

The advertised diet: an examination of the extent and nature of food advertising on Australian television

Michele Roberts^{A,E}, Simone Pettigrew^A, Kathy Chapman^B, Pascale Quester^C and Caroline Miller^D

^ABusiness School, University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Australia.

^BCancer Council NSW, PO Box 572, Kings Cross, NSW 1340, Australia.

^CThe University of Adelaide, North Terrace, Adelaide, SA 5005, Australia.

^DSouth Australian Health and Medical Research Institute and School of Population Health, University of Adelaide, North Terrace, Adelaide, SA 5005, Australia.

^ECorresponding author. Email: michele.roberts@uwa.edu.au

Abstract

Issues addressed: The aim of the present study was to describe food advertising and expenditure on Australian television, and to conduct an audit to assess what proportion of food and beverage television advertisements was consistent with dietary recommendations.

Methods: Data were acquired from a national media monitoring company for advertisements broadcast in five major Australian cities from 1 September 2010 to 31 October 2010. Content analysis was undertaken on these advertisements and the advertised foods were assessed against the Australian Guide to Healthy Eating. The data also included advertising expenditures.

Results: Most advertised foods were non-core foods (63%), with few advertisements for fruits and vegetables (6%). Advertisements for non-core foods were significantly more frequent during prime time viewing periods (71% vs 60%; $P < 0.01$). High levels of advertising for fast food (28%) and non-core beverages (24%) were recorded.

Conclusions: The present study found that the foods advertised during the data-collection period were inconsistent with the recommended diet. There are clear areas for policy concern given that the majority of recorded advertisements were for foods classified as ‘occasional foods’, there were low levels of advertising for fruit and vegetables, and there were no social marketing messages to support healthy eating.

So what? The findings of the study suggest that there is an urgent need for more comprehensive regulation of food advertising in Australia.

Key words: advertising, food, marketing, nutrition, obesity, regulations.

Received 18 November 2012, accepted 26 July 2013, published online 16 September 2013

Introduction

Adult overweight and obesity has continued to escalate in Australia, increasing from 61% in 2007 to 63% in 2012.¹ A dominant cause of obesity is the excessive consumption of energy-dense foods.² The current Australian diet is inappropriate not only in view of escalating levels of overweight and obesity, but also because it lacks adequate nutrients required for good health.²

Health researchers have asserted that an important step in addressing the obesity epidemic is the reduction of advertising for foods that are high in fat, sugar and/or salt.² Although much concern has been expressed about the effects of food advertising on children’s diets,^{3,4} the effects of food advertising on the general population have been of less policy interest. This is despite a growing awareness that

advertising may have non-conscious, involuntary effects causing people to mimic the observed behaviours, a phenomenon referred to as the ‘chameleon effect’.^{5,6} This effect bypasses cognitive defences that are supposed to be triggered by awareness of persuasive intent.⁷ Non-conscious, involuntary mimicking has been reported to occur in response to food advertisements in both children^{8,9} and adults.⁹ A study by Harris *et al.*⁹ found that more snack food was consumed by adults and children after exposure to food advertising compared with non-food advertising, even though the foods offered were different to those advertised. This response to food advertising was strongest in men and those who were trying to lose weight, and was independent of hunger levels. The subjects were not aware of the effect of the advertising on their behaviour.⁹

Concerns about the effects of food advertising on children have led to some changes in advertising regulations. Mandatory regulations are embedded in the Children's Television Standards,¹⁰ which limit the types of advertising appeals (e.g. mood enhancement) and offers (e.g. competitions) that may be used to promote food and other products. The Standards do not cover advertising outside dedicated children's programs. There are also two sets of voluntary regulations developed by industry that cover food advertising: (1) the Australian Food and Grocery Council's 'Responsible Children's Marketing Initiative';¹¹ and (2) the Australian Quick Service Restaurant Industry's 'Initiative for Responsible Advertising and Marketing to Children'.¹² Both these voluntary codes are limited to programs that are specifically produced for children (P and C programs) or programs where more than 50% of the audience is children.

Numerous previous advertising content analyses have been performed; however, most of these focused on advertisements during children's television viewing times and a comprehensive account of food advertising at the population level remains lacking.¹³ Past studies have included advertisements screened during adult programming periods, but only for short time periods and/or for specific hours within the day.^{14–21} In aggregate, these studies from Australia and the rest of the world have found that advertisements for unhealthy foods are more prevalent than those for healthy foods.³ The aim of the present study was to address the limitations of these previous studies by providing a comprehensive overview of the extent and nature of television food advertising in Australia during total viewing times, rather than just children's viewing times. The study incorporated data on advertising expenditure and drew on a larger dataset of 24-h continuous viewing from all major states, thereby providing evidence for policy review of advertising regulations in the Australian context.

Methods

Two months of television food advertising data, including advertising expenditure and television scheduling data, were purchased from a national media monitoring agency. There were multiple data points collected for each advertisement, including a media file of each advertisement and information on placement, including time, date and the title of the program during which the advertisement was aired. The data also included the placement costs for each advertisement, which were provided by the media monitoring agency based on the published advertising rates for each television station. The figures only included placement costs and did not include costs of producing the advertisements.

The data were purchased to cover the four free-to-air national television stations with both analogue and digital signals (SBS, Seven Network, Nine Network and Ten Network) in the five major metropolitan cities of Australia (Sydney, Melbourne, Brisbane, Adelaide and Perth). The data-collection period was 24 h per day for 61 complete and sequential days from 1 September to 31 October

2010. This included 43 days during the week, 18 days during the weekend and 15 days during the school holidays, totalling 29 280 h of food and beverage advertising across these channels and cities.

The data were analysed using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA) to generate descriptive statistics. Results were considered significant when $P < 0.01$.

A detailed coding framework used in a previous Australian study was adopted with some modification.²² The original framework consisted of 67 codes relating to the types of foods being advertised and the advertising appeals used. The classification of advertisements according to food categories was based on the Australian Guide to Healthy Eating (AGHE).²³ The AGHE is closely aligned to the British food categorisation scheme, otherwise known as The Eatwell Plate.²⁴ This British scheme provided a basis for the regulation of food advertising. The AGHE classification divides foods into core (suitable for daily consumption) and non-core (high in salt, sugar and/or fat) categories. The core food category includes bread, cereals, rice, pasta, vegetables, fruits, lean meat, fish, poultry, eggs, nuts and legumes. Examples of non-core foods are confectionery, sugar-sweetened cereals, fried foods, ice-cream, chocolate, fast food and sugar-sweetened beverages. The AGHE recommends that adults and children over 2 years of age choose low-fat milk, yoghurt and cheese and limit their intake of fruit juice. As a result, full-fat dairy products and fruit juices were also classified as non-core. Any advertisements containing core and non-core foods were classified as non-core. Advertisements that included both food and beverages were coded for both these categories. The analysis of top food advertisers excluded supermarkets, because their advertisements included both food and non-food items, such as cleaning products and pet food.

An additional miscellaneous category was created to describe products that are not specifically mentioned in the AGHE and that do not clearly fit into either the core or non-core categories (e.g. diet soft drink, tea and coffee). Advertisements that promoted a company or brand, rather than specific foods, were also categorised as 'miscellaneous', unless the majority of foods in their product portfolio were non-core. For example, corporate supermarket advertisements that did not feature specific foods were classified as miscellaneous, whereas corporate advertisements for quick service restaurants (QSRs) were classified as non-core.

After data analysis had been completed, there was a revision to the AGHE. Notable changes included: (1) an emphasis on the foods and food groups that should be eaten, rather than the nutrients; (2) increased emphasis on reducing total saturated fat by eating less processed foods; and (3) recommendations to limit the intake of sugar. None of this affected the classification of foods for the present study.

Restaurants or QSRs were coded accordingly. The category of QSRs encompassed fast food restaurant chains such as McDonald's.

Additional coding was performed for the time of exposure to ascertain whether there were differences in the times that certain foods were broadcast. These times included weekday versus weekends and prime time versus non-prime time. The definition of 'prime time' was 7:00 pm–10:30 pm, which is the same definition used in previous studies.^{16,19}

To assess the applicability of this framework, 10 advertisements that were not part of the final dataset were coded by three coders, two of whom were involved the final coding stage. The framework was then modified according to the results of this pretest to remove any ambiguity or unnecessary codes and to include relevant additional codes. This resulted in a more comprehensive framework consisting of 113 codes. The coding framework was then tested again by the same three coders using a new set of 10 advertisements to verify the utility of the changes to the framework. Further minor modifications were made to the coding framework after this second pretest. After the coding framework was finalised, it was used by the two final coders to determine inter-coder reliability. Both coders independently coded two additional sets of 10 advertisements (also not part of the final dataset) and met after each coding round to discuss and resolve any differences identified in coding behaviours. The first attempt resulted in an inter-coder reliability rating of 90% and the second in a rating of 94%. The final dataset was then coded, with both authors coding every campaign. The first coder coded all versions of all advertisements, whereas the second coder coded one advertisement for each campaign (usually 60 or 90 s), but did not code the shorter versions of advertisements in the same campaign (usually 30 or 15 s) or versions that displayed different contact telephone numbers or different prices for different states. The inter-coder reliability rating of the final dataset was 94%.

Results

The 2 months of television advertising sampled contained a total of 642 687 advertisements, of which 93 284 advertisements (14.5%) were for food. The expenditure on food advertising for this 2-month dataset was Au\$233 823 360.

Most advertisements depicted non-core foods, such as confectionery, fast food, ice-cream and sugar-sweetened cereals and beverages (63%; $n = 58\,771$; Fig. 1). A substantial number of advertisements (12%; $n = 11\,392$) were corporate advertisements (promoting a company rather than specific foods). As noted above, these were categorised as 'miscellaneous' (Fig. 1). Core foods, such

as those that are suitable for daily consumption, including bread, cereals, rice, pasta, vegetables, fruits, lean meat, fish, poultry, eggs, nuts and legumes, accounted for only 25% ($n = 23\,121$) of all food advertisements. Fruits and vegetables received especially low levels of exposure (6%; $n = 5581$). There were no social marketing messages for healthy eating.

Table 1 shows that the rate of advertising for non-core foods was significantly higher during weekends ($\chi^2 = 15.921$, $P < 0.001$) and prime time ($\chi^2 = 1012.02$, $P < 0.001$). During the weekend, 69% of food advertisements were for non-core food, compared with 61% during the week. During prime time, 79% of food advertisements were for non-core food, compared with 60% during non-prime time.

There was a total of 119 different advertisers represented in the dataset. Table 2 shows that 28% ($n = 26\,359$) of the advertisements for non-core foods were accounted for by only five advertisers. These top five advertisers were responsible for 25% of the advertising spend in the dataset. The main types of non-core foods being advertised were fast food, confectionery, non-core beverages and processed cheese snacks.

More than one in four advertisements (28%; $n = 25\,821$) were for QSRs, compared with less than 1% for conventional restaurants ($n = 344$). The high proportion of QSR advertisements is further evident from the advertising expenditure listed in Table 2. The company with the highest expenditure, McDonald's, had almost twice the level of investment of their closest competitor.

Beverages featured in 29% ($n = 27\,135$) of all food advertisements. These included advertisements that were solely intended to

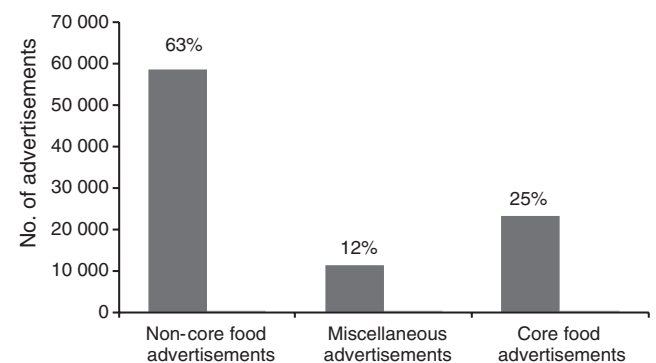


Fig. 1. Proportion of core, non-core and miscellaneous food advertisements from 1 September to 31 October 2010 across four television stations in five Australian cities.

Table 1. Scheduling of food advertisements from 1 September to 31 October 2010 across four television stations in five Australian cities

Data show the number of advertisements, with percentages given in parentheses

| | Weekend | Weekday | P-value | Prime time | Non-prime time | P-value |
|------------------------------|---------------|---------------|---------|---------------|----------------|---------|
| Non-core food advertisements | 16 721 (69%) | 42 050 (61%) | <0.001 | 17 865 (71%) | 40 906 (60%) | <0.001 |
| Miscellaneous advertisements | 2226 (9%) | 9166 (13%) | <0.001 | 2633 (11%) | 8759 (13%) | <0.001 |
| Core food advertisements | 5321 (22%) | 17 800 (26%) | <0.001 | 4566 (18%) | 18 555 (27%) | <0.001 |
| Total food advertisements | 24 268 (100%) | 69 016 (100%) | <0.001 | 25 064 (100%) | 68 220 (100%) | <0.001 |

Table 2. Advertising by the top five non-core food producers from 1 September to 31 October 2010 across four television stations in five Australian cities

| Advertiser | No. food advertisements | No. non-core food advertisements (% of all advertisements) | Average no. non-core food advertisements per hour | Advertising spend (Au\$) |
|---|-------------------------|--|---|--------------------------|
| McDonald's | 7699 | 7699 (8%) | 5.3 | 20 616 490 |
| Hungry Jack's (Burger King) | 6565 | 6565 (7%) | 4.5 | 10 874 428 |
| Mars International (including Dolmio and Masterfoods) | 5032 | 5008 (5%) | 3.4 | 8 503 393 |
| KFC | 3444 | 3444 (4%) | 2.4 | 8 955 493 |
| Kraft Foods (including Cadbury Schweppes) | 3198 | 3124 (3%) | 2.1 | 9 723 809 |
| Total | 25 938 | 25 718 (27%) | 17.6 | 58 679 613 |

promote one specific beverage (particular brand) and advertisements that included beverages in conjunction with other products (e.g. supermarket advertisements that included reference to a beverage as one of the items on sale). The only beverages considered to be core in the AGHE are water and milk products that are low in fat, sugar and energy, and these received negligible advertising (0.6%; $n = 581$), especially compared with non-core beverages (24%; $n = 22\,673$). Non-core beverages accounted for a very high proportion of all beverage advertising (84%; $n = 22\,673$), with over half (51%; $n = 13\,714$) being for sugar-sweetened soft drinks. The prevalence of soft drinks was driven primarily by their inclusion in advertisements for meal deals from QSRs.

Discussion

The data present a concerning picture of Australian advertising. The overwhelming majority of advertised food continued to be non-core, and there were no social marketing messages to promote healthy eating.

Advertising for non-core foods was heavily disproportionate to advertising for core foods, both in terms of quantity and expenditure. Schroer²⁵ suggests that insufficient advertising expenditure makes it impossible to gain market share; this would imply that campaigns for healthy eating and core foods will be disadvantaged relative to the large number of well-funded campaigns promoting non-core foods.

Australia has a long history of social marketing campaigns to support healthy eating; for example, the '2 'n' 5' campaign²⁶ significantly increased the consumption of fruit and vegetables at the height of the campaign's exposure, however its effects diminished as advertising expenditure reduced, leaving the authors to conclude that future campaigns need adequate resourcing for several years to achieve sustained behaviour change.

A substantial and sustained investment in advertising would be necessary to achieve any increase in healthy eating and market share of core foods.²⁵ One option for funding this investment is provided by Harper and Mooney.²⁷ These authors argue that the taxation system could be used to impose a levy on advertising

expenditure for non-core foods, which would then provide the funding necessary to support advertising for core foods and social marketing of healthy eating. Such a model would also provide the food industry with an incentive to promote more core foods.²⁷

The data show that what is advertised on television is substantially misaligned with national dietary recommendations. The study incorporated a larger dataset than those reported previously, and appears to be the only one to incorporate 24 h of continuous daily programming time over a substantial period of time. The present study also appears to be one of the few to provide data on advertising expenditure.

Most previous work does not appear to have examined differences in advertising exposure between weekdays and weekends, with two exceptions: (1) Guran *et al.*,²¹ who, similar to the present study, found higher levels of advertising during weekends; and (2) Chapman *et al.*,¹⁴ who did not find higher levels of advertising at the weekend. The difference between the results of the present study and those of Chapman *et al.*¹⁴ is likely to be due to the smaller dataset used in the latter study, which was limited to a single Australian state and a restricted time slot. The larger dataset in the present study is likely to have resulted in outcomes that are more representative of actual rates of food advertising across Australia.

The high proportion of advertised beverages in the present study that were classified as non-core is a concern. Comparison of these results with the outcomes of previous studies is difficult due to significant variations in the way beverages are classified, because some previous content analyses combined fruit and vegetable juices into the fruit and vegetable category and milk drinks into the dairy foods category,²¹ or failed to provide a breakdown of healthy versus unhealthy beverages.¹⁶ When past studies are examined in chronological order, it appears that the proportion of beverages to foods in advertisements may be increasing over time.

In addition, the high prevalence of QSR advertisements is concerning. This prevalence is consistent with the results of previous content analyses, which identified rates of between 10%¹⁹ and 42%,¹⁷ with most reporting around one-quarter of all food advertisements being for QSRs. Three of the top five non-core

advertisers were QSRs, and these were the same companies reported by Henderson and Kelly¹⁷ as being among the top five food advertisers in the US (McDonalds, Hungry Jack's and KFC). Exposure to advertising for QSRs has been associated with frequency of attendance at these restaurants and perceived norms favouring the regular consumption of fast food.^{28,29} Thus, the strong representation of QSRs in the present and previous studies may have considerable health implications. Given that the trend towards eating outside the home is escalating throughout the world,³⁰ the high frequency of advertising by QSRs could be having an undesirable effect on diets.

The high level of repetition for non-core foods is also important for several reasons. Repetition creates top-of-mind awareness, which can lead to brand preference and choice.³¹ It also prolongs the effects of advertisements in low involvement situations.³² According to social learning theory, the high degree of repetition present in these data is likely to have strong behavioural and attitudinal effects due to the frequently repeated modelling of the advertised behaviours.³³

Advertising literacy theory suggests that adults are immune to being manipulated by advertising because they recognise the persuasive intent of advertising and can use cognitive defences to protect themselves from its effects.⁷ This suggests a place for enhancing advertising literacy to ensure that people understand that the advertised diet is misaligned with the recommended diet. Educating consumers about the role and effects of advertising is likely to be best organised as part of a life-course consumer education strategy that is articulated into schools, adult education centres and the mass media.

Providing adults with advertising literacy training could provide some protection to adults from advertising effects; however, the research on non-conscious processing and involuntary responses to advertising^{5,6,9} shows that adults are constrained in their ability to consciously process advertisements and use cognitive defences against them.⁸ This has public policy implications for adults' ability to withstand the effects of the vast body of non-core food advertising, and suggests the need to consider ways of reducing any negative impacts.³⁴ Possible strategies could include more social marketing messages to inform the public of the characteristics of a healthy diet and the importance of a nutritious diet to overall health. Consumers would need to be exposed to such messages very frequently to counteract the subconscious repetition effects that are currently favouring non-core foods. Alternatively, advertising regulations could be implemented along the lines of those currently in place for tobacco and alcohol products. Such regulations would need to be mandatory, clearly defined and effectively monitored³⁵ to overcome the loopholes that have been identified in the regulations of children's food advertising and that have minimised their effectiveness.^{36,37}

The results of the present study suggest that policy makers should also consider and address the apparent use of corporate messages by food advertisers to overcome restrictions imposed on the depiction

of unhealthy products. Most of the food companies using corporate messages, rather than advertising specific products, were associated with non-core foods. The most prominent examples were McDonald's and Hungry Jack's (Burger King). Although the lack of prior research relating to this phenomenon prevents a comparison over time, it is possible that new voluntary codes that prohibit the advertising of unhealthy foods to children may be causing companies to resort to this form of advertising to continue their promotional activities in a manner that circumvents the requirements of the codes. Little is known about the effects of corporate advertising; however, there is some indication that it can favourably influence consumers' evaluations of a company's products.^{38,39}

A limitation of the present study is its focus on television advertising and, thus, its underestimation of the full extent of food advertising. The same campaigns, repeated through multiple channels, such as billboards, Internet advertising, social media, magazines and radio, are likely to have far more impact than these televised advertisements alone.⁴⁰ The use of a new classification framework in the present study also limits the ability to compare these results with those of other published studies that used different classification frameworks.

Future research should attempt the important, although herculean, task of cataloguing the population's full exposure to food advertising. Further work is also needed to understand the non-conscious effects of food advertising on people's diets to facilitate the development of appropriate regulations and the enhancement of media literacy training that can alert people to advertising effects and possible methods to counteract these effects.

To conclude, we have presented the results of a comprehensive review of food advertising in the context of total diet and found that the foods advertised in Australia are inconsistent with dietary recommendations. There are clear areas for policy concern, with the majority of advertised foods classified as non-core foods, low levels of exposure for fruit and vegetables and no social marketing messages to promote core foods. The frequency of non-core advertisements was significantly higher during times when larger numbers of consumers were watching (prime time and weekend).

In view of the World Health Organization's³⁵ call to reduce food advertising as a measure to control obesity, policy makers may use the findings of the present study to review their responses to food advertising at a population level. This may provide one means of creating a less obesogenic environment for the general community.

References

1. Australian Bureau of Statistics. Australian health survey: first results, 2011–12 (catalogue no. 4364.0.55.001). Canberra: Australian Bureau of Statistics; 2012. Available from: <http://www.abs.gov.au/AUSSTATS/abs@nsf/DetailsPage/4364.0.55.0012011-12?OpenDocument> [Verified 17 November 2012].
2. McNaughton SA, Ball K, Crawford D, Mishra GD. An index of diet and eating patterns is a valid measure of diet quality in an Australian population. *J Nutr* 2008; **138**: 86–93.

3. 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. Available from: http://www.who.int/dietphysicalactivity/Evidence_Update_2009.pdf [Verified 2 February 2013].
4. Office of Communications (Ofcom). Childhood obesity: food advertising in context: children's food choices, parents' understanding and influence, and the role of food promotion. London: Ofcom; 2004. Available from: <http://stakeholders.ofcom.org.uk/binaries/research/tv-research/report2.pdf> [Verified 2 February 2013].
5. Chartrand TL, Bargh JA. The chameleon effect: the perception-behavior link and social interaction. *J Pers Soc Psychol* 1999; **76**: 893–910. doi:10.1037/0022-3514.76.6.893
6. Tanner RJ, Ferraro R, Chartrand TL, Bettman JR, Baaren RV. Of chameleons and consumption: the impact of mimicry on choice and preferences. *J Consum Res* 2008; **34**: 754–66. doi:10.1086/522322
7. Brucks M, Armstrong G, Goldberg M. Children's use of cognitive defenses against television advertising: a cognitive response approach. *J Consum Res* 1988; **14**: 471–81. doi:10.1086/209129
8. Halford JC, Boyland EJ, Hughes G, Oliveira LP, Dovey TM. Beyond-brand effect of television (TV) food advertisements/commercials on caloric intake and food choice of 5–7-year-old children. *Appetite* 2007; **49**: 263–7. doi:10.1016/j.appet.2006.12.003
9. Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. *Health Psychol* 2009; **28**: 404–13. doi:10.1037/a0014399
10. Australian Communications & Media Authority. Children's television standards 2009. Subsection 122 (1) of the Broadcasting Services Act 1992. Canberra: Australian Communications & Media Authority; 2012. Available from: http://www.acma.gov.au/webwr/aba/contentreg/codes/television/documents/childrens_tv_standards_2009.pdf [Verified 2 February 2013].
11. Australian Food and Grocery Council. The responsible children's marketing initiative of the Australian Food and Beverage Industry. Canberra: Australian Food and Grocery Council; 2009. Available from: <http://www.afgc.org.au/industry-codes/advertising-to-children/rcmi.html> [Verified 2 February 2013].
12. Australian Association of National Advertisers. Australian quick service restaurant industry initiative for responsible advertising and marketing to children. Canberra: Australian Association of National Advertisers; 2009. Available from: <http://www.aana.com.au/pages/australian-quick-service-restaurant-industry-initiative-for-responsible-advertising-and-marketing-to> [Verified 2 February 2013].
13. King L, Hebden L, Grunseit A, Kelly B, Chapman K. Building the case for independent monitoring of food advertising on Australian television. *Public Health Nutr* 2012; **1**: 1–6. doi:10.1017/S1368980012004429
14. Chapman K, Nicholas P, Supramaniam R. How much food advertising is there on Australian television? *Health Promot Int* 2006; **21**: 172–80. doi:10.1093/heapro/dal021
15. Mink M, Evans A, Moore CG, Calderon KS, Deger S. Nutritional imbalance endorsed by televised food advertisements. *J Am Diet Assoc* 2010; **110**: 904–10. doi:10.1016/j.jada.2010.03.020
16. Abbatangelo-Gray J, Byrd-Bredbenner C, Austin SB. Health and nutrient content claims in food advertisements on Hispanic and mainstream prime-time television. *J Nutr Educ Behav* 2008; **40**: 348–54. doi:10.1016/j.jneb.2008.01.003
17. Henderson VR, Kelly B. Food advertising in the age of obesity: content analysis of food advertising on general market and African American television. *J Nutr Educ Behav* 2005; **37**: 191–6. doi:10.1016/S1499-4046(06)60245-5
18. Warren R, Wicks RH, Wicks JLB, Fosu I, Chung D. Food and beverage advertising on US television: a comparison of child-targeted versus general audience commercials. *J Broadcast Electron Media* 2008; **52**: 231–46. doi:10.1080/08838150801992037
19. Adams J, Hennessy-Priest K, Ingimarsdóttir S, Sheeshka J, Østbye T, White M. Changes in food advertisements during 'prime time' television from 1991 to 2006 in the UK and Canada. *Br J Nutr* 2009; **102**: 584–93. doi:10.1017/S0007114509220848
20. Sixsmith R, Furnham A. A content analysis of British food advertisements aimed at children and adults. *Health Promot Int* 2010; **25**: 24–32. doi:10.1093/heapro/dap045
21. Guran T, Turan S, Akcay T, Degirmenci F, Avci O, Asan A, Bereket A. Content analysis of food advertising in Turkish television. *J Paediatr Child Health* 2010; **46**: 427–30. doi:10.1111/j.1440-1754.2010.01753.x
22. Roberts M, Pettigrew SA. Thematic content analysis of children's food advertising. *Int J Advert* 2007; **26**: 357–67.
23. Department of Health and Ageing. Australian dietary guidelines summary. Canberra: Department of Health and Ageing; 2013. Available from: http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55a_australian_dietary_guidelines_summary_book_0.pdf [Verified 27 May 2013].
24. Food Standards Agency. (2009) Eat well, be well: the eatwell plate. <http://www.eatwell.gov.uk/healthydiet/eatwellplate/> [Verified 12 June 2013].
25. Schroer JC. Ad spending: growing market share. *Harv Bus Rev* 1990; **68**: 44–8.
26. Dixon H, Borland R, Segan C, Stafford H, Sindall C. Public reaction to Victoria's '2 Fruit 'n' 5 Veg Every Day' campaign and reported consumption of fruit and vegetables. *Prev Med* 1998; **27**: 572–82. doi:10.1006/pmed.1998.0328
27. Harper TA, Mooney G. Prevention before profits: a levy on food and alcohol advertising. *Med J Aust* 2010; **192**: 400–2.
28. Grier SA, Mensinger J, Huang SH, Kumanyika SK, Stettler N. Fast-food marketing and children's fast-food consumption: exploring parents' influences in an ethnically diverse sample. *J Public Policy Mark* 2007; **26**: 221–35. doi:10.1509/jppm.26.2.221
29. Scully M, Dixon H, Wakefield M. Association between commercial television exposure and fast-food consumption among adults. *Public Health Nutr* 2009; **12**: 105–10. doi:10.1017/S1368980008002012
30. Lachat C, Nago E, Verstraeten R, Roberfroid D, Van Camp J, Kolsteren P. Eating out of home and its association with dietary intake: a systematic review of the evidence. *Obes Rev* 2012; **13**: 329–46. doi:10.1111/j.1467-789X.2011.00953.x
31. D'Souza G, Rao RC. Can repeating an advertisement more frequently than the competition affect brand preference in a mature market? *J Mark* 1995; **59**: 32–42. doi:10.2307/1252071
32. Cacioppo JT, Petty RE. Central and peripheral routes to persuasion: the role of message repetition. In Allwright LF, Mitchell AA, editors. Psychological processes and advertising effects (pp. 91–111). Hillsdale, NJ: L. Erlbaum Associates; 1985.
33. Bandura A. Social learning theory. Edgewood Cliffs, NJ: Prentice Hall; 1977.
34. Buckingham D. Beyond the competent consumer: the role of media literacy in the making of regulatory policy on children and food advertising in the UK. *Int J Cult Policy* 2009; **15**: 217–30. doi:10.1080/10286630802651602
35. World Health Organization. Set of recommendations on the marketing of foods and non-alcoholic beverages to children. Geneva: World Health Organization; 2010. Available from: http://whqlibdoc.who.int/publications/2010/9789241500210_eng.pdf [Verified 2 February 2013].
36. King L, Hebden L, Grunseit A, Kelly B, Chapman K. Building the case for independent monitoring of food advertising on Australian television. *Public Health Nutr* 2012; **4**: 1–6. doi:10.1017/S1368980012004429
37. Roberts M, Pettigrew S, Chapman K, Miller C, Quester P. Compliance with children's television food advertising regulations in Australia. *BMC Public Health* 2012; **12**: 846. doi:10.1186/1471-2458-12-846
38. Biehal GJ, Sheinin DA. The influence of corporate messages on the product portfolio. *J Mark* 2007; **71**: 12–25. doi:10.1509/jmk.71.2.12
39. Brown TJ, Dacin PA. The company and the product: corporate associations and consumer product responses. *J Mark* 1997; **61**: 68–84. doi:10.2307/1252190
40. Friestad M, Wright P. The next generation: research for twenty-first-century public policy on children and advertising. *J Public Policy Mark* 2005; **24**: 183–5. doi:10.1509/jppm.2005.24.2.183