

	A	B	C		A	B	C
7.1 You get	480	540	480	7.6 You get	500	500	570
Other gets	80	280	480	Other gets	500	100	300

7.2 You get	A	B	C	7.7 You get	A	B	C
Other gets	560	500	500	Other gets	510	560	510
	300	500	100		510	300	110
7.3 You get	A	B	C	7.8 You get	A	B	C
Other gets	520	520	580	Other gets	550	500	500
	520	120	320		300	100	500
7.4 You get	A	B	C	7.9 You get	A	B	C
Other gets	500	560	490	Other gets	480	490	540
	100	300	490		100	490	300
7.5 You get	A	B	C				
Other gets	560	500	490				
	300	500	90				

Part 8

	True or False
8.1 You are always willing to admit it when you make a mistake.	T/ F
8.2 You always try to practice what you preach.	T/ F
8.3 You never resent being asked to return a favor.	T/ F
8.4 You have never been annoyed when people expressed ideas very different from your own.	T/ F
8.5 You have never deliberately said something that hurt someone's feelings.	T/ F
8.6 You like to gossip at times.	T/ F
8.7 There have been occasions when you took advantage of someone.	T/ F
8.8 You sometimes try to get even rather than forgive and forget.	T/ F
8.9 At times you have really insisted on having things your own way.	T/ F
8.10 There have been occasions when you felt like smashing things.	T/ F

Part 9

<p>Gender (by observation)</p> <p><input type="checkbox"/> Male</p> <p><input type="checkbox"/> Female</p>

Age:

- 18-19 years old
- 20-29 years old
- 30-39 years old
- 40-49 years old
- 50-59 years old
- 60-69 years old
- 70-79 years old
- 80 years old or more

Highest education level attained:

- Primary school level
- Secondary school level
- Tertiary education level

Personal monthly income (HKD):

- \$5,000 or below
- \$5,001 - \$10,000
- \$10,001 - \$30,000
- \$30,001 - \$50,000
- \$50,001 - \$70,000
- \$70,001 - \$90,000
- \$90,001 or above

~ Thank you ~

Appendix 5: List of Shopping Malls for the Quantitative Study

Hong Kong Island

Hing Wah Plaza, Chai Wan
Hysan Place, Causeway Bay
Infinitus Plaza, Sheung Wan
International Finance Centre, Central
Island Place shopping mall
Pacific Place, Admiralty
QRE Plaza, Wan Chai
The Landmark, Central
Times Square, Causeway Bay

Kowloon

Amoy Plaza, Amoy Gardens, Kowloon Bay
Dragon Centre, Sham Shui Po
Elements, Jordan
Festival Walk, Kowloon Tong
Lok Fu Plaza, Wang Tau Hom, Wong Tai Sin
Mira Mall, Tsim Sha Tsui
Olympian City, Tai Kok Tsui
Telford Plaza, Kowloon Bay
Tze Wan Shan Shopping Centre, Tsz Wan Shan

New Territories

City Landmark I & II, Tsuen Wan
Landmark North, Sheung Shui
Ma On Shan Plaza, Ma On Shan
Metroplaza, Kwai Chung
Metro City, Tseung Kwan O
Sha Tin Plaza, Sha Tin
Up Town Plaza, Tai Po
Yat Tung Shopping Centre, Tung Chung
YOHO Town, Yuen Long

CURRICULUM VITAE

Academic qualifications of the thesis author, Miss LEE Lai Yung, Ada:

- Received the degree of Bachelor of Social Sciences (Honours) in Communication from Hong Kong Baptist University, December 1991.
- Received the degree of Master of Business Administration from Hong Kong Baptist University, December 1999.

August 2016