

ORIGINAL ARTICLE

Industry self regulation of television food advertising: Responsible or responsive?

LESLEY KING¹, LANA HEBDEN¹, ANNE GRUNSEIT¹, BRIDGET KELLY¹, KATHY CHAPMAN² & KAMALESH VENUGOPAL¹

¹University of Sydney, Prevention Research Collaboration, Sydney, Australia, ²Cancer Council NSW, Sydney, Australia

Abstract

Introduction. This study evaluated the impact of the Australian Food and Grocery Council (AFGC) self-regulatory initiative on unhealthy food marketing to children, introduced in January 2009. The study compared patterns of food advertising by AFGC and non-AFGC signatory companies in 2009, 2007 and 2006 on three Sydney commercial free-to-air television channels. **Methods.** Data were collected across seven days in May 2006 and 2007, and four days in May 2009. Advertised foods were coded as core, non-core and miscellaneous. Regression for counts analyses was used to examine change in rates of advertisements across the sampled periods and differential change between AFGC-signatory or non-signatory companies between 2007 and 2009. **Results.** Of 36 food companies that advertised during the 2009 sample period, 14 were AFGC signatories. The average number of food advertisements decreased significantly from 7.0 per hour in 2007 to 5.9 in 2009. There was a significant reduction in non-core food advertising from 2007 to 2009 by AFGC signatories compared with non-signatory companies overall and during peak times, when the largest numbers of children were viewing. There was no reduction in the rate of non-core food advertisements by all companies, and these advertisements continue to comprise the majority during peak viewing times. **Discussion.** While some companies have responded to pressures to reduce unhealthy food advertising on television, the impact of the self-regulatory code is limited by the extent of uptake by food companies. The continued advertising of unhealthy foods indicates that this self-regulatory code does not adequately protect children.

Key words: Food marketing, child obesity, public policy, industry self-regulation, prevention

Introduction

There is an accumulating body of international evidence on the nature and extent of food marketing and the negative effects of inappropriate food marketing on children's knowledge, attitudes, food preferences and consumption (1). In Australia, the types of foods and beverages marketed to children are inconsistent with dietary recommendations and predominantly comprise unhealthy/non-core foods that are high in undesirable nutrients and/or energy (2–7). This is of significant concern, given the high prevalence of childhood overweight and obesity (8). In 2009, a taskforce established by the Australian government recommended that the reduction in children's exposure to the marketing of energy-dense nutrient-poor food and beverages should form an important strategy for obesity prevention, and that

the initial focus should be on the monitoring and evaluation of industry self-regulatory initiatives (9).

In recent years, there has been vigorous international debate regarding appropriate policy responses to reduce children's exposure to non-core food marketing, with significant advocacy from health and consumer groups for policy intervention (10–12). At the same time, food and advertising industries have adopted new self-regulatory approaches to limit inappropriate food marketing to children (13,14). In January 2009, the Australian Food and Grocery Council (AFGC), the national body representing food and grocery manufacturers, introduced the Responsible Children's Marketing Initiative, which aims to 'provide a framework for food and beverage companies to promote healthy dietary choices and lifestyles to Australian children' (13). The AFGC framework

recommends food companies develop explicit commitments regarding appropriate food advertising messages to children, use of licensed characters and premium offers, product placement and advertising in schools. Under this code, definitions of appropriate foods to be marketed to children and the permitted times and contexts for marketing of unhealthy foods, are left to individual companies, resulting in differing interpretations by each of the sixteen (as at March 2010) signatory companies (Table I summarises key company commitments related to television advertising).

In the absence of a formally constituted monitoring and evaluation system, information on food marketing patterns and the evaluation of self-regulatory initiatives relies on independent studies. As television is a major source of children's exposure to unhealthy food advertising, the current study aimed to provide an initial assessment of the impact of the AFGC self-regulatory initiative on food marketing, by comparing patterns of food marketing on free-to-air (FTA) television in 2009 to data previously collected in 2006/07.

Methods

Coding and analysis methods have been described in detail elsewhere (3). As consistent methods were used across all years, they are described only briefly here.

Sampling

All advertisements broadcast on the three main Sydney commercial free-to-air (FTA) channels were recorded for the following periods:

- May 2006, Sunday 14th to Saturday 20th, between 06:00 to 23:00 (357 hours).
- May 2007, Sunday 13th to Saturday 19th, between 06:00 to 23:00 (357 hours).
- May 2009, Saturday 16th to Tuesday 19th, between 06:30 to 22:30 (192 hours).

Because the number of weekdays sampled varied between 2006/7 and 2009, the distribution of core and non-core food advertisements for four and seven days in the 2007 data were compared and found to be not significantly different, and therefore comparable.

Coding

Advertised foods were identified and classified as: healthy/*core* (nutrient-dense, low-energy foods considered part of a healthy diet for children); unhealthy/*non-core* (high in undesirable nutrients and

not considered part of healthy diet for children); or other/*miscellaneous* foods, as based on the Australian Guide to Healthy Eating (15), and used in previous studies on food advertising to children (3), and summarised in Table II.

The companies advertising foods were identified as being an AFGC signatory or not (as at May 2009).

The use of persuasive advertising techniques within non-core food advertisements was also coded. These techniques comprised the use of: promotional characters (celebrities, characters, sports persons, health professionals, scientists, charities or organisations); premium offers (competitions or giveaways); and nutrient content claims (defined as '...a claim about the presence or absence of a property of the food, other than a claim about alcohol content') (16).

Children's peak viewing times were identified in 2007 using commercial audience data (OzTAM Pty Ltd), and were defined as those periods when the number of children watching across all channels was greater than a quarter of the maximum child audience rating for the day, based on average child audience viewing patterns over the previous year (17). These peak viewing times corresponded to 7:00 to 9:00 and 15:30 to 22:30 on weekdays (9 hours/day), and 7:30 to 10:30 and 15:30 to 22:30 on weekends (10 hours/day).

Analyses

The count of food advertisements for the sampled times was the dependent variable. Separate analyses were conducted for all food advertisements, and according to food category (core, non-core and miscellaneous) across years (2006, 2007 and 2009), to examine whether there had been a change over time. To assess the impact of the AFGC initiative, further analyses were conducted with non-core foods from 2007 to 2009 only, including a year by company type (AFGC-signatory and non-signatory) interaction term. As the number of days of data collection differed between years (seven days in 2006 and 2007 and four days in 2009), this was adjusted for in both the descriptive and regression analyses, respectively, by adjusting the denominator for calculation of the average number of advertisements per hour and including a dummy variable for weekday/weekend and the appropriate offset for the rate calculations.

Counts of advertisements were analysed using four models: poisson, negative binomial, zero-inflated poisson (ZIP) and zero-inflated negative binomial (ZINB) regression. The best model was selected based on goodness of fit statistics, Vuong test (ZIP vs. poisson and ZINB vs. negative binomial) and the dispersion parameter alpha (negative binomial vs.

Table I. Summary of key elements of the Australian Food and Grocery Council's (AFGC) responsible children's marketing initiative framework, and commitments of signatory food companies.

	1. Types of foods permitted for advertising to children	2. Media	3. Popular personalities and licensed characters	4. Premium offers
AFGC Key policy elements	A. Product must be a healthy dietary choice "...consistent with established scientific or Australian government standards", or B. Advertisement messaging must encourage good dietary habits (consistent with A), and/or physical activity.	Audience: media "...where the audience is predominantly children and/or the media or communication activities are directed primarily to children." Types of media: TV, radio, print, cinema, third party internet sites.	Defined as a character from C or P program, other program or movie and all non-copyright cartoons. These characters may only be used if consistent with policy element 1 (A and B).	May be used if premium is merely incidental to food product advertised.
Commitments of signatory food companies				
Campbell Arnotts	Based on NSW Healthy Kids SCA nutrient criteria for Green and Amber foods.	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
Cereal Partners Worldwide	Cereal Partners Worldwide Nutrition Foundation.	Consistent with AFGC specifications, in addition: outdoor & telephony.	Consistent with AFGC specifications.	Conditions must also be consistent with policy element 1.
Coca Cola	None. Will abstain from direct targeting of children <12 for brand messaging.	Audience: children >50% media audience. Consistent with AFGC specifications, in addition: sponsorship and point of sale.	Unspecified.	Unspecified.
Ferrero	None. Will abstain from advertising specific products, although brands permitted.	Audience: children >50% media audience for TV, internet, radio and print.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
Fonterra	Fonterra Good Choice Guidelines.	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
George Weston Foods	NSW Healthy Kids SCA nutrient criteria for Green and Amber foods.	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
Kellogg's	Kellogg's Global Nutrient Criteria.	Audience: children >50% media audience for TV, radio and third-party internet sites.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
Kraft (including Cadbury brands)	Kraft Sensible Solutions.	Audience: children >35% media audience for internet and TV. Consistent media types with AFGC specifications, excluding cinema.	Restrictions only apply to 'new' characters.	Consistent with AFGC specifications.
Mars	None.	Audience: children >25% media audience for TV and films. Consistent with AFGC specifications, in addition: outdoor advertising and telephony.	Consistent with AFGC specifications. Will continue to use M&Ms characters.	Only premiums primarily directed at children restricted.
Nestle	Nestle Nutritional Profiling System.	Consistent to AFGC specifications, in addition: outdoor advertising and telephony.	Consistent with AFGC specifications.	Conditions must also be consistent with policy element 1.
Patties	National Heart Foundation Tick Program, FOCIS, and SCA criteria for Vic and WA.	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Only premiums primarily directed at children restricted.

(Continued)

Table I. (Continued)

	1. Types of foods permitted for advertising to children	2. Media	3. Popular personalities and licensed characters	4. Premium offers
PepsiCo	None.	Audience: children >50% media audience and C or P programs. Consistent types of media with AFGC specifications.	Consistent with AFGC specifications.	Only premiums primarily directed at children restricted.
Sanitarium	Sanitarium Corporate Nutrition Policy, National Heart Foundation and FOCiS.	Consistent with AFGC specifications, in addition: outdoor advertising, packaging, labelling, in store promotions and events.	Consistent with AFGC specifications. Sanitarium will continue to use "aspirational heroes".	Consistent with AFGC specifications.
Simplot	National Heart Foundation Tick Program.	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Consistent with AFGC specifications.
Unilever	Unilever Global Internal Nutrient Criteria, and Healthy Kids NSW SCA Criteria (Green and Amber foods).	Consistent with AFGC specifications.	Consistent with AFGC specifications.	Conditions must also be consistent with policy element 1.

Abbreviations: 'Aspirational heroes' = characters that "...inspire young Australians to make healthy eating and lifestyle choices"; C character = Company owned characters, C program = Children's program as classified by the Advertising Standards Bureau, FOCiS = Federation of Canteens in Schools, L character = Licensed/copyright characters, P character = popular characters, such as sports persons or those from a children's popular TV program or movie, P Program = Pre-school program as classified by the Advertising Standards Bureau, SCA = School Canteens Association.

Table II. Description of core and non-core food categories.

Core and healthy food categories

Breads (include high fibre, low fat crackers), rice, pasta and noodles
 Low sugar and high fibre breakfast cereals (<20 g/100 g sugar and \geq 5 g/100 g dietary fibre)
 Fruit and Vegetable products without added sugar
 Dairy
 Meat and meat alternatives (not crumbed or battered) (includes fish, legumes, eggs and nuts and nut products, including peanut butter and excluding sugar coated or salted nuts)
 Core foods combined (including frozen meals [<10 g/serve fat], soups [<2 g/100 g fat, excludes dehydrated], sandwiches, mixed salads, and low fat savoury sauces [<10 g/100 g fat; includes pasta and stir-fry simmer sauces])

Baby foods (excluding milk formulae)

Bottled water (including mineral and soda water)

Non-core and unhealthy food categories

High sugar and/or low fibre breakfast cereals (>20 g/100 g or <5 g/100 g dietary fibre)
 Crumbed or battered meat and meat alternatives (e.g., fish fingers) and high fat frozen meals (>10 g/serve fat)
 Cakes, muffins, sweet biscuits, high fat savoury biscuits, pies and pastries
 Snack foods, including chips, savoury crisps, corn chips and taco shells, extruded snacks, popcorn, snack bars, muesli bars, sugar sweetened fruit and vegetable products (such as jelly fruit cups, fruit straps) and sugar coated nuts.
 Fruit juice and fruit drinks
 Frozen/fried potato products (excluding packet crisps)
 Ice cream and iced confection
 Chocolate and confectionery (including regular and sugar-free chewing gum and sugar)
 Fast food restaurants/meals
 Sugar sweetened drinks including soft drinks, cordials, electrolyte drinks and flavour additions (e.g., Milo).
 Diet varieties included.

Alcohol

High fat/sugar/salt spreads (includes yeast extracts, margarine and chocolate spreads), oils, high fat savoury sauces (>10 g/100 fat), and soups (>2 g/100 g fat tinned and all dehydrated)

poisson). All analyses were conducted using STATA version 11.0 and the threshold for significance set at $p = 0.05$. In the regression model, counts were calculated per half hour, but are presented in results on a per hour basis for ease of interpretation.

Results

Food advertisements comprised 26%, 26% and 16% of all advertisements observed in the 2006, 2007 and 2009 sample periods, respectively. The average number of advertisements for all foods and the three food categories, and incidence rate ratios comparing 2006 with 2007 and 2009 with 2007, are shown in Table III.

Controlling for type of day (weekday or weekend), there was no significant change in the rate of

Table III. Average number of food advertisements per hour on free-to-air television and incidence rate ratios by food type for 2006, 2007 and 2009.

	Average number of advertisements/hour			Incidence rate ratio (IRR) (95%CI) and p-value			
	2006 ^a	2007 ^a	2009 ^b	2006 vs. 2007		2009 vs. 2007	
All food ads ^c	7.3	7.0	5.9	1.05 (0.97–1.13)	NS	0.65 (0.59–0.71)	<0.01
Core foods ^c	2.4	1.9	1.5	1.18 (1.04–1.34)	<0.01	0.90 (0.77–1.06)	NS
Non-core foods ^c	3.7	3.4	3.2	1.05 (0.96–1.15)	NS	1.05 (0.84–1.17)	NS
Miscellaneous foods ^d	1.3	1.7	1.4	0.69 (0.59–81)	<0.01	0.96 (0.80–1.15)	NS

^aAverage number = total number of advertisements/357 hours (17 hours per day/7 days/3 channels).

^bAverage number = total number of advertisements/192 hours (16 hours per day/4 days/3 channels).

^cNegative binomial model (2007 reference category).

^dZero-inflated negative binomial model (2007 reference category).

all food advertising from 2006 to 2007, but there was a 35% decrease in 2009 compared with 2007. The average number of food advertisements per hour decreased from 7.0 in 2007 to 5.9 in 2009.

Across the three sample periods, 50% of food advertisements were for non-core foods, 29% were for core foods, and 21% for miscellaneous foods. Between 2007 and 2009 there were no statistically significant changes in advertising rates for any of the specific food categories, although altogether there was a reduction in overall food advertisements. Previously, between 2006 and 2007 there were changes in the rate of advertisements for different food categories: 18% decrease in advertisements for core foods, 31% increase for miscellaneous foods, and unchanged for non-core foods.

Non-core food advertisements by company type

Given that the focus of regulatory actions is the advertisement of unhealthy foods, the data for this food category was further analysed to determine if advertisements came from an AFGC-signatory or non-signatory company. Of the 41 companies advertising food products in 2009 (following the introduction of the AFGC Initiative), 14 (34%) were AFGC signatories. Of the 36 companies advertising non-core foods, 11 were AFGC signatory companies. These 11 companies contributed 41% of all non-core food advertisements in 2009.

The average number of all food advertisements (per hour) for non-core foods from AFGC signatory and non-signatory companies is shown in Table IV. The average number of non-core food advertisements from AFGC companies reduced from 1.7 per hour in 2007 to 1.3 in 2009, compared with 1.7 and 1.8, respectively, by non-signatory companies. A reduction in non-core food advertisements by AFGC companies was also observed during children's peak viewing times (from 1.8/hour to 1.5/hour), suggesting that during children's peak viewing times the

average rate of non-core food advertising was slightly higher than overall (not formally tested).

The results of the regression analyses used to formally assess the impact of the company being an AFGC signatory on the advertisement of non-core foods and containing the type of day (weekday or weekend), year, company type (AFGC signatory versus non-signatory), and the interaction between year and company are shown in Table V.

Although the change in rate of non-core food advertising from 2007 to 2009 was not significant in the overall analyses shown in Table III, the analysis reported in Table V shows that once the data were stratified by company type, the rate for AFGC-signatory companies was almost halved between 2007 and 2009 compared with non-AFGC companies. Tests of the simple effect of company type at each year showed that AFGC-signatory and non-signatory companies were not significantly different in 2007 (mean difference = 0.31, $p > 0.05$), but the tests of interaction effects showed

Table IV. Average number of non-core food advertisements per hour on free-to-air television for the Australian Food and Grocery Council's (AFGC) signatory and non-signatory companies in 2007 and 2009.

	Average number of advertisements per hour			
	AFGC		non-AFGC	
	2007 ^a	2009 ^b	2007 ^a	2009 ^b
All non-core food ads	1.7	1.3	1.7	1.8
Peak viewing times	1.8	1.5	2.1	2.0
Use persuasive techniques	1.0	0.6	0.3	0.4

^aAverage = total number of advertisements / 357 hours (17 hours per day/7 days/3 channels); peak viewing times = total number of advertisements/195 ([9 hours/day/5 days+10 hours/day/2 days]/3 channels).

^bAverage = total number of advertisements / 192 hours (16 hours per day/4 days/3 channels); peak viewing times = total number of advertisements/114 ([9 hours/day/2 days+10 hours/day/2 days]/3 channels).

Table V. Results of regression analyses of incidence rate ratios (IRR) of non-core food advertisements for the Australian Food and Grocery Council's (AFGC) signatory and non-signatory companies in 2007 and 2009.

Independent variables (reference category)	Dependent variable					
	Non-core food ads ^a		Non-core food ads during peak viewing times ^b		Non-core ads using persuasive techniques ^{b, c}	
	IRR (95% CI)	p	IRR (95% CI)	p	IRR (95% CI)	p
Type of day (weekday)	1.34 (1.22–1.49)	<0.01	1.16 (1.03–1.31)	0.013	1.13 (0.96–1.32)	NS
Company type (non-AFGC)	1.96 (1.75–2.2)	<0.01	1.75 (1.52–2.02)	<0.01	2.74 (2.31–3.25)	<0.01
Year (2007)	1.42 (1.24–1.64)	<0.01	1.22 (1.04–1.44)	0.015	0.89 (0.82–0.98)	0.013
Company by year (2007/non-AFGC)	53 (0.43–0.65)	<0.01	0.93 (0.69–1.26)	<0.01	–	–

^aZero-inflated Poisson regression model.

^bPoisson regression model.

^cResults for model without interaction which was non-significant ($p = 0.223$).

that AFGC-signatory companies had significantly lower rates of non-core advertising in 2009 (mean difference = 0.35, $p < 0.01$), as non-AFGC companies increased their non-core food advertising by 42% from 2007 to 2009, while AFGC companies decreased theirs by 24% over the same time. Figure 1 illustrates the significant interaction graphically. The interaction between year and company type remained significant when the analysis was conducted for children's peak viewing times only (Table V).

In 2009, there were 181 non-core food advertisements that used at least one persuasive advertising technique, and 62% of these were from AFGC signatory companies. In 2007, 74% of non-core food advertisements using these techniques came from companies that later became AFGC signatories. However, there was no significant interaction between year and company type in the use of persuasive marketing techniques (Table IV); therefore the results for the model recalculated without the interaction term are shown.

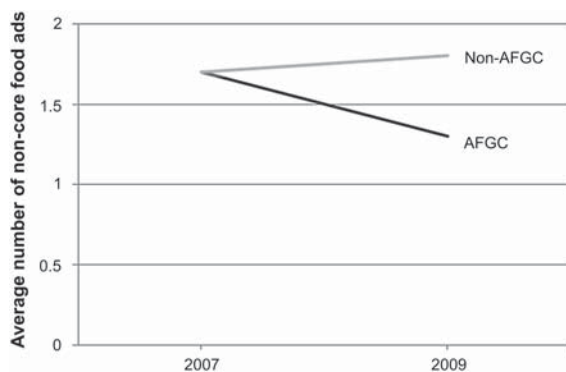


Figure 1. Graph of average number of non-core food advertisements for the Australian Food and Grocery Council's (AFGC) signatory and non-signatory companies in 2007 and 2009.

Discussion

This paper documents changes in television food advertising patterns between 2006 and 2009, and the relative contributions of those food companies who made commitments to the AFGC self-regulatory initiative in 2009. This study also illustrates the value of a system of independent monitoring and evaluation of television food marketing, which is an important tool for both transparent evaluation and public accountability for any regulatory arrangement.

The analyses show that the rate of food advertising fell following the introduction of this initiative, although the rate of non-core food advertising remained stable. However, compared with other companies, AFGC-signatory companies reduced their rate of non-core food advertising between 2007 and 2009, even after taking into account reductions in overall food advertising. This was true for children's peak viewing periods and overall.

Despite the changes in food advertising patterns by AFGC signatory companies, the 2009 food advertising rates presented here show the majority of all food advertisements continue to be for non-core foods (of the 5.9 food advertisements per hour 3.2 are for non-core foods). The AFGC signatory companies appear to be over-represented in advertising of non-core foods, as they comprise about one-third of the food companies advertising in the 2009 sample period, but are responsible for approximately 41% of the non-core food advertisements shown. This result is consistent with the finding from the study of a US industry self-regulatory initiative, which found that the majority of foods advertised by participating companies are unhealthy (18). Non-core food advertising still constitutes a high proportion of food advertising during children's peak viewing times, as found in earlier studies (3,21).

Persuasive advertising techniques also continue to be frequently used within advertisements for non-core foods by both AFGC-signatory and non-signatory companies and, at least qualitatively, it appears that AFGC companies account for a disproportionate number of advertisements using these techniques in both 2009, after becoming AFGC Initiative signatories, as well as in 2007. The continued advertising of unhealthy foods during peak viewing times and the ongoing use of persuasive techniques indicates that this self-regulatory code does not fully or adequately protect children, a conclusion that is consistent with the independent evaluation of the US self-regulatory initiative (18).

Interestingly, the reductions in non-core food advertising by some AFGC companies in 2009 are beyond those required for them to comply with their own self-regulatory commitments; unlike the case of self-regulation in Spain where companies did not comply with their commitments (20). To some extent this reflects differences in regulatory codes; and, in Australia, the fact that self-regulatory commitments vary between companies. Further, the commitments by participating companies in Australia are highly permissive and allow continued advertising of non-core foods using persuasive techniques at times when large numbers of children are viewing television. The AFGC's own evaluation exercise did not systematically monitor companies' compliance with their commitments, but involved a non-systematic documentation by participating companies of any changes they had made, which covered product formulation as well as advertising (21). This unstructured approach, as well as the inherent limitations of monitoring compliance in relation to permissive and variable criteria, illustrate the importance of assessing marketing patterns and regulatory approaches in relation to objective indicators of exposure, such as used in this study and recommended by WHO (22).

The findings on the reductions in non-core food advertising suggest that some food companies have been responding to consumer sentiment and public health advocacy efforts (12,23,24), and are consistent with the reduction in advertisements for high fat, high sugar foods observed in the UK, following the introduction of a regulatory system in 2007 (25).

However, unlike the UK government regulatory system, the non-binding nature of the AFGC initiative means there are many food companies who have not made any commitments and continue to engage in more frequent non-core food advertising. In 2009, only 11 of the 36 food companies advertising on television were AFGC signatories. The level of participation by companies engaged in food advertising

in Australian is substantially lower than in the US, where 71% of those companies advertising foods were participants in the self-regulatory initiative (20).

It is possible that the reductions in non-core food advertising by AFGC companies observed in this study may have pre-dated the self-regulatory initiative, as rates of all food advertising and non-core food advertising were lower in 2008 compared with 2007 (19). Thus, companies' responsiveness to the changing consumer environment may be motivating both reductions in non-core food advertising and agreements to self-regulatory commitments. Further, the possibility that there have been shifts in food and beverage marketing from FTA television to other broadcast and non-broadcast media, such as observed in UK reports on marketing patterns, cannot be excluded (26).

One limitation of this study is that the data sample is limited to a seven-day study period in May 2006 and 2007 and a four-day study period in May 2009. Although based on small broadcast periods, the data collection periods excluded holiday ratings and special events and used the same month (May) across years to control for seasonal variability.

While this study illustrates that food companies can reduce their levels of food advertising, it also identifies challenges for self-regulatory approaches. First, the observation that the reductions in AFGC-signatory company advertising patterns exceeded what was required to meet their own commitments means that the observed changes to advertising patterns are not the result of this self-regulatory initiative *per se*. The challenge is whether the AFGC and signatory companies will modify and extend their action plans to match practices. Second, the findings illustrate that substantial reductions in children's exposure to non-core food advertising would require changes by a larger number and proportion of food companies. The limited participation in the AFGC Initiative to date is a significant weakness. Since the introduction of the AFGC initiative, however, the Australian Quick Service Restaurant Industry Initiative for Responsible Advertising and Marketing to Children was introduced, in August 2009 (14). The extent to which this has contributed to additional changes in television food advertising should be assessed in future research.

The results indicate there is scope to further reduce unhealthy food marketing to children. One mechanism through which this could occur is through increased company participation in industry self-regulatory initiatives, in combination with ongoing changes in practices. However, industry self-regulation is only one approach to restricting children's exposure to food marketing and it could be strengthened through co-regulatory mechanisms,

where, for example, government set a policy framework that specifies key policy elements regarding the foods, times and techniques appropriate for advertising to children that then underpin industry self-regulation (22). Sharma et al. (2010) (27) propose eight standards that should be met if self-regulation is to be effective, including transparency, meaningful objectives and benchmarks, accountability and objective evaluation, and oversight. Like self-regulatory systems in a number of countries, such as Spain and the US, the Australian initiative does not fully conform to these requirements.

This case study provides an independent evaluation of the impact of a specific industry self-regulatory initiative on objective measures. It also illustrates the value of a system of independent monitoring, which is an important tool for both transparent evaluation and public accountability in any regulatory arrangement. While the findings of this study pertain to a specific setting and time, the issues arising in relation to self-regulation are of significance internationally.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

- Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. Geneva: World Health Organization; 2009.
- Chapman K, Nicholas P, Supramaniam R. How much food advertising is there on Australian television? *Health Promot Int.* 2006;21:172–80.
- Kelly B, Smith B, King L et al. Television food advertising to children: the extent and nature of exposure. *Public Health Nutr.* 2007;10:1234–40.
- Neville L, Thomas M, Bauman A. Food advertising on Australian television: the extent of children's exposure. *Health Promot Int.* 2005;20:105–12.
- Kelly B, Bochynska K, Kornman K et al. Internet food marketing on popular children's websites and food product websites in Australia. *Public Health Nutr.* 2008;11:1180–7.
- Kelly B, Chapman K. Food references and marketing to children in Australian magazines: a content analysis. *Health Promot Int.* 2007;22:284–91.
- Jones S, Phillipson L, McVie D et al. Food Marketing to Children in Australia. Wollongong: Centre for Health Initiatives, University of Wollongong; 2007 [cited 2010 June 17]; Available from URL: HYPERLINK "http://www.cancer.org.au/File/PolicyPublications/FoodMarketingtoChildreninAustralia.pdf" http://www.cancer.org.au/File/PolicyPublications/FoodMarketingtoChildreninAustralia.pdf.
- Commonwealth Scientific Industrial Research Organisation (CSIRO), Preventive Health National Research Flagship and the University of South Australia. 2007 Australian National Children's Nutrition and Physical Activity Survey: Main Findings. Canberra: Commonwealth of Australia; 2008. [cited 2010 June 17]; Available from URL: [http://www.health.gov.au/internet/main/publishing.nsf/Content/66596E8FC68FD1A3CA2574D50027DB86/\\$File/childrens-nut-phys-survey.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/66596E8FC68FD1A3CA2574D50027DB86/$File/childrens-nut-phys-survey.pdf).
- National Preventative Taskforce. Australia: the healthiest country by 2020. National Preventative Health Strategy – the roadmap for action. Canberra: Commonwealth of Australia; 2009 [cited 2010 June 17]; Available from URL: <http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/nphs-roadmap>.
- Hawkes C. Marketing food to children: changes in the global regulatory environment 2004–2006. Geneva: World Health Organization; 2006.
- Swinburn B, Sacks G, Lobstein T et al. The 'Sydney Principles' for reducing the commercial promotion of foods and beverages to children. *Public Health Nutr.* 2008;11:881–6.
- Coalition on Food Advertising to Children. 'Pull the Plug on Food Advertising to Children' campaign. 2008 [cited 2010 June 17]; Available from URL: <http://www.cfac.net.au/>.
- Australian Food and Grocery Council (AFGC). The responsible marketing to children initiative. 2009 [cited 2010 June 17]; Available from URL: <http://www.afgc.org.au/industry-codes/advertising-kids.html>.
- Australian Association of National Advertisers. Australian quick service restaurant industry initiative for responsible advertising and marketing to children. Australian Association of National Advertisers. 2009 [cited 2010 June 17]; Available from URL: <http://www.aana.com.au/documents/QSRAInitiativeforResponsibleAdvertisingandMarketingtoChildren-June2009.pdf>.
- Smith A, Kellett E, Schmerliab Y. The Australian Guide to Healthy Eating. Canberra: Commonwealth Department of Health and Family Services; 1998.
- Kelly B, Hattersley L, King L et al. Persuasive food marketing to children: use of cartoons and competitions in Sydney commercial television advertisements. *Health Promot Int.* 2008;23:337–44.
- Australian Television Audience Measurement (OzTAM). Homepage on the internet: <http://www.oztam.com.au/>.
- Kunkel, D, McKinley C, Wright P. The impact of industry self regulation on the nutritional quality of the foods advertised to children. *Children Now*; December 2009.
- Kelly B, Chapman K, King L et al. Down but not out: children's broadcast diet remains unbalanced. *Aust N Z J Public Health.* 2010; [In press].
- Romero-Fernandez MA, Royo-Bordonada MA, Rodriguez-Artalejo F. (2009) Compliance with self-regulation of television food and beverage advertising aimed at children in Spain. *Pub Health Nutr.* 2010;13:1013–21.
- Australian Food and Grocery Council (AFGC). Australian Food and Grocery Council: Responsible Children's Marketing Initiative. Interim report for 2009. 2010 [cited 2010 June 21]; Available from URL: <http://www.afgc.org.au/industry-codes/advertising-kids/rcmi-reports-2009.html>.
- World Health Organization. Marketing of food and non-alcoholic beverages to children. Development of recommendations on the marketing of foods and non-alcoholic beverages to children. Process updates. Approved resolution WHA63.14 Geneva: World Health Organization; April, 2010 [cited 2010 June 17]; Available from URL: www.who.int/dietphysicalactivity/marketing-food-to-children/en/.
- Kelly B, Chapman K, Hardy LL et al. Parental awareness and attitudes of food marketing to children: A community attitudes survey of parents in New South Wales, Australia. *J Paediatr Child Health.* 2009;45:493–7.

24. Morley B, Chapman K, Mehta K et al. Parental awareness and attitudes about food advertising to children on Australian television. *Aust N Z J Public Health*. 2008;32:341–7.
25. Office of Communications (Ofcom). Changes in the nature and balance of television food advertising to children: a review of HFSS advertising restrictions. London: United Kingdom; 2008 [cited 2010 June 17]; Available from URL: <http://www.ofcom.org.uk/research/tv/reports/hfssdec08/hfssdec08.pdf>.
26. Department of Health. Changes in food and drink advertising and promotion to children: a report outlining the changes in the nature and balance of food and drink advertising and promotion to children from January 2003 to December 2007. United Kingdom: Department of Health; 2008 [cited 2010 June 17]; Available from URL: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_089123.pdf.
27. Sharma LL, Teret SP, Brownell KD. The food industry and self-regulation: standards to promote success and to avoid public health failures. *Am J Public Health*. 2010;100:240–6.