British Food Journal

Household food providers' attitudes to the regulation of food marketing and government promotion of healthy foods in five countries in the Asia Pacific region

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Received 4 May 2017
Revised 22 December 2017
Accepted 23 December 2017

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Abstract

Purpose – The purpose of this paper is to understand middle class household food providers' attitudes to the regulation of food marketing and the promotion of healthy food practices.
Design/methodology/approach – A cross-sectional, online questionnaire survey was administered to 3,925 urban respondents in Indonesia, Melbourne, Shanghai, Singapore and Vietnam. Cross-tabulation, confirmatory factor analyses and multiple regression analyses were employed.
Findings – Most respondents supported government communications to promote healthy eating and to a lesser extent, regulatory measures to control unhealthy food marketing. Personal values and country of residence were more strongly associated with the respondents' views than demographic variables. Overall, strongest support for nutrition promotion and for stricter regulation of food marketing was seen in Shanghai, Indonesia and Vietnam. Broadly, two groups were identified across the region: those who held equality-nature or tradition-security-conformity personal values, who disapproved of food marketing but supported government health promotion campaigns, and, those with stronger hedonist values who held opposite views.
Research limitations/implications – First, a wider range of personal values could be included in future studies to better represent Asian values. Second, changes in population views could be assessed in future longitudinal studies. Finally, future studies should include dietary assessments and the views of people from a variety of socio-economic and cultural backgrounds.
Practical implications – These findings suggest that health policy makers and communicators need to frame their communications to match the world views of household food providers in their countries.

The authors thank the staff of GMI for their efficient administration of the Families and Food survey. The authors are also grateful for the valuable, incisive comments of an anonymous reviewer. Funding was provided for this research by a small grant from the School of Exercise and Nutrition Sciences, Deakin University.

British Food Journal

0007-070X
DOI 10.1108/BFJ-05-2017-0269

Originality/value – The study provides confirmation of attitude-values theories within five different countries in the Asia Pacific region and demonstrates the importance of personal values and country of residence in influencing food providers' views.

Keywords Regulation, Survey, Values, Food marketing, Promotion, Asia Pacific, Attitudes, Household food providers

Paper type Research paper

1. Introduction

The nutrition transition is occurring rapidly throughout the Asia Pacific region in the wake of economic changes (Popkin *et al.*, 2012). It presents serious threats to population nutrition status in the forms of the rising prevalence of obesity and non-communicable diseases, loss of traditional dietary patterns and associated environmental degradation (Popkin *et al.*, 2013; Baker and Friels, 2014).

The marketing of energy dense, nutrient poor products is an integral part of these changes and is increasing rapidly in the region (Hawkes, 2002, 2007; Brownell, 2012; Stuckler *et al.*, 2012; Stuckler and Nestle, 2012; Moodie *et al.*, 2013). This is often associated with laissez faire government food policies in which public health goals are sacrificed in the name of trade liberalisation (Hawkes *et al.*, 2015). At the same time, governments may try to counter the adverse dietary changes associated with the nutrition transition through marketing campaigns of their own that promote "healthy" foods such as fruit and vegetables.

Household food providers are often targets of both private industry food marketing and of government "healthy eating" campaigns. They are important players in the food system, because they have strong influence over the foods and beverages that are consumed in their households (Wansink, 2003; Reid *et al.*, 2015). The development and implementation of food policies that promote the public's health depends to a large extent on the building of community consensus in support of healthy food policies (Laverack, 2009; Field, 2014; Huang *et al.*, 2015) and household food providers are likely to play important educational and communication roles in this process. Therefore, it is important to understand the levels of support they hold for both the control (regulation) of industry food marketing as well as for government promotion of healthy foods.

In previous papers, we have reported findings from the Families and Food survey which was conducted among middle class household food providers in five urban areas in the Asia Pacific region (Indonesia, Melbourne, Singapore, Shanghai and Vietnam) in early 2014. The respondents were divided in their trust of industry sources of nutrition information which was associated with their use of convenience food outlets (De Jong *et al.*, 2017) and evaluations of the healthiness of popular beverages (Thomson *et al.*, 2017). In this paper, we examine their support for the regulation of food marketing and for government promotion of healthy food consumption.

We expected that several factors would be likely to influence the householders' opinions of these issues.

Briefly, they are as follows.

First, demographic characteristics such as age, gender, marital status, education level and the presence or absence of children in the household have been linked to food related attitudes and practices. Many older people, women and less educated people hold more critical views of the food supply (Worsley and Scott, 2000; Worsley, 2006) and consider food safety to be important (Hohl and Gaskell, 2008), as do parents of young children (Jussaume and Judson, 1992). Further, married and cohabiting people tend to follow healthier dietary practices than single people (Elstgeest *et al.*, 2012).

However, the public's support for food regulation of food marketing and for government nutrition promotion programmes has been little studied, particularly in the Asia Pacific,

and few studies demonstrate demographic differences in public opinion. Four studies have demonstrated mixed public support for obesity control policies in the USA. Oliver and Lee (2005) found that most Americans were unconcerned about obesity and saw it in terms of individual responsibility. In contrast, Simon *et al.*'s (2014) later survey of 998 adults in Los Angeles county found that 74 per cent supported restrictions on unhealthy food and beverage advertising, and 60 per cent a soda tax. More women supported these and other policy proposals than men. Although Americans seem concerned about childhood obesity, they tend to support strategies that disseminate health information, provide healthier food and physical activity choices but they appear to be opposed to regulatory and taxation interventions (Evans *et al.*, 2005). This agrees with the views of American policy experts who considered outright bans on obesogenic commercial activities to be politically unacceptable in contrast to education and information dissemination policies (Brescoll *et al.*, 2009). Therefore, we hypothesised that there would be generally more support for educational policies and programmes than for stricter regulation of food marketing such as bans and taxes. Based on the literature on consumers' health attitudes and practices, we expected that older people, women, married people and parents of young children would be more likely to support the regulation of food marketing and government nutrition promotion programmes.

Second, level of economic development: the five urban locations included in this study belong to countries which have been classified by the World Bank according to their per capita incomes. Singapore and Australia (Melbourne) are classified as high-income countries, China (Shanghai) is an upper middle income country and Vietnam and Indonesia and lower middle income countries (World Bank, 2016). We expected that middle class householders in well-established "free market" economies' such as Melbourne and Singapore would support regulation of food marketing more than those in developing economies such as Indonesia, Shanghai and Vietnam, regions in which, until recently governments have played strong roles in the economy. This is because the disadvantages of the consumerist culture associated with marketing (Belk, 2010; Hastings, 2013) and the rise of "free markets" may be more apparent in these economies.

It is possible that household food providers in these developing economies may be less protected by effective government regulation and policies, as evidenced by widespread water and food contamination issues in many developing countries (e.g. Tao and Xin, 2014; Grace, 2015), poorly regulated food marketing (Huang *et al.*, 2012, 2015; Kelly *et al.*, 2016; Moodie *et al.*, 2013) and, rapidly increasing obesity and NCD prevalence (Moodie *et al.*, 2013) compared to those in developed economies like Singapore and Melbourne. Therefore, it could be argued that the very novelty of the nutrition transition with its adverse health consequences in Shanghai, Vietnam and Indonesia might make householders more aware of the new non-communicable diseases and so more willing to support policies to prevent or ameliorate them.

Third, personal values: in most large-scale societies people differ according to their world views or personal values (Hofstede, 1991; Schwartz, 1992). This means it is possible to "segment" (Moore and Paree, 2010) people according their values. For example, some people hold strong self-oriented, hedonist values; they see the pursuit of pleasure as being very important in their lives. Other people are more "other or equality oriented"; they believe that it is very important to care for others as well as for nature and less fortunate people. A third group tend to value security and conformity with traditional ways of life. Most people hold these and other values to varying degrees but they differ in the emphasis they place on them. We expected that people with hedonist values would be less likely to support regulation of food marketing and government promotion of healthy eating. In contrast, we expected the other oriented "equality-nature" and the "tradition-security-conformity" people would be more likely to support both policies. This form of values segmentation is likely to assist policy makers to communicate better with these segments to address their interests.

2. Method

2.1 Design and sampling

An online survey (The Families and Food Survey) was conducted in late 2013, early 2014, among 3,945 household food providers in approximately equal numbers from Indonesia (mainly Jakarta-West Java), Vietnam (mainly Ho Chi Minh City, Hanoi and other cities), Melbourne, Shanghai, and Singapore, by Global Market Insite (GMI), a major online market research company. Respondents were rewarded via a points reward system, redeemable for small cash payments. A screening question was used to ensure respondents were household food providers over 18 years of age: Who does the food shopping in your household? Respondents who did not self-identify as food providers were excluded from participation. The online administration of the survey enabled the recruitment of mainly middle class, financially well-off respondents.

2.2 Procedure

The survey questionnaire was translated into Chinese, Bahasa Indonesian and Vietnamese by GMI. These translations were then checked by nationals of these countries (WCW, JF, QP, respectively) and any culturally sensitive or misleading phrasings were rephrased. Prospective respondents, drawn from GMI databases, were invited to participate in the survey by e-mail via a secure link to the respondents' e-mail addresses.

2.3 The questionnaire

The extensive content of the questionnaire has been described elsewhere (Pham and Worsley, 2016; De Jong *et al.*, 2017; Thomson *et al.*, 2017; Worsley *et al.*, 2017; Worsley and Ridley, 2014). We have described the variables that are relevant to this paper below.

2.3.1 Attitudes to government regulation and promotion of food and beverages. The respondents were asked "What can governments do to help us consume healthier foods and drinks?" Then followed 15 items that were presented in rotated order. Five-point response scales were used by the respondents to indicate their agreement with the items (strongly disagree (1), disagree (2), not sure/neutral (3), agree (4), strongly agree (5)). The percentages of respondents in the five locations who agreed with the propositions in the items (ratings 4 + 5) are shown in Table I along with the confirmatory factor loadings. They are presented in two groups according the results of the confirmatory factor analysis (CFA) (below). They include actions to do with food regulation as well as broader communication and nutrition promotion activities. The items in this section were derived from previous discussions with colleagues and broad reading of the food policy literature. Sex differences are shown in Table II.

2.3.2 Demographic characteristics. Respondents' age was measured in years; gender was coded as 1 – male, 2 – female; marital status was coded as 1 – single/widowed/ separated/ divorced, 2 – married/cohabiting; university education coded as 1 and lesser levels as 0; the number of children in the household was elicited for the 0-5, 5-12, 13-18 year age groups. Home ownership was assessed as fully owned or mortgaged, coded as 1, or not owned, coded as 0.

2.3.3 Level of economic development. The five urban locations included in this study belong to countries which have been classified by the World Bank according to their per capita incomes. Singapore and Australia (Melbourne) are classified as high income countries, China (Shanghai) is an upper middle income country and Vietnam and Indonesia are lower middle income countries. (World Bank, 2016). The country of residence was dummy coded into four binary variables using Melbourne as a reference group: Shanghai vs Melbourne, Indonesia vs Melbourne, Singapore vs Melbourne and Vietnam vs Melbourne.

	CFA factor loading	Melbourne $n=769$	Shanghai $n=807$	Indonesia $n=788$	Singapore $n=771$	Vietnam $n=810$	Total $n=3,945$	χ^2
Bans and taxation ($\alpha=0.72$)								
Ban all advertising of fizzy sugar sweetened beverages (e.g. Coca-Cola)	0.75	38.2	44.1	26.9	35.8	24.6	33.9	163.06
Ban vending machines selling unhealthy food or drinks in schools	0.65	61.6	68.6	60.2	54.3	51.7	59.3	85.64
Put a 20% tax on fizzy sugar sweetened beverages (e.g. Coca-Cola)	0.63	39.5	66.7	60.5	42.5	50.6	52.1	295.99
Ban the advertising of any food products to children	0.51	38.1	43.4	27.8	34.0	27.0	34.0	132.90
Promotion and regulation ($\alpha=0.87$)								
Subsidise the sales of fruits and vegetables, making them cheaper	0.67	79.3	88.6	92.8	78.0	87.0	85.2	113.20
Conduct media campaigns to encourage people to eat healthier foods, like fruit and vegetables	0.75	83.0	91.7	94.4	81.2	89.4	88.0	103.12
Make food labels carry clearer information about the content of foods	0.71	81.9	89.1	91.1	80.8	88.3	86.3	63.00
Enforce the regulations on food safety in shops, markets and restaurants	0.76	78.3	89.1	91.9	78.3	90.5	85.7	120.34
Establish SMS systems to remind people when to eat healthier foods	–	28.5	79.9	75.9	48.0	72.2	61.3	891.29
Ensure that children learn how to purchase and cook foods at school	0.60	78.7	86.5	78.6	74.7	84.1	80.6	57.19
Help companies to reformulate foods to contain less salt, sugar and saturated fat	0.65	74.0	84.1	82.4	74.1	81.7	79.3	46.63
Allow vending machines to contain only healthy food and drinks	–	56.8	76.5	81.9	67.7	74.1	71.5	170.70
Strictly enforce food safety regulations	0.70	76.5	90.7	90.2	75.9	89.0	84.6	146.34
There is little governments should do about the availability of foods and beverages		22.8	36.7	21.6	33.5	66.8	36.5	615.25
Provide incentives to encourage consumers to make healthier choices	0.59	75.2	86.9	81.0	75.7	85.4	80.9	75.14

Notes: The two dimensions of support for possible government policy initiatives bans and taxation and promotion and regulation are shown along with standardized factor loadings and scale internal reliabilities. χ^2 tests indicated statistically significant differences between regions on all items at or below $p=0.001$

Table I.
Regional comparisons of food providers' agreement with possible government actions to help the population consume healthier food and drinks (per cent agreement, ratings 4+5)

Table II. Gender comparisons of food providers' agreement with possible government actions to help the population consume healthier food and drinks (per cent agreement, ratings 4+5)

	Male $n = 1,695$	Female $n = 2,250$	Total $n = 3,945$	χ^2	p
Conduct media campaigns to encourage people to eat healthier foods, like fruit and vegetables	83.6	91.3	88.0	54.810	< 0.001
Make food labels carry clearer information about the content of foods	83.1	88.8	86.3	26.473	< 0.001
Enforce the regulations on food safety in shops, markets and restaurants	82.5	88.1	85.7	24.808	< 0.001
Subsidise the sales of fruits and vegetables, making them cheaper	80.9	88.4	85.2	43.653	< 0.001
Strictly enforce food safety regulations	81.9	86.6	84.6	16.542	< 0.001
Provide incentives to encourage consumers to make healthier choices	79.2	82.3	80.9	7.020	0.030
Ensure that children learn how to purchase and cook foods at school	77.2	83.2	80.6	22.465	< 0.001
Help companies to reformulate foods to contain less salt, sugar and saturated fat	75.5	82.3	79.3	29.697	< 0.001
Allow vending machines to contain only healthy food and drinks	70.0	72.7	71.5	5.630	0.060
Establish SMS systems to remind people when to eat healthier foods	60.6	61.8	61.3	1.225	0.542
Ban vending machines selling unhealthy food or drinks in schools	56.7	61.3	59.3	9.046	0.011
Put a 20% tax on fizzy sugar sweetened beverages (e.g. Coca-Cola)	50.0	53.8	52.1	5.952	0.051
There is little governments should do about the availability of foods and beverages	39.3	34.4	36.5	16.165	< 0.001
Ban the advertising of any food products to children	35.4	33.0	34.0	4.192	0.123
Ban all advertising of fizzy sugar sweetened beverages (e.g. Coca-Cola)	34.0	33.8	33.9	0.152	0.927

2.3.4 Personal values. The Short Portrait Values Questionnaire (Schwartz, 2006) was administered. The phrasing was altered to apply to male and female respondents. Respondents were asked: how well do the following statements ACTUALLY describe you and your approach to life? The items were administered in rotated order across respondents. Five-point response scales were used: not like me at all (1), not like me (2), a little like me (3), like me (4) and very much like me (5). Subsequent CFAs derived three reliable factors which were named: security-tradition-conformity (Cronbach's $\alpha = 0.68$), hedonism ($\alpha = 0.73$) and equality-nature ($\alpha = 0.74$). Further details are provided elsewhere.

2.4 Statistical analysis

SPSS 23 (IBM Corp, 2016) and Mplus (Muthén and Muthén, 1998-2015) were used for the data analyses. The demographic characteristics of the samples were summarised through descriptive statistics. The support for the various government policy options is summarised in Tables I and II. In order to identify the dimensions that underlie the item responses, factor analyses were performed. The total sample of 3,951 respondents was randomly split into exploratory ($n = 1971$) and confirmatory ($n = 1980$) subsamples that were used for the exploratory factor analyses (EFA) and CFAs, respectively. Scale internal reliabilities were calculated and examined. Factor scores were calculated for subsequent regression analyses by summing the relevant item ratings.

The CFAs were estimated by the robust maximum likelihood (MLR) method to remedy the non-normality of the data. Model evaluations were examined by χ^2 statistics and

accompanying significance tests. Goodness-of-fit indices reported are the standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), Tucker-Lewis index (TLI) and comparative fit index (CFI). The following criteria were used to assess the fit of the model to the data: χ^2 probability or its scaling correction factor for MLR, $p > 0.05$, SRMR < 0.08, RMESA < 0.08, TLI > 0.90 and CFI > 0.90. The CFA factor loadings are shown in Table I.

Multiple regressions with MLR estimation were used to explore the associations between the household food providers' socio-demographic characteristics and their support for possible government policy initiatives. These background variables included age, gender, education, marital status, number of children aged 0-5, 6-11 and 12-18 years, and the five regions they resided in, along with the three personal values factor scores, were used as independent variables. Respondents' scores on the government policy option factors derived from the CFAs were used as outcome variables.

3. Results

3.1 The demographic characteristics of the samples

These are described in detail elsewhere (Worsley and Ridley, 2014). In all, 57 per cent of the respondents were female. The mean age was 35.72 (SD = 11.23) years. Melbournians were the oldest respondents, and the Vietnamese were the youngest. In all, 60 per cent were married or in *de facto* relationships; most singles were Vietnamese, the lowest proportion was in Shanghai. Approximately four out of five (79 per cent) claimed to have at least a Bachelor's degree. Fewer Melbournians claimed to be university educated. Three-quarters (76.3 per cent) reported they owned or were buying their own accommodation.

3.2 Support for possible government policy initiatives

The most popular proposals endorsed by over three-quarters of the respondents were: media campaigns to encourage people to eat healthier foods, making food labels carry clearer information about the content of foods, enforcement of the regulations on food safety in shops, markets and restaurants, subsidisation of the sales of fruits and vegetables, strict enforcement of food safety regulations, provision of incentives to encourage consumers to make healthier choices, ensuring that children learn how to purchase and cook foods at school and help for companies to reformulate foods to contain less salt, sugar and saturated fat (Table I).

Around one-third of respondents supported the banning of the advertising of any food products to children or the banning of all advertising of fizzy sugar sweetened beverages. However, approximately one-third of respondents reported that there is little governments should do about the availability of foods and beverages.

There was more support in Shanghai, Indonesia and Vietnam than in Melbourne and Singapore (Table I) for the following proposals:

- The conduct of media campaigns to encourage people to eat healthier foods, like fruit and vegetables.
- To make food labels carry clearer information about the content of foods.
- Enforcement of regulations on food safety in shops, markets and restaurants. Subsidies for the sales of fruits and vegetables, making them cheaper.
- Strict enforcement of food safety regulations.
- Help for companies to reformulate foods to contain less salt, sugar and saturated fat.
- Establishment of SMS systems to remind people when to eat healthier foods.

- Allow vending machines to contain only healthy food and drinks.
- Ban vending machines selling unhealthy food or drinks in schools.
- Put a 20 per cent tax on fizzy sugar sweetened beverages (e.g. Coca-Cola).
- Ban the advertising of any food products to children, and ban all advertising of fizzy sugar sweetened beverages (e.g. Coca-Cola).
- The belief that there is little governments should do about the availability of foods and beverages was supported most in Vietnam, and to lesser extents, in Shanghai and Indonesia.

More respondents in Shanghai and Vietnam than elsewhere favoured the provision of incentives to encourage consumers to make healthier choices, and, to ensure that children learn how to purchase and cook foods at school.

Overall, most support for the majority of these proposals, particularly those relating to food safety, was seen in Shanghai, Indonesia and Vietnam than in Singapore or Melbourne. Whilst respondents in the latter two cities held similar views of most proposals they did differ quite substantially on four items: more Singaporeans wanted SMS reminder systems (19 per cent difference), vending machines to contain only healthy products (11 per cent) and that there was little government could do about food availability (11 per cent), and more Melbournians wanted bans on unhealthy product vending in schools (8 per cent).

Generally, more women than men supported all the proposed actions except for the provision of incentives to encourage consumers to make healthier choices, allowing vending machines to contain only healthy food and drinks, establishment of SMS systems to remind people when to eat healthier foods, levying a 20 per cent tax on fizzy sugar sweetened beverages (e.g. Coca-Cola), banning the advertising of any food products to children, and the banning of all advertising of fizzy sugar sweetened beverages (Table II).

3.3 Underlying dimensions of support for policy proposals

Using principal axis factoring with direct Oblimin rotation, an EFA was conducted on the sample of 1,971 respondents for the 15 support for possible government policy initiatives items. The EFA suggested two dimensions provisionally named: bans and taxation (Items 1-3 and 6, e.g. "Ban vending machines selling unhealthy food or drinks in schools"); and promotion and regulation (Items 4, 5, 7, 8, 10, 11, 13, and 15, e.g. "Enforce the regulations on food safety in shops, markets and restaurants"). Items 9 and 12 had cross-loadings, while Item 14 did not load on either dimension. Therefore, they were removed from further analysis.

The factor structure derived from the EFA was then tested in a CFA on the subsample of 1,980 respondents for the remaining 12 items related to support for possible government policy initiatives. It showed that the model fitted the data well as all the fit indices met the criteria: $\chi^2(53) = 442.72$, $p = 0.00$ with a scaling correction for MLR $p = 1.47$. CFI = 0.92, TLI = 0.90, RMSEA = 0.06 (90% CI: 0.06, 0.07), and SRMR = 0.05. The two dimensions: bans and taxation measured by Items 1-3 and 6 with an internal reliability of 0.72 and promotion and regulation reflected by Items 4, 5, 7, 8, 10, 11, 13, and 15 with an internal reliability of 0.87. Table I shows the items that measure each dimension with their standardized factor loadings and scale internal reliability and response percentages.

3.4 Prediction of support for possible government policy initiatives

Support for bans and taxation was positively but weakly related to being Shanghainese or Indonesian (vs Melbournian), being female, older, or married/cohabiting or in a family with a child under five years of age, as well as to tradition-security-conformity, hedonism or equality-nature values (Table III). These variables explained only 8 per cent of the variance

	Support for government initiative	
	Bans and taxation	Promotion and regulation
R^2	0.08	0.32
Being female	0.04* (0.00, 0.07)	0.07** (0.04, 0.10)
Age	0.07** (0.03, 0.11)	0.08** (0.04, 0.11)
Married/cohabiting	0.05** (0.02, 0.09)	0.02 (−0.02, 0.05)
Education	0.01 (−0.03, 0.04)	0.01 (−0.02, 0.05)
Tradition-security-conformity	0.10** (0.06, 0.15)	0.15** (0.12, 0.18)
Hedonism	0.07** (0.03, 0.11)	0.04* (0.00, 0.07)
Equality-nature	0.06** (0.02, 0.10)	0.36** (0.32, 0.39)
Children 0-5 years	0.04* (0.00, 0.07)	−0.01 (−0.04, 0.02)
Children 6-12 years	0.02 (−0.01, 0.05)	0.01 (−0.02, 0.03)
Children 13-18 years	−0.01 (−0.04, 0.02)	−0.04** (−0.06, −0.01)
Shanghai vs Melbourne	0.15** (0.11, 0.20)	0.24** (0.21, 0.28)
Indonesia vs Melbourne	0.05* (0.01, 0.09)	0.21** (0.17, 0.24)
Singapore vs Melbourne	0.02 (−0.02, 0.07)	0.10** (0.06, 0.13)
Vietnam vs Melbourne	−0.03 (−0.08, 0.01)	0.32** (0.28, 0.36)

Notes: Standardized regression coefficients are shown in the columns and 95 per cent confidence intervals are presented in parentheses. *$p < 0.05$; **$p < 0.01$

Table III. Prediction of support for government initiatives to regulate food marketing

of bans and taxation. In contrast, almost one-third (32 per cent) of the variance of promotion and regulation was explained by the positive relationships of several independent variables, principally, equality-nature values, being Shanghainese, Indonesian or Vietnamese (and to a smaller extent, Singaporean vs Melbournian) and tradition-security-conformity (Table II). Smaller positive relationships were observed with being older, or female, or holding hedonist values. There was also a weak negative relationship with households with 13-18 year-old children.

4. Discussion

These novel findings show that there is widespread support for regulation of food marketing and for government initiated programmes for the promotion of healthy food consumption. The findings also show that attitudes to government regulation and food promotion programmes are most strongly associated with personal values and country of residence, and to lesser extents, to the demographic characteristics of middle class household food providers.

The widespread support for government-sponsored nutrition promotion programmes and food regulation is consistent with public health advocates' calls for greater government regulation of food marketing (Cancer Council of Australia, 2018). Consistent with some American studies of public support for obesity prevention policies (Evans *et al.*, 2005; Brescoll *et al.*, 2009), there was more support for education and government promotion of healthy eating than for taxes and bans on unhealthy products (Table I). The policy actions identified by this mainly middle class sample are likely to be popular among the emerging middle classes in Asia and elsewhere in the world, which are important social, economic and political influences (Ekman, 2015).

A novel aspect of these findings is the demonstration of strong associations of a number of variables with support for government regulation and nutrition education (or communication) programmes (Table III). The strongest associations were with equality-nature values (promotion and regulation). As hypothesised, household food providers who held equality-nature values, and to a lesser extent security-tradition-conformity values (self-transcendent values; Schwartz, 1992) were more likely to support government food communication programmes and regulation of food marketing activities. In other words, equality-nature values appear to oppose the influence of food marketing and consumerism.

Generally, the respondents in the different regions held similar values. This suggests policy makers could adopt similar approaches to the various values segments though in Vietnam more attention may need to be paid to respondents with high hedonism values, perhaps through framing of communication messages in terms of fun and excitement.

As noted in the Introduction, we had equivocal expectations about the regional differences. The results clearly show that residents of Vietnam, Shanghai, and Indonesia tended to favour government campaigns and regulation of food marketing. The reasons for this bifurcation in opinion are not entirely clear. On the one hand, household food providers in the three developing economies may be less protected by effective government regulation and policies, as noted in the Introduction, and perhaps they may be more optimistic about the prospects for government communication programmes than their peers in developed economies like Singapore and Melbourne. In part this may be because of their greater traditional reliance on government to control the economy but more investigation is required to understand the reason for this major difference.

The greater support for bans and taxation among householders with children aged 0 to 5 years and for promotion and regulation those with children 13-18 years of age (Table III) is consistent with previous reports on the targeting of children and adolescents by industry (Speers *et al.*, 2011; Kelly *et al.*, 2016). These findings suggest that the impact of food marketing on families with children may contribute to their support for more control of these activities. More investigation of these findings is required but they do suggest that support for public health food policies may be found among parents.

4.1 Implications for regulation and government healthy food promotion programmes

It is clear that there are at least two kinds of household gatekeepers in all five regions who differ in their world views (or personal values). The first group (Group 1) consists of people who hold equality-nature and/or Security-tradition-conformity values. They tend to support strong regulatory measures and government healthy eating programmes. Other findings from the Food and Families survey also show that this group also disapprove of food marketing activities (unpublished), distrust food industry sources of nutrition information and use convenience food stores less often than others (De Jong *et al.*, 2017). In contrast, the second group (Group 2) hold stronger hedonist values, are more tolerant of food marketing activities (unpublished), trust food industry sources of nutrition information and use convenience food outlets more often than other people (De Jong *et al.*, 2017). They also see sweetened, heavily marketed beverages (e.g. Coca-Cola) as healthy than other people (Thomson *et al.*, 2017).

The overall findings show that greatest support for the regulation of food marketing and government-sponsored promotion of healthy food practices was found among people with strong equality-nature and/or security-tradition-conformity values, and among householders in Vietnam, Shanghai and Indonesia. The views of these respondents are already aligned with public health perspectives. They are already motivated to consume healthy foods but they may require communications which show them how to find and prepare healthy foods. Other respondents, however, seem more receptive to the views of the processed food industry and so may benefit from exposure to more communications to public health viewpoints. Because these householders' views are anchored in hedonist values, public health communications may need to emphasise fun and excitement rather than simplistic exhortations adopt healthier habits.

These findings highlight the importance of personal values for the design and communication of messages about proposed and existing regulations and for the promotion of healthy dietary practices. Whilst the present findings are derived from five locations in the Asia Pacific, they are likely to be relevant for other developing countries that are currently implementing policies to promote healthy eating (e.g. Mexico, Barquera *et al.*, 2013; Chile, Multi Country Obesity Prevention Initiative: Chile; and, South Africa, Webster *et al.*, 2016).

4.2 Limitations and future research directions

This is novel, exploratory research and it has several limitations, recognition of which can guide future research in this area. For example, the variables employed here were indicative and largely did not describe the richness of current practices and beliefs about food marketing. Qualitative explorations of the main concepts would allow currently unrecognised local themes to emerge. Further, dietary practices were not included in this study. Future research needs to incorporate measures of these practices and subsequent nutrient status in order to assess the impact of marketing and associated attitudes a number of food practices such as purchasing habits and food consumption inside and outside the home.

Similarly, our measures of personal values did not represent all the values held by Chinese and other Asian cultures (particularly notions of "face" and "future"; Hofstede, 1991). The present indices acted merely as markers of far richer sets of meanings and competencies. The influence or associations of social ideologies (Wang *et al.*, 2008), such as materialism, femininity and masculinities, environmentalism, beauty and body appearance, could be examined in future work.

The survey was cross-sectional and given the rapid pace of change in countries in the region, there is a need to monitor change through additional survey waves, say every two years. This would enable evaluation of government policies and programmes as well as the continuing impact of consumerism is a need to track the effects of government policies and programmes on marketing and on community participation in food and health issues. Consideration could be given to increasing the reach of the survey through the inclusion of more cities and other population groups since food marketing affects all social strata including people from low SES backgrounds.

5. Conclusions

The respondents to this survey were mainly well educated, better off members of their communities. They supported government promotion of healthy eating and regulatory measures to control unhealthy aspects of food marketing. The residents of Vietnam, Shanghai and Indonesia expressed greater support for these policy initiatives than residents of Melbourne and Singapore. The personal values of the respondents were strongly associated with their views of the proposed initiatives. These findings suggest that policy communications should take account of prevailing values within countries.

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