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*Research article*

## **Understanding different types of consumers: A multi-group analysis based on convenience food-related lifestyle**

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**Abstract:** The primary objective of this study is to identify categories of organic food consumers based on the CFL (convenience food related lifestyle). Secondly, this study explores characteristics, motivations/barriers in consumption and perception regarding to self-focus perception (such as perceived consequence of purchasing organic food) and altruistic behaviour (such as recycling behavior and perception of transportation) in different CFL. 1,262 valid samples are collected in this study. Moderate, convenience-pursuing and quality-pursuing categories are separated by cluster analysis. Consumer attitudes toward ready-made meals and takeaway meal solutions, perceived consequences of purchasing organic food, purchase frequency and quantity are differential, and the influence of organic food purchasing perception of consequence on altruistic behaviour are differences in CFL. Only consumers who purchase organic food motivated by environmental concerns are able to improve their recycling behavior. This study believes that the CFL framework has enhanced the understanding of consumer buying behavior and characteristics.

**Keywords:** organic food; convenience food-related lifestyle; organic food purchasing behavior; attitudes towards ready meals and takeaway meal solutions; purchasing organic food perceived consequences

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## 1. Introduction

An increasing amount of processed food and foods made in polluted environments causes people now more concerned about the food quality and safety [1–4]. People who are interested in purchasing organic products to benefit their health as well as promoting a food production system which combines the best environmental practices, preserves both biodiversity and natural resources [5]. Therefore, the organic food sector becomes one of the rapidly growing industries. Researchers have been interested in discussing consumers' organic food consumption behavior. In these studies, researchers evaluate consumption factors, such as consumer perception, knowledge, culture, social values etc., from different perspectives [6,7], quality of traceability information and purchase intention towards organic food [8], co-consumption and organic food [9], consumers' willingness to pay for organic food [10,11], organic label and product evaluation [12,13], and consumption perception/attitude in different organic consumers' types [1,3].

Indeed, consumers' categories are one of the popular research issues in organic field [3,14]. As the argument of Lucas et al. (2022) [15], understanding the need of different consumer groups can support the development of new food products and more target-group specific food product marketing. Most food studies have focused on food-related lifestyle (FRL) to separate consumers while ignoring the changes in modern life and working styles, which may have an influence on food consumption behavior [16–19]. In modern society, such as the incorporation of women into the workforce, consumers have been getting used to living daily life more quickly, resulting in people (e.g., women) needing convenience food such as ready meals and takeaway meals [19,21]. It has been found that when consumers' working hours are longer, they are more likely to buy convenience food [22]. In the last decade, eastern societies, such as Taiwan, Japan and Hong Kong, have begun experiencing these problems. Therefore, to characterise modern organic consumers' behavior, this study adopts convenience food-related lifestyles (CFL) as a tool to analyse organic consumer perceptions and market potentials.

In addition, organic food consumption is not merely a behavior of self-interest, but it is also an altruistic practice [5,23]. Liang and Lim (2020) [24] point out that organic food can promote individuals' health, and that its production methods can also help protect the environment and aid in animal welfare efforts. Montefrio and Wilk (2020) [4] echo this argument, and they note that individual consumers today, especially in the rising middle classes, are seeking healthier, safer, and more environmentally friendly food options. Therefore, egoistic and altruistic perception are included in organic food consumption and needed to understand them simultaneously.

Based on the studies mention above, scholars [15,16,22,24] emphasized that it is very important to understand the differences in the cognition or behavior of different types of consumer groups for purchasing organic food. Meanwhile, it is also necessary to consider about the changes in modern social life and work styles. Therefore, the primary objective was to identify categories of organic food consumers based on the CFL. Secondarily, we explore their characteristics, motivations/barriers in consumption and perception regarding to self-focus perception (such as perceived consequence of purchasing organic food) and altruistic behaviour (such as recycling behavior and perception of transportation) of different CFL. Meanwhile, we examine the relationship between self-focus perception and altruistic behaviour in different CFL.

The structure of this paper proceeds as follows: The literature review discusses FRL, egoistic and altruistic perspective, and research hypothesis development. After that, this study introduces the

measurement development and sampling process. In the section detailing statistical results, confirmatory factor analysis, cluster analysis, ANOVA and regression analysis were used to test the hypotheses. The final section concludes with this work's findings and provides its unique contribution.

## 2. Materials and methods

### 2.1. Food-related lifestyle overview

Food-related lifestyle instrument (FRL) can be described as the interface between the consumer's values and the product's perception and buying behavior [14]. Meanwhile, FRL can be used to distinguish between different groups of consumers, and to understand their motivation to purchase food [17,25]. Djokic et al. (2018) [26] adopted FRL to analyse organic consumer preferences and market potentials. Montero-Vicente et al. (2019) [27] analysed fresh fruit consumers to apply FRL in Spain which included five distinct components of shopping, i.e. food quality, cooking method, consumption and shopping motivation. Some food Scholars [14,16,28] developed different patterns of food lifestyle, such as fruit-specific lifestyle, as well as CFL. De Boer et al. (2004) [29] suggested that CFL has five dimensions: Time pressure, individualism, stress level, breakdown mealtime and eating alone. Buckley et al. (2007) [28] identified twenty convenience lifestyle factors (e.g., convenience in meal preparations and cooking, shopping convenience). Scholderer and Grunert (2005) [30] argued that food preparation, consumption and cleaning take time and effort, and that consumers are seeking a convenient lifestyle as convenience food not only facilitates time saving, but also the effort of meals planning and preparation is minimized. Botonaki and Mattas (2010) [31] effectively focused on how household strategies are used to cope with time pressure, and the factors that predict food consumption behavior. Dhillon and Munjal (2022) [32] analysed four segments- adventurous consumers, uninvolved consumers, relaxed consumers and convenience seekers based on CFL and indicated that food marketers can identify target segments by different CFL consumer types.

### 2.2. Egoistic and altruistic perspective

The theory of self-construction emphasizes the concept of the individual, and individualism and collectivism influence individual self-centeredness [33]. Previous studies [5] have found that self-worth and self-altruistic values are important constructs for consideration. Individualistic values are consistent with the demands of personal preference (for example, emphasis on individual welfare), and are more ego focused [34]. Collectivists on the other hand tend to care for other individuals or the environment, with an emphasis for the common welfare of other consumers and are interpersonally focused [20].

Some studies have suggested that self-interest and altruism affect personal attitudes and behavior simultaneously [1,24]. This phenomenon has been studied in the context of organic food consumption behavior by Kareklas et al. (2014) [23]. In the organic food context, consumers are aware of the health benefits of organic food compared to the conventional, non-organic line of food produced in a production-friendly environment. Buying organic food therefore fulfills the consumer's self-interest and altruistic values; in other words, both a self-focused orientation (e.g., health and safety concerns), and an interpersonally focused orientation (e.g., environmental concerns) have been found to influence purchase intentions [5,35–37].

Being attentive to one's health is perceived as a self-serving individual consideration, leading to consumer preferences for organic food and also to purchase intent [5,31]. Compared to the conventional line of non-organic products, consumers believe that organic foods have higher nutritional value, use natural production methods, and do not include chemical compounds [24]. Care for the environment and altruism were similarly found to influence purchase intention [38], and the production of organic food is both pro-social and pro-environmental. The emphasis on pesticide-free production methods reduces soil acidification of local organic food and reduces carbon emissions. Therefore, by purchasing organic food, consumers are able to demonstrate personal interest toward the common good [1,36,37,39]. Nosi et al. (2020) [38] also pointed out that consumers who care about animal welfare also tend to exhibit environment-friendly behavior. When consumers who believe that organic food is produced in an environmentally friendly way, they tend to have positive organic food-related attitudes and purchase intentions. In other words, consumers with altruistic considerations will tend to purchase organic food that is less harmful to the environment. As such, this study argues that an egoistic trait includes personal health awareness and purchasing organic food behavior, while an altruistic trait is aware of environmental protection, carbon reduction, and recycling behavior.

### *2.3. Research hypothesis development*

FRL is a useful tool to divide consumer types of food consumption situation [16,17]. CRL, a kind of FRL, has been used to predict the food behavior and attitudes of consumers, uncovering the diverse characteristics of segments and subgroups of consumers [28,32,40]. De Boer et al. (2004) [29] compared food lifestyle, attitude towards convenience food, and the belief in convenience food between high and low frequency users. They found that CFL helps to distinguish consumer types, and that each CFL consumer type made different food purchasing decisions. Buckley et al. (2007) [28] grouped UK consumers using CFL into food connoisseurs, home meal preparers, kitchen evaders, and convenience-seeking grazers, and they have different attitude towards ready meals and takeaway meals. Demographics (e.g., gender or age) of different CFL segments varied, as convenience-seeking grazers had a more positive attitude towards ready meals and takeaway meal solutions and tended to be older than food connoisseurs. Kaliji et al. (2022) [14] used fruit-related lifestyle and separated consumers into careless consumer, adventure consumer, conservative consumer and functional consumer. They demonstrated that socio-demographic characteristics (e.g., education, household size and monthly income) differed significantly between the identified segments. For example, well-educated female consumers tend to pay more attention to fruit product information and labels. In summary, past studies of FRL infer that differences in consumer types result in varying demands for food [14,19]. These differences are explained by the variation in organic food consumption related knowledge, attitudes, and behavior. This study therefore addresses the following research hypothesis:

H1: There exist differences between organic food consumer segments based on CFL.

H2: The consumers' characteristics, motivations/barriers in consumption and perception regarding to self-focus perception and altruistic behavior have significantly difference in different CFL types.

According to the theory of self-construction, self-interest and altruism considerations influence individual attitudes and behavior [5,23,34,37]. Organic food research similarly confirms that consumer awareness and concerns for personal health and environment do influence consumers' preference for organic food and also for environment-friendly behavior [1,31,35,39]. In addition, Buckley et al. (2007) [28]

proposed that convenience-seeking grazers have a more positive attitude towards ready meals and takeaway meal solutions than food connoisseurs. Liang (2014) [40] also found that enthusiastic food shoppers had a positive purchase intention compared to uninvolved food shoppers. Sheikhesmaeili and Hazbavi (2019) [41] indicated that people are more satisfied or tend to purchase food when they try novel food. However, the relationship between consumers' perception and purchase intention were moderated by food familiarity or involvement (e.g., high vs low). For example, high food involvement consumers discriminate between food or more willingness to buy familiar food. Therefore, it can be construed that organic food consumers' altruistic behavior will be influenced by self-focus perception. And under different types of CFL, the effect of self-focus perception on altruistic behavior is different. Therefore, the present study addresses the hypothesis.

H3: The effect of consumers' perceived consequence of purchasing organic food on recycling behavior are different in different CFL types.

#### *2.4. Measurement development*

Questionnaire development was based on items with high reliability and validity from previous research. There were three sections in the formal questionnaire. In the first section, respondents must have bought organic food for a period of at least one year and have purchased organic food at least once a month in the last 3 months to be eligible for the second section of the questionnaire. This is to ensure that the subjects were organic food buyers [42]. The following comprise section two of the questionnaire: (1) convenience food lifestyle has five dimensions, including time pressure, individualism, stress level, breakdown meal time, and eating alone, and is defined as an individual's wish to save time, physical strength and energy to deal with food purchasing-related activities [29]; (2) perceived consequence of purchasing organic has three dimensions, including environment perception, health perception and transportation perception, and is defined as an individual's perception that buying organic food results in specific consequences for the self [35]; (3) There are two dimensions in recycling behavior, including easy recycling and advanced recycling behavior, measuring an individual's recycling frequency [35]; (4) Attitude towards ready meals and takeaway meal solutions refer to the degree of personal preference for takeaway and ready meals [28]. Finally, recycling frequency (1: never–5: very often) was included to determine how often a subject recycles, and specific activity was included to determine which items consumers recycled (1: never vs. 5: always/very often). The remaining dimensions were measured via a five-point Likert scale (1: strongly disagree–5: strongly agree). The third section asked for respondents' demographic variables and organic food buying behavior, gender, age, occupation, average monthly income, marital status, years of work, reasons for buying organic food, quantity and frequency of purchases [43,44].

#### *2.5. Sampling design*

Sampling data were from three cities in Taiwan including Taipei, Taichung and Kaohsiung. The major metropolitan cities were collected based by face-to-face surveys. The increasing numbers of consumers are buying organic food in three cities, which suggests that organic food buying behavior are shifting [24]. In each of the three cities, 15 organic stores (15 questionnaires distributed per store) and a popular organic market (250 questionnaires) were selected as sampling locations. Surveys were distributed during June to August 2019 at each venue by judgmental sampling: on a weekday night

between 6 PM and 10 PM in an organic shop entrance, and on a holiday morning between 9 AM and 12 AM at the organic markets. This ensures that only consumers who purchase organic food are responding, reducing possible deviation. A total of 1425 questionnaires were issued. After removing incomplete or invalid questionnaires, the effective sample was 1262.

Most were women (68.1%), married with children (56.7%) and without children (7.4%), and others (1.1%). Age demographics were below 25 years (6.9%), 26–35 years (21.6%), 36–45 years (31.1%), 45–55 years (27.0%) and above 56 years (13.4%). Most had working experience above 12 years (35.8%), 4–8 years (28.5%), less than 3 years (25.6%) and 8–11 years (10.2%). The education level were elementary or junior high school (5.5%), high school (25.9%), college (34.2%) and master degree or above (34.8%). The main occupations of respondents were in the service sector (22.4%), military and government (18.5%) and agriculture, forestry, animal husbandry, and fisheries (16.7%). The average monthly income was mostly concentrated within two ranges: one being USD\$715-1,429 (42.1%) and the other being USD\$1,430-2,144 (25.2%). Others are lower than USD\$714 (18.5%) and higher than USD2,145 (14.3%).

### 3. Results and discussion

#### 3.1. Reliability and validity test

Confirmatory factor analysis was conducted to explore the various dimensions of reliability and validity (Table 1). ‘Pressure’ (SL3) and ‘watching television while having a meal’ (BMT1) were found to have modification indexes (MI) higher than 30 and were deleted. Deleted measurement modes had the following characteristics: (1) the indicators met the standards (e.g., RMSEA = 0.061; NFI = 0.96; CFI = RFI = 0.97; RMR = 0.050; GFI = 0.88); (2) Composite reliability (CR) in each dimension was higher than 0.7, with the average variance extracted (AVE) in addition to time pressure (TP) was lower (0.46) and the remaining dimensions higher than 0.5; (3) Items of factor loading in the range of 0.5 and 0.95 remained. Overall, the reliability and validity of each dimension were higher than previously recommended standards.

**Table 1.** Confirmatory factor analysis results.

Dimensions (AVE, CR)	Items	Factor loading	Error
Time pressure (TP) (0.46, 0.72)	TP1 I always want to save time	0.51	0.74
	TP2 I'm always in a rush to finish all sorts of things	0.80	0.36
	TP3 I'm always busy	0.70	0.51
Individualism (IN) (0.55, 0.78)	IN1 Separate meals have to be prepared for some members in my family	0.57	0.67
	IN2 Members of my family have different tastes in food	0.86	0.27
	IN3 Family members are often picky in what they eat	0.77	0.40
Pressure level (SL) (0.72, 0.84)	SL1 Recently, I am unable to overcome stresses in life	0.86	0.26
	SL2 Recently, I was unable to manage the important things in life	0.84	0.29

*Continued on the next page*

Dimensions (AVE, CR)	Items	Factor loading	Error
Breakdown meal time (BMT) (0.66, 0.79)	BMT2 My family often dines at different times	0.78	0.39
	BMT3 To dine with my family is very difficult	0.84	0.30
Eating along (EA) (0.75, 0.86)	EA1 When it's just me, I don't prepare a proper meal	0.89	0.21
	EA2 When it's just me, I don't enjoy cooking for myself	0.85	0.28
Attitudes towards ready meals and takeaway meal solutions (ARTM) (0.52, 0.87)	ARTM1 Fast (microwave) food is a very good value	0.72	0.48
	ARTM2 Fast food is a common alternative food at home	0.77	0.41
	ARTM3 Fast food is convenient	0.74	0.45
	ARTM4 Takeaway food is convenient	0.69	0.52
	ARTM5 Takeaway food is worth the extra charge	0.71	0.50
Environmental perception (EP) (0.77, 0.94)	ARTM6 Takeaway food is a satisfactory solution	0.71	0.49
	EP1 Can improve the daily deterioration of the environment	0.79	0.37
	EP2 Can reduce the use of artificial fertilizers Agriculture	0.90	0.20
	EP3 Can reduce chemical pollution of lakes and excessive algae problems in watercourses	0.92	0.15
	EP4 Can reduce soil pollution	0.90	0.19
Health perception (HP) (0.68, 0.91)	EP5 Can reduce the use of agricultural pesticides and herbicides	0.87	0.25
	HP1 Can improve the health of their families	0.81	0.35
	HP2 Gives me moral goodness	0.75	0.44
	HP3 Avoid eating non-organic foods derived health risk	0.83	0.30
	HP4 Provides my child with better food	0.85	0.27
Transportation perception (TP) (0.81, 0.93)	HP5 Can reduce the risk of ill family members	0.86	0.27
	TP1 Can reduce food transportation miles (carbon footprint)	0.84	0.30
	TP2 Can reduce oil or non-renewable energy use	0.93	0.14
Easy recycling behavior (ERB) (0.79, 0.92)	TP3 Can reduce the total energy consumption	0.93	0.14
	ERB1 Recycled glass	0.77	0.40
	ERB2 Recycled paper packaging	0.94	0.11
Advanced recycling behavior (ARB) (0.78, 0.91)	ERB3 Recycled newspapers and magazines	0.95	0.09
	ARB1 Recycle batteries	0.88	0.23
	ARB2 Recycling plastic packaging	0.89	0.21
	ARB3 Metal packaging recycling	0.88	0.23

$$\chi^2_{(df=574)}=5.70, \text{RMSEA}=0.061, \text{NFI}=\text{NNFI}=\text{RFI}=0.96, \text{CFI}=\text{IFI}=0.97, \text{RMR}=0.050, \\ \text{SRMR}=0.047, \text{GFI}=0.88, \text{AGFI}=0.85, \text{PNFI}=0.83, \text{PGFI}=0.72 \quad (1)$$

Composite reliability (CR) average variance extracted (AVE) Paired correlation confidence interval was adopted to test the discriminant validity. The exclusion of the value of 1 in the confidence interval (CI) meant that discriminant validity between the potential variables exists, and the result indicates that the CIs of all dimensions did not include the value of 1, suggesting that there is discriminant validity between the dimensions. In addition, as recommended by Hair et al. (1998) [46], where the square root of the AVE of a potential variable were larger than the correlation coefficient



under other dimensions, the result would indicate that there is also discriminant validity between the dimensions.

### 3.2. Cluster analysis for hypothesis 1

This study employed two-step cluster analysis to classify consumers into different segments. First, a hierarchical procedure using Ward's method was performed to establish the number of clusters by reviewing the dendrogram and cluster (agglomeration) coefficients. The dendrogram and agglomeration coefficients revealed that a three-cluster solution was most appropriate (see Table 2). Second, the number of clusters derived from hierarchical clustering was used as a starting point for subsequent K-means clustering, which is a non-hierarchical procedure. The results indicated that the correct classification rate was 86%. The results of the two-step cluster analysis are therefore acceptable.

**Table 2.** Agglomeration coefficient table and confusion matrix of the discriminant analysis.

Cluster	1	2	3	4	5	6	7	8	9	10
Agglomeration coefficient	18986.6	21474.0	22826.9	18007.5	17458.8	16958.6	16495.4	16134.4	15776.8	15440.6
Change rate	6.3%	13.1%	5.4%	3.1%	2.9%	2.8%	2.2%	2.3%	2.2%	
Confusion matrix	cluster 1 (532)		cluster 2 (400)		cluster 3 (330)		Correct classification rate			
cluster A (549)	465		57		27		86%			
cluster B (347)	0		343		4					
cluster C (366)	67		0		299					
ANOVA Analysis results of consumers' CFRL clusters										
Cluster (Number)	Cluster A (549)		Cluster B (347)		Cluster C (366)		F (p)	Post-hoc		
Dimensions										
Time pressures	3.485		4.209		3.115		213.52	B>A>C		
Individuality/family	2.978		4.112		2.531		427.76	B>A>C		
Stress levels	2.795		3.482		2.398		228.44	B>A>C		
Breakdown of mealtime	2.907		3.957		2.246		466.00	B>A>C		
Eating alone	3.664		3.956		1.959		532.05	B>A>C		
Named cluster	Moderate type		Pursuing convenience		Pursuing quality					
Dimension	Moderate type		Pursuing convenience		Pursuing quality		F	Post-hoc		
Attitudes towards ready meals and takeaway meal solutions	2.839		3.182		2.516		46.458	2> 1> 3		

As seen in Table 2, consumers in Cluster A comprises of higher averages. They lack sufficient time ( $M = 3.485$ ), and they do not like to prepare their own meals ( $M = 3.664$ ). However, family members have dissimilar taste preferences ( $M = 2.978$ ), feel time pressure ( $M = 2.795$ ) and have differing meal times ( $M = 2.907$ ), which are all closer to the median ( $M = 3$ ). In addition, the degree of acceptance for microwave food and takeaway also approaches the median ( $M = 3$ ). Based on these figures, consumers were therefore labeled "moderate type".

Consumers in Cluster B were clustered by five variables with the highest average CFL. These consumers are busy and perceives time as being limited ( $M = 4.209$ ). Family members' taste

preferences are very inconsistent ( $M = 4.112$ ). They feel time pressure ( $M = 3.482$ ). Family mealtimes are different ( $M = 3.957$ ), and they do not like to prepare meals for themselves ( $M = 3.956$ ). At the same time, food preference for microwave meals is higher ( $M = 3.182$ ). It would appear that consumers in this cluster need to prepare different food for their families, resulting in a relatively complex food preparation process. Because of the need to prepare food in a limited amount of time for family members with different food tastes, and different dining times, respondents have a strong preference for convenience food in order to reduce personal stress. They are therefore labeled "pursuing convenience type".

Consumers in Cluster C have the lowest CFL averages. These consumers do not feel that there is a lack of time ( $M = 3.115$ ). Family taste preferences are consistent ( $M = 2.531$ ). They do not feel significant time pressure ( $M = 2.398$ ). Family meal times are the same ( $M = 2.246$ ). Finally, they prefer cooking for themselves ( $M = 1.959$ ). At the same time, these consumers are less likely to purchase takeaway food and microwave meals ( $M = 2.516$ ). These consumers prepare meals, are relatively stress-free and spend more time with family members who have similar taste preferences. The authors suggest that this cluster pursues quality food, uses high-quality ingredients to prepare meals, and rewards themselves and their family. This cluster was thus labelled "pursuing quality type".

### 3.3. ANOVA and $\chi^2$ analysis for hypothesis 2

ANOVA analysis (Table 3) shows that (1) consumers are extremely agreeable to the purchase of organic food if environmental and transport carbon emissions / energy consumption can be reduced, and personal and family health improved ( $4.00 < M < 4.51$ ). This finding suggests that consumption of organic food for personal health, environmental concerns and carbon reduction have considerable influence on the degree of altruism, but also imply that consumers have strong levels of organic food knowledge and understanding. (2) The means for environment ( $M = 4.51$ ), health (4.42), and improving transport (4.37) of the pursuing convenience group of consumers were significantly higher than the other two groups of consumers ( $12.24 < F < 19.17$ ). Consumers who pursue quality have a higher regard for improving environmental sustainability ( $M = 4.43$ ) and health knowledge ( $M = 4.26$ ) compared to moderate type consumers.

Therefore, consumers 'pursuing convenience' and 'pursuing quality' display a higher perception of environmental protection and health. For consumers 'pursuing convenience', the authors suggest that the reason for the highest mean in considerations of the environment, health and transportation is because an individual is under pressure (e.g., time or life). Physically, the body demands an individual goes in search of high-energy food and drinks: high-sugar, high-fat and high-cholesterol foods, which may consequently lead to health issues. Therefore, as consumers who pursue convenience faces greater pressure, they require a healthier diet to improve their physical condition. In other words, consumers who pursue convenience are cognizant of organic food's potential to improve health. In addition, consumers who 'pursue quality' have less time pressure compared to the moderate consumers who are more likely to spend time improving organic food knowledge.

**Table 3.** Different types of consumers' purchases of organic food as well as the results of the actual behavior of the cognitive ANOVA analysis.

Dimension	Pursuing convenience (PC)	Moderate (MT)	Pursuing quality (PQ)	F	Post-hoc
Environment perception	4.5141	4.2874	4.4388	12.244	PC, PQ > MT
Health perception	4.4242	4.1410	4.2585	16.240	PC > PQ > MT
Transportation perception	4.3679	4.0085	4.1029	19.168	PC > MT, FQ
Moderate (N = 529)	Pursuing convenience (N = 339)	Pursuing quality (N = 348)	Purchases	SS (df)	F (p)
M (SD)	M (SD)	M (SD)	Between groups	9.58 (2)	5.36 (0.005)
1.571 (.937)	1.534 (0.917)	1.750 (0.986)	The group	1085.20 (1213)	
Post-hoc	3 > 1, 2		sum	1094.78 (1215)	
Moderate (N = 534)	Pursuing convenience (N = 334)	Pursuing quality (N = 346)	Purchase Amount	SS (df)	F (p)
M (SD)	M (SD)	M (SD)	Between groups	30.89 (2)	18.58 (0.000)
1.504 (.833)	1.443 (0.719)	1.829 (1.161)	The group	1006.85 (1211)	
Post-hoc	3 > 1, 2		sum	1037.75 (1213)	

ANOVA analysis (Table 3) shows that consumers who pursue quality purchase organic food in larger quantities ( $F = 18.58$ ) and more frequently ( $F = 5.36$ ) compared to the other two groups. Having controlled for consumer awareness of organic food and actual organic food purchase, there appears to be a perceived consequence of purchasing organic food and actual purchasing behavioral gap. Although consumers who pursue convenience food believe that organic food is associated with environmental sustainability, better health and reduced carbon emissions, the frequency and quantity of organic food purchase remains low. There are two possible reasons for this phenomenon.

First, regardless of ethnicity, the top three reasons for purchasing organic food (see Table 4) are its health benefits (72.1%), its naturalness (68.8%) (i.e., its lack of synthetic chemicals), and its safety (63.4%). Conversely the top three reasons for not purchasing organic food are its relatively higher price (70.5%), unclear or confusing food packaging and labeling (46.6%), and the inconvenience of purchasing organic food (39.1%) (e.g., consumers cannot buy what they want after working). For different groups of consumers, their awareness of organic food is the same. In this context, demographic variables could be used to explain differences in different groups of consumers' organic food buying behavior.

Referring to Table 4, regardless of consumer groups, women are the main purchasers (> 60%). For consumers who pursue convenience, their monthly income averages around USD 1418 or less (69.3%). Their level of education is high school level (35.2%) and college (36.7%), with many having worked for 4–7 years (34.0%), followed by 3 (31.1%) and 12 or more years (28.2%). For both consumers who pursue quality and moderate consumers, their monthly income averages are USD\$715–2149 (68.9% FC vs. 65%), with college and university education (82.9% FC vs. 64.8%), and having been in work for 12 or more years (42.8% FC vs. 35.4%), followed by 4–7 years (27.0% FC vs. 25.3%). Consumer profiles appear to indicate that consumers who pursue convenience tend to have lower monthly income, lower education, and lower employment levels. They face greater

pressure (e.g., time), so they prefer microwaveable meals and takeaway food, which also have lower prices. This result explains why consumers who pursue convenience while being aware of the benefits of organic food are less likely to purchase them. Pressure they face compels them to better understand the importance of health needs. Many respondents (> 50%) suggest that a busy work life brings with it long-term physical and psychological pressure. However, most felt that organic food is unaffordable.

**Table 4.** Different types of consumers want to buy/do not want to buy organic food.

Gender	Moderate%	Pursuing convenience%	Pursuing quality%	Educational background	Moderate%	Pursuing convenience%	Pursuing quality%
male	33.50	35.0	24.50	Elementary or junior high school	4.50	5.90	5.50
Female	66.50	65.00	75.50	High school level	23.60	35.20	20.40
N	544	343	364	Specialist University	35.0	36.70	30.60
$\chi^2 = 11.29$ (p = 0.004)				Graduate School	47.90	17.90	34.20
monthly income	Moderate%	Pursuing convenience%	Pursuing quality%	Seniority	Moderate%	Pursuing convenience%	Pursuing quality%
\$714 or less	18.60	20.60	16.30	N	8.90	5.90	14.00
\$715-1,429	40.30	48.70	38.60	$\chi^2 = 47.05$ (P = 0.000)			
\$1,430-2,144	28.60	18.30	26.40	3 years	25.20	31.10	20.90
\$2,145-2,859	6.10	6.20	11.00	4-7 years	27.00	34.00	25.30
\$2,860-3,574	3.90	3.80	3.90	8-11 years	12.40	6.70	10.20
\$3,575 or more	2.40	2.40	3.90	12 more years	42.80	28.20	35.40
N	538	339	363	N	540	344	363
$\chi^2 = 25.92$ (0.004)				$\chi^2 = 30.94$ (.000)			
		Total sample%		Moderate%	Pursuing convenience%		Pursuing quality%
Natural Health		68.8		67.0	65.3		74.2
Preferred taste		17.4		13.4	17.3		21.6
Protect environment		48.1		43.7	39.3		61.4
Safer food security		63.4		58.3	61.3		70.7
Protect the animals		19.1		15.2	14.5		27.7
Support the local economy		28.3		25.7	20.8		38.4
Wholesome		72.1		67.7	68.5		80.0
Number				545	346		365
		Total sample%		Moderate%	Pursuing convenience%		Pursuing quality%
Expensive		70.5		74.0	70.2		67.4
Inconvenient to buy		39.1		38.9	37.4		40.9
Unclear labels		46.6		47.1	44.4		48.2
Inadequate marketing		18.3		20.6	17.0		17.3
Satisfied with existing food		13.2		12.7	14.3		12.5
Does not look appealing		10.3		10.5	12.6		7.8
Number				543	342		359

### 3.4. Regression analysis for hypothesis 3

**Table 5.** Perceived consequences and recycling behavior among types of consumers purchasing organic food.

Dependent variables	Easy recycling		Advanced recycling		
Independent variables					
Total samples	$\beta$	t (p)	$\beta$	t (p)	VIF
Environment perception	0.389	10.48 (0.000)	0.361	9.59 (0.000)	2.335
Health perception	0.139	3.21 (0.001)	0.139	3.17 (0.002)	3.178
Transportation perception	0.006	0.15 (878)	0.019	0.48 (0.632)	2.502
	F = 144.04	R <sup>2</sup> = 0.254	F = 130.61	R <sup>2</sup> = 0.236	
	DW = 1.809		DW=1.838		
Moderate type	$\beta$	t (p)	$\beta$	t (p)	VIF
Environment perception	0.311	5.65 (0.000)	0.264	4.72 (0.000)	2.17
Health perception	0.185	2.91 (0.004)	0.235	3.64 (0.000)	2.90
Transportation perception	0.036	0.65 (0.518)	0.004	0.06 (0.950)	2.24
	F = 57.16	R <sup>2</sup> = 0.235	F = 50.21	R <sup>2</sup> = 0.212	
	DW = 1.798		DW = 1.789		
Pursuing convenience type	$\beta$	t (p)	$\beta$	t (p)	VIF
Environment perception	0.408	6.07 (.000)	0.440	6.52 (.000)	2.04
Health perception	0.064	0.81 (.418)	0.005	0.06 (.950)	2.82
Transportation perception	0.045	0.58 (.562)	0.055	0.70 (.482)	2.72
	F = 35.64	R <sup>2</sup> = .231	F=34.54	R <sup>2</sup> = .225	
	DW = 1.771		DW = 1.891		
Pursuing quality type	$\beta$	t (p)	$\beta$	t (p)	VIF
Environment perception	0.494	6.511 (0.000)	0.430	5.61 (0.000)	2.87
Health perception	0.100	1.144 (0.253)	0.088	1.00 (0.318)	3.81
Transportation perception	-0.081	-1.117 (0.265)	0.006	0.08 (0.940)	2.62
	F = 45.17	R <sup>2</sup> = 0.266	F = 41.98	R <sup>2</sup> = 0.252	
	DW = 1.887		DW = 1.846		

The results of the regression analysis (Table 5) illustrate that, consumers generally purchase more organic food when they are concerned for the environment ( $0.36 < \beta < 0.38$ ) and their health ( $\beta = 0.14$ ), with greater participation in frequent recycling. Scholars [1,5] argued that organic food helps to protect the environment and improve health. This study demonstrated that both consumer willingness to help save the environment and recycling behavior, increased when purchasing organic food, as it provides environmental protection and improves health. In addition, all categories of consumers believe that organic food helps to sustain the environment, with increases in both the simple recycling methods ( $0.31 < \beta < 0.49$ ) and advanced recycling methods ( $0.26 < \beta < 0.43$ ). The moderate consumer's awareness of organic food increases the perception of health along with an improvement in both simple ( $\beta = 0.19$ ) and advanced ( $\beta = 0.24$ ) behaviors of recycling. However, for moderate consumers, the environmental protection effect can enhance recycling behavior, but with a lower coefficient, while a health improvement effect can enhance recycling behavior with a higher coefficient. Both convenience and quality pursuing consumers believe that participating in environmental protection enhances an individual's recycling behavior (both simple and advanced) with higher coefficients. Therefore, both

groups of consumers are aware of the positive effects of organic food on environmental protection, and at the same time increase their recycling behavior to a greater degree than moderate consumers. This result indicates that different CFL types can moderate the relationship between perceived consequences of purchasing organic food and recycling behavior.

#### 4. Conclusion

This study states that CFL can be applied in developing countries [19,45] to explore consumer attitude-behavior gaps, which were found in the Taiwanese organic food consumers' perception, purchase frequency, quantity purchased and probable antecedents. In CFL perspective, this study demonstrates that classifying consumer types via the CFL framework has enhanced the understanding of consumer buying behavior and characteristics, and thus CFL can be used as future researchers focus on the issue of convenience food. In addition, as advocated by self-construction theory, consumers practice self-interest in cognitive purchase behavior [23,34]. The results of this study can serve to inform future studies applying the theory of self-construction and self-interest as a consumer characteristic and foundation for altruism. In other words, this study makes a substantive contribution to the core issue of how the organic food industry's marketing strategy could strive to meet the needs of diverse consumer groups.

Concerning the managerial implications using both CFL and self-construction theory, the authors have found that different types of organic food consumers differ in self-focus, altruism and behavior. First, consumers who pursue convenience due to time pressure have a preference for takeaway or microwave food and are likely to seek a quick and easily available, cost-saving product type. Therefore, the supply of affordable organic takeaway or microwavable food for the group would not only result in a swiftly cooked meal for the family but also reduce time pressure. Second, moderate consumer types tend to be relatively stress-free, with similar family mealtimes and taste preferences. The industry could therefore develop organic food products that further reduce stress and time preparing meals, by increasing personalized packaging of organic food. Third, consumers pursuing quality have even less time pressure and little preference for takeaway food. The industry could perhaps implement a loyalty program to improve the frequency of organic food purchases such as rewards cards or member birthday gifts.

With regard to organic food consumers' behavior, all consumer types believe that organic food is environmentally sustainable contributes to positive effects on health, and accompanies positive recycling behavior. The organic food industry could aim to promote knowledge about environmental sustainability. Therefore, to support the national initiative of an environmentally sustainable policy, the organic food industry while continuing to promote organic food for the benefit of the environment and (altruistic) personal health, could also introduce recycling schemes in their marketing strategies, such as setting up recycling bins on their premises or the collection of recyclables such as used batteries, paper packaging, etc. in exchange for points and other reward systems. These schemes would not only fulfil corporate social responsibility agendas but also help to build a positive reputation for businesses via recycling and offering incentives to augment the government's sustainability policy.

In relation to the organic food marketing strategy, organic food consumers' perception of costs appears to be the biggest barrier to long-term organic food consumption. Government agencies could help to eradicate the misconceptions by implementing suitable organic food and consumer policies. In the short term, to increase organic food sales, it is necessary to increase the number of distribution channels, for instance by commissioning organizations to promote green restaurants with organic fruits

and vegetables as ingredients. Organic food suppliers could be encouraged to offer less-than-perfect-looking food items to minimize losses. In the medium term, a grading mechanism for organic ingredients could be implemented, where varying levels of organic ingredients could be graded. In the long run, national education policies could mandate regular information updates on organic industry programs to enhance consumers' knowledge of organic food. For example, periodic reports of organic industry programs and events, enhance consumer understanding of the various key stakeholders' roles in the organic industry. These stakeholders include government administration, certification bodies, manufacturers, distributors, experts and research. In summary, increasing access to diverse organic food distribution channels, and cultivating organic food production and food items, along with improved consumer understanding could enhance consumer acceptance and willingness to purchase.

Finally, there are four limitations of this study: (1) Sampling range limits: The study's selected sampling area was Taiwan, a developing Asian country. Future research could be replicated in other continents with a cross-cultural analysis of consumer behavior. (2) Analysis of different customer characteristics of buying behavior is limited to gender, education level, and number of purchases. Future research could include other variables, such as religion and family size. (3) Customer segmentation restrictions: This study adopted the convenience food lifestyle segmentation criteria, while previous studies adopted socio-demographic variables, personality traits or behavior [18]. (4) Limitation of variables studied: Recycling behavior could be better understood with the addition of other variables such as consumer consciousness [7], subjective norms [43], and attitudes toward organic food [23].

### Conflict of interest

We declare no conflicts of interest in this paper.

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