Food references and marketing to children in Australian magazines: a content analysis

BRIDGET KELLY* and KATHY CHAPMAN
The Cancer Council NSW, Sydney, Australia
*Corresponding author. E-mail: bridgetk@nswcc.org.au

SUMMARY
The aim of this study was to assess the content and extent of food references and marketing within popular children’s magazines in Australia. Sixteen popular Australian children’s magazines were selected, as determined by readership and circulation data. Back copies of each magazine were purchased for publications released between January and December 2006 (n = 76). Each magazine was assessed for food references on the basis of 23 food categories and 7 food-referencing types and as either branded or non-branded food references. There were a high number of overall food references within the children’s magazines, with the majority of these being for unhealthy food products (63.7% unhealthy versus 36.3% healthy foods, p < 0.001). The food groups with the highest proportion of branded food references, and therefore paid marketing, were ice cream and iced confection (85.6% branded references), fast food restaurant meals (83.4%), high-sugar drinks (78.9%) and snack foods (73.4%). Of all magazines, those targeting males and children aged 7–12 years had the highest proportion of unhealthy food references (78.1 and 69.8% unhealthy food references, respectively). Food references within children’s magazines are common and skewed towards unhealthy foods. Children’s high magazine readership rates and a lack of advertising and product placement regulations for magazines in Australia make this media an attractive target for food marketers. The timely establishment of food marketing regulations within magazines are recommended to prevent further expansion of food marketing in this area.

Key words: food marketing; food advertising; magazines; childhood obesity

INTRODUCTION
The prevalence of childhood overweight and obesity is reaching unprecedented proportions in Australia and internationally. The most recent research on the prevalence of overweight and obesity among children, from kindergarten to school year 10 in New South Wales, Australia, indicates 8% of boys and 6% of girls are obese and 17% of both boys and girls are overweight (Booth et al., 2006).

Food marketing to children has been recognized in a joint report by the Food and Agriculture Organization and the World Health Organization as a probable causal factor in childhood overweight and obesity (World Health Organization, 2003), influencing children’s food preferences, at both the brand and category level, purchasing behaviour, purchasing requests and food consumption habits (McNeal, 1987; Dalmeny et al., 2003; escalante de Cruz, 2004; Committee on Food Marketing and the Diets of Children and Youth, 2005; Hastings et al., 2006). Television is typically both the main electronic medium with which children engage (Linn, 2004) and the primary source of advertising used by the food industry (Hastings et al., 2003; Institute of Medicine of the National Academies, 2006). Previous reviews on food marketing to children have focused primarily on television, as there is a lack of published studies on other marketing...
avenues. In a systematic review prepared for the UK Food Standards Agency (Hastings et al., 2003), it was acknowledged that the majority of the available research was based on television as an advertising medium, with only 5 out of 50 reviewed studies focusing solely on other marketing techniques. The collective effect of other food marketing techniques, together with television advertising, is likely to augment television advertising’s effect on children’s food choices and dietary intake (Hastings et al., 2003).

Print media, including magazines, is one such marketing technique that has received little attention in the research arena, with few previous studies available that examine food marketing to children through children’s magazines and no studies that systematically assess food marketing within this medium.

Magazines are a major component of advertising expenditure by the food industry, contributing 16% of total food advertising expenditure (US $1445 million) in the USA (Center for Science in the Public Interest, 2003), and also enjoy high readership rates. A survey of Australian children’s magazine readership in 2004 showed the reach of popular children’s magazines among 6–13 year olds to be high, with some reaching almost 20% of the child population (McNair Ingenuity Research Pty Ltd, 2004). The circulation frequency of magazine periodicals allows for continued product exposure to an established magazine fan base.

The aim of this study was to assess the content and extent of food marketing within popular children’s magazines published in Australia. All types of food references within magazines, including branded food marketing and non-branded food references, were examined.

For reasons of simplicity, foods and beverages that were considered to be non-core or high in fat, sugar and/or salt are abbreviated to unhealthy foods, whereas core foods are deemed as healthy foods. Core refers to those foods recommended to be consumed daily, to meet nutrient requirements. Non-core refers to foods that provide energy and/or nutrients in surplus of requirements.

METHODS

Sampling
Back copies of 16 popular Australian children’s magazines, issued over a 6-month period, were purchased (n = 76). As some back copies were difficult to obtain, the magazines were collected in the 12 months between January and December 2006. That is, for magazines issued monthly, six magazines were collected between January and December 2006, and those issued bi-monthly, three magazines were collected during this time. Readership and circulation data were identified for the magazines from the Audit Bureau of Circulation report January–June 2006 (Magazine Publishers of Australia, 2006), Roy Morgan Youth Surveys (Roy Morgan, 2006), B&T Aards Media and Production Guide 2004 (B&T Aards, 2004), magazine subscription websites and in discussion with Magazine Publishers Australia. Selected magazines included K-zone, Total Girl, Girlfriend, TV Hits, Dolly, Disney Adventures, Disney Princess, Smash Hits, Barbie, D-Mag, Just Kidding, Krash, Mania, Girl Power, Saddle Club Magazine and Scientriffic.

Coding
All food references within the magazines were coded according to two main categories, healthy food and unhealthy food. These categories were further subdivided into 23 food-group subcategories (Table 1). Food categories were selected on the basis of categories used in previous research on television food advertising to children (Wilson et al., 1999; Neville et al., 2005; Chapman et al., 2006; Kelly et al., 2007) and according to the Australian Guide to Healthy Eating, the nationally recognized food guide for Australia (Australian Government Department of Health and Aging, 1998).

Food references within each magazine were also categorized as one of the seven different food reference types including direct advertisements, part of an editorial (articles, interviews, comics, stories and letters), product competition or promotion, activity (games, puzzles, quizzes), inclusion in a recipe, association with a children’s icon (cartoon characters, celebrities, sporting figureheads) or links to other media marketing (such as a food company’s internet site). These food reference types were based on those outlined by Kraak and Pelletier (Kraak and Pelletier, 1998) in their discussion of magazine marketing. Every pictorial or written reference to food was included.
The research dietitian (B.K.) developed both of these coding tools. A research assistant screened all magazines for food references and analysed these according to the developed criteria. Training was provided, and accuracy of coding was established at this time. The research dietitian and research assistant simultaneously coded a small subsample of magazines (not included in the final data); and any discrepancies were discussed and resolved. All references were classified as either non-branded (a generic food reference) or branded references (referring to a specific product brand).

Analysis
Analysis was performed using Statistical Package for Social Science (SPSS) version 14.0 for Windows. A Pearson $\chi^2$ test was applied to determine significant differences between the types of foods referenced in different magazines. Results were considered significant at the 0.05 level.

RESULTS

Healthy versus unhealthy food references
In the 76 magazines assessed (average of 106 pages per magazine), there were a total of 8488 food reference types. The number of food references both between magazine titles and between different issues of the same title varied considerably. For example, the mean number ($\pm$ standard deviation) of food references for Scientific was 51 ($\pm$11.1); 184 ($\pm$104.8) for Dolly magazine and 359 ($\pm$191.4) for Total Girl. Of all food references, 34.0% were for specific food brands, whereas 66.0% were general food references.

There were a significantly higher number of references for unhealthy foods than for healthy foods (63.7 versus 36.3%, $p < 0.001$). For unhealthy foods, there were a slightly higher proportion of branded food references (51%). The majority (95.6%) of healthy foods were non-branded food references.

Types of healthy and unhealthy foods referenced
Although the healthy food category had an overall lower proportion of food references, the

<table>
<thead>
<tr>
<th>Table 1: The proportion of total food references for each food-group category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food category</td>
</tr>
<tr>
<td>Healthy food categories</td>
</tr>
<tr>
<td>Fruits and fruit products without added sugar</td>
</tr>
<tr>
<td>Meat and meat alternatives [including legumes, eggs and nuts and nut products (including peanut butter, excluding sugar coated nuts)]</td>
</tr>
<tr>
<td>Breads, low-sugar/high-fibre breakfast cereals (&lt;20/100 g sugar and &gt;5/100 g dietary fibre), rice, pasta and noodles (including high-fibre, low-fat crackers)</td>
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<tr>
<td>Vegetables and vegetable products without added sugar</td>
</tr>
<tr>
<td>Core foods combined [including frozen meals, soups (sodium &lt;250 mg/100 g), sandwiches, mixed salads and international cuisines]</td>
</tr>
<tr>
<td>Water (including bottled and non-bottled)</td>
</tr>
<tr>
<td>Low-fat/reduced fat milk, yoghurt, custard and cheese alternatives</td>
</tr>
<tr>
<td>Baby foods</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Unhealthy food categories</td>
</tr>
<tr>
<td>Ice cream and iced confection</td>
</tr>
<tr>
<td>Chocolate and confectionary (including regular chewing gum and sugar)</td>
</tr>
<tr>
<td>Fast food restaurants/meals</td>
</tr>
<tr>
<td>Cakes, muffins, sweet biscuits, high-fat savoury biscuits, pies and pastries</td>
</tr>
<tr>
<td>Other non-core items, e.g. sugar-free chewing gum, tea, coffee and yeast extracts</td>
</tr>
<tr>
<td>Full-cream milk, yoghurt, custard, dairy desserts (e.g. YoGo), cheese and alternatives (including non-specified fat content)</td>
</tr>
<tr>
<td>High-sugar drinks [including soft drinks, cordials, electrolyte drinks and flavour additions (e.g. Milo)]</td>
</tr>
<tr>
<td>Snack foods [including crisps, extruded snacks, popcorn, snack bars, muesli bars, sugar sweetened fruit and vegetable products (including jelly fruit cups, fruit strips) and sugar-coated nuts]</td>
</tr>
<tr>
<td>Fats, spreads (excluding peanut butter), sauces, meal helpers (including stir fry sauces, flavour bases, etc.) and soups (sodium &gt;250 mg/100 g or non-specified sodium content)</td>
</tr>
<tr>
<td>Frozen/fried potato products</td>
</tr>
<tr>
<td>Alcohol</td>
</tr>
<tr>
<td>Fruit juice and fruit drinks</td>
</tr>
<tr>
<td>High-sugar/low-fibre breakfast cereals (&gt;20/100 g sugar or &lt;5/100 g dietary fibre) (including non-specified sugar or fibre content)</td>
</tr>
<tr>
<td>Baby and toddler formulae</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
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*p < 0.001.
most frequently referenced food-group subcategory was fruit and fruit products, contributing 47.9% of healthy food references (17.4% of all food references). Other frequently referenced food-group subcategories were unhealthy, including ice cream and iced confection (11.8% of all food references), chocolate and confectionery (11.5%) and fast food restaurant meals (7.1%) (Table 1).

The food-group subcategories with the highest proportion of branded food references were ice cream and iced confection (85.6% branded references), fast food restaurant meals (83.4%), high-sugar drinks (78.9%) and snack foods (73.4%). The food category subgroups with the lowest proportions of branded food references, and therefore a higher proportion of non-branded references, were fruit and fruit products (1.4% branded references), vegetables and vegetable products (1.5%), core foods combined (5.4%) and low fat/reduced fat dairy products (6.1%).

Food reference types

The most frequently identified food reference type in the children’s magazines was in the editorial section, which contributed 55.5% of all food references. The use of children’s icons was the least used food reference type, contributing only 1.3% of overall food references (Figure 1). Food references in the editorial and recipe sections of the magazines had a higher proportion of references for healthy foods (50.1 and 45.0%, respectively). Whereas, food references using children’s icons, activities, competitions, links to other media and direct advertisements were more likely to be for unhealthy food groups (98.2, 98.0, 97.5, 94.8 and 91.8%, respectively).

Within the editorial and recipe food references, the most frequently referenced food group was for fruit and fruit products, contributing to 24.7 and 18.7% of overall editorial and recipe food references. For both competitions and links to other media, the most frequently referenced food-group subcategory was ice cream and iced confection, contributing to 43.9% of overall competitions and 48.2% all of links to other media. Lastly, chocolate and confectionery were the most frequently referenced food-group subcategories used within direct advertisements, contributing to 19.4% of overall food references for this food reference type.

Food references by age and gender groups

Comparing the magazines targeted towards different genders and age groups, the highest proportion of unhealthy food references was found in magazines directed at males and those for children aged 7–12 years. Magazines targeted towards 7–12 year olds had a significantly higher proportion of unhealthy food references than magazines for children aged <7 years and >12 years (69.8% unhealthy food references in magazines for 7–12 year olds versus 58.9 and 48.9% in magazines for children <7 years and >12 years, respectively, \( p < 0.001 \) (Figure 2).

The most notable food subcategory references contributing to a higher proportion of unhealthy food references in magazines for 7–12 year olds were ice cream and iced confection, chocolate and confectionery and fast food restaurant meals (15.8, 14.1 and 9.1% of all food references, respectively). These magazines also had a lower proportion of food references for breads and low-sugar/high-fibre cereals and vegetable and vegetable products.

Unhealthy food references within magazines targeted towards males were significantly higher than those in magazines targeting females (78.1 versus 58.3% of all food references, \( p < 0.001 \)) (Figure 3). Magazines targeted towards males had a higher proportion of references for ice cream and iced confection and fast food restaurant meals (27.1 and 14.8% of all food references). Those magazines targeted towards females had a higher proportion of references for fruit and fruit products (22.7% of all food references).
DISCUSSION

This study indicates that food references within popular Australian children’s magazines are common. Although the proportion of food references for some healthy food subcategories, such as fruit and fruit products, were relatively high when compared with data from studies assessing television advertising to children [17.4% of all magazine food references versus 3% (Chapman et al., 2006) and 4.6% (Kelly et al., 2007) of all television food advertisements during children’s viewing times], overall food references were significantly skewed towards unhealthy foods (63.7% unhealthy food references versus 36.3% healthy food references, \( p < 0.001 \)). References for unhealthy foods were significantly more concentrated in magazines targeted towards males and children between 7 and 12 years. This is in part due to the inclusion of recipes in magazines targeted towards females, which typically contained healthy ingredients. Many of these magazines also included information on dieting and weight loss, which often referred to low-fat product alternatives and promoted fruit and vegetable consumption.

There were a greater number of overall branded references for unhealthy foods, promoting a specific food brand, whereas those for healthy foods tended to be for non-branded food products. Those food-group subcategories

![Fig. 2: The proportion of healthy and unhealthy food references in magazines targeted at children of different age groups.](image1)

![Fig. 3: The proportion of healthy and unhealthy food references in magazines targeted at children of different gender groups.](image2)
with the highest proportion of branded food references, which were paid food marketing, were for ice cream and iced confection, fast food restaurant meals, high-sugar drinks and snack foods. These frequently marketed food types are similar to those indicated in a systematic review of food marketing to children by Hastings et al. (Hastings et al., 2003) for the Food Standards Agency in the UK, as being the most commonly advertised foods, namely soft drinks, confectionery, savoury snacks, fast food restaurants and pre-sugared breakfast cereals. Conversely, those food groups with the highest proportion of non-branded food references were fruit and fruit products, vegetable and vegetable products, core foods combined and low-fat/reduced fat dairy products.

Over half of the identified food references were contained within the editorial section of magazines, which comprised almost equal proportions of healthy and unhealthy food references. All other food reference types, including direct advertisements, competitions, activities, recipes, use of children’s icons and links to other media consisted of higher proportions of unhealthy foods than healthy foods.

Commendably, it appears that children’s magazines do contain a considerable number of references for healthy foods, particularly in the editorial and recipe sections. Further, the majority of these healthy food references are non-branded and thus appear to be unprompted by the food industry and included at the magazine editor’s own discretion. However, the inclusion of branded marketing and product placements in the magazines, of which the majority are for unhealthy foods, may undermine any positive health effects of these healthy food references. There is also clear scope for further improvements to the types of non-branded food products that are promoted in magazines, with non-branded references contributing to 49.0% of all unhealthy food references.

Product placement involves the incorporation of a message or logo, such as that when branded references appear in editorial sections, activities, recipes and competitions, to indirectly market that product (Hawkes, 2004). The prime vehicle for product placement is typically television (Tiwsakul and Hackley, 2005), although it is increasingly being used in internet marketing, computer games (The Food Commission, 2005) and, as demonstrated in this study, children’s magazines. When a food product is associated with one of these entertainment genres, the magazine, for example, itself becomes an advertisement for that product (Linn, 2004). Children are unlikely to consider these product placements as advertisements, as they are enmeshed in the magazine, making them more vulnerable to this type of marketing (Center for Science in the Public Interest, 2003). This concept has been demonstrated in areas of tobacco control research, which has revealed that the prevalence of smoking in films leads to more positive perceptions of smoking and a greater likelihood of the audience smoking in the future (Charlesworth and Glantz, 2006). Similarly, a study examining the effect of tobacco advertisements in magazines indicated that exposure to this advertising strengthens peer pressure to smoke and is associated with a positive attitude towards smoking (Aloise-Young et al., 2006).

Notably, advertising regulations for tobacco now preclude all publications of tobacco advertisements including those in magazines (Commonwealth Government of Australia, 1992).

Non-branded food references can also act as powerful messages, which may influence children's food attitudes and perceptions. As demonstrated by Byrd-Bredbenner et al. (Byrd-Bredbenner et al., 2003), health-related content in prime-time television, including references for unhealthy food and eating behaviours, can potentially promote poor eating habits and food choices. This concept may be extrapolated to food references within magazines, where repetitive food references normalize these foods to children and make them highly desirable. Although there were many non-branded healthy food references observed in this study, there were also 2646 non-branded references for unhealthy foods (49% non-branded references for unhealthy food group).

In Australia, magazine advertising spend is high, with some large food companies such as Nestle and Unilever spending $7.3 million and $3.7 million, respectively, solely on magazine marketing, equating to 16–18% of total marketing spend (Magazine Publishers of Australia, 2004). Although there is no available data specifically relating to the effect of magazine marketing on children's food preferences and diet, data concerning the impact of magazine food marketing and adults have been documented. In industry-generated research by the
Magazine Publishers of Australia (Magazine Publishers of Australia, 1996), advertisements for Arnott’s Tim Tam biscuits were published in magazines for 15 weeks in conjunction with a television advertisement for this product. Following this marketing campaign, sales data for this product were assessed and compared with baseline data. Those people who were exposed to both the magazine and television food marketing increased their Tim Tam purchases by 32%, compared with those people who only viewed the television advertisements, at 5% increased sales (Magazine Publishers of Australia, 1996).

This research is the first study, both in Australia and internationally, to systematically evaluate magazine food marketing to children. The purpose of this research was to give some insight into the current scope of food marketing within popular children’s magazines and to provide baseline data for future comparative studies. As this study assessed magazines that were released over a year period, any seasonal variations in referenced foods were accounted for. This also ensured that the data did not reflect any specific advertising campaign, but included a broad range of food marketing initiatives.

With increasing controversy in Australia concerning television food advertising regulations to children (Coalition on Food Advertising to Children, 2006), it could be anticipated that food marketers may increasingly use alternative avenues for food marketing, such as children’s magazines. There are currently few Australian or international regulations that specifically relate to food marketing within children’s magazines. The International Chamber of Commerce’s Consolidated Code, an amalgamation of all of the International Chamber of Commerce’s advertising codes including direct marketing, does not apply to communications whose direct purpose is entertainment or education rather than commercial (International Chamber of Commerce, 2006). Therefore, the content of magazines is not covered by this code. Direct advertisements within magazines are covered by the International Chamber of Commerce’s Framework for Responsible Food and Beverage Marketing Communication, which states that marketing communications must be fair and honest and not exploit children’s lack of knowledge (International Chamber of Commerce, 2006). The Australian Association of National Advertisers Food and Beverages Advertising and Marketing Communications Code outlines regulations relating to all forms of food marketing to children, including, but not specifically, magazines, and similarly makes broad statements relating to misleading and deceptive advertisements (Australian Association of National Advertisers, 2006). The current lack of magazine food marketing regulations may further entice food marketers towards this medium.

Consequently, it is important to both quantify and acknowledge the current levels of food marketing in popular children’s magazines to determine children’s current potential exposure and to monitor any future changes to magazine food marketing, should tighter regulatory environment for television food marketing occur. The current high levels of food marketing within popular children’s magazines, particularly for unhealthy food products, highlight the immediate need for specific regulations pertaining to food marketing to children within magazines. The high readership of many of the magazines included in the current study indicates that exposure to this form of food marketing is potentially high. Further advocacy for the establishment of food marketing regulations, as well as research on the impact of this form of marketing on children’s food preferences and dietary behaviours, is warranted.

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