EFFECTS OF CHINESE YOUTH CONSUMER RECYCLING BEHAVIOR DECISIONS: APPLICATION OF TPB THEORY TO BEVERAGE CONTAINER RECYCLING SYSTEM ADOPTION

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**Liu Xuchang
Corporate Environmental Management
Supervisor: Marjo Siltaoja**

JYVÄSKYLÄN YLIOPISTO

ABSTRACT

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Liu Xuchang	
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Abstract

Increasing municipal waste is a challenge that China is facing during decades, especially along with the economic growth. Although recycling is apparently an efficient method to deal with the problem, 2% of solid waste recycled in China revealed there is barrier in the path. The recycling system is developing in China by government and companies, hence understanding and predicting Chinese consumers' acceptance of the system is necessary. This research is aim to understand the Chinese youth consumers' recycling behavior through the view on beverage container recycling behavior. Hypothesizes in this study is proposed according to the theoretical framework of the TPB, which is attitude toward the behavior, subjective norm, and perceived behavioral control are the effects to the recycling behavior intention. *Face* (*mian zi*) is a well-known concept in China representing a personal property used to exchange for respect and social status in the social activities, and face consciousness is the care of gaining or losing *Face* (*mian zi*). Since the concept of face consciousness is a typical characteristics in China, its relationship with consumption behavior were studied in many researches in China. Hence, face consciousness was proposed as an effect in this research as well.

The research was a quantitative research, the data was collected through a survey delivered to universities and high schools in Wuhan, China. There were 500 questionnaires delivered, and 197 valid response. Through multiple-regression analysis and mediation model analysis processed with SPSS Statistic Software, the three constructs of the TPB were proved as the positive effects to the BCR intention, and the face consciousness was demonstrated as both direct and indirect effect to the BCR intention. Nevertheless, face consciousness is able to transformed into a positive effect through a mediator, subjective norms. Therefore, face consciousness might able to utilized in recycling system promotion.

Keywords

recycling behavior, beverage container recycling behavior, TPB, face consciousness

Location   Jyväskylä University School of Business and Economics

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1   INTRODUCTION

During last decades, Chinese economics was developed rapidly and became one of the biggest manufacturing countries in the world. Along with the amount of growing municipal solid waste caused by the rapid urbanization and industrialization, the following environmental problem regards to air, land and water pollution is emerging. Recycling and waste sorting is required to relieve this crisis. However, while Finland is having over 90% of beverage container was recycled (PALPA Oy, 2016), there are less than 2% of all solid municipal waste was recycled in China (Zhang et al., 2015) and recycled beverage container was only a part of it. The reason of why recycling system could not promote efficiently in China is complicated. This thesis aims to discuss effects of youth Chinese consumers' recycling behavior through the theory of planned behavior (TPB), and discuss about how Chinese face concern affecting the intention of pro-environmental behavior in China, since beverage container recycling behavior is one of the recycling behavior; it is selected as the research topic.

According to the result from National Bureau of Statistics of China, the rate of urbanization was 53.7% in 2013, comparing to the rate 21.62% in 1983, the urbanization rate was increased dramatically with more than 20% in twenty years. (National Bureau of Statistics of China, 2016) Furthermore, National Bureau of Statistics of China was claimed the waste generation was 1.1 kg/capital/day in 2010, and was estimated to be increased with the rate of 8-10% in the future. (As cited Tian et al., 2013) With such an enormous number of waste generation amount, China is facing the huge challenge of waste management and deposal. Although the "3R" principle defined in 2009 was about reduction, reuse and recycling (as cited Tian et al., 2013), mixed solid waste composting, landfill and incineration is still applied as the main waste management solution. According to the research in 2013 by Tian et al., air pollutants such as greenhouse gases, odorous gases, heavy metals and even PM can be generated during the waste disposal and treatment processes (Tian et al., 2013). However, until the year of 2011, 20% of waste treated in the incinerator and about 78% of waste were landfilled (Zhang et al., 2015), in other words, only about 2% of waste were recycled in China.

According to Chinese renewable resource recycling report in 2015, there are about 200 thousand of recycling station in China, and about 10 thousand of companies are working with the recycling processing, over 15 million of employees, however over 80% of the company was individual workshop or family company. The recycled renewable resources in China were increased 5% than former years. (Environmental Economy, 2015) Notwithstanding, the practical recycling rate was dissatisfied while considering about the huge amount of recyclable waste generated in China. It is almost certain that lacking construction on infrastructures could be one of the factors to be blamed. Although there are legally registered recycling companies and trade market, in China mobile recycling traders is sharing the biggest percentage of the recycling market. Because

the business was mostly unlicensed, these mobile traders usually working without fixed address and essential facilities. However, since consumers exist as a significant role in recycling, it is important to understand the consumer recycling intention and discover the effects behind the intention.

Since the theory of reasoned action (TPA) (Fishbein & Ajzen, 1975) and the theory of planned behavior (TPB) (Ajzen, 1991) were proposed, the theory was mostly relied to understand and predict consumer's behaviour. (Fransson & Gärling, 1999; Harland & Staats & Wilke, 1999; Armitage & Conner, 2001; Pavlou & Fygenson, 2006; Bezzina & Dimech, 2011; Culiberg, 2014) During the past decades, along with the emerging concept of environmental conscious consumption, environment is no longer concerned by environmental enthusiasts, TPB theory was relied to understand and predict pro-environmental behaviours such as green consumption and recycling behaviors. According to the theory, intention is directly affecting behavior and it is affected by attitude toward the behavior, subjective norm, and perceived behavioral control (PBC) (Ajzen, 2012). It was assumed that subjective norm is determined by a series of normative beliefs about the certain behavior (Ajzen, 2012), and it was demonstrated in Ajzen and Fishbein in 1991. In consequence, it is assumed that there are other factors are performance as effects to subjective norm in the planned behavior prediction model.

In China, there is a typical Chinese social-psychological concept named as *Face Consciousness* or *Face Concern*. It refers to the personal image which can be earned or damaged during the social activities. Although the concept does not exist in China only, it is dramatically embedded by Chinese people in social activities. In China, face concern is not only a personal image but also the image of family, friendship and even other social networks. Being a typical social-psychological characteristic of Chinese people, face concern dominates and regulates varies of regular behaviors in China. In consequence of the joint influence from economics, cultural and personalities of consumers, the existing consumer behavior difference was admitted in many studies and researches (Fan & Xiao, 1998; Lysonski & Durvasula & Zotos, 1995). Along with the upgrade of China's economic strength and international status, researches about Chinese consumers' behavior was increasing, and had demonstrated the significance of Chinese traditional cultural effects such as face consciousness (Qi, 2009; Jiang, 2009; Zhang & Li & Ma, 2010).

In spite of the recycling behavior was commonly defined as altruistic behavior, the beverage container recycling system in Finland and other Western countries are rewarded with money or equivalents. Therefore, in this research, recycling behavior is assumed as a consumer behavior, and it is a pro-environmental behavior as well. Face concern could affect Chinese consumer's behavior, but whether it influences recycling behavior is a question. Furthermore, it is proposed by Chinese social psychologists that face consciousness can be a tool to coordinate a certain social relationship (Chen, 1999), it would be interesting to know whether it can be utilized in promoting recycling behavior.

1.1   Research Motivation

The Finnish bottle return system was created in 1950, however, in China the informal bottle and food container returning system was appeared in earlier time. The company Suomen Palautuspakkaus Oy was established in 1996 and created the recycling system for PET plastic bottles. (PALPA Briefly, 2015) However, while the bottles return system was completed in Finland during the decades, the bottle and food container returning system in China was transformed more informal than early time and even disappearing in these decades. The growing economics and decreasing fix cost of bottle and food container producing process might be one of the reasons behind the phenomenon.

With the enormous generation of waste beverage bottle container, a mature recycling system is required. The demand was noticed in China by Chinese government and companies. In the latest decade, formal recycling companies started to establish and grow, in 2007 the Chinese Recycling Website was established and in 2008, the Incom Recycle Co. Ltd. Was founded. (Incom Recycle, Corporate Introduction, 2015) Furthermore, in 2011, Premier Wen Jiabao was announcing the decision of complete the resources recycling system in China at the executive meeting of the State Council (Jilin City News, 2011). Nevertheless, the first Chinese Reverse Vending Machine (RVM) was designed and produced in January in 2016 (Incom Recycle, Corporate News, 2016).

In October of 2015, the researcher had interviewed Pasi Nurminen, the managing director of Suomen Palautuspakkaus Oy (Palpa), in Helsinki. Reasons of the successful beverage container recycling system in are complicated; there is tax exempt, refunding system and perfection infrastructure. Moreover, the number of consumer's adoption and participation was impressed, the recycled rate of beverage can be about 97%, and about 92% of PET-bottle was recycled, nevertheless, the one-way glass bottle was recycled approximately 89% of total. (Nurminen, ppt, 2015) This high recycled rate was contributed by the high consumer's participation.

To date, it is certain that the recycling system in China was not constructed formally; however, the recycling technology and infrastructure is developing. Whether Chinese consumers will accept and participant in the recycling is now one of the biggest challenges that recycling companies and government is facing. In order to understand and predict Chinese consumers recycling behavior, the researcher chose the theory of planned behavior (TPB) as the theoretical framework to rely on. Nevertheless, the fact that Chinese people concern about their 'Face' is known by the world. Being a Chinese, it was heard from others surrounded claimed that they don't want to recycle their bottles because if them recycle the bottle for a penny, it makes them a penny pincher to other people. Along with the internationalization, new conscious is affecting Chinese new generations. With the rapid development of public media, Chinese youths, age from 16 to 25, is one of the main group emerging environmental concerns. Therefore, the researcher focus on collecting data from Chinese youth,

and the aim is to understand their recycling behavior and figure out whether face consciousness is affecting their pro-environmental behavior.

1.2   Research method

The research method should be decided according to the research types. The research in this Master's Thesis is a quantitative study, and the data used in the research is gathered from a survey.

In order to guarantee the response rate, the questionnaire was formed by twenty-two questions contains of measurement of pro-environmental behavior, pro-environmental behavior intention, green attitude, green subjective norms, green perceived behavioral control and face concern. The question about face concern was designed according to the scale used in the face concern empirical research by Oetzel & Ting-Toomey (2003). On the other hand, the other factors measurement is designed according to the instruction from Ajzen (1991)'s theory of planned behavior.

Since the reform and opening-up policy announced about 38 years ago, Chinese economy had changed dramatically, the mindset and custom is different between the generation of 1970s, 1980s and 1990s (Xue & Fu & Jiang, 2014). In order to limit the deviation caused by the difference between generations, the research sample is focus on the generation of 1990s. Because of the Characteristic of Chinese society, most of Chinese at age from 15-23 are still students in high school or university. There are 530 questionnaires delivered to high schools and universities in Wuhan, and 198 are valid responses.

1.3   Research Questions

The aim of this Master's Thesis is to understand Chinese youth consumer's recycling behavior relied on the theory of planned behavior, investigate whether the three main factors contained in the theory are affecting Chinese youth consumers to recycle. Moreover, the thesis aims to investigate whether the face concern issue takes part in the recycling decision making by affecting the three main factors. Nevertheless, the study aims to provide the suggestion for the further research on utilize the face consciousness to promote recycling behavior or pro-environmental behavior if it affects any of the factors effects in the theory of planned behavior.

The research will started with the inspection of whether the factors as attitude toward the behavior, subjective norms, and perceived behavioral control (PBC) are the factors applied to Chinese youth consumers recycling behavior. And base on the result from this first question, the further question of whether face concern issue is affecting the factors will be investigated.

Consequently, there is a general research question is what are the effects of Chinese youth consumers recycling behavior. This question can be solved by the specific questions as follow:

1. Are the factors: attitude toward the behavior, subjective norms, and perceived behavioral control affecting Chinese youth consumers' recycling intention?
2. Is face consciousness an indirect effect to the BCR intention? How is it effects?
3. Can face consciousness be utilized in promoting recycling behavior? What are the suggestions?

2   THEORETICAL FRAMEWORK

The consciously behavior of recycling beverage container is a complex result of a multidimensional approach, therefore the theoretical framework in this Master's Thesis consist the concepts involved in the study such as the concept of recyclig behavior, beverage container recycling, theory of planned behavior (TPB), and face consciousness. In this chapter, these concepts will be introduced and elaborated.

2.1   Environmental Concern and Recycling behavior

On general definition of environmental behavior, every human activity could be defined as environmental behavior because of the influence from their activities, no matter how significant the effect is. Nevertheless, the concept of pro-environmental behavior is the environmental behavior, which is judged as a protective behavior for the environment. (Krajhanzl, 2010) The distinction between attitude, intention, and behavior was investigated in many attitude theories (as cited by Fransson& Gärling, 1999). According to the theory of reasoned action (TRA) (Ajzen& Fishbein, 1975) and the theory of planned behavior (TPB) (Ajzen, 1991), a behavior was determined by attitude and intention and other factors, and value priorities is significant in these evaluations (Fransson & Gärling, 1999). Environmental concern is often treated as the determinant of environmental behavior, in consequence of the theories from psychological field, environmental concern is identified as a general attitude toward the environmental behavior (as cited by Fransson& Gärling, 1999).

To date, environmental concern is embedded in different fields and industries and even daily life. However, the result of pro-environmental behavior was disappointed at most of the situation. The reason behind this phenomenon is that environmental concern is not the direct determinant of environmental behavior (Bamberg, 2003).

During last two decades, the environmental degradation had brought harmful impact to Chinese people devastatingly. The outburst of haze in Beijing and other modern cities in China was known by the world. "Environmental concern is not among the top-ranked issue concerns in China overall, but in the urban areas and in the east-costal region the environmental issue features as a rather important social issue" as stated in Liu & Mu's research in 2016 (Liu & Mu, 2016). This result had pointed out one of the prerequisites of environmental concern establish is the economic development. In contrast, the environmental conditions would continue to deteriorate along with the economy growing if there is no public concern and effective policy response (York et al., 2003).

As one of the most promoted and accepted environmental solution, recycling is sharing the same problem of consumers' participants. Nevertheless, the

research conducted by Jekria & Daud (2016) had indicated that environmental concern is a potential variable to recycling decisions.
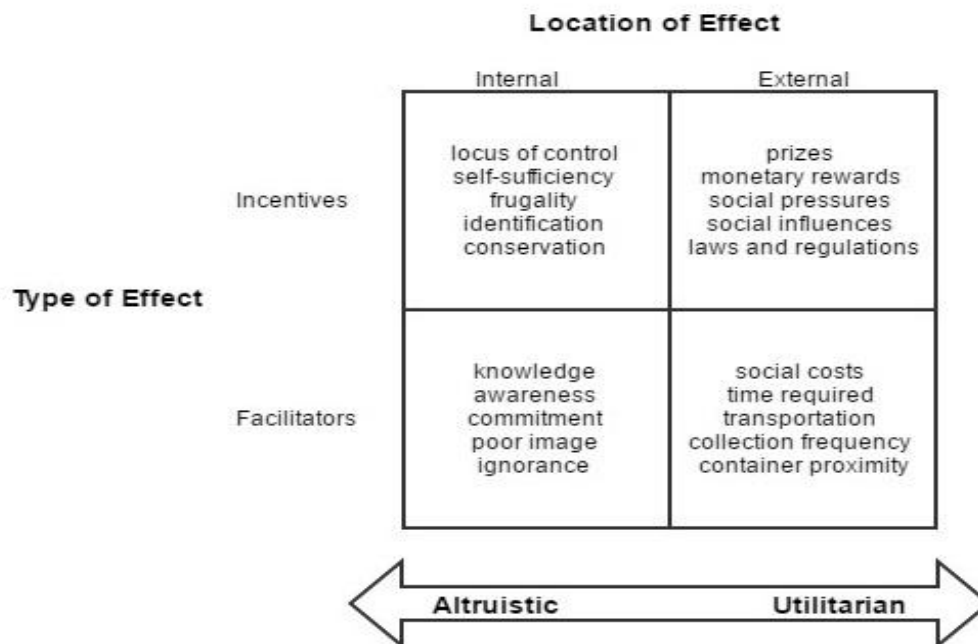
Recycling is the concept emerged over 40 years, since the phenomenon as resources decrease and waste increase was discovered, the importance of recycling was valued. The definition of recycling is the process of converting waste materials into reusable products to reduce the material consumption. Until 1994, there are already over 50 studies related to recycling was published (Cheung, Chan, Wong, 1999). In 1991, the recycling behavior was discussed as an altruistic behavior because it requires time and energy to save, sort and deliver recyclable materials but no immediate rewards (Joseph R.& Joyce, 1991). This theory and definition had been wild acknowledged and used in many studies in the early time. By contrast, as cited by Michiyo (2005), Barns (1982) researched recycling behavior with marketing theories. Therefore, recycling could be defined into different categories in the research, while it certainly is a multidimensional approach.

In China, recycling exists with duel identity as altruistic behavior and a consumption behavior. There are 10 main recycled materials such as metal, electrical products, electromechanical equipment and its assembly unit, paper, plastic, package of pesticide products, glass etc. Some of the recycling materials are recycled with payback or relevant rewards; on the other hand, some of the recycling material was gathered spontaneously without any payment. Recyclable electronic equipment, such as mobile phones, microwaves, computers and other home electronic equipment, are recycled by the maintenance companies or moving companies with some payment in reward. There were "old for new" activities provided by companies to exchange the old equipment with the new products. On the other hand, some materials should be recycled such as battery should be recycled spontaneously by collecting them to specific trashcans.

According to the report of recycled material in China in 2015, there are over 644.69 billion recycled materials was recycled (Digest, Environmental Economy, 2015). However, comparing to the enormous number of solid waste generation per year in China, the recycling rate of recyclable material is not satisfied.

As cited in Meneses & Palacio's (2005) study, recycling behavior is treated as a product in social marketing perspective, and the main target is improve the acceptance of it by the consumers. It was approved that recycling is a multidimensional approach (Meneses & Palacio, 2005), therefore, determinant of recycling behavior is not in simple dimension. Considering about the duel definition of recycling behavior as altruism behavior and utilitarian behavior, determinant of recycling behavior is concluded into four main categories shown: internal incentives, internal facilitators, external incentives, and external facilitators (Hornik et al., 1995). As the following Figure 1 shows that, some of the variables to internal incentives and facilitators are affected by the social influences such as education and influence from people surrounded us.

FIGURE 1 Variables of recycling behavior (Hornik et al., 1995)

Location of Effect

		Internal	External
Type of Effect	Incentives	locus of control self-sufficiency frugality identification conservation	prizes monetary rewards social pressures social influences laws and regulations
	Facilitators	knowledge awareness commitment poor image ignorance	social costs time required transportation collection frequency container proximity

⟵ **Altruistic** ——— **Utilitarian** ⟶

In conclusion, recycling behavior is able to discuss as an altruistic behavior and a utilitarian behavior as well, determining recycling behavior is a multidimensional approach, there are not only one determinant controlling the behavior. Although it is a pro-environmental behavior, aside of environmental concern, there are also other factors such as monetary rewards, social pressure, and other internal or external effects in charge of the final behavior. Hence, recycling behavior research is commonly assumed as a consumption behavior, and was studied with marketing and social-psychological theories. Moreover, the illustrated model that recycling behavior is predicted by the effects such as perceived benefit, attitude toward recycling, social norm and past behavior was demonstrated in Michiyo's (2005) research. The concept perceived benefit is affected by cost and benefit. This result is supporting the research from Hornik et al., (1995). Since the recycling system adopting in China is similar with Finnish recycling system, it is accepted in this research that recycling behavior is a utilitarian behavior.

2.2   Beverage Container Recycling

The concept of beverage container recycling was introduced over decades, and was completed and improved with the development. Nowadays, the most commonly used recycling system was the deposit-refund system and the initial intention of the system is to recycle the glass bottles by cleaning and refill (White, 2002). With the replacement of glass bottles by aluminum cans, the system was stopped in some countries like China, however in the USA the first le-

gislated 'bottle bill' requiring refundable deposits on all beer and soft drink containers was passed in Oregon in 1971, and by 1987, one-quarter of the U.S. population had enacted the beverage container deposit law (White, 2002). Not only in the U.S., in Sweden the container deposit legislation was firstly formed in 1984, however, the legislation modified more completed since 2006 (Bottle Bill Resource Guide, 2011). Since plastics became a raw material to beverage container, the major problem of waste disposal became a challenge to the industry. Therefore, poly (ethylene terephthalate) (PET) was researched and developed into a recycling container, and was drawing enormous attention to the PET recycling. The recyclable beverage containers are aluminum cans, PET bottles and glasses, and they are recycled and process into raw materials of new beverage container or utilizing in other industries.

The Container Recycling Institute (CRI) was formed in 1991 (White, 2002), which is a phenomenon of conscious consumption promotion. However, in some countries the container recycling system was not adopted. With the growing aware of sustainable consumption all around the world, the reason of how the container recycling system was promoted should be studied in some countries like China. The significant role of policy establishment should be admitted, but there are other factors related to the sustainable consumption promotion. (Zhang et al., 2016; Welle, 2011; Oromiehie & Mamizadeh, 2004; Meneses & Palacio, 2005; Liu & Mu, 2016; Jekria & Daud, 2016)

As one of the countries with the impressive recycling rate with the recyclable beverage containers, Finland was an example for countries like China to imitate as a reference. Therefore, in this section, the beverage container recycling system in Finland is firstly be elaborated, the information was gathered through a interview to the PALPA company in Finland, which is the company in charge of Finnish recycling system operation. Moreover, the current beverage container recycling system situation will be introduced in this chapter as well.

2.2.1 Beverage container recycling system in Finland

The beverage bottle recycling system is adopted by most of the EU countries, especially in Nordic countries. As known, Sweden was taken a quick reaction with the container recycling system and Denmark is the country with outstanding environmental performance, however, Finland tops these countries at bottle recycling according to the news from *Good News* in 2013 (Good News!, 2013). The deposit-refund system in Finland has a long history started from 1952 and the glass bottle deposit-refund system was created along with Coca-Cola arrives. In Finland, about 94% of plastic bottles are recycled and around 6.6 million plastic bottles are returned per week, furthermore, nearly 90% of glass bottles are recycled in the system. (Good News!, 2013)

The beverage container recycling system in Finland is operating with the cooperation between recycling company and beverage companies. Companies are joining the recycling system voluntarily, they have the choice between paying recycling tax of 0.51 € /liter sales and joining the deposit recycling system (Nurminen, ppt, 2015). The beverage container recycling system in Finland is

formed by three different flows: Material flow (Figure 2), deposit flow (Figure 3), and other fees and compensations flow (Figure 4). The life-cycle of material is the loop that beverage containers started from the beverage producer and returned to the producer again with the new manufactured container through retailer, consumer, returning point, transport operator, baling and counting plant, and material recycler.

FIGURE 2 Material Flow in Finnish beverage container recycling system (Nurminen, ppt, 2015)
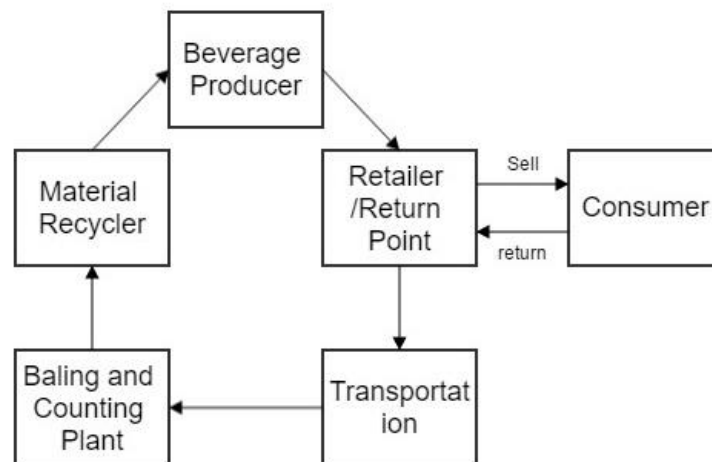
On the other hand, the flow of deposit and other fees are having fewer participants. The deposit in the system only transfer between retailer, consumer, beverage producer, and PALPA Company. In addition, other fees and compensations take part in the business relationship between PALPA Company and other partners such as material recycler, transportation, baling and counting plant, retailer/return location, and beverage producers. (Nurminen, ppt, 2015)

FIGURE 3 Deposit flow in Finnish beverage container recycling system (Nurminen, ppt, 2015)
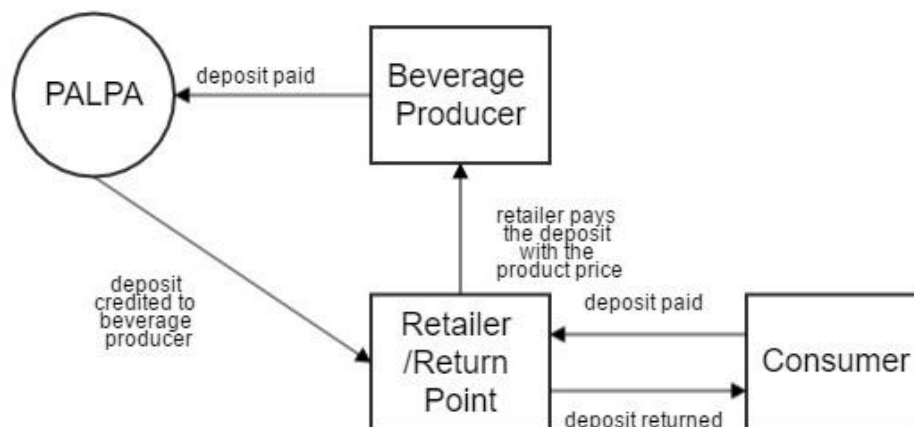
FIGURE 4 Other fees and compensation flow in Finnish beverage container recycling system (Nurminen, ppt, 2015)
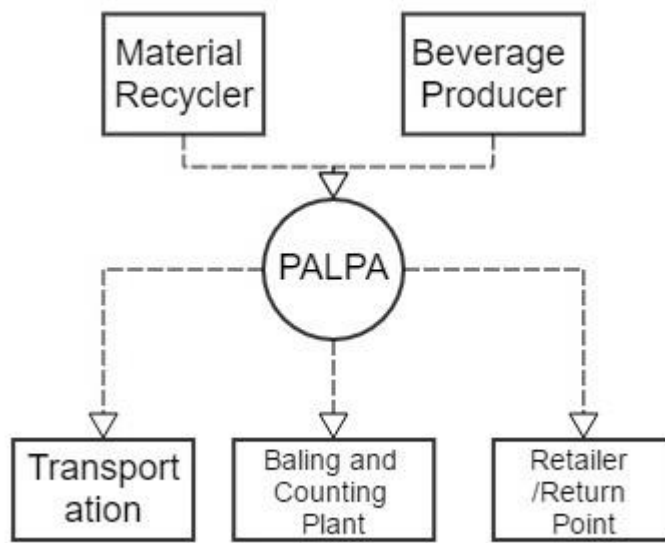
As admitted by many researchers, the influences of human behavior are various, in the review of former research in 2014, there are 18 personal and social factors had been concluded as the influences of pro-environmental concern and behavior (Gifford & Nilsson, 2014). Furthermore, there are still factors which haven't been concluded in the review but having significant influence as well, for example the infrastructure as a path of motivating pro-environmental behavior. By the reason of the advance and complete system in Scandinavian beverage container deposit-refund system, the infrastructure development is playing a point role as well. (Jørgensen, Finn Arne, 2011)

The success of Finnish beverage container recycling system and other similar systems in other Western countries is giving an illusion that the key factor of the system success is monetary rewards. On the industry and companies' perspective, one of the reason of recycling promoted was the pressure from cost. In Finland, if the beverage retail over 2,000 sales, it is much worth to join the recycling system than pay the recycling tax (personal conversation by PALPA, 2015). On the consumers' perspective, according to the research by PALPA company, there are only over 50% of consumer's will recycle their beverage containers while more than 90% of consumer's will recycle when there is deposit (Nurminen, ppt, 2015). However, the result of the meta-analysis in 1995 by Hornik et al. (1995) had investigated that there are a number of factors other than monetary incentives are affecting the recycling behavior. Beverage container recycling, being one of the recycling behaviors, the consequence should be applied in it as well. As conclude by PALPA company, they claimed that the high return rates owing to three major factors: cultural, convenience, and deposit (Nurminen, personal conversation, 2015).

2.2.2 Beverage container recycling system in China

During last decades, beverage container recycling system in China remains the traditional recycling method and recycling channel. Since beverage bottles are defined as one of the recyclable material, the recycling process is similar with other recyclable material recycling process. The biggest share of recycling beverage bottles is occupied by mobile traders, however, on consequence of the incomplete recycling system, the containers was manually sorted and mostly sold to underground illegal factory. Without proved technology and standard, the recycling process barely has environmental contribution but pollution the environmental again.

The material recycler's manufacture and process technology is sharing the responsibility of the recycling efficiency. Furthermore, manufacturing cost is effecting the price of recyclable materials along with the amount of supplements and the transportation cost. In 2014, the price of recyclable material is decreasing. (Digest, Environmental Economics, 2015) In 2015, the reporter interviewed some consumers and mobile traders. It was claimed that the price of recyclable cardboard, beverage containers are recycling with the price of 0.6 Yuan/kg instead of 0.1 Yuan/bottle. "Collecting recyclable materials from residents in the city is no longer a good business. "one of the mobile traders said, "Sometimes we can only get about 50 Yuan/day by collecting over 250 kg of recyclable materials. "(Unknown, Feijiu, 2015) Consequently, it is difficult for the consumers to recycle, "We are used to save our recyclable materials and ask the mobile traders to come and collect them. "one of the consumers claimed, "But we don't know where to find them since they are not working as traders anymore." (Unknown, Feijiu, 2015)

As a result, the problem of decreasing recycling channel to the consumers was noticed by the recycling companies and governments. INCOM Resources Recovery Co., Ltd., had established a subsidiary company named RVM-Incom Recycle Co., Ltd.in 2008 to focus on the research and development on reverse vending machine (RVM). (RVM, Incomrecycle, 2016) In the end of 2012, RVM was used in Beijing at Metro line 10 stations, RVM receives consumers' empty beverage bottles, and charges consumer's bus card or SIM card in return. RVMs used in this trial operation was placed at bus stops and Metro stations, and they contain the functions of bottles identification, recycling, compression, storage, card billing, and real-time data transfer.

In the summer of 2014, the return visit to these RVMs used at Metro stations was paid by the reporter Su Ni (2014). The maximum capacity of RVMs is about 300-400 bottles per RVMs. However, according to the reporter's observation, only 1 person was using RVMs while other 4 people are throwing away their beverage bottles during two hours. Nevertheless, INCOM had placed over 300 RVMs to transportation stations, only 20-25 bottles were recycled per RVMs per day. (Su, 2015)

After the trial operation, INCOM is now improving their RVMs, and also developing new partners to improve the infrastructure of beverage container recycling system into other cities and public areas. In 2016, the new smart RVM

was in used in Shanghai, and it is still under development level. Nevertheless, in Sichuan Foreign Language University, there are two RVMs is in used. The INCOM company had considered the consumers' environmental intention into the RVMs promoting project, therefore, there is a message of the consumer's environmental contribution will show on screen of RVMs when he or she return their beverage bottles (INCOM news, 2016).

2.3   Theory of Planned Behavior

The theory of planned behavior (TPB) is an extension of the theory of reasoned action (TRA), it was proposed to predict and understand planned behavior with the specific contexts (Ajzen, 1991). It is a common knowledge that explaining human behavior is a difficult task, since the theory of planned behavior was proposed in 1991, the theory had used frequently on the subjects about human behavior.

Because of the feature of better prediction of less controllable behaviors, TPB had used in understand and predict pro-environmental behavior such as the adoption of water saving technologies (Lynne et al., 1995), household recycling (Boldero, 1995; Taylor & Todd, 1995). (as cited in Mannetti, Pierro & Livi, 2004)

Ajzen(1991) believes that behavior is not performed automatically or without thinking in mind, therefore, he researched on understanding and predicting human's behavior(Ajzen, 2012). The theory of planned behavior (TPB) as figure 5 shows bellow had proposed that attitudes towards the behavior, subjective norms with respect to the behavior and perceived control are used as determines to predict a behavior intention, and with the social and behavior sciences in control, the result proximately rise up with high degree of accuracy (Ajzen, 1991).

FIGURE 5 The Theory of Planned Behavior (Ajzen, 1991)
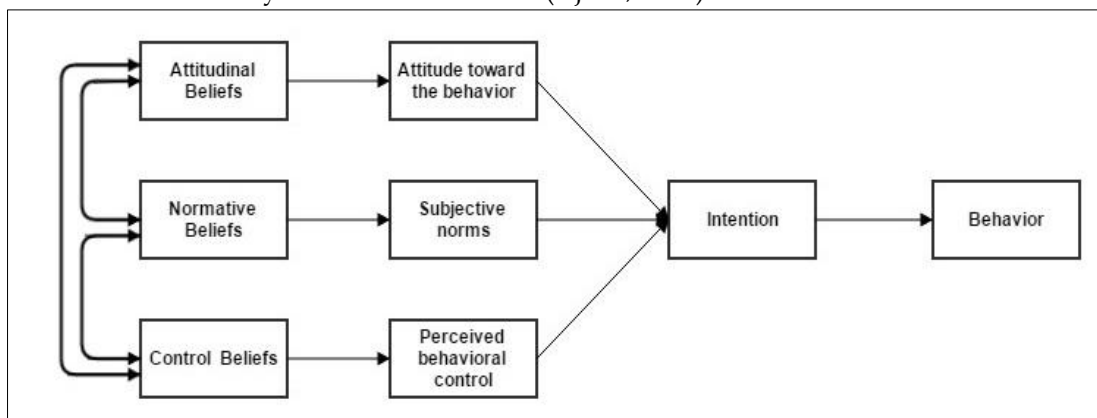
Since the theory of planned behavior (TPB) is rooted in the theory of reasoned action (TRA), there is a part of the theory in TPB is remaining the conclusion in the TRA. According to the TRA, determinant of a predicted behavior is

intention toward the behavior. Furthermore, the intention toward the behavior was determined by attitude toward the behavior and the subjective norms (SN).

As the determinant of a behavior intention, attitude toward a behavior was adjusted with the expectancy-value model in the TRA. It was proposed in the TRA that the combination of behavioral beliefs and outcome evaluation would generate the attitude toward the certain behavior (Ajzen, 2012). The equation of attitude toward the behavior is showing in Equation 1. In the equation, A refers to the attitude, b_i and e_i are representing the subjective beliefs and the evaluation of outcome i respectively (Ajzen, 2012).

$$A \propto \sum b_i e_i \qquad (1)$$

Furthermore, the proposed definition of subjective norms is the social pressure affects the person to perform or not to perform the certain behavior. According to Dulany's (1968) (as cited in Ajzen, 2012), it is assumed the equation of subjective norms (SN) is determined by normative beliefs and motivation toward the behavior and the equation is showing in Equation 2. Where SN refers to subjective norms, and n_i stands for normative beliefs with referent i, while m_i representing the motivation of the behavior with referent I (Ajzen, 2012).

$$SN \propto \sum n_i m_i \qquad (2)$$

"Subjective norm in the TRA and the TPB is conceptually independent of attitudes toward the behavior."Ajzen (2012) claimed in his review of the TPB theory in the handbook. It is possible that a person holding a negative attitude toward the behavior but the social pressure to perform it. Although this situation rarely happens, it is rational to happen in principle.

The TRA assumes that individual behavior is a volitional behavior, whereas scholars queried that the TRA defined the behavior too utilitarian, and it is possible constrained by other objective conditions (Tonglet, Phillips, Read, 2004). Hence, the TPB was proposed with an additional determinant of behavior intention defined as Perceived Behavioral Control (PBC), and it refers to people's perceptions of the possibility to perform the behavior through evaluate their ability and external opportunities. (Ajzen, 1991) With the same model of expectancy-value model as used in attitude and subjective norm calculation, the equation of PBC is as Equation 3. PBC in the equation stands for the perceived behavioral control, c_i and p_i refers to the control belief and perceived power of the certain control factor i. (Ajzen, 2012)

$$PBC \propto \sum c_i p_i \qquad (3)$$

The behavior researched in this thesis is a recycling behavior, and was conclude that it is a behavior determines by different variable as explained in the previous chapter, the TPB was used as a framework to apply in this study. Furthermore, the theory was extended and applied in many researches about recycling behaviors all over the world. (Bezzina, Dimech, 2011; Zhang et al., 2016; Cheung, Chan, Wong, 1999)

In this research, face consciousness was considered as a significant characteristic that embedded in Chinese consumers' behavior; however, the concept of face consciousness is not able to fit into the concept of attitude, subjective norms,

and perceived behavioral control. Therefore, in this research, face consciousness is a independent concept from other variables proposed in the TPB. The concept of face consciousness was introduced in next section.

2.4   Face Consciousness

In the researches discussing and understanding face consciousness, it is commonly assumed that Chinese society is formed with rational and perceptual decisions, and it had been proved in many researches that Chinese society is a society full with *Face* (*mian zi*) and *Favor* (*ren qing*) (Zhai, 2004). In China, a decision is commonly made by balancing rational and perceptual circumstance, and this thinking mode was firstly proposed by Confucianism in China since Qin Dinasty (Zhai, 2004). And face consciousness is generated from in this reasonableness (*qing li*) society.

The concept of *Face* in China is containing two different meaning: physiological face, and the social psychological phenomenon of the image of a person, which also called *mian zi*. Face consciousness is a typical social psychological phenomenon generated in the social activities in China. The concept of *Face* and *Facework* is not the unique phenomena in China, it is a universal phenomenon (Ting-Toomey, 2004), but with different expression and emphasis. Therefore, the face negotiation theory was proposed by Ting-Toomey (1988) to understand how the facework differences affecting the culture differences and world conflicts (as cited in Ting-Toomey, 2003).

In the face negotiation theory, face concerns emphasizes three different perspectives. On the personal perspective, face concern is about personal image, and on the relationship perspective, face concern is also the concern for other's image, nevertheless, on the group perspective, the face is representing the group image. (as cited in Oetzel, Ting-Toomey, 2003)

Although the concept of face concern is not unique in China, the attached importance to Face (*mian zi*) in China is dramatically, and plays a unique significant role in Chinese social life and communication. An idiom of "Ren yao lian, shu yao pi" is used commonly in Chinese daily life, which means that person need to have face (*mian zi)* just like a tree needs bark, and had representing the importance of face (*mian zi*) Thus, Chinese social behaviors is moderated and affected by the concept Face (*mian zi*) constantly. (Chen, 1999) The definition of Face (*mian zi*) in China was not fixed even though this phenomenon was appeared in Chinese history over thousand years. There are numerous of scholars researched on this concept and defines it. Hu(1944) had proposed the definition of face concern should be divided into two concepts: *lian* and *mian*. *Lian* is the personal moral judgment by the society; on the other hand, *mian* is the social reputation and social relationship, which might not need moral regulation to gain. (as cited in You, 2015) However, in the modern Chinese cities, the concept of face concern is no longer considered separately. It was argued by Yu and Gu (1990) that the concept of face should be the combination of *lian* and *mian*.

Chen(1999) believes that Face consciousness is not emerged naturally in Chinese mind, it is growing up along with the person taking part in the social activities. The traditional idiom in Chinese as "tong yan wu ji" which means a kid will not fear if they said anything inappropriate, and it indicates that Chinese people are not born with face consciousness. Face concern emerges when the self-conscious was generated and tried to behave according to the social environment. Furthermore, face (*mian zi*) is a social resource for Chinese people in the social interaction, hence, in the society that people are pursuing resources, face (*mian zi*) became an important concept in Chinese society.

In Chinese society, a person is representing his family, hence his or her behavior and reputation is not a personal issue anymore. Therefore, in China, there is always a gap between the personal intention and normative beliefs. Furthermore, as proposed by Zhai (2004), face (mian zi) in China is not only a personal social resources, it is able to share from others, such as family members, good friends, and colleagues. This special characteristic of face concern in China had enlarged the pressure from the people surrounded the person who suppose to behave.

Face concern is a complex social psychological phenomenon in China, it can be described as a social resource that people would like to gain, or defined as a normative belief that affects Chinese consumers. As described in Lu Xun's literature article, face concern is a concept that familiar to every Chinese, but none of us can define it exactly. However, combined the definition proposed by Ting-Toomey (1988) and the features of Chinese face concern, the scale of measuring face concern is using the scale on self-face image measurement and other-face image consideration measurement. In addition, in this thesis, the accepted definition of "Face" is:

"Face (mian zi) is an object or property that people utilize it to protecting the image of people surrounded him and himself, which is commonly accepted and praised by the society." – Zhai (1995)

Therefore, the definition of face consciousness accepted in this research is that consciousness about gaining *Face* (*mian zi*) or losing *Face* (*mian zi*) when the person performance a behavior. Although face consciousness was discussed in many researches in China, lack of the theoretical framework and logical relationship between face consciousness, *Favor* (*ren qing*), and other behaviors is limiting the demonstration on the effects from face consciousness to Chinese society. By contrasts, the face consciousness was researched and proposed into theories in Western countries. Those theories were commonly utilized in studying the relationship between face consciousness and Chinese consumers' behavior as well. Hence, in this research, the face-negotiation theory measurement and the TPB are combined to understand the role of face consciousness in Chinese youth consumers' recycling behavior.

2.4.1 Face consciousness and consumer's decision and behavior

As mentioned in the last chapter, that face consciousness is affecting Chinese people in various behaviors. Although that face concern in studied in western

countries as intercultural research (Mak, Chen, 2006; Oetzel, Ting-Toomey, 2003; He & Zhang, 2011; Gao, 1998; Winnie et al., 2009), it had been studied in China related to Chinese consumer's decision and behavior (Wang & Yang, 2015; You, 2015; Zhang, Li, Ma, 2010; Han & Wu, 2013).

Since face (*mian zi*) is an object or property to a person, it can be loss or gain during the social communication and activities. In Han & Wu's (2013) research, they extended the definition of face (*mian zi*) proposed by Ho (1976) and defines the consumer's face concern refers to the respect gained when he or she purchase a certain product or brand. This definition was utilized in Wang & Yang's (2015) study as well.

In consequence of the deep influence from Confucianism culture, Chinese personal consumption behavior contains several characteristics, which is not included in Western cities. Hence, a deviation might exist when understand Chinese consumers' behavior with the theories in Western countries. The significance of Face (mian zi) was enlarged in China because of their collectivism and dependency of interpersonal relationship. It was argued in Wang & Yang's (2015) research that consumers are transferring their personal information such as tastes, income, and social status through purchasing a brand and using a certain product. As a result, consumer's face consciousness is affecting consumption behavior in China.

Comparing the culture difference between Western and Asian consumers, it was concluded that personal preference and taste are mostly considered by Western consumers, while Asian consumers caring more about preventing or improving personal and family' face (*mian zi*) when they consume luxury productions. Furthermore, American consumers mostly paid attention on the cost performance, whereas, Chinese consumers usually considering about the brand, reputation and price to provide a fancy image of the personal or family social position. (Wang & Yang, 2015)

Nevertheless, the relationship between face consciousness and impulsive consuming was researched by You (2015). Since the on-going compliance is a feature of face-concerned consumers, Chinese consumers mostly purchase popular brand, and followed the recommendation from surrounded people. (You, 2015) In order to maintenance the social relationship, and prevent being treated with disrespect behavior, consumers make their consume decision accordingly. For instance, consumers will consider about the brand and reputation when they choosing presents; and they will purchase a popular brand or product to merge into the group. (You, 2015)

In conclusion, the relationship between face consciousness and consumer's behavior was discussed in Chinese circumstance in many researches, and the relationship might extend into the recycling behavior as well. This hypothesis will be tested and discussed in the latter part of this thesis.

2.4.2 Significance of Face consciousness

"In China, Face (*mianzi*) is most precious property; it's even more precious than destiny, grace and power. Face is more respected than constitution. ", was men-

tioned in Lin Yutang's (1934) book '*My Country and My People*'. Many scholars and litterateurs agreed this statement. (Chen, 1999; You, 2015; Mak, Chen, 2006; Oetzel, Ting-Toomey, 2003; He & Zhang, 2011; Gao, 1998; Winnie et al., 2009).

However, most of the research is focus on the negative effects provided by face concern issue, such as losing the face, and the negative emotion, for instance anger and embarrass, emerges because of losing *Face* (*mian zi*). By contrast, it was proved by Yamaguchi (2011) that losing face might provide negative result because of the negative emotion, but protecting face is also affects people to perform positively (as cited in You, 2015).

Consequently, as a typical Chinese social psychological phenomenon, face consciousness contains both positive and negative impacts to human's behavior in China. With the appropriate method and guidance, it could bring a positive result toward the target.

2.5　　Deduction and Hypothesis

As discussed previously, although Chinese recycling behavior is combining altruism and utilitarianism, the beverage container recycling behavior in China is behavior with rewards. Therefore, in this Master's Thesis, the beverage container recycling behavior is classified as a consumption behavior.

The beverage container recycling system in Finland is different from Chinese traditional recycling system; nonetheless, the new developing recycling system in China is similar to the Finnish system. As claimed by Nurminen(2015), the success of Finnish beverage container recycling system is owing to the culture, convenience, and the monetary rewards. In addition, the contribution of governmental involvement is significant as well. On the other hand, the new development on recycling system in China is assignable, and the gap of technology and infrastructure contribution between Finland and China will be reduced in few years. However, the long history of Finnish beverage container recycling system and consumer's participation is not able to catch up.

Thus, it is necessary to understand the determinants and effects of Chinese consumer's adoption of the recycling system. According to the framework provided by the theory of planned behavior (TPB), attitude toward the recycling behavior, subjective norms, and perceived behavioral control are the main determinants researched in this thesis. Nevertheless, since the face consciousness is deeply embedded in Chinese people's daily life, it was treated as an important factor to many Chinese consumers' behavior, hence, the conjecture of face concern issue affects Chinese youth consumers' recycling behavior is proposed in the research as well.

It was defined that Face (mian zi) is generated in the social activities and it is working as a property of a person to exchange for the respect in the society in China. According to the former researches on Chinese consumers' face consciousness, it is a rational deduction that there is a direct influence caused by face consciousness toward the recycling behavior intention. Moreover, the role

of face consciousness is proposed embed into the theoretical framework of Ajzen's TPB. Since face consciousness is working in social activities, subjective norms is a potential sector that might transfer the influence toward the behavior intention.

Therefore, the hypothesis of this research is as follow:

Hypothesis 1. Attitude towards recycling behavior affects the behavior intention positively.

Hypothesis 2. Subjective norm of the recycling behavior affects the behavior intention positively.

Hypothesis 3. Perceived behavioral control of the recycling behavior affects the behavior intention positively.

Hypothesis 4. Face consciousness is affecting recycling behavior intention directly with positive impact.

Hypothesis 5. Face consciousness is affecting recycling behavior intention indirectly, and subjective norm is the mediator between face consciousness and recycling behavior intention.

3   DATA AND RESEARCH METHOD

According to Kothari,C.R.'s claim in *Research Methodology: Methods and Techniques*, the basic types of research are descriptive, analytical, applied, fundamental, quantitative, qualitative, conceptual and empirical methods. (Kothari, 2004, p2-3) As definition of quantitative and qualitative research methods, qualitative research is concerned with qualitative phenomenon while quantitative research is based on the measurement of quantity (Kothari, 2004, p3).

In this chapter, the choice of research method, the research sample, data collection and data analysis will be elaborated. Face consciousness was an addition concept embedded to the research applying the TPB in predicting and understanding consumer's behavior, the reliability of the data is analyzed in the chapter as well.

3.1   Quantitative research and data collection

The research method should be decided according to the research types. In consequence of the research topic is understand the consumer's behavior, the research method of this study is a quantitative research. Survey was defined as a social scientific method for gathering information of a specific group of people by Wrench et al. (2008, p. 213). The data of this research was collected through a survey delivered in Wuhan, one of the Chinese modern cities. In addition, the questionnaire was designed according to the theoretical guidelines and the relevant formal research measurements scales.

The study measures the relationship between the recycling behavior intension and three determinants, attitude, subjective norm, and perceived behavioral control. Moreover, the hypothesis of face concern affecting attitude and subjective norm will be demonstrated through the data analysis.

3.1.1 Sample

Sample is a concept in research, refers to a subset drawn from some larger group (Punch, 2003, p36). The aim of sampling is to avoid the impractical work to include the total population. In this study, regarding to the research topic, choosing sample is significant. However, China is very diverse. The diversity is caused by different reasons. The coexisting of 56 ethnicities brought the diversity of language, religions, culture and custom, while the geographical diversity is causing the difference of economic growth and living standard in different cities. These diversities in China induced various of background variables to the research. In order to limit the variables, the research population was decided to focus on youth consumers in Chinese modern cities. Wuhan, as one of the fam-

ous modern city owning 28 universities in China, was chosen as the sampling location.

On consequence of the research scope, students from age 15 to age 25 are the sample to this research. The sample size is suggested in Guthrie(2010) as 30 -400 people. There were 600 questionnaires issued to high school and universities in Wuhan, and about 440 respond back to the researcher. However, the valid respond rate was about 45% of total responds with the amount of 197 questionnaires.

About 600 students from Wuhan University and Ruisheng High School participated in this study, 197 among total are the valid response, 119 male, and 80 female. The age of participants was from 16-23, the mean age is 18.6, and student at age of 17 is sharing the biggest share in the data as 34% of the total data. In addition, there are only 3 participants at age of 18 was selected in the survey. The participant percentage of other ages are 13% (16), 7% (19), 17% (20), 16% (21), 6.5% (22), and 2% (23) (as table 1). The reason of this age distribution will be elaborate in the later section.

TABLE 1 Sample Distribution

Variable	Category	Number of respondents	Percentage (%)
Gender	Male	117	59.40
	Female	80	40.60
Age	16-17	95	48.22
	18-19	17	8.63
	20-21	68	34.51
	22-23	17	8.63

3.1.2 Data collection method

The type of data and collection method is depends on the research problem and hypothesis (Guthrie, 2010, p80). According to the research scope, the data collection method should be designed efficiently and clear. There are several options of survey implementation such as street interviews, face-to-face interviews to the specific location, mail interview, phone interview, and internet questionnaires.

Internet survey is one of the most common methods used in a student's research benefit by the internet characteristics of low cost and convenience; however, it has limitations as well. Because of the absent of interviewer face-to-face contact, the method of rewarding with small present to interviewees could not be utilized on internet easily, and the possibility of interviewees misunderstanding the questions is enlarged. These are the barriers to recover valid responses. Furthermore, internet survey is not able to guarantee the interviewee is the target sample. (Yu, 2011) Nevertheless, internet survey relies on the popularizing rate of internet in the certain area, whereas, only 34.3%of the total population in China was popularized until the end of 2010 (Yu, 2011). Therefore, in

this particular research, the research target is Chinese youth consumers, the limitation of internet questionnaire would be magnified.

Regarding to the sample of this research is youth Chinese consumers from age 15-25, the questionnaires could be delivered to Universities and high schools in China. In order to guarantee the valid response rate and avoid dishonest response, the researcher asked the teachers in Universities and high schools to deliver the questionnaires in the class, and researcher was in charge of answering questions from interviewees. The responses of the questionnaires was recorded with Microsoft Office Excel, and analyzed by SPSS.

Because of the education system in China, high school students at age 18 are mostly at the third grade of high school, and preparing for one of the biggest exam of their lives. The negotiation with their teacher to spend time participating in this research was failed, which is the reason of lacking of 18 years old student interviewed in the data.

3.1.3 Questionnaire

A success questionnaire should meet several requirements. Since the research sample are Chinese, the questionnaire in this research was designed according to the questionnaire structure instruction in China and the theoretical content from Western former researches or theories.

The amount of questions contained in the research required to be rationalized, locial, and standardized. Due to the relationship of time spend and compatibility, a tedious list of question constantly recieving refuse from the participants. (Key points of questionnaire desgin, 2003) In order to guarantee the response rate, the questionnaire was formed by twenty-two questions, contains of measurement of past recycling behavior, recycling behavior intention, attitude toward recycling behavior, subjective norms, perceived behavioral control, and face consciousness. The question about face concern was designed according to the scale used in the face concern empirical research by Oetzel & Ting-Toomey (2003). On the other hand, the other factors measurement are designed according to the instruction from Ajzen (1991)'s theory of planned behavior.

The variables in this research were measured with two methods. Nominal-level questions, such as gender and age were simply asked with blanket questions, while other variables such as attitude toward the behavior, subjective norms, perceived behavioral control, and face consciousness, are measured with interval scales from 1-7. For example, the question describing as "I will recycle my beverage containers.", and the interval scale will be agree or disagree scale from 1-7.

As elaborated in the literature review section, the concept of face consciousness utilized in this study was agreed with part of the Ting-Toomey's (1998) definition on face concern. The scale used in this questionnaire design was based on the scale of 'self-face' and 'other-face' scales used in Oetzel & Ting-Toomey's (2003) research. The original measurement scale for face concern selected in the questionnaire is as listed (Oetzel & Ting-Toomey, 2003) :
   - Concern with not bringing shame to myself (self-face)

- Concern with protecting self-image (self-face)
- Concern with maintaining the poise of the other person (other-face)
- Concern with helping the other person's pride (other-face)
- Tried to be sensitive to the other person's self-worth (other-face)

In addition, the scale used to measure intension, attitude, subjective norms and perceived behavioral control was referred from pro-environmental behavior researches using the TPB as theoretical framework. The scales adopted in the questionnaire are listed below.

TABLE 2 Scales adopted to measure variables to recycling behavior

Constructs	Items
Behavior Intention **(Source: Lao & Wu, 2013)**	1. I will recycle my beverage container if I have chance.
	2. I recycle rather than disposal to trash.
	3. I would recommend people to recycle.
Attitude toward the behavior **(Source: Lao & Wu, 2013)**	4. Recycling is good.
	5. Recycling is beneficial.
	6. Recycling should be promoted.
Subjective norms **(Source: Lao & Wu, 2013; Zhang et al., 2016)**	7. My friends /family recycle.
	8. Beverage container recycling (BCR) is encouraged in school/in the city.
	9. Recycling fulfills my personal moral value.
	10. Recycling beverage bottles is a development tendency.
Perceived Behavioral Control (PBC) **(Source: Lao & Wu, 2013; Zhang et al., 2016)**	11. I have plenty opportunities to recycle beverage containers.
	12. Recycling beverage bottles is convenient.
	13. I know where to recycle beverage bottles.
Face consciousness **(Source: Oetzel & Ting-Toomey, 2003)**	14. My cared people are important to me.
	15. I would recycle empty bottles even if my friends do not like to do.
	16. I would recycle even if others think it is wasting time.

| | 17. I would recycle even if others think it is a stingy active. |
| | 18. I will recycle beverage bottle for my friends when they requests even if I do not want to. |

Table 2 shows the core questions of the questionnaire, the real questionnaire was developed according to this scales with detail. The entire questionnaire used for this thesis is presented in the Appendix 1 and Appendix 2. Since the research sample is Chinese, the questionnaire was translated into Chinese and delivered. In the questionnaire, all the items was referenced from other relevant researches on pro-environmental behavior or recycling behavior. However, it was modified by the researcher according to the research topic. Therefore the reliability of the questionnaire is analyzed in the next section.

3.1.4 Reliability

The reliability of questionnaire is commonly analyzed with Cronbach's alpha. It is an alpha developed by Lee Cronbach, and used to measure the internal consistency of a scale with an expressed number between 0 and 1 (Mohsen Tavakol et al., 2011). The recommended minimum value for Cronbach's alpha is 0.70, and the reliability analyzed in this study was calculated with SPSS Statistic software.

According to the analysis completed through SPSS, the Cronbach's alpha of the concepts measured in this study are over 0.74, which refers all the questionnaire regarding to the measurement concept are reliable in this study. The individual Cronbach's alpha is showed in the table 3.

TABLE 3 Cronbach's alpha of individual concepts

concepts	Cronbach's alpha
Intension	0.786
Attitude toward the behavior	0.859
Subjectvie norm	0.831
Perceived behavioral control	0.742
Face consciousness	0.753

In the analysis of face consciousness, the Cronbach's alpha would incline to 0.795 if the question 22 was removed. The question 22 was intended to measure the face consciousness about trying to be sensitive on other person's personal value. It is certain that Q 22 is contained in the concept of face consciousness under the category of other-face, the deviation occurs in this analysis could be concluded into the misleading expression on the question or the understanding gap between researcher and participants. Despite of Q 22 lows down the Cronbach's alpha, the final result is still fulfills the minimum requirement, therefore, data collected from Q 22 is not removed for the result analysis.

3.2 Data analysis

After the data was collected according to the method and questionnaire elaborated in the previous section, the data is ready to be analyzed. Converting data into information is the main objective of data analysis, and analysis refers to the process converting raw data into information (Nair, Suja R., 2009).

The data collected from the participants was firstly recorded into an Excel file as in Appendix 2. In order to convert the collected data into evidence to demonstrate whether the hypothesis of this study is correct, the data analysis is completed with two analysis models: multi-regression and mediation model.

All the concepts was measured with the scale 1-7. Mostly the scale 1 representing more negative answer, while 4 representing neutrual and 7 refers to positive opinion, For example, the question about recycling behavior, 7 stands for very much likely to do. However, in order to avoid deliberately answer the questions into 7 or 1, the questionnaire scale was not in the same direction on explaining the opinion. The data was revised after recorded into Excel files. The interpretation of revised scores is explained in the Table 4.

TABLE 4 Scales interpretation from data

Score	Willing	Agreement	Quantity
1	Not willing at all	Completely disagree	None
2	Quite not willing	Disagree	Very few
3	Somewhat not willing	Somewhat disagree	Few
4	Neither willing, nor not willing	Neither agree nor disagree	Some
5	Somewhat willing	Somewhat agree	Somewhat many
6	Willing	Quite agree	Many
7	Completely willing	Completely agree	Very many

3.2.1 Multiple-regression model

Multiple linear regression is an extension statistical tool of simple linear regression, it is utilized to examine the relationship between multiple independent variables and the dependent variable (Higgins, 2005).The hypothesis 1, 2 and 3 in this study was using the multi-regression to analysis whether the hypothesis are tenable.

The multiple-regression model is calculated through IBM SPSS Statistic Software, and the relationship between independent variables and dependent variable is analyzed according to the concept of correlation coefficient and Chi-Square Test. Since the Chi-Square Test can only compare categorical variables, it is not used in this particular study.

The Pearson Correlation is the statistic method to measure the strength and direction of linear relationships between continuous variables by correlation coefficient (r) (SPSS Tutorial Pearson Correlation, 2016). When the data meets the requirements of 'a linear relationship applied between at least two continues variables', the correlation coefficient value r can be used to measure the how the variables affecting each other. The absolute value of r ($|r|$) refers to the strength of correlation between the variable, the bigger $|r|$ means the stronger correlation. When r=0, there are no correlation between the variables as Table 5. If the r<0, it means the independent variable is affecting the dependent variable negatively.

TABLE 5 Correlation coefficient value interpretation

Absolute value of Correlation Coefficient ($|r|$)	Strength of correlation
0.8-1.0	Extreme strong
0.6-0.8	Strong
0.4-0.6	Medium strong
0.2-0.4	Weak
0.0-0.2	Extreme week

However, the correlation coefficient only valid if the overall regression model is significant. The significant of the regression model is demonstrated through P-value. When 0.01< P-value <0.05, it means the regression model is significant, and when P-value< 0.01, it refers the regression model is extreme significant.

In this study, dependant variable is the recycling behavior intention, and the attitude toward the recycling behavior, subjective norms and perceived behavioral control are the independent variables.

3.2.2 Mediation model

Mediation model is used when there is a mediator transmits the effects from independent variable to the dependent variable. It is defined as a tool to understand how the independent variable (X) effects on dependent variable (Y) through the mediator (M) (Hayes, 2013, P86). The mediation model used in this study is the most basic mediation model- the simple mediation model. It only contains three variables.

FIGURE 6 simple mediation model (Hayes, 2013)
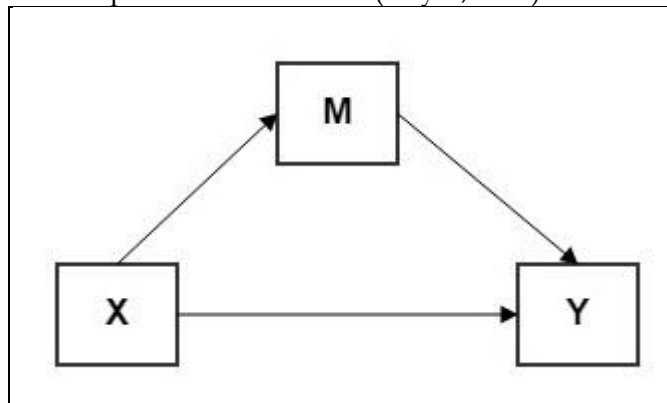
As showed in Figure 6, there are two antecedent variables X and M, and two consequent variables M and Y, therefore, the variable M is the intervening variable (Hayes, 2013). The arrow between X and Y is the direct effect between X and Y, and the arrow between X and M, M and Y refers to the indirect effect between X and Y through M. In the particular research, face consciousness is the variable X as the independent variable, and subjective norm is the mediator M between face consciousness and the recycling behavior intention.

The hypothesis about the link between face consciousness and the tree of the TPB theory requires testifying the validation of the mediation model. Therefore, in this analysis section, linear regression calculation is needed to prove the correlation between face consciousness (X), subjective norms (M), and BCR intention (Y).

The mediation model analysis was conducted through IBM SPSS Statistic Software with the mediation process designed by Andrew F. Hayes (2013). Although mediation model is different from multiple-regression, it is still using the calculation method as regression, therefore, the effect between the variables only valid when the P-value stays in the rage of $P<0.05$. Nevertheless, the mediation model will not able to valid while the range between bootLLCI and bootULCI contain a value zero.

4 RESEARCH FINDINGS

The findings from the data analysis according to the methods explained in last chapter will be present in this chapter. It starts with the findings from multiple-regression analysis, and the next section will elaborate the findings according to the mediation model analysis. The general information and distribution of the data was presented in 3.1.1. The data analysis framework is present as Figure 7. In the figure, the solid arrow is analyzed by multiple-regression analysis. However, because of the unpractical measurement on actual behavior, the relationship between intention and behavior is not discussed in this study.

Furthermore, the second part of the result is about the moderation model, which is representing by the dotted arrow in the figure.

FIGURE 7 Data analysis framework
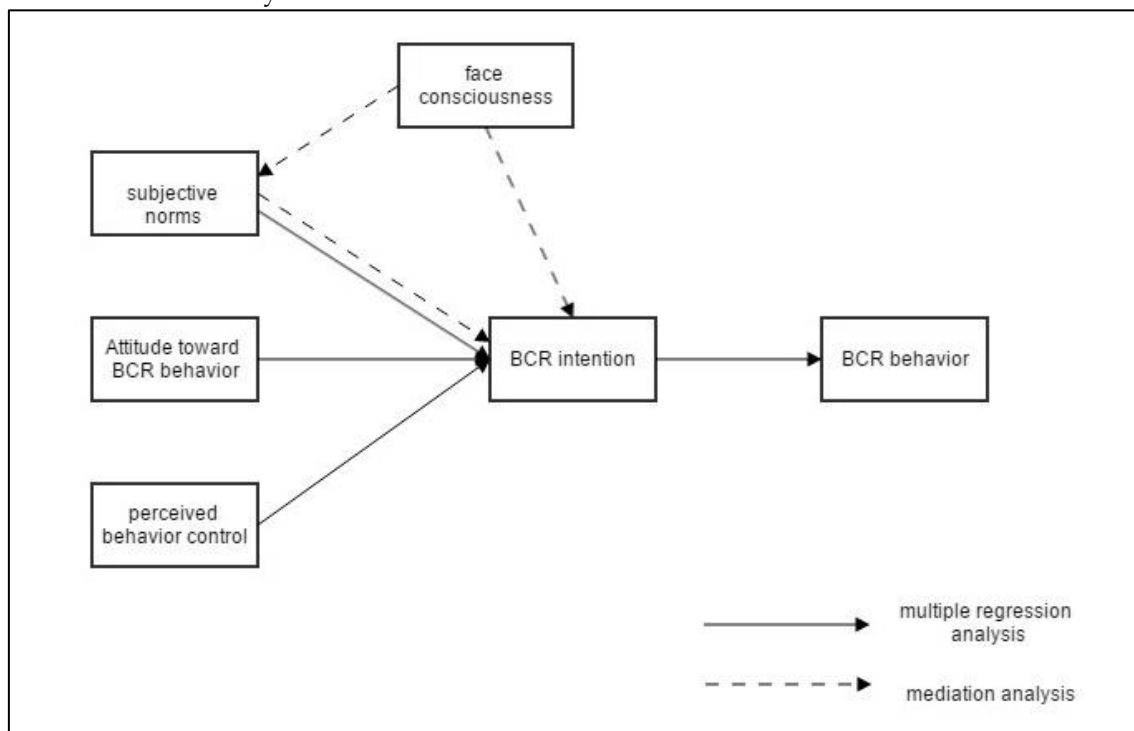
As described in the previous chapter, the hypotheses were developed based on the theoretical background. The hypotheses are listed bellow, H_1-H_3 are testified by multiple regression analysis, moreover, H_4 and H_5 are assessed by regression analysis in mediation model.

Hypothesis 1. Attitude towards recycling behavior affects the behavior intention positively. (multiple regression analysis)

Hypothesis 2. Subjective norm of the recycling behavior affects the behavior intention positively. (multiple regression analysis)

Hypothesis 3. Perceived behavioral control of the recycling behavior affects the behavior intention positively. (multiple regression analysis)

Hypothesis 4. Face consciousness is affecting recycling behavior intention directly with positive impact. (mediation model analysis)

Hypothesis 5. Face consciousness is affecting recycling behavior intention indirectly, and subjective norm is the mediator between face consciousness and recycling behavior intention. (mediation model analysis)

4.1   The TPB applied in beverage container recycling behavior

This section aims to answer the research questions: "What are the effects to beverage recycling behavior intention in China?" By calculating the relationships between the independent variables and dependent variables in proposed in the TPB theory by Ajzen (1991), Hypotheses H_1-H_3 are able to be testified and the question will be discussed. In this section, as showed in Figure 7, multiple regression analysis was chosen as the data analysis method.

4.1.1 The TPB validation in the research

To discuss whether the variables are the predictors toward the BCR intention, the TPB's validation on this case is required to be insured in the first place. When calculate the multiple-regression of the request model, the table of Model Summary (Appendix 4-1) and table of ANOVA (Appendix 4-2) was presenting the proof of model validation. The table (Table 6) below is a conclusion of the Model Summary and ANOVA.

Table 6 Summary of TPB model validation

TPB model validation				
model	R	R Square	F	Sig. (P-value)
TPB model	0.474	0.225	18.744	0.000

In this case, the variables are as followed:
Dependent variables: BCR intention
Independent variables: Attitudes toward the BCR behavior
                                     Subjective norms
                                     Perceived behavioral control
The ANOVA (Appendix 4-1) table is providing the information on whether the independent variables are the predictors to the dependent variable. The table presented in Model Summary table (Appendix 4-2) provides the R and R-Square values. The Sig representing P-value, and can be easily observed that P-value < 0.01, which indicates that the proposed model in this research is valid. However, the proportion of variance in the dependent variable that can be explained by the independent variables is measured by R-Square.

As described in previous paragraph, the R-Square value indicates how much of the independent variables can explain the total variation in the depen-

dent variable. In this particular case, R-Square valued as 0.225, which means only 23% can be explained by the independent variables, which is not a large account. It is possible that the one or few independent variables are not predictor, and this will be interpreted through the correlation table and coefficients table.

In conclude at this phase, R^2 =0.225, F (3,194) = 18.74 and the P-value (sig) <0.01, hence, the overall regression model was significant. However, R-Square value is indicating there are other determinants to the BCR intentions, because only approximately 23% of the BCR intention changes can be explained by independent variables: attitude, Subjective norms, and perceived behavioral control.

On consequences, the TPB theory framework is able to utilize in China on BRC behavior research because there are at least one predictor in this model to the BCR intention prediction. In addition, the further analysis on variables effects on BCR intention is able to process.

4.1.2 Variables effects on BCR intention

The variables included in this section of analysis are attitude toward the beverage container recycling behavior, subjective norms, perceived behavioral control, and beverage container recycling (BRC) intention. Three of the variables excepting BCR intention are the independent variables in the analysis.

The data was collected through 3-6 questions in the questionnaire with the scale 1-7 (as explained in 3.2). In addition, the data representing different variables are the sum of the questions scales accordingly.

Before interpreting the table of correlation, the table of coefficient should be analyze first to insure the P-value between the dependent variable and independent variables are in the significant range. The table of coefficient is present with Table 7, the table was summarized according to Appendix 3-3.

Table 7 Coefficients of TPB model

Coefficients			
Model	B	Correlation to intention	Sig. (P-value)
Constant value	5.856	-	0.003
Attitude toward the intention (X_1)	0.408	0.399	0.000
Subjective norms (X_2)	0.013	0.372	0.010
Perceived behavioral control (X_3)	0.164	0.252	0.025

The coefficients table is able to provide a prediction equation the relationship between independent variables and dependent variable. In addition, the P-value of individual predictors is provided, and it is utilized to exclude the non-predictor from the independent variables group. B-value represents the coefficient of the equation.

According to the Sig (P-value) in Figure 10, all the independent variables are significant correlated to the dependent variable. Among those, attitude toward beverage recycling behavior is most significant correlated to the dependent variable with P-value <0.01, while other variables are significant with 0.01<P-value <0.05.

Set X_1-X_3 are the predictors stands for attitude toward BCR behavior, subjective norms, and perceived behavioral control. Moreover, the equation of predicting BRC intention (Y) is as Equation 4.

$$Y = 5.856 + 0.408X_1 + 0.013X_2 + 0.164X_3 \qquad (4)$$

The equation shows a big number of constant coefficient as 5.856, is also another prove that there is other variables are taking part of the BCR intention (Y) prediction. Since it was explained in the last section, R^2 representing the percentage of predictors analyzed in the calculation predicting the outcome variable, and R^2=0.23 is the reason of the coefficient in the equation is 5.856.

The correlation between variables is read from the correlation table in Table 8, and the interpretation table is presented in Table 9 below.

Table 8 TPB variables correlation descriptive

Correlation		Intention	Attitude toward recycling behavior	Subjective norms	Perceived behavioral control
Pearson Correlation	Intention	1.000	0.399	0.372	0.252
	Attitude	0.399	1.000	0.460	0.144
	Subjective norms	0.372	0.460	1.000	0.309
	Perceived behavioral control	0.252	0.144	0.309	1.000
Sig. (P-value)	Intention	-	0.000	0.000	0.000
	Attitude	0.000	-		0.021
	Subjective norms	0.000	0.000	-	0.000
	Perceived behavioral control	0.000	0.021	0.000	-

TABLE 9 Correlation interpretation on individual predictors

Predictors	Strength of correlation
Attitude toward BRC behavior	Weak (r=0.399)**
Subjective norms	Weak (r=0.372)**
Perceived behavioral control	Weak (r=0.252)**

Notice: ** P<0.01
*0.01<P<0.05

The statistic significant was evaluated from ANOVA and coefficient table, all the independent variables are the predictors to the outcome variable. Moreover, the correlation between predictors and outcome variable is showed in the Table 7, attitude toward BCR behavior, comparing to other predictors, is sharing the strongest association to BCR intention. However, according to the correlation coefficient interpretation table (Table 5) in 3.1.1, all the predictor is having a weak association to the outcome variable. This finding indicates the individual affects caused by any of the predictors is significant, although in this proposed model, the correlation is not strong, proposed predictors are certainly effects towards the BCR behavior intention.

In conclusion, the TPB theory can be applied in Chinese consumers' beverage container recycling behavior, and all the predictors involved in the theory are accordingly predicting the beverage container recycling intention. Furthermore, all the variables are influencing the outcome positively; hence, H_1, H_2, and H_3 were accepted (as Table 10).

Table 10 Findings conclusion on TPB variables

	Effect	Hypothesis	Acceptance
Attitude →Intention	Positive	H_1	Accept
Subjective norms → Intention	Positive	H_2	Accept
Perceived behavioral control →Intention	Positive	H_3	Accept

4.2 Mediation analysis

This section is aimed to answer the question: "Is face concern an effect toward the beverage container recycling intention?" Moreover, the hypothesis: face concern is an indirect effect to beverage container recycling intention mediated through subjective norm as a mediator is going to be test in the following section.

The mediation model between face concern, subjective norms and recycling behavior intention will be established according to two hypotheses:

1. The causal variable is correlated with the outcome.
2. The causal variable is correlated with the mediator.

Therefore, the mediation analysis is going to complete by testing the hypotheses in order. The correlation between face concern and behavior intention, and the correlation between face consciousness and subjective norms is going to be calculated in first place, and the mediation model will be test afterwards.

4.2.1 Correlation between face concern and behavior intention

The correlation between face concern and behavior intention is analyzed through linear regression, where dependent variable is behavior intention, and face concern is the independent variable.

The output generated from IBM SPSS Statistic Software contains the table of Model Summary, AVONA, Correlation and Coefficient (Appendix 4). It is demonstrated in the last section, that Chinese consumer's recycling behavior intention is predicted by several variables, and in Table 11, the value of R^2 = 0.041, which means about 4.1% of changes behavior intention can be explained by the reason of face consciousness. Although it is not sharing a big association, the significant of the impact from face consciousness requires the P-Value (sig.) from Coefficients table presents in Table 11.

Table 11 Model validation and Coefficient for face concern and behavior intention

Model validation			Coefficient			
model	R	R Square		B	Sig.	Correlations to intention
			Constant	22.701	0.000	
Face con-sciousness → Intention	0.202	0.041	Face con-sciousness	-.206	0.004	-0.202

In consequence of single variable contains in this analysis, the P-value in AVONA table and Coefficient table are the same, as P-value=0.004 <0.01(as Table 11). Hence, the equation of this linear regression is able to establish, and the statistic significance is significant. Furthermore, the correlation between face concern and intention r=-0.202, according to the correlation strength table (Table 5), the correlation between this two variables are weak.

This finding shows the statistical significant relationship between face consciousness and BCR behavior intention. Although the correlation is weak, there is a negative impact caused by face concern toward the intention of beverage container recycling behavior in this particular study. Hence, the hypothesis 4 was confirmed according to this data analysis.

4.2.2 Correlation between face concern and subjective norm

As elaborated in the last subchapter, the correlation between face consciousness and subjective norm is analyzed through linear regression calculation as well. The dependent variable is subjective norm and the independent variable is face concern in this calculation.

According to the output from IBM SPSS Statistic Software, the correlation can be analyzed by interpreting the table Model Summery, and Coefficient (Appendix 4). Subjective norm was proved in Fishbein & Ajzen's (1978) TRA that normative belief is the main predictor of it. However, in Table 12, the value of R^2 = 0.033, which means in the equation of predicting subjective norm about

3.3% of dependent variable's changes are associated with the degree of face consciousness. Since the normative belief is the main but not only predictor of subjective norm, the hypothesis of correlation between face consciousness and subjective norms is reliable. Furthermore, the statistic significant of this equation P-value = 0.010 < 0.05 (as in Table 12), hence, the result on correlation is acceptable.

Table 12 Model validation and Coefficient for face concern and subjective norms

Model validation			Coefficient			
model	R	R Square		B	Sig.	Correlations to subjective norms
			Constant	131.870	0.000	
Face consciousness → Subjective norms	0.182	0.033	Face consciousness	2.692	0.010	0.182

The correlation r between face concern and subjective norms is shown in Figure 15. In the table, r=0.182, which is in the range of 0.0 - 0.2, according to the correlation strength table (Table 5), the correlation between face concern and subjective norm is extreme weak, and it is a positive effect.

In conclusion, the findings from this subchapter indicate that although the correlation is week, there is a positive correlation between the variables. In another word, with a strong aware and concern on subjective norms is associated with the strong face consciousness of the person.

4.2.3 Mediation model

As the hypothesis of this study was proposed in the research question chapter, and the hypothesis of whether face concern is an indirect effect to the BCR intention in China is requires a mediation model calculation. After the correlation between the variables of the mediation models, the calculation of mediation model validation is able to analysis.

The moderation model is presented in Figure 8, where *a*, *b*, and *c'* are the regression coefficients between variables, and X stands for face consciousness, Y refers to BCR intention, moreover, M representing the mediator subjective norm. The Output from SPSS is presented in Appendix 5, and the important analysis result are concluded in Table 13 and Table 14.

Figure 8 Moderation model for face consciousness and intention study in statistics diagram
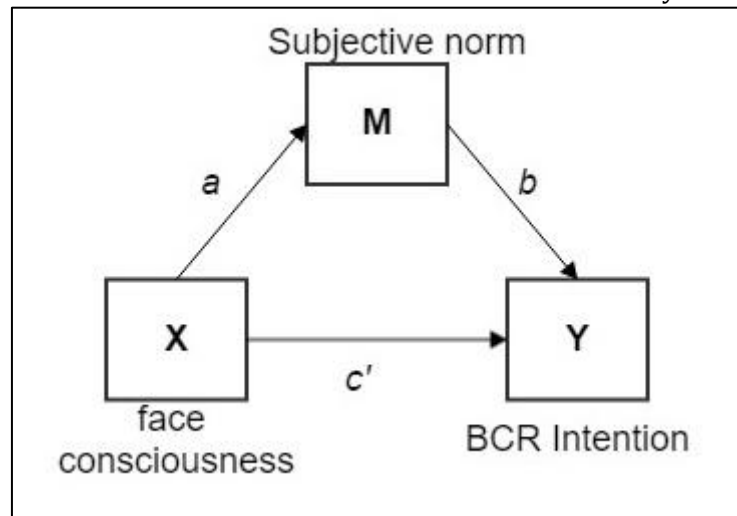
In consequence of calculating mediation model with Andrew F. Hayes's (2013) process, one of the most important requirements of a valid mediation model is whether the range of bootstrapped contains zero. The output shows in Table 13 provides the bootstrapped confidence intervals, in this case, the true indirect effect is 95% likely to range from 0.0068 to 0.1668, which exclude a zero in the range; hence, the mediator's indirect effect of X on Y is significant. This finding had proved that the proposed mediation model is valid.

Table 13 Total, direct, and indirect effects between the variables in the model

Total, direct, and indirect effects between the variables				
	Effect	P-Value	LLCI	ULCI
Total effect of face consciousness on BCR intention	-0.2064	0.0042	-0.3471	-0.0657
Direct effect of face consciousness on BCR intention	-0.2849	0.0000	-0.4148	-0.1551
Indirect effect of face consciousness on BCR intention	0.0785	-	0.0068 (BootLL CI)	0.1668 (BootULCI)

TABLE 14 Model Coefficients for the mediation analysis

		Consequent						
		M (Subjective Norm)				Y(BCR Intention)		
Antecedent		Coeff.	SE	p		Coeff.	SE	p
X (Face Concern)	a	2.692	1.039	<0.05	c'	-0.285	0.066	<0.01
M (Subjective Norm)		_	_	_	b	0.029	0.004	<0.01
constant	i_1	131.870	20.879	<0.01	i_2	18.854	1.427	<0.01
		R² = 0.033				R² = 0.214		
		F (1, 196)= 6.708, p<0.05				F(2, 195)= 26.577, p<0.01		

Since the proposed mediation model is tested as valid, the relationships between the variables are able to be discussed. The output from SPSS can be found in Appendix 5, was concluded in Table 13 and Table 14. According to the output, a= 2.692, b= 0.029, and c'= -0.285. The total effect of face concern on BCR intention equals the sum of direct and indirect effects: c (total effects) = $c' + ab$ = -0.285 + (2.692*0.029) = -0.207, which is on the verge of the correlation r calculated in the previous section r= -0.202. In addition, according to the result from the correlation analysis of face concern and BCR intention, the proposed mediation is a partial mediation.

Therefore, the proposed mediation model is valid and the hypothesis "face concern is an indirect effect to BRC intention, and subjective norm is acting as a mediator" is accepted.

Furthermore, there is an interesting result from the mediation analysis present in Table 13, that the indirect effect of face consciousness on BCR intention through the mediator subjective norm is 0.0785, while the direct effect is a negative number as -0.2849. This finding shows that with subjective norms as mediator between the relationship of face consciousness and BCR behavior intention, the effects of face consciousness turns into positive effect from a negative effect.

5   DISCUSSION

The Master's thesis intended to study Chinese youth consumers' recycling behavior, and beverage container recycling behavior was the research object. Ajzen's theory of planned behavior was used in this research as theoretical framework, the determinants of planned behavior intention in the TPB were propose in this study as effects to Chinese youth consumers' recycling behavior. This study first measured the constructs of TPB and tested the validation of the theory utilized in Chinese consumer's recycling behavior, and the additional indirect effect, face consciousness, was measured and analyzed through mediation analysis. In this chapter, the research question is going to be explained according to the data analysis result and theoretical supports. In addition, limitation and suggestions for future research is going to elaborate.

5.1   The TPB and BCR behavior in China

In Ajzen's TPB, attitude, subjective norm, and perceived behavioral control are the constructs of the theory. In data analysis chapter, the determinants of recycling behavior according to the TPB was tested, the result provides understanding on whether the theory applicable in the Chinese youth consumers' recycling behavior research.

    The attitude toward the behavior is a direct and significant effect to the behavior intention (Ajzen, 1991). In some other researches regarding Chinese people's pro-environmental behavior, that green attitude is not significantly affecting the pro-environmental behavior (Lao & Wu, 2013). However, this conclusion is disagreed in this study. In the case of researching Chinese consumers' recycling behavior, attitude toward the BCR behavior is measured and calculated, and the result turns out to support the Ajzen's definition of attitude. The possible reason on this divergence is that the researching object in Lao & Wu's study is about purchasing home appliance. Differ from paying big amount of money on pro-environmental behavior, there are rewards could be gained when recycling. Therefore, in this recycling behavior research, this study persevere the own result. Nevertheless, researches on recycling behavior relies on the TPB is supporting the result from this study as well (Zhang et al, 2016; Cheung, Chan, Wong, 1999). According to the correlation calculation, the correlation between attitude and intention is the strongest comparing with subjective norm and perceived behavioral control, r=0.399. Hence, in predicting Chinese consumers' BCR behavior, attitude toward the behavior is significant. Moreover, the positive value r indicates the impact from attitude is positive. In consequence, with a stronger attitude toward the recycling behavior, Chinese youth consumers are more intend to recycle.

Furthermore, the impact from surrounded people's behavior is also a significant effect to the behavior intention was proposed in both the TRA and the TPB. (Ajzen, 2013) This certain concept was concluded as subjective norm, and was tested in this study. The result from multiple-regression shows the subjective norm is an important construct to predict BCR intention (P-value <0.05, r= 0.372). Results from other researches with relevant topic and scope are supporting this result from this study (Zhang et al, 2016; Cheung, Chan, Wong, 1999). The positive correlation value r indicates that subjective norm affects the behavior intention positively, which means the social pressure such as surrounded people's behavior and suggestions provided from others are more leads toward the behavior, the behavior intention is enlarged in China. In this study, subjective norms contain the family and friends' BCR behavior, promotion of BCR in family, school and city. Therefore, in China, youth consumers' recycling intention enhance when family and friends are having the behavioral performance and the promotion takes place in public places and within the families.

Nevertheless, capability of performing a behavior is proposed as a determinant of a planned behavior in TPB, and it was conceptualized as perceived behavioral control. According to Ajzen's(2013) description, PBC can influence the behavioral performance indirectly through its effects on intention, and it can influence the behavior directly as well. However, in this particular study, the measurement of participants' actual behavior on beverage container recycling is unavailable; the direct relationship between PBC and the behavioral performance is not discussed in this research. The correlation between PBC and the behavior intention according to the data analysis, r = 0.252, which means Chinese youth consumers' recycling intention is affected by PBC positively. PBC in this study contains the knowledge regarding recyclable materials and the recycling infrastructure construction situation in the city. Hence, according to the research, improvement on infrastructure construction and education on the recycling knowledge will improve the recycling intention in China.

TABLE 15 Conclusion on Hypothesis 1-3

Hypothesis	Correlation (r)	p-value	conclusion
Attitude → intention	0.399	<0.01	Confirmed
Subjective norms → intention	0.372	<0.05	Confirmed
PBC → intention	0.252	<0.01	Confirmed

In general, as one of most significant finding of this study is that TPB is applicable in Chinese youth consumers' recycling behavior research, and all three determinants proposed in TPB are having positive affects toward the recycling intention in China. The hypothesis 1-3 was accepted by this research.

5.2   Face concern and BCR behavior

The power of face consciousness in China was studied in many researches, and in this study, the hypothesis on affects from face concern to beverage container recycling behavior can be direct and indirect in different circumstances. The data analysis provides a strong support of this hypothesis, which claims that face consciousness, subjective norm and BCR intention is forming mediation model. The definition of face consciousness is defined according to the accepted definition of "Face", in the research, *Face* (*mian zi*) is an object that people use to exchange for their social position and social relations. Hence, face consciousness refers to the states of consciousness on gaining or losing *Face* (*mian zi*). According to the mediation analysis, the direct effect from face consciousness toward the BCR intention is a negative influence (c' = -0.285), and the total effect emerged based on the mediation model is negative as well (c = -0.207). However, the indirect effect emerged through the mediator subjective norm, the influence toward the BCR intention is positive, although it is a very weak effect (ab = 0.079). It is an interesting finding from this study, that subjective norm is a significant mediator that can transform face consciousness into a positive effect to the BCR intention.

In China, the beverage container recycling system is not constructed formally and the value of beverage container recycling behavior was educated at the macro level understanding, which is benefiting the environment, but the personal benefit is not educated. Moreover, on the monetary perspective, in Finland the beverage container recycling system is encouraged with the deposit reward, however, in China, the recycling reward is decreasing, the personal benefit did not remain as the old time. According to the face concerns studies in China, face consciousness is the inherent characteristic of Chinese people, the influence from this characteristic toward behavior intentions is different depends on the how much consciousness they have. For a person with high consciousness of *Face* (*mian zi*), a behavior is more intended to perform when it is able to gain *Face* (*mian zi*) or avoiding of losing *Face* (*mian zi*). However, recycling beverage container is not a behavior that is able to protect or gain *Face* (*mian zi*) in Chinese consumers' common knowledge. Furthermore, recycling traders are having reputation as poor people in China, nevertheless, as described in the second chapter, the monetary reward from recycling is decreasing in China, the price of recyclable bottles and materials is incredible cheap comparing the daily consumption standard. Therefore, recycling behavior is not treated as a behavior able to gain any *Face (mian zi)* but a behavior that might lose one's *Face* (*mian zi*). Under this condition, face consciousness is able to influence the behavior intention negatively.

On the contrast, when the subjective norm is mediating the relationship between the face consciousness and BCR intention, the indirect effect is transformed into positive effect. How other people behave and whether the public and family is promoting the recycling behavior is concluded as subjective

norms in this study. It was tested and elaborated in some face consciousness studies that final behavior decision might changed because of approve from other people (You, 2015; Xue, Fu, Jiang, 2014; Wang & Yang, 2015). For instance, when purchasing luxury products, Chinese consumers are preferring more popular products than more expensive and luxury brands. One possible explanation of this phenomenon is that purchasing luxury product is a tool to gain *Face* (*mian zi*), however, if the product is popular and perceived as a sign of richness or great taste, the popular product will be chosen because of the feature of more effective to gain *Face* (*mian zi*). This phenomenon is also applied in the circumstance of recycling beverage containers. When other people are recycling, and the recycling behavior is promoted in public places and within families, the social value of recycling will increase. With the affirmed from the society, the possibility of gaining *Face* (*mian zi*) through recycling behavior is possible. In this circumstance, with the mediator subjective norm, the influence from face consciousness is transformed into positive effect.

5.3   Theoretical contribution

The results from this study were interesting. The theoretical contribution of this research is concluded into two main results: testing the applicable of the TPB in Chinese circumstance, and the theoretical relationship between face consciousness and BCR behavior intention. In this section, the theoretical contribution will be illustrated by the main results.

The TPB provides a useful model to measure and predict recycling behavior in studies all over the world. As a result, attitude toward BCR behavior, subjective norm, and perceived behavioral control are significantly influencing the BCR intention in this particular study. This result consistent with the findings from various relevant studies (Tonglet, Phillips, Read, 2004; Mannetti, Pierro, Livi, 2004; Jekria & Daud, 2016; Culiberg, 2014; Pavlou & Fygenson, 2006; Steg & Vlek, 2009). Besides of the result those three elements are significant factors to determine the recycling behavior intention, there are other possible elements affecting consumers' recycling intention was another interesting finding from this research. Likewise, self-identity dimension was demonstrated as an addition section of TPB in the research conducted by Mannetti, Pierro, and Livi (2004). Nevertheless, the other factors such as moral norm and situational factors are measured in Tonglet, Phillips, and Read's (2004) research, and the result is supporting the proposed result from this study as well. With the relevant researching scope and topic, several of researches (Zhang et al, 2016; Cheung, Chan, Wong, 1999; Pavlou & Fygenson, 2006) also support the result from this study. Hence, the possibility of understanding Chinese consumers' recycling behavior intention through the TPB, and research on extension of the TPB to predict recycling behavior in China is one of the theoretical contribution from this Master's Thesis.

Furthermore, the finding on face consciousness is surprising. Face consciousness was a topic had been researched in China since 1944, and was deeply embedded in Chinese people's behavior consciousness. Although the theoretical definition on face consciousness is not fix, the researches on influence from face consciousness to other behavior was popular in China. There are researches regarding the topic of face consciousness, and how it influencing Chinese consumers' consumption behavior and decision (You, 2015; Xue, Fu, Jiang, 2014; Wang & Yang, 2015). Moreover, researches on pro-environmental behavior and recycling behavior were conducted during the decades. However, research regarding both face consciousness and pro-environmental behavior is not commonly studied. This thesis result on the influence from face consciousness to recycling intention is a bridge between those researches, and provides a possibility to further research on relationship between face consciousness and pro-environmental behavior.

5.4   Limitations of the study and suggestions for future research

This study is focus on the beverage recycling behavior as representing the recycling behavior and pro-environmental behavior in China, and the scope of the research was focusing on Chinese youth consumers only. Moreover, the population of the study is from one city and mainly from most famous high schools and universities in Wuhan. The reason of construction the focusing scope is to narrow down the variables in the research. However, the result had shows that the constant in the recycling intention prediction formula is big, and the value of R-squared is at the low degree of fitting, hence, there are other important factors such as self-identity, past behavior etc, which influencing the recycling behavior intention.

As described in the section introducing the concept of face consciousness, the definition on face consciousness is various, and only one definition was accepted in this research. Therefore, the result is able to be different with different concept definition and theory regarding face concern. In addition, as the research population, Chinese students from high schools and universities were interviewed in the study, however, the result from their answer shows that they are not representing the most face concerned population in China. As showed in Table, the total scale over 20 refers that the participant has high face consciousness, whereas, only 37.1% of the participants has the scale result over 20. Therefore, the result from this study is only able to stands for the Chinese youth consumers, and not able to support any researches with boarder researching scope and population.

TABLE 16 statistic result of face concern scale

	0-5	6-10	11-15	16-20	21-25	26-30	31-35
Percentage of total	0.5%	2.5%	8.5%	51.3%	27.6%	8.5%	1%
			62.8%			37.1%	

Furthermore, many scholars and students studied researches regarding Chinese people's pro-environmental behavior; however, the results are different. Although most of the researches are supporting the result from this Master's Thesis, however, there are still researches results are arguing that the TPB is not total applied in Chinese people's research. In the research conducted by Lao & Wu (2013), differ from this study result, attitude toward the behavior is not determining the pro-environmental behavior. Less data collected and smaller research scope is probably one of the reasons of this result difference.

As a result, a future research extending the research scope from Chinese youth to the all-aged Chinese consumers is suggested accordingly. It is certain that it is inappropriate to research on the all-aged consumers in one group of data set, a grouping sampling sets is required in the research for getting more accurate and comparable result. Moreover, further research extending the topic that discovering the role of face consciousness in pro-environmental behavior rather than recycling behavior is interesting as well.

Although the researches with coherent results were more commonly valid in this research topic, the argument from Lao & Wu's (2013) was minded in this research. Hence, future researches might still test about the validity of TPB in predicting or understanding Chinese consumers' pro-environmental behaviors.

Another interesting possibility for the future research would be to propose and demonstrate possible predictors other than the independent variables proposed in this research. Since the equation on predicting Chinese youth consumers' recycling behavior was discovered from this research, the constant value is representing the possibilities on other predictors to the same outcome.

5.5   Reliability and validity

Reliability is a statistical measurement of the survey's ability to produce systematic results (Litwin, 1995). On more generalized definition, reliability refers to the repeatability of the result from survey or findings from a research. The internal reliability of research data was evaluated according to the Cronbach's alpha value calculated by IBM SPSS Statistics Software. However, due to the factors such as time and geographical area, the repeatability of the finding on the relevant research is not able to be generalized.

The population (n=197) for the study was considered to be sufficient to provide a valid result for the research purpose. In order to ensure the internal reliability, the questionnaire was designed with adoption of the frequently-used scales on Ajzen's TPB and Face concern dimensions. Same measurements of the TPB constructs were utilized in Tonglet, Phillips, Read's (2004) research on recycling behavior, in addition, the measurements were used in Zhang et al.'s (2016) research on Chinese recycling behavior. The results were found identical with the findings from this particular study. Furthermore, measurement concerning about the face consciousness was used according to Ting-Toomy's (2003) face negotiation theory measurement scale. In You's (2015) research, the same

scale was used to measure face consciousness, and the result was coherent as well.

Due to the researching scope is only Chinese youth consumers in Wuhan, in addition, the research period is from 2015-2016, hence, researches conducted by other scholars are not completely having the same scope on the certain topic. Despite of difference between researching scopes, findings from this research are supported by several relevant and similar researches in general.

The concept of validity refers to the believability of the research, such as genuineness of the findings and strength of valid predictors. As discussed in previously, the conceptualized relationship between the predictors (independent variables) and the outcome (dependent variable) was constructed according to Ajzen's (1991) TPB. The theory had provided a strong evidence of validity of proposed predictors on recycling behavior intention.

Furthermore, the internal validity of face consciousness and behavior intention was researched in many researchers in China (Wang & Yang, 2015; You, 2015; Xue, Fu, Jiang, 2014). Although the supporting researches are not researches on the same topic on recycling behavior, the existing relationship between face consciousness and Chinese consumer's behavior was confirmed in the researches.

6   CONCLUSIONS

To date, Chinese consumers had been studied because of the different culture background and behavior performance, researches about comparing Chinese and Western countries consumers was commonly conducted in the field of social psychology and marketing. Ajzen's TPB was frequently used in understanding and predicting consumers' behavior, hence, it was adopted in several Chinese consumers' behavior such as pro-environmental behavior, recycling behavior and consumption behavior. However, in 2013, the research from Lao & Wu (2013) was issued and the result was arguing that attitude toward the behavior, which is one of significant determinants in TPB framework, was not the predictor to Chinese consumers' pro-environmental behavior. This result inspired the researcher to test the validity of TPB in Chinese youth consumers' behavior before study how face consciousness affects Chinese youth consumers on recycling behavior.

As a result, determinants proposed in Ajzen's (1991) TPB framework were significant predictors toward the recycling behavior intention in China, the result, which is coherent with other recycling researches in China and in Western countries as well. The results indicates that in Chinese youth consumers recycling intention is influenced by their attitude toward the recycling intention such as how they value recycling behavior, subjective norms such as whether surrounded people recycle or not, and perceived behavioral control such as how convenience the recycling behavior can be performed in their daily life. However, differ from the theory, Ajzen's (1991) TPB, the equation for predicting the recycling behavior intention contains a rather large constant term. It is possible that there are other predictors toward the recycling intention are inducing this constant term, on contrast, the possibility of other objective variables causing the constant value might also emerged in this research since the variables are controlled in this study.

With the dramatically economic development in China, Chinese consumers' behavior and preference had been researched actively by scholars all over the world. As one of the well-known characteristic of Chinese, face consciousness was researched in many fields, especially in inter-cultural communication researches. In China, face consciousness was commonly researched as a factor to the consumption behavior. To discover the relationship between face consciousness and recycling behavior intention is the second aim of this study. The concept of face consciousness was noticed in China in early ages, the academic definition was firstly concluded in 1944. *Face* (*mian zi*) refers to a property that Chinese people used in their social activities to exchange for their social status and social respects, moreover, the consciousness of caring about gaining or losing their *Face* (*mian zi*) is defined as face consciousness. The hypothesis was established based on the TPB framework, since *Face* (*mian zi*) is emerged in the social activities, it was assumed that face consciousness might have some relationship with subjective norms. According to the measurement and data analy-

sis result, the hypothesis was confirmed valid. It was concluded in this research that face consciousness is not only a direct effect toward the recycling behavior intention but an indirect effect through subjective norm as a mediator as well.

One of the interesting finding according to the investigation is that Chinese youth consumers' recycling behavior intention is influenced negatively if the consumer is having high face consciousness, however, if the influence is emerged through the mediator, subjective norms, the recycling behavior intention is influenced positively. Face consciousness is deeply embedded in Chinese people's behavior consciousness, and changing of this factor is difficult. Therefore, this finding suggests that, the face consciousness is not the factor that need to be avoid when organizations or companies intended to promote Chinese youth consumers' recycling behavior, but enlarge the subjective norms such as promote the recycling behavior more in public, educating the significance of recycling to not only young generation but their family as well.

In general, results from this Master's Thesis had proved two possibilities: Ajzen's TPB framework is able to predict Chinese youth consumers' recycling behavior, although the further research for create more accurate formula was required and suggested; and face consciousness is not required to be avoid but can be utilized when promoting the recycling behavior to Chinese youth consumers. The further researches could be working on how to achieve these possibilities into practice. More researches are needed to make these findings more reliable, and this research is providing a new perspective on this certain researching topic.

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APPENDIX 1 SURVEY INSTRUCTION

问卷调查

General information（基本信息）

Age （年龄）：

Gender（性别）：

Instruction

说明

Questions in this survey should be evaluate with scales from 1-7, you are suppose to circle the number that best describes your opinion.

此问卷由 20 个问题组成，每个问题提供 1-7 级别的感观评估选项，请根据选项左右的提示选择最符合自己观点的选项.

Example:
The math exam is:

easy :___1___:___2___:___3___:___4___:___5___:___6___:___7___: difficult
   extremely quite slightly neither slightly quite extremely

举例:

这次的数学考试:

简单 :___1___:___2___:___3___:___4___:___5___:___6___:___7___: 困难
   极其的 相当 较为 两者都不 较为 相当 极其

If you think the math exam is extremely easy, you would circle the number 1, as followed:

easy :___①___:___2___:___3___:___4___:___5___:___6___:___7___: difficult

Otherwise, you should circle the number which stands your opinion best.

如果你认为这次的数学考试极其简单，则圈出最靠近"简单"的 1 级评估等级，如下:

简单 :___①___:___2___:___3___:___4___:___5___:___6___:___7___: 困难

若认为这次的数学考试相当简单则选择 2，较为简单则选择 3，即不简单也不困难选择 4，以此类推.

APPENDIX 2 SURVEY QUESTIONS

About beverage container recycling behavior

关于废旧饮料瓶回收行为

The beverage container recycling behavior would be defined as return the empty beverage container in the recycle system and get money or products in return. For instance, the beverage container recycle machine in Beijing will receive the empty bottles and give cats or dogs food in return, or remain empty bottles in the house and ask people come to collect. **ATTENTION! Collecting empty bottles in public is NOT the recycling behavior mentioned in this survey!**

废旧饮料瓶回收行为是指将空饮料瓶送往回收系统并获得少量金钱或物品回报。比如在北京有的回收空瓶的机器，可以换取少量猫粮狗粮，或在武汉，将废瓶存放在家里，达到一定数量请人上门回收。注意！在公共场所收集废旧饮料瓶的行为不列为此问卷调查的回收行为！

1. I _____ use the beverage container recycling system if they are in the market place.
   如果商城或超市有回收废瓶的系统或机器，我____使用。
   Will（会）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Will not（不会）

2. If there is a trash can and a recycling machine in front of me, I _____ the beverage bottle to the trash can.
   如果我面前有一个垃圾桶和一个回收机器，我_____将空瓶扔进垃圾桶。
   will（会）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:will not（不会）

3. If you have an empty bottle in your hand, you _____ save the bottle for recycling instead of throwing it away.
   如果你手中有一个空瓶，你_____留下它以便回收而不会直接扔掉。
   will（会）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:will not（不会）

4. I _____ like ask people surround me to recycle beverage bottles.
   我愿意推荐身边的人将废瓶回收。
   would（会）:___1___:___2___:___3___:___4___:___5___:___6___:___7___: would not（不会）

5. I think recycling beverage bottle is a good choice.
   我觉得回收废瓶是一个好的选择。
   Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

6. I think recycling beverage bottle brings benefit to everyone.
   我觉得回收废瓶对大家都有利。
   Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

7. Beverage container recycling system should be promoted in Wuhan.
   我觉得废瓶回收系统需要在武汉被推广。
   Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

8. My friends _____ save empty beverage container for recycling.
   我的朋友_____会将废瓶留下以便回收.
   Always(经常):___1___:___2___:___3___:___4___:___5___:___6___:___7___:Never（从不）

9. It is encouraged to save empty beverage bottles for recycling in my school.
   将空瓶留下回收的行为在学校是宣扬并鼓励的.
   Agree（同意):___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree(不同意)

10. My family _____ save empty beverage container for recycling.
    我的家人_____会将废瓶留下以便回收.
    Always(经常):___1___:___2___:___3___:___4___:___5___:___6___:___7___:Never（从不）

11. It is encouraged to save empty beverage bottles for recycling in my city.
    将空瓶留下回收这样的行为在我所在的城市是宣扬并鼓励的.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

12. I think recycling fulfills my personal moral value.
    我认为回收循环利用是符合我的个人道德观的.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

13. I think recycling beverage bottles is a development tendency of the society.
    我认为回收废瓶是一个社会发展趋势.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

14. I have _____ of opportunities to recycle beverage containers.
    我有_____机会来回收废瓶.
    Plenty（很多）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:None（没有）

15. Recycling empty beverage bottle is inconvenient in my city.
    在我所在的城市中，回收废瓶是很不方便的.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

16. I know where to take my empty bottle for recycling.
    我知道什么样的空瓶可以回收.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

17. The local council provides satisfactory resources for recycling beverage containers.
    我所在的城市有提供非常方便并且全面的回收系统.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

18. Approval from my cared people is important to me.
    我在乎的人对我的认可对我来说非常重要.
    Agree（同意）:___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

1

19. I _____ recycle my empty bottles if my friends don't like to do.
如果我的朋友们不喜欢回收废瓶，我_____这么做．
Would（会）：___1___:___2___:___3___:___4___:___5___:___6___:___7___:Would not（不会）

20. I would still recycle beverage bottle even if people around me think its wasting time.
如果身边的人认为回收废瓶是浪费时间，我还是会去做．
Agree（同意）：___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

21. I would still recycle beverage bottles if other people think it's a stingy active.
如果其他人认为回收废瓶是很吝啬小气的行为，我还是会去做．
Agree（同意）：___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

22. I will do recycling as a favor for my friend when he/she requests me to do (even if I don't want to).
如果我的朋友请我帮忙回收瓶子，即便我本身不想，我还是回去做．
Agree（同意）：___1___:___2___:___3___:___4___:___5___:___6___:___7___:Disagree（不同意）

Thank you for your corporation!
非常感谢您的帮助与合作！

APPENDIX 3

3-1 *ANOVA (IBM SPSS Statistics Software)*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	905.329	3	301.776	18.744	.000[b]
	Residual	3123.318	194	16.100		
	Total	4028.646	197			

ANOVA[a]

a. Dependent Variable: Intention

b. Predictors: (Constant), perceived behavior control, attitude toward recycling behavior, subjectvie norms

3-2 *Model Summary (IBM SPSS Statistics Software)*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.474[a]	.225	.213	4.012

a. Predictors: (Constant), perceived behavior control, attitude toward recycling behavior, subjectvie norms

3-3 *Coefficients of TPB variables toward intention (IBM SPSS Statistics Software)*

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	5.856	1.936		3.024	.003			
	attitude toward recycling behavior	.408	.101	.288	4.045	.000	.399	.279	.256
	subjectvie norms	.013	.005	.194	2.613	.010	.372	.184	.165
	perceived behavior control	.164	.072	.150	2.261	.025	.252	.160	.143

a. Dependent Variable: Intention

APPENDIX 4

Model Summary for face concern and behavior intention linear regression (IBM SPSS Statistic Sofware)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.202[a]	.041	.036	4.440

a. Predictors: (Constant), face consciousness

Coefficients table for face concern and intention linear regression (IBM SPSS Statistic Sofware)

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order	Correlations Partial	Correlations Part
1	(Constant)	22.701	1.433		15.841	.000			
	face consciousness	-.206	.071	-.202	-2.893	.004	-.202	-.202	-.202

a. Dependent Variable: Intention

Model Summary for face concern and subjective norm linear regression (IBM SPSS Statistic Sofware)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.182[a]	.033	.028	64.688

a. Predictors: (Constant), face consciousness

Coefficients table for face concern and subjective norm linear regression (IBM SPSS Statistic Sofware)

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order	Correlations Partial	Correlations Part
1	(Constant)	131.870	20.879		6.316	.000			
	face consciousness	2.692	1.039	.182	2.590	.010	.182	.182	.182

a. Dependent Variable: subjectvie norms

APPENDIX 5

Output (part 1) from the PROCESS procedure for mediation analysis (IBM SPSS Statsitics Software)

```
Run MATRIX procedure:

************** PROCESS Procedure for SPSS Release 2.15 ********************

       Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2013).  www.guilford.com/p/hayes3

**************************************************************************
Model = 4
    Y = to_in
    X = to_FC
    M = SN_eg

Sample size.
      198

**************************************************************************
Outcome: SN_eg

Model Summary
        R       R-sq      MSE        F        df1       df2        p
     .1819     .0331   4184.5198   6.7082   1.0000   196.0000     .0103

Model
           coeff       se        t         p       LLCI      ULCI
constant  131.8701   20.8794   6.3158    .0000    90.6929   173.0473
to_FC       2.6919    1.0393   2.5900    .0103     .6422     4.7417

**************************************************************************
Outcome: to_in

Model Summary
        R       R-sq      MSE        F        df1       df2        p
     .4628     .2142   16.2344   26.5774   2.0000   195.0000     .0000

Model
           coeff       se        t         p       LLCI      ULCI
constant   18.8541    1.4267   13.2149    .0000    16.0403    21.6679
SN_eg        .0292     .0044    6.5568    .0000      .0204      .0379
to_FC       -.2849     .0658   -4.3276    .0000    -.4148     -.1551
```

Output (part 2) from the PROCESS procedure for face concern mediation analysis (IBM SPSS Statsitics Software)

```
**************************** TOTAL EFFECT MODEL ****************************
Outcome: to_in

Model Summary
        R       R-sq      MSE        F        df1       df2        p
     .2024     .0410   19.7125    8.3704   1.0000   196.0000     .0042

Model
           coeff       se        t         p       LLCI      ULCI
constant   22.7009    1.4331   15.8408    .0000    19.8747    25.5271
to_FC       -.2064     .0713   -2.8932    .0042    -.3471     -.0657

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
    Effect       SE        t         p       LLCI      ULCI
    -.2064     .0713   -2.8932    .0042    -.3471     -.0657

Direct effect of X on Y
    Effect       SE        t         p       LLCI      ULCI
    -.2849     .0658   -4.3276    .0000    -.4148     -.1551

Indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SN_eg     .0785     .0395     .0068     .1668
```