APPLICATION OF EXTENDED THEORY OF PLANNED BEHAVIOR MODEL TO ECOLOGICAL BEHAVIOR INTENTIONS IN THE FOOD AND BEVERAGE SERVICE INDUSTRY

Eric S.W. Chan[1*] and Alice H.Y. Hon[2]

[1*] School of Hotel & Tourism Management, The Hong Kong Polytechnic University, 17 Science Museum Road, TST East, Kowloon, Hong Kong

(email: eric.sw.chan@polyu.edu.hk)

Tel: (+852) 3400 2163 / Fax: (+852) 2362 9362

[2] School of Hotel & Tourism Management, The Hong Kong Polytechnic University, 17 Science Museum Road, TST East, Kowloon, Hong Kong

(email: alice.hon@polyu.edu.hk)

[*] Corresponding Author

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ABSTRACT

This study examined the relationships between environmental concern, the three main constructs of theory of planned behavior (TPB), two extended constructs (psychological ownership of the company and sense of responsibility) and employee behavioral intention to implement environmental measures. A questionnaire designed for restaurant employees was used to measure identified indicators. Structural equation modelling was chosen for hypothesis testing. Our results indicated that the three TPB constructs and one psychological trait (sense of responsibility) mediated the relationship between environmental concern and behavioral intention. Employee psychological ownership of a company was verified to exert a positive effect on employee behavioral intention. However, the findings cannot be applied to F&B settings in general since the study was restricted to Chinese restaurants identified.

Keywords Environmental management, Food and beverage, Intention, Extended variables, Theory of planned behavior

1. Background

Historically, the food and beverage (F&B) sector has placed minimal emphasis on environmental issues (Kasim, Ismail, & Issa, 2011). However, the proliferation of environmental regulations and the intensifying market pressure have raised the awareness of many restaurant operators (Schubert, Kandampully, Solnet, & Kralj, 2010; Wang, Chen, Lee, & Tsai, 2013). Restaurants specifically face mounting pressure since they utilize substantial amount of water, energy, non-recyclable goods and harmful chemical substances that contribute to carbon emissions (Schubert et al., 2010). Furthermore, restaurants deplete natural resources to conduct their business as a result of constructing restaurant facilities and consuming water, energy and gas in food production. They generate substantial waste during their operations (Barclay, 2012). The report 'Monitoring of Solid Waste in Hong Kong: Waste Statistics for 2015' revealed that food waste was one of the greatest contributors to Hong Kong landfills. Food waste amounted to 33% of all municipal solid waste. Therefore, restaurants are progressively introducing environmental programs in accordance with the trend of becoming more 'green' to save costs and maintain competitiveness (Bonn, Cronin Jr., & Cho, 2016; DiPietro, Gregory, & Jackson, 2013; Hu, Parsa, & Self, 2010). These programs range from purchasing local and organic food ingredients, reusing food leftovers and recycling food waste to employing environmental technologies to earn green awards. For example, Starbucks Hong Kong's 'Think Blue Act Green' sustainability program, has launched a new sustainable seafood range to encourage customers to make conscious choices and perform simple measures to improve their eating habits. The Peninsula Hong Kong's 'Naturally Peninsula' has emphasized the use of locally harvested supplies for healthy, nutritious cuisine to help conserve marine resources. To encourage restaurants to go green, the Environmental Protection Department in Hong Kong established a Restaurant Partnership Program, which helps dining establishments to improve their environmental performance, reduce costs and raise the trade's image (EPD, 2005). In addition to the introduction of different environmental programs, many restaurants provide trainings to their employees to enhance their environmental awareness and knowledge (e.g., using environmental information to purchase food; saving energy and water during food production and the ways to reduce food waste etc.). All these practices have implications for the routine activities of employees in the F&B sector; therefore, employee attitudes and behavior toward a company's environmental measures are important determinants of the managerial decision to implement environmental measures, as well as their success.

Regarding participation in environmental measures, employees are believed to appreciate working for environmentally concerned companies (Harvey, Bosco, & Emanuele, 2010; International Hotels Environment Initiative, 1996). However, in certain service sectors (including hospitality), a high employee turnover rate is observed for businesses that incorporate environmental strategies (Brown, 1996). It is probably due to the lack of organizational support to avoid employees' confusion about the incorporation (Paillé and Raineri, 2015). Also with high employee turnover rates (Nivethitha, Dyaram, & Kamalanabhan, 2014; Rennie, 1994; Wildes, 2007), restaurants that instigate environmental measures may encounter similar challenges. During the interview by the Pearl Report: Green Vehicles Green Tours, which was aired on TVB Pearl in Hong Kong, a restaurant manager of a famous restaurant situated on The Peak, the highest point on Hong Kong Island, stated that restaurant staff have reservations about implementing the company-required water-saving measures because the savings are not significant despite the extra workload. Given the research gap on the impact of environmentalism on restaurant employees in terms of their attitude and behaviors, understanding what drive employees in the labor intensive F&B sector (Choi, Woods, & Murrmann, 2000) to ecological behavior is crucial.

To investigate the predictors of behavioral intention, a model of theory of planned

behavior (TPB) was applied. The model proposed by Ajzen (1991) advocates that an individual's behavioral intention is jointly influenced by three main factors: (1) attitude toward the behavior, (2) subjective norms and (3) perceived behavioral control. The model has been frequently adopted by social psychologists to examine behavioral intentions (Fielding, McDonald, & Louis, 2008).

By extending the TPB model, our study mainly investigates the relationships among environmental concerns, the main TPB constructs and two additional psychological factors – employees' psychological ownership of the company and their sense of responsibility – and their intention to implement the environmental measures of F&B companies.

Psychological ownership has been described as a phenomenon whereby an individual develops possessive feelings for his/her company (Van Dyne & Pierce, 2004). This 'feeling of ownership' is important in predicting an employee's performance: the employee feels a sense of responsibility in performing his or her duties. Finer (1941, p. 338), noted that 'first, responsibility may mean that X is accountable for Y to Z, Second, responsibility may mean an inward sense of moral obligation'. The 'integration' of the sense of obligation from psychological ownership with efforts towards environmental protection has been infrequently investigated through its relationship with extra role behavior (Vandewalle, Van Dyne, & Kostova, 1995), work attitudes and behaviors (Van Dyne & Pierce, 2004), organisational effectiveness (Wagner, Parker, & Christiansen, 2003) and employee performance (Pierce & Rodgers, 2004). By contrast, many scholars have studied the relationship between social responsibility and a firm's environmental activities and performance (Babiak & Trendafilova, 2011; Garay & Font, 2012; Mackenzie & Peters, 2014) such as examining the impact of individual responsibility on environmental protection. Sense of ownership and individual responsibility are deemed to play a joint contributing role in ecological behavior intention. In fact, some studies have suggested that employees' psychological ownership of the company (Pierce, Kostova, & Dirks, 2003; VandeWalle et al., 1995) and sense of responsibility (Chan & Hawkins, 2010; Kollmuss & Agyeman, 2002) help predict their behavioral intentions. Thus, in addition to the TPB's main constructs, an individual's psychological ownership of the company and sense of responsibility are included in our scheme. Environmental concern has been proven to influence an individual's ecological behavior (Chan, Hon, Okumus, & Chan, 2017; Chan, Hon, Chan, & Okumus, 2014). Therefore, it is considered an antecedent of all the variables in our extended TPB model.

Instead of focusing on stakeholders such as employees, environmental management literature predominantly consists of explorations on issues such as environmental management system (EMS) planning (Cai, Huang, Lin, Nie, & Tan, 2009) and the rationale behind, benefits of (Chan & Wong, 2006; Goldstein, Cialdini, & Griskevicius, 2008) and the obstacles to (Chan, 2011) the system/programs in the different industries such as construction, chemical and hospitality (Chan & Hawkins, 2012; Chan & Li, 2001; Chin & Pun, 1999). Study examining the relationship between employees and environmental activities is considered less attractive (Chan & Hsu, 2016). Some studies advocate that running environmental programs in a company can produce benefits (Chan & Li, 2001; Rondinelli & Vastag, 2000). Nevertheless, limited empirical studies have investigated what triggers employees' intentions to implement the company's environmental policy/measures. No such studies have been found in the F&B sector. Furthermore, prior research on environmental management provide limited insight into the challenges involving employees, especially those in the F&B sector, in the implementation process. A structural investigation of the impact of environmental concern, social factors and psychological traits on the intention to implement environmental measures in restaurants is not available in the literature. Thus, the present research aims to fill this significant gap.

Given this, the main purpose of this study is to examine the factors that affect employees' willingness to implement the established environmental measures in the Hong Kong F&B sector in which the total number of restaurants has reached 14,000 in the market according to the Hong Kong Tourism Board's information of where to eat (http://www.discoverhongkong.com). The city

that brings together cuisines from all over the world, in itself, could be described as a food paradise where some restaurant practices would however contribute to the damage of natural environment (e.g., high energy consumption in commercial kitchens), it is noteworthy to look at its environmental management and the factors that influence employees' intentions to implement environmental measures. In addition, western studies on environmental management may not validate the applicability of the findings to a Chinese (Hong Kong) setting due to the difference of culture. Therefore, conducting this study in a predominantly Chinese setting is a valid research area. Accordingly, the following objectives are achieved:

1. investigate how employees' environmental concern relates to their attitudes toward behavior (attitude toward adopting green practices), subjective norms, perceived behavioral control, psychological ownership of the company and their sense of responsibility;
2. investigate the relationship between attitudes toward behavior, subjective norms, perceived behavioral control, psychological ownership of the company, a sense of responsibility and ecological behavior intention (behavioral intention to implement restaurant environmental measures); and
3. Investigate the mediating roles of attitude toward behavior, subjective norms, perceived behavioral control, psychological ownership of the company, a sense of responsibility between environmental concern and ecological behavior intention.

2. Literature review

Examining the impact of the factors that trigger an individual's ecological behavior intention to implement a restaurant's environmental measures suggests that developing a framework that includes all of the factors behind the intention might be impossible. Consequently, the TPB was adopted as a framework for our exploration. Previous studies verified that certain factors can have impacts on employee support for the environmental programs of a company and that social factors influence one's behavioral intentions (Chen & Knight, 2014; Govindarajulu & Daily, 2004; Ramus & Steger, 2000; Wang, 2014). The TPB and the psychological traits, specifically psychological ownership of the company and a sense of responsibility, considered in this study are discussed in the following subsections.

2.1. Environmental concerns

Environmental concern was defined as 'a general concept that can refer to feelings about many different green issues' (Zimmer, Stafford, & Stafford, 1994, p.64). Environmental concern is a vital determinant of whether people will behave in an environmentally beneficial manner. Several studies verified their positive relationship. For instance, Kim and Choi (2005) when investigating the antecedents of green purchase behavior found that environmental concern influences the behavior directly. The positive relationship between the concern and pro-environmental intentions and behavior was further proved by other studies (Albayrak, Aksoy, & Caber, 2013; Fujii, 2006; Pierce, Dalton, & Zaitsev, 1999; Robertsa & Baconb, 1997). All of these studies suggest that environmental concern is a good predictor of people's intention to take environmentally friendly measures.

2.2. What is ecological behavior intention?

Axelrod and Lehman (1993, p.153) defined ecological behavior as 'actions which contribute towards environmental preservation and/or conservation'. Following this definition, ecological behavior intention is the intention to act in an environmentally responsible way to

contribute toward environmental preservation and/or conservation. An individual who indicates an intention to act to protect the environment is regarded as more likely to engage in such an action relative to one who does not exhibit such intention. Some investigations found ecological behavior intention and ecological behavior have a very strong relationship (Kaiser & Schultz, 2009; Kaiser, Wolfing, & Fuhrer, 1999; Lansana, 1992; Levine & Strube, 2012), although one concluded that the relationship is moderately related (Moore, Murphy, & Watson, 1994). A general relationship between environmental concern, knowledge and ecological behavior has been documented (Chan, E.S.W., Hon, Chan, W., & Okumus, 2014; Mostafa, 2007; Shin, Im, Jung, & Severt, 2017; Wurzinger & Johansson, 2006). Several studies have also investigated the relationship of environmental knowledge with employees' ecological behavior intention. Behavioral intentions are also influenced by other situational factors, including social pressures, money and chances to pursue various actions (Hines, Hungerford, & Tomera, 1986-87; Joshi & Rahman, 2015). However, Ajzen, Joyce, Sheikh, and Gilbert Cote (2011) argued that it is vital to understand an individual's subjective beliefs toward an issue and how the beliefs affect the behavior intention. We followed this line of thought and therefore employed a popular TPB model of human behavior in our study to examine the beliefs that affect the ecological behavior intention. The TPB of Ajzen (1991) describes behavioral intention as a reliable predictor of actual behavior, and the model is 'open to the inclusion of additional predictors' (p. 199) that can predict intentions more accurately. Thus, ecological behavior intention is posited to be affected by environmental concern, which eventually shapes an individual's attitude, subjective norms, perceived behavioral control (i.e. the TPB variables) and the two psychological traits examined in our study.

2.3. Theory of planned behavior

TPB (Ajzen, 1991) is an extension of theory of reasoned action (TRA) (Ajzen & Fishbein, 1980). TRA claims that an individual's intention to perform a particular behavior influences the actual behavior. And behavioral intention can be predicted from a combination of two main factors: (1) an individual's attitude toward the behavior and (2) the subjective norms representing one's perception of the attitudes of significant others (e.g. family members, friends and opinion leaders) toward the behavior. In supporting our argument, TRA explains that the main determinant of whether restaurant employees will engage in environmental measures depends on their intention to do so. By extending the domains of behavior covered by TRA to behaviors that are not in an individual's full control, Ajzen (1991) added an independent component, namely, perceived behavioral control, and defined it as the individual's perception of the extent to which performance of the behavior is easy or difficult. That is, TPB comprises three main constructs: (1) attitudes toward the behavior, (2) subjective norms and (3) perceived behavioral control. These constructs further form a behavioral intention. This theory supports Hypotheses 1, 2 and 3, as outlined later.

TPB has become a major theoretical framework for studying the prediction of behavior, and it has been broadly applied in various industries along with the tourism and hospitality literature. For instance, Parker, Manstead, Stradling, Reason, and Baxter (1992) examined drivers' intentions to commit four specific driving violations by using TPB. Godin and Kok (1996) verified the theory's ability to predict health-related behavior. O'Boyle, Henly, and Larson (2001) employed TPB to investigate hand hygiene behavior in hospitals. Shih and Fang (2004) compared TPB with TRA for predicting people's intention to accept Internet banking. Kautonen, Van Gelderen, and Tornikoski (2013) applied TPB to predict entrepreneurial behavior. For the tourism industry, TPB has been utilized to predict tourists' consumer behavior (Huang & Hsu, 2009; Sparks, 2007), intention to use the Internet (Lee & Choi, 2009), hospitality employees' behavior (Huh, Kim, & Law, 2009) and young consumers' green hotel visit intention (Verma & Chandra, 2018). In relation to the F&B sector, Trenda and Hillers (1997) examined food safety behavior

at home, whereas Tarkiainen and Sundqvist (2005) looked into an organic-food buying context and tested an extended model. Graham-Rowe, Jessop, and Sparks (2015) also used an extended TPB to predict food waste reduction motivation and behavior.

With environmental concern as the antecedent, the possible factors that may influence peoples' intentions to implement environmental measures in the F&B sector were reviewed and categorized according to TPB's three main constructs: (1) attitude toward the behavior, (2) subjective norms and (3) perceived behavioral control. We further discuss the relationships in the following subsections.

2.4. Relationships between environmental concern, TPB variables and ecological behavior intention

Extant literature concluded that the environmental concern of an individual is related to one's beliefs or values (Schultz, 2000), which are also closely related to the individual's specific attitudes (Kollmuss & Agyeman, 2002). An attitude is causally related to an individual's behavior and is 'a person's overall evaluation of the behavior' (Francis, Eccles, Johnston, Walker, Grimshaw, & Foy, 2004, p. 9) in the TPB model. Ajzen and Fishbein (1980) demonstrated attitude does not determine behavior but rather influences the intention, which, in turn, shapes the individual's actions. Conversely, some research have indicated that a weak or moderate relationship between attitude toward environmental protection and the actual implementation of the behavior (Fraj, 2007; Hines et al., 1986-87). Nevertheless, the qualitative study by Chan and Hawkins (2010) revealed that the attitudes of hotel staff toward ecological behavior had a positive impact on their actual implementation of the hotel's green practices.

Furthermore, environmental concern has been found to positively influence subjective norms and perceived behavioral control (Bamberg, 2003). Subjective norms are regarded as the social pressures on an individual to decide whether or not to perform a particular behavior (Francis et al., 2004). It is also an individual's perception that other people who are important to him/her think he/she should/should not perform a particular behavior (Ajzen, 1991). TRA by Fishbein and Ajzen (1975) posits that an individual's behavioral intentions can be predictable from a weighted average of one's attitudes toward as well as subjective norms about the act. Protecting the planet is commonly believed to be the right course of action in view of increasingly severe environmental problems. This environmental trend could be the norm (also considered as an approximation of one's subjective norms) for many people. In fact, many individuals are becoming more environmentally friendly because they care about their relationships with others such as family members, close friends and colleagues and show concern for the welfare of society. (Leonidou, Leonidou, & Kvasova, 2010). For example, they increasingly follow the reduce–reuse–recycle rule to minimize waste, while some are more ecologically conscious in purchases of food and goods. This peer group pressure could trigger an individual to act in a more environmentally friendly way. The perceived pressure from social norms and other reference groups could thus influence peoples' behavior (Reynolds, Subašić, & Tindall, 2015). In Chinese society, the driving force to comply with important referent people is particularly high because of the influence of culture (Lam, Lo, & Chan, 2002). Yang (1992) and Zhang, Long, Wang, and Tang (2015) further indicated that personal relationships are important among the Chinese, especially young Chinese employees whose work attitudes are significantly influenced by friendship (Cheng, 1980). Following the logic of these arguments, we believe that the ecological behavior intention of Hong Kong F&B employees (mainly Chinese people) will be triggered by subjective norms.

Another TPB variable, perceived behavioral control, is defined as 'the extent to which a person feels able to enact the behavior' (Francis et al., 2004, p. 9). This variable consists of two main components: (1) internal cognitive perceptions of control (e.g., a restaurant employee may not perform a green practice because it is perceived as too difficult) and (2) external control

factors (e.g. a restaurant employee may not comply with a green policy to refill water glasses only when guests ask because of serious guest complaints). Individuals' behavioral intentions have been proven to be significantly and positively affected by their perceived behavioral control (Teng, Wu, & Liu, 2015; Wu & Teng, 2011).

All the three TPB's variables were utilized before to understand high school students' pro-environmental intentions and behavior and the findings revealed that all the variables have independent contributions to the prediction of the behavioral intentions (De Leeuw, Valois, Ajzen, & Schmidt, 2015). In our study, we raise the research questions listed below: *To what extent are restaurant employees' attitudes toward ecological behavior, subjective norms and perceived behavioral control influenced by environmental concerns? How do such concerns influence employee behavioral intention to implement environmental measures*? Based on the preceding discussion, the relationships among these variables are expected to be positive. Thus, the following three hypotheses are proposed:

H1: Restaurant employees' attitudes toward behavior mediate the effect of environmental concern on ecological behavior intention (behavioral intention to implement the environmental measures).

H2: Restaurant employees' subjective norms mediate the effect of environmental concern on ecological behavior intention (behavioral intention to implement the environmental measures).

H3: Restaurant employees' perceived behavioral control mediates the effect of environmental concern on ecological behavior intention (behavioral intention to implement the environmental measures).

2.5. Relationships between environmental concern, psychological ownership of company and ecological behavior intention

Lee, Song, Lee, and Lee (2013) indicated that employee commitment to company increases when the employees become aware of corporate social responsibility. Accordingly, employees, who are more aware of the environment or other environmental issues, would tend to be more committed to their company (especially when the company has a green policy) than employees who have no such awareness. Mehta and Chugan (2015, p.75) in their green HRM study indicated that 'Green employers become the most preferred choice of green talent pool, i.e. potential employees who not just understand sustainability but have also put it in practice in business previously.' This reflects people's desired possessive feelings (psychological ownership) for the green companies. Muster and Schrader (2011) echoed that the private experiences of individuals influence their environmental behavior in working life. An individual may perceive a firm (especially an environmentally friendly firm) to have a very close connection with the self (Pierce et al., 2003). Chan and Hawkins (2010) discovered that hotel staff at different levels took pride in their company's achievements and felt superior in front of their peers because the hotel received an eco-label ISO 14001 certification. Such findings may suggest that a positive relationship likely exists between an individual's environmental concern and his or her psychological ownership of the company. Van Dyne and Pierce (2004) claimed that the psychological ownership of an organization can have special relevance to volitional behavior, such as ecological behavior intention. Furby (1978) and Jussila, Tarkiainen, Sarstedt, and Hair (2015) indicated that an employee's psychological feeling of ownership of a company can become an extension of his or her self-concept. Therefore, a restaurant employee with high environmental concern and feelings of possession toward the organization will be more willing to perform the required environmental measures, which can further manifest his or her self-concept as an environmentally friendly person. Following this assumption, we propose that an

individual's psychological ownership of a company has a mediating effect between environmental concern and ecological behavior intention.

H4: Restaurant employees' psychological ownership of the company mediates the effect of environmental concern on ecological behavior intention (behavioral intention to implement the environmental measures).

2.6. Relationships between environmental concern, sense of responsibility and ecological behavior intention

Mueller, Tippins, and Stewart (2013, p. 19) predicted that "generation R" (for "responsibility") will increasingly take accountability for the issues they care deeply about. Accordingly, people who advocate environmental protection will likely assume increasing responsibility to help Earth survive. Hines et al. (1986-1987) and Bamberg and Möser (2007) suggested that people with relatively high sense of personal responsibility very likely behave more environmentally friendly. Therefore, this internal stimulus believed to be an important motivation for environmental protection because it is a personal value that could significantly influence the behavior of the individual. A sense of personal responsibility spurs certain people to care about an issue. Socially conscious customers strongly believe that their buying behavior can reduce social impact and protect the planet, although many individuals also reckon that protecting the environment is the responsibility of governments and corporations (Lin & Hsu, 2015; Webster, 1975). Many companies have voluntarily integrated environmental concerns into their business strategies because of social responsibility (Rodríguez & del Mar Armas Cruz, 2007). Chan and Hawkins (2010) found that most hotel employees felt that implementing environmental programs was a meaningful business strategy and they emphasized that they felt it was their responsibility to do so. Thus, for employees to change their behaviors to be more environmentally sensitive, they must also have a sense of responsibility to perform beneficial acts for the earth. When an individual's environmental concern prioritizes his or her responsibilities, then his or her motivation to perform environmental protection measures is likely to be higher.

H5: Restaurant employees' sense of responsibility mediates the effect of environmental concern on ecological behavior intention (behavioral intention to implement the environmental measures).

(Insert Fig. 1 about here)

Figure 1 shows the framework established based on the background rationale and literature review. The TPB framework with the two additional psychological variables formed the basis of a fieldwork investigation to understand the relationships between employees' attitudes toward behavior, subjective norms, perceived behavioral control, psychological ownership of the company and sense of responsibility and the intention to implement environmental measures in the F&B sector. To test the established hypotheses, structural equation modelling (SEM) would be employed to analyse the collected data. This quantitative analytical method was considered suitable for identifying the determinants of restaurant employees' intentions to implement environmental measures and ascertaining which determinants are most and least important in accounting for the intention. The methodology is further discussed in the following section.

3. **Methodology**

3.1. Research setting

This research used data obtained from employees of the F&B sector. A research instrument comprising 33 statements (see appendix) was pre-tested in the restaurant setting in order to prove reliability and validity of the measurement. We asked four restaurant professionals from hotel, convention and exhibition centers, as well as independent restaurant sectors and those who were responsible for their companies' environmental programs to review and give comment on the draft of questionnaire.

3.2. Research instrument

The first part of the questionnaire consisted of seven items, which were used in Minton and Rose (1997)'s study, to measure the environmental concerns of employees. The second part consisted of 10 items used to assess the influence of three variables on behavioral intention: individual attitudes, measured subjective norms and perceived behavioral control. Each of the first two variables were measured by three items developed by Han, Hsu, and Sheu (2010), whereas the third variable was measured by four items from Kim, Njite, and Hancer (2013). The third part measured the psychological ownership of the company using seven items developed by Van Dyne and Pierce (2004) and then measured sense of responsibility towards the environment with four items developed by Wan, Cheung, and Shen (2012). The fourth part measured the employees' intention to implement environmental measures in F&B outlets (five statements developed by Minton & Rose, 1997). We used a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to measure the indicators. The final section of the instrument measured the demographic characteristics. These demographic characteristics were controlled because they might have confounding effects on the behavioral intentions of employees.

3.3. Data collection

After a lengthy search through the network of the first author, a Michelin Star Chef agreed to help distribute the questionnaire to the restaurant owners and operators known to him. By using convenience sampling, 320 questionnaires were sent to the service and kitchen employees of seven local Chinese full-service restaurants of which five were independent restaurant, one was owned by a hotel group and one was owned by a catering group. 208 questionnaires were eventually completed for a response rate of 65%. Among the completed questionnaires, six contained too many missing values or patterns in responses. Thus, the final completed and usable sample was 202. The sample size met the general recommendation for conducting structural equation modelling (SEM) (Hair et al., 2010) which states that models with seven or fewer constructs require a minimum sample size of 150 respondents.

3.4. SEM analysis

We tested the hypotheses by SEM (Joreskog & Sorbom, 1982) and employed the Anderson and Gerbing (1988)'s two-step strategy in the test. We further used confirmatory factor analysis (CFA) in the measurement model to check the discriminant validity of variables, and then performed SEM to estimate the fit of the full mediation model to the data. Moreover, the chi-square ($\chi 2$) values along with several fit indices (CFI, TLI, RMSEA) were presented to compare the proposed model of this study with several alternative models. According to Hu and Bentler (1999), CFI and TLI values greater than or equal to 0.90 reflect a good fit. Furthermore, The RMSEA value equals to 0.08 or lower means that the model appropriately fits the data.

Considering the possibility of response and non-response bias, we used several procedures to detect the problems. We found no significant differences when both respondents and non-respondents on job position and employment status on the major variables were compared. Therefore, the problem of non-response bias was not an issue in this study. We

employed Harman's post-hoc single-factor test to test for common method variance. The test yielded seven factors that accounted for 61.5% of the variance, and the first factor accounted for 17.06% of the variance. No single factor accounted for majority of the variance in variables; the common method variance therefore posed no major threat to the data.

4. Results

Most respondents (60%) in the sample indicated that their restaurant had established a kind of environmental program. Approximately 51% of the participants were male, 28.1% were between the ages of 30 and 39, 26.5% were between 20 and 29, 23.5% were between 40 and 49 and the rest were over 50. More than half (63.7%) had a high school education, 25.3% reached junior school level and the rest had a bachelor or higher degree. Over 93% were full-time staff working in the food service (77.2%) and the rest worked in food production. Approximately 65.8% were general employees and the rest were managerial or supervisory staff (34.2%). Many of them had worked in the industry for five years or more (64.5%).

4.1. Correlation table

Table 1 shows the means, standard deviations and correlations of all variables. Except for employees' psychological ownership of the company, environmental concern was related to their sense of responsibility ($r = .49$, $p < .01$), attitude toward behavior ($r = .58$, $p < .01$), subjective norms ($r = .34$, $p < .01$) and perceived behavioral control ($r = .31$, $p < .01$) positively. A sense of responsibility ($r = .57$, $p < .01$), attitude toward behavior ($r = .49$, $p < .01$), subjective norms ($r = .43$, $p < .01$), perceived behavioral control ($r = .37$, $p < .01$) and psychological ownership of the company ($r = .28$, $p < .01$) were related to the employees' ecological behavior intention (i.e. behavioral intention to implement environmental measures) positively.

(Insert Table 1 about here)

4.2. Measurement model

To evaluate the discriminant validity of different constructs of the proposed model in this study, we conducted a CFA on the items measuring the seven key variables. The results reflected the seven-factor model to be a good fit, with all item loadings on their intended constructs ($\chi2 = 884.51$, df = 386, $p < 0.01$; CFI = 0.91, TLI = 0.90, RMSEA = 0.08) and the significant factor loadings at the 0.05 level. Then, two six-factor models that combined the items for environmental concern and attitude toward behavior were computed because they had high correlations, as shown in Table 1 ($r = .58$, $p < .01$), with other variables displayed separately. The six-factor model yielded a poor fit ($\chi2 = 1007.94$, df = 398, $p < 0.01$; CFI = 0.61, TLI = 0.59, RMSEA = 0.11). Lastly, a one-factor model in which all items were constrained to load on a single factor also yielded a poor fit ($\chi2 = 2175.31$, df = 428, $p < 0.01$; CFI = 0.37, TLI = 0.32, RMSEA = 0.14). Hence, when comparing with the six-factor model ($\Delta\chi2 = 123.43$, Δdf = 12, $p < 0.01$) and the one-factor model ($\Delta\chi2 = 1290.80$, Δdf = 42, $p < 0.01$), the seven-factor model was a better fit, thereby supporting the distinctiveness of each construct in the proposed model.

4.3 Structural model

We employed SEM to test the mediation relationships. In Table 2 (Model 2), the results showed that the hypothesized model (Figure 1) was a good fit to the data ($\chi2 = 884.51$, df =

386, p < 0.01; CFI = 0.90, TLI = 0.90, RMSEA = 0.08). We then tested the mediating effects of environmental concern and behavioral intention and ran an alternative model (Model 3) by adding a direct path from environmental concern to behavioral intention. The result showed that the fit indices of alternative model were significant (pls. see Table 3, Model 1), the coefficient from environmental concern was found to have direct effect on behavioral intention to implement environmental measures (β = .21, p<.01). In addition, the result of each coefficient path and the fit indices for the alternative model (Table 2, Model 3: $\chi 2$ = 876.33, df = 371, p < 0.01; CFI = 0.95, TLI = 0.94, RMSEA = 0.08) was better than the hypothesized model 2. The addition of hypothesized path from environmental concern to behavioral intention improves fit over that of Model 2.

(Insert Table 2 and Table 3 about here)

4.4 Hypothesis testing

Hypothesis 1 predicted that attitude toward behavior mediates the relationship between environmental concern and behavioral intention. The SEM results in Table 3, Model 2 (direct effects) show significant path coefficients from attitude toward behavior to behavioral intention to implement environmental measures (β = .42, p < .01) and concern (β = .71, p < .01). Hypothesis 2 predicted that subjective norms mediate the relationship between environmental concern and behavioral intention. The SEM results for Model 2 (direct effects) in Table 3 show significant path coefficients from subjective norms to behavioral intention to implement environmental measures (β = .43, p < .01) and concern (β = .48, p < .01). Hypothesis 3 predicted that perceived behavioral control mediates the relationship between environmental concern and behavioral intention. The SEM results for Model 2 (direct effects) in Table 3 show significant path coefficients from perceived behavioral control to behavioral intention to implement environmental measures (β = .30, p < .01) and concern β = .39, p < .01). Hypothesis 5 predicted that sense of responsibility mediates the relationship between environmental concern and behavioral intention. The SEM results for Model 2 (direct effects) in Table 3 show significant path coefficients from sense of responsibility to behavioral intention to implement environmental measures (β = .36, p < .01) and concern (β = .57, p < .01). These results were supported Hypotheses 1, 2, 3 and 5. Hypothesis 4 predicted that psychological ownership of the company mediates the relationship between environmental concern and behavioral intention. Although the direct path coefficient was significant from psychological ownership of the company to behavioral intention (β = .19, p < .05), the direct path with environmental concern was not significant. Therefore, Hypothesis 4 was not supported. Finally, the results for Model 3 in Table 3 show that after including a direct path from environmental concern to behavior intention to implement environmental measures, the resulting path coefficients were still significant (β = .20, p < .05). The results were supported the direct effects of each constructs.

To further test the mediating effects in Figure 1, we performed percentile bootstrapping and bias-corrected percentile bootstrapping at a 99% confidence interval with 10,000 bootstrap samples in our study (Taylor, MacKinnor, & Tein, 2008) and adopted Preacher and Hayes (2008) approach to calculate the confidence interval of the lower and upper bounds and to test the significance of the mediating effects of the five constructs. Except H4, psychological ownership of company (indirect effect= -.01*, n.s.*) was not supported, the bootstrap test results confirm the positive and significant mediating effects for attitude toward behavior (indirect effect =0.45, p<0.01), subjective norms (indirect effect =0.37, p<0.01), perceived behavioral control (indirect effect =0.23, p<0.01), and sense of responsibility (indirect effect =0.18, p<0.01). The 95%

confidence interval for attitude toward behavior (0.35, 0.12), subjective norms (0.28, 0.08), perceived behavioral control (0.23, 0.02), and sense of responsibility (0.19, 0.01) computed using bootstrapping estimates did not include zero. Hence, the mediating relationships of H1, H2, H3, and H5 were supported.

5. Discussion and implications

Different from value-belief-norm (VBN) theory orginally developed to predict actual environemtnal behaviors (Stern, 2000), we examined the intentions of F&B employees to implement environmental measures by incorporating the Ajzen's TPB model, along with two additional constructs (psychological ownership of the company and sense of responsibility) because behavioral intentions are the crucial contributing factors in explaining individuals behaviors. Our findings showed that intentions of employees were significantly predicted by the three main variables of TPB: attitude toward behavior, subjective norms and perceived behavioral control. Attitude toward behavior (β =.42) and subjective norms (β =.43) emerged as a highly significant factor in triggering the intention of F&B employees to practise environmental measures echoing the findings of Han and Kim (2010) and (Nasri and Charfeddine, 2012). The results provides more support for the predictive validity of the TPB in relation to the implementation of environmental measures. In addition to TPB constructs, this study gives evidence for the incremental validity of the additional variables, as the two additional psychological traits were proved to have positive significant effects on the intentions of employees. That means the TPB variables are further enhanced by the inclusion of the additional psychological variables. The addition of psychological ownership of the company and sense of responsibility adds significantly to its predictive power. Furthermore, the extent to which an employee has sense of responsibility to the environment (β =.36) seems to be of more importance in fostering the behavioral intention than TPB's perceived behavioral control ((β =.30). Theoretically, the three variables of TPB and the sense of responsibility construct were indicated to mediate the relationship between environmental concern and intention to perform environmental measures. The mediation results reveal that the employee's environmental concern can exert impact on his/her intention to implement environmental measures of a restaurant through his/her attitude toward the green behavior, subjective norms, perceived behavioral control, and sense of responsibility.

Although the positive relationship between environmental concern and psychological ownership of the company was not supported, the positive relationship between psychological ownership of the company and behavioral intention was significant, which is in line with Van Dyne and Pierce (2004) who found that employee's psychological ownership of a company has effect on one's behavior. It implies that a restaurant employee, whose feeling of possession toward the company is high, will be more willing to implement environmental measures.

In short, the results implied that TPB is insufficient for understanding the ecological behavior intention in the context of environmentally friendly restaurants, and the extended model of our study represented a substantial improvement over the TPB. Furthermore, our study not only contributed to the environmental management literature but also offered new insights to operators, who might consider mediating factors when recruiting employees to make their F&B businesses more environmentally friendly than before.

The findings indicated that attitudes of F&B employees are strongly related to their intentions to practice environmental measures. Therefore, managers and owners of environmentally friendly restaurants should select their employees wisely during the recruitment process. The attitude of applicants toward environmental protection should be explored during the interview (e.g., recruitment manager shares the company's environmental policies with the

candidates and observe how they react), as it is difficult to be changed (Chan et al., 2014). Otherwise, the environmental performance and goals of such restaurants will be affected.

Our findings also implied that the ecological behavior intention of F&B employees is significantly influenced by subjective norms. Attitudes of employees toward the intention to implement green measures largely depend on the views of their significant others (e.g. colleagues and close friends) toward the measures and restaurants. Green restaurant operators should actively find ways to help such significant others develop favorable perceptions on the green measures of their restaurants. For instance, encouraging co-created green ideas by organizing brainstorming sessions as well as appointing champions to share good and feasible green practices with the subordinates can likely be the possible ways.

Sense of responsibility also affects the intentions of F&B employees. Therefore, managers should increase the environmental awareness and concern of their employees by appealing for their environmental responsibility to motivate them to practice the required environmental measures of their company, as our finding indicated a strong correlation coefficient between an individual's environmental concern and sense of responsibiltiy. This goal could be achieved by organizing green activities, such as taking employees to an educational landfill tour, arranging 'green' seminars and equipping the employees with relevant and updated environmental knowledge and skills through a series of structured training programs.

Our analysis did not find a positive relationship between environmental concern and psychological ownership of the company. This condition could contribute to the valuation of individuals on different environmental issues. Our findings indicated that not all people 'desperately' want to work for an environmentally friendly restaurant. These people may consider promotion opportunities, salary, benefits and other factors when selecting a company to work for. Nevertheless, people increasingly prefer to work for environmentally friendly organizations because of the 'green' trend and to express their concern about environmental problems. Moreover, Chan and Hawkins (2010) reported that most of their respondents are proud to work for an environmentally friendly hotel. Although the positive relationship between environmental concern and psychological ownership of the company could not be proven in our study, managers can still implement strategies to enhance their employees' psychological ownership of their companies because of its positive relationship with behavioral intention. Implementing human resource management tactics, such as empowerment and incentive plans, can help. Furthermore, having the company certified, for instance, with the internationally recognized International Organization for Standardization's ISO 14001 standard can help employees become committed and feel a sense of ownership toward the company (Chan & Hawkins, 2010).

6. Limitations and directions for future research

This study has limitations that provide opportunities for future research. First, this study was restricted to Chinese restaurants identified by a gatekeeper because accessing data in the F&B sector in Hong Kong is difficult. Thus, the findings probably cannot be applied to other F&B settings, such as Western restaurants in Hong Kong. In addition, we did not analyze the differences among different grades of restaurants of which the environmental measures and policies may have different influence on employees' ecological behavior. Another limitation is that social desirability biases could not be addressed in the study, which mainly examined the effect of the main constructs of the TPB model and two psychological traits on the intention of employees to implement green measures but not the actual behavior. Employees (not their significant others) were the only respondents to intention-related questions. Thus, future studies can include additional types and different grades of restaurants, including those in other countries, to improve generalization. Finally, we controlled some demographic characteristics, but these factors may influence the behavioral intention of individuals to implement environmental

measures. Future studies should consider whether demographic variables affect the perceptions and intentions of employees to implement environmental measures. Other possible variables, such as the differences in or duration of environmental program can also be examined as they may influence employee involvement. Further studies should be conducted to validate other models or approaches and focus on different contexts, such as high-end or fast-food restaurants to measure the intentions of employees to implement environmental measures.

7. Conclusions

This study is probably the first to provide analytical insight into the intention of F&B employees to implement environmental measures using the three main variables of TPB and the two psychological traits as mediators by building an extended TPB model in the F&B environment. Our findings confirm that the intentions of F&B employees to implement the required environmental measures of their company are a result of their attitudes toward ecological behavior, subjective norms, perceived behavioral control, psychological ownership of the company and sense of responsibility. These variables, except psychological ownership of the company, are positively affected by the environmental concern of individuals. The results also show that employees with positive attitudes toward the behavior, subjective norms, highly perceived behavioral control, psychological ownership of the company and a sense of responsibility possibly engage in ecological behavior in the workplace. The differences between the current results and those found in previous studies may reflect the varying determinants of ecological behavior intentions. The extended TPB model has allowed our study to provide useful insights for practitioners and academics concerning which psychological variables affect the intentions of F&B employees to perform environmental behavior. However, limited information on the process is known. In view of serious environmental problems, knowing what factors motivate the employees to support their company's green measures remains critical to the operators of environmentally friendly businesses.

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APPENDIX

Questionnaire items

Environmental Concern

- I think we are not doing enough to save scarce natural resources from being used up
- I feel sorry that the government does not do more to help control pollution of the environment
- I feel disturbed when I think about the harm being done to plant and animal life by pollution
- Restaurant guests should pay higher prices for products which pollute the environment
- Public schools should require all students to take a course concerning environmental conservation
- I feel disturbed when I think of the ways industries are polluting the environment
- Restaurant operators should be required to use recycled materials in their operations possible

Attitude Toward Behavior

- Adopting green practices is meaningful
- Adopting green practices is worthwhile
- Adopting green practices is wise

Subjective Norms

- Most people who are important to me think I should select an environmental friendly restaurant for my job
- Most people who are important to me would want me to select an environmental friendly restaurant for my job
- People whose opinions I value would prefer that I select an environmental friendly restaurant for my job

Perceived Behavioral Control

- Performing an environmental friendly practice for my job, compared to a non environmental friendly practices, is completely up to me
- I am confident that if I want, I can perform an environmental friendly practice for my job, compared to a non-environmental friendly practice
- I have enough skill to perform an environmental friendly practice for my job
- I have enough working time to perform an environmental friendly practice for my job

Sense of responsibility

- It would be wrong of me not to recycle my recyclables
- I would feel guilty if I did not recycle my recyclables
- Not recycling goes against my principles
- Everybody should share the responsibility to recycle recyclables

Psychological Ownership

- This is my restaurant
- I sense that this restaurant is our company
- I feel a very high degree of personal ownership for this restaurant
- I sense that this my company
- This is our company
- Most of the people that work for this restaurant feel as though they own the company
- It is hard for me to think about this restaurant as mine

Intention to Implement Green Practices

- I would be willing to sign a petition to support my company environmental cause
- I would consider joining my company's green committee
- I would be willing to do extra works which are related to environmental protection even though no extra pay will be given
- I would be willing to follow my company instructions to perform the required environmental practices
- I would be willing to attend any environmental training organized by my company

Figure 1

Proposed Relationships between Environmental Concern and Behavioral Intention to Implement Environmental Measures

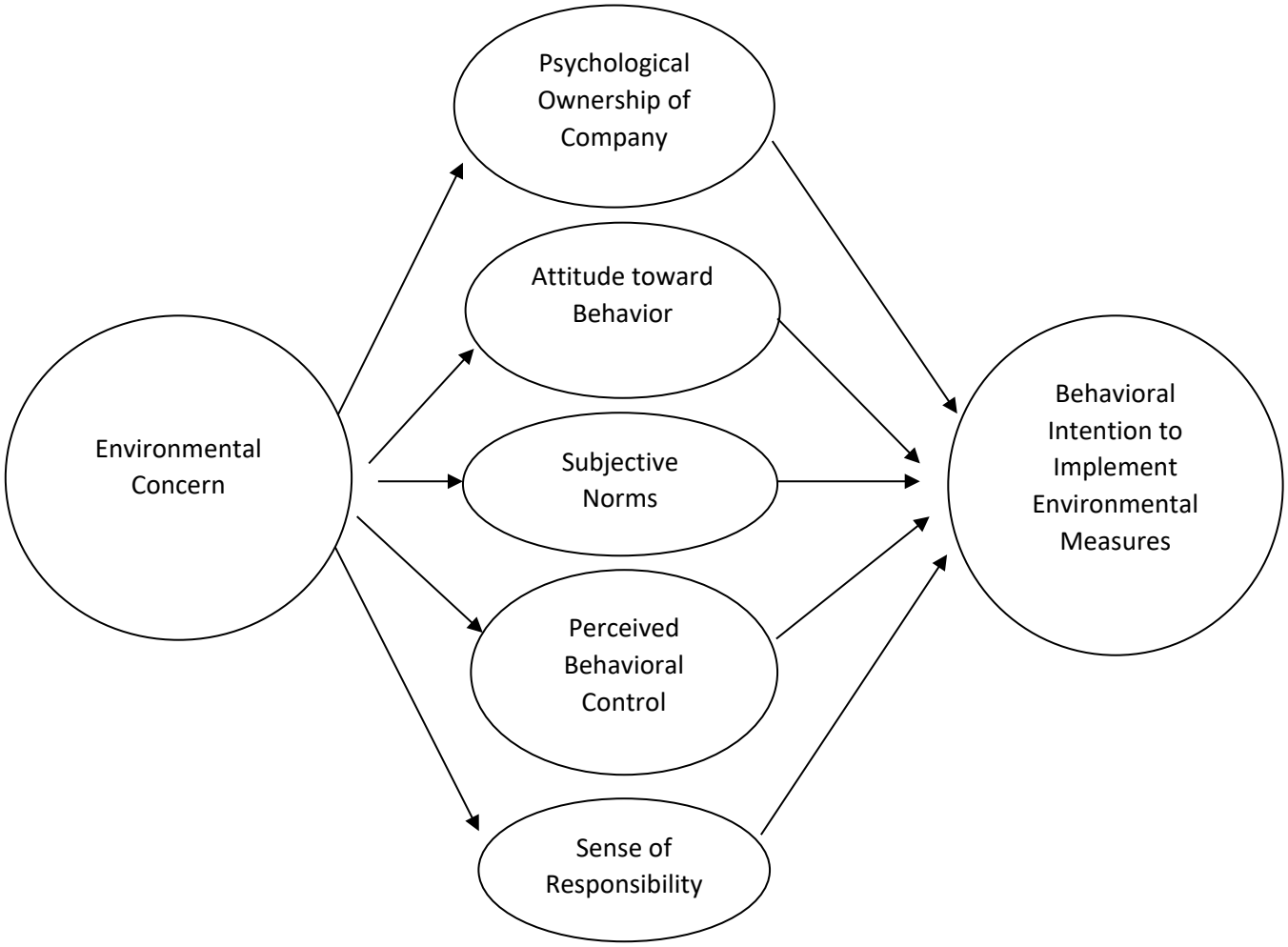

Table 1

Means, Standard Deviations and Correlations

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Environmental Concern	3.86	0.57	(.80)									
2. Sense of Responsibility	3.63	0.69	.49**	(.82)								
3. Attitude toward Behavior	4.13	0.70	.58**	.35**	(.92)							
4. Subjective Norms	3.58	0.78	.34**	.38**	.37**	(.88)						
5. Perceived Behavioral Control	3.27	0.82	.31**	.36**	.11	.46**	(.87)					
6. Ownership of Company	3.38	0.76	.13	.32**	.27**	.38**	.45**	(.89)				
7. Behavioral Intention	3.73	0.63	.45**	.57**	.49**	.43**	.37**	.28**	(.89)			
8. Age	34.3	1.19	.07	.03	.02	.09	.01	.00	.07	-		
9. Gender	1.49	0.51	-.04	-.02	-.01	-.03	-.06	-.05	-.08	.10	-	
10. Education	1.87	0.62	.12	.03	.08	.04	.05	.02	.03	.07	.01	-

Note. (n = 202). Reliabilities are in parentheses.

** $p < .01$

Table 2

Fit Results for Structural Equation Models

	Fit Indices				
	$\chi 2$	*df*	RMSEA	TLI	CFI
Model 1	401.28**	158	.09	.92	.93
Model 2	884.51**	386	.08	.90	.90
Model 3	876.33**	371	.08	.94	.95

Note. Listwise n = 202
** $p < .01$

Table 3
Structural Equation Path Coefficients

	Completely Standardised Path Coefficients and (*t*-values)		
	Model 1[a]	Model 2	Model 3
Environmental Concern → BI [b]	.21 (2.02*)		.20 (2.67*)
Environmental Concern → SR		.57 (7.88**)	.56 (7.87**)
Environmental Concern → ATB		.71 (8.23**)	.70 (8.22**)
Environmental Concern → SN		.48 (6.50**)	.47 (6.50**)
Environmental Concern → PBC		.39 (5.17**)	.38 (5.17**)
Environmental Concern → POC		–.05 (–.38)	–.16 (–.66)
SR → Behavioral Intention		.36 (3.03**)	.36 (3.01**)
ATB → Behavioral Intention		.42 (9.12**)	.41 (9.11**)
SN → Behavioral Intention		.43 (5.29**)	.43 (5.29**)
PBC → Behavioral Intention		.30 (2.46**)	.29 (2.46**)
POC → Behavioral Intention		.19 (2.41*)	.19 (2.40*)

[a] Model 1 = direct effects, Model 2 = full mediation, Model 3 = partial mediation
[b] BI = behavioral intention, SR = sense of responsibility, ATB = attitude toward behavior, SN = subjective norms, PBC = perceived behavior control, POC = psychological ownership of the company
** $p < .01$; * $p < .05$.