Childhood Obesity: Is Advertising the Culprit?

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We present a meta-analysis of recent studies into the size of the effect of advertising on children. We find that only experimental studies have a small effect, while observational studies show no long-term effect. Discussions of implications for regulation and further research follow.

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ABSTRACT
The role of marketing in the global rise of obesity to children has been the subject of heated debates in the past decade. In this paper we review recent studies to contribute to the debate surrounding further regulation of advertising.

‘Polemic and Panic’ Around Advertising and Childhood Obesity
Much of the public debate focuses singularly on advertising, exemplified by claims of concerned participants portraying advertising to children as “by its very nature, exploitive” (Kunkel et al. 2004, 11) and as “inherently misleading” (Graff, Kunkel, and Mermin 2012, 392). There are frequent calls for “governmental action to protect young children from commercial exploitation” (Kunkel et al. 2004, 23), including recent calls for stronger regulation, or a complete ban of advertising in the UK and Canada (Joseph 2013; CBC News 2013). While much of the public debate often includes different promotional, pricing and distribution tactics, traditional media “advertising seems to have been effectively scapegoated as the villain of the piece” (Young 2003, 25).

The industry has responded that advertising bans are counterproductive, have no effect on obesity levels and result in “serious social, cultural and economic ramifications”, such as “reduced sales, job cuts, decreased consumer choice, stifled innovation and barriers to competition and market entry” (World Federation of Advertisers 2013).

Policy reactions inevitably vary by country (see Young 2010 for a more extensive discussion). In the US, the Federal Trade Commission started to regulate advertising to children since the 1970s, coupled with industry self-regulation. Some countries, such as Sweden and Quebec, have banned all media advertising to children, while others, for example the UK, have banned only certain types of advertising (such as those for foods high in fat, sugar and salt) during programs aimed primarily at children.

Academic Contribution
Mirroring the passionate public discussion, the academic debate surrounding the effect that food advertising has on childhood obesity has been similarly polarized. Cautiously, Young et al. (1996) concluded in an early review of the evidence relating to the effect of advertising on the rising obesity levels among children, that advertising is only one of many factors influencing children’s food consumption.

Taking the opposite view, Hastings et al. (2003) conclude that current food promotion, alongside television consumption, “significantly influences children’s food behavior and diet independently of other factors” (p.18). Similar to Hastings et al. (2003), later reviews, such as a report by the Institute of Medicine (2006), a report by the British regulator Ofcom (2004) and a further report by Livingstone and Helsper (2004) all conclude that the direct effect of advertising is moderate, but harmful.

The contradictory conclusions can be explained, at least in part, by the selection criteria for inclusion of studies: Young et al. (1996) excluded experimental or laboratory based studies, arguing that these types of studies are too far removed from reality. Hastings et al. (2003) and the later reports for Ofcom (2004), the Institute of Medicine (2006) and Livingstone and Helsper (2004) on the other hand, draw their conclusions mainly based on experimental studies.

These later reports argue that overall television-viewing habits must be taken into account when considering the impact of advertising exposure, i.e. they equate high television viewing with high exposure to food advertising and resultant obesity.

The equation of high-television-viewing with a direct advertising effect, however, is challenged by Desrochers and Holt (2007). Based on US data, they show that obesity levels among children have risen dramatically in the last 20 years, in line with television-viewing and total exposure to television advertising. Nevertheless, children’s exposure to food advertisements decreased over the same time. Moreover, in 1977 children were exposed to more advertising for cereals and desserts and sweets than in 2004. It is safe to say, that the presented arguments remain controversial and much contested.

The point on which both sides agreed, however, is that too little is known regarding the size of the direct effect of advertising itself. For example, the Hastings et al. (2003) report only one study examining a direct relationship between advertising and snacking frequency (i.e. not merely a link between television viewing in total and food choice). The study (Bolton 1983) is, however, almost 20 years old, and therefore may no longer adequately represent today’s media consumption patterns. Bolton (1983) concludes that “long-run effects of television food advertising are detected, but their impact is found to be very small in comparison with that of other effects” (p. 173). The study quantifies the effect of television food advertising as explaining 2% of the observed variance in snacking behavior among children. For comparison, parental snacking frequency explained 29% of the variance in children’s snacking behavior.

Because of the lack of evidence regarding a direct link between advertising and obesity in children, both sides in the argument draw conclusions on the basis of a narrative evaluation, relying on circumstantial evidence regarding food promotions, largely relying on experimental data, or arguing on the basis of a link between television viewing and obesity levels.

In the past few years, several researchers have attempted to examine the link between advertising exposure and food choice. However, this research has not been systematically reviewed or entered the public policy debate.

The current debate is, therefore, often based on data that rarely explicitly address the directly attributable effect that advertising has on consumption, leaving the industry to conclude “it is not possible to draw any meaningful conclusions on the impact [of advertising] on longer-term dietary and health variables” (World Federation of Advertisers 2006, 3). With the majority of regulatory efforts and public discourse being directed towards regulating (or even banning) media advertising, the question is, whether this effort is misdirected.

This paper contributes to the debate by analyzing studies from different fields that have attempted to examine the direct link between advertising and food choice, establishing what the size of the effect of advertising on childhood obesity is likely to be, based on the available evidence. In doing so, we investigate two interrelated research questions:

RQ1: Based on recent evidence, what is the reported effect of advertising on food choice?

RQ2: Does the study design effect the outcome?
METHODOLOGY
To address both questions, we conduct a meta-analysis of recent studies (conducted in the past 10 years). To identify studies for inclusion in the meta-analysis, we conducted a keyword search using the terms children, advertising and effect or effectiveness using Business Source Elite, Emerald and Google Scholar, following the recommendations by Hunter and Schmidt (2004), and similar to steps taken in earlier meta-analyses published in the marketing literature. In order to include only studies that were conducted recently, we limited the inclusion to peer-reviewed studies published in the last twelve years (2000-2012).

The search resulted in 15 studies from the business, health and psychology fields. As this study aims to examine the direct effect of advertising on consumption, only studies which gave empirical evidence of direct advertising effectiveness on food choice were included. Studies which measured other marketing effectiveness measures, such as advertising recall, brand awareness, or brand preference amongst children were excluded. Of the 15 studies, 6 were removed because they relied on general media exposure rather than advertising exposure, one because it solely measured recall of specific advertising elements (Maher, et al. 2006) and one (Dhar and Baylis 2011) because it was based on data from 1984 to 1992.

The remaining manuscripts (marked by asterisks in the references) were included in the meta-analysis, covering a total sample size of 17,431. In cases where the studies did not provide all the details required to calculate effect sizes, we contacted the authors to obtain the relevant details. The ages of the children studied ranged from 3-12 years old, and all studies included both male and female children.

Most studies reported single effects, i.e. effect of advertising on a single food or drink item, with the exception of a study by Andreyeva et al. (2011), which reported four effect sizes. Because of the multiple effect sizes reported by Andreyeva et al. (2011), 10 effect sizes were used for the meta-analysis. In order to consider a weight for the multiple measures for this study, each sample size was weighted by the ratio 0.25 to the number of effect sizes reported, as suggested by Hunter and Schmidt (2004). All other studies, which reported a single measure for the dependent variable, were weighted 1.0.

We selected the correlation coefficient (r) effect size for the analysis. Consequently, numbers closer to 1 indicate a strong, positive effect of advertising, while numbers closer to 0 indicate no effect. Numbers closer to -1 would indicate a negative effect.

RESULTS
The resultant meta-analytic correlations (applying the random-effects model) are given in Table 1.

<table>
<thead>
<tr>
<th>Type of Study</th>
<th>Number of Studies</th>
<th>N</th>
<th>r</th>
<th>CI_{Upper}</th>
<th>CI_{Lower}</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1 Combined</td>
<td>10</td>
<td>17431</td>
<td>0.160</td>
<td>0.376</td>
<td>-0.056</td>
</tr>
<tr>
<td>RQ2 Experimental</td>
<td>4</td>
<td>611</td>
<td>0.456</td>
<td>0.487</td>
<td>0.425</td>
</tr>
<tr>
<td>RQ2 Observational</td>
<td>6</td>
<td>11820</td>
<td>0.012</td>
<td>0.013</td>
<td>0.011</td>
</tr>
</tbody>
</table>

In order to answer RQ1 the result, taking into account all studies irrespective of study type, shows that advertising has a small, but significant effect on children. The mean for all studies is \( r = 0.160 \), with 95% confidence intervals (CI) between CI_{Upper} = 0.376 and CI_{Lower} = -0.056 for all studies. According to Cohen (1977) this effect is considered small. This finding is therefore similar to the finding of Bolton (1983), and adds further evidence that any direct effect of advertising, independent of being short- or long-term, is at best limited.

In order to answer RQ2, we also calculated the meta-analytic correlations for the different types of studies included i.e. if there are differences in reported effect sizes between experimental and observational studies. We classified as experimental all studies which evaluated children’s food choices following advertising exposure by means of an experimental setup, while observational studies were those that calculated advertising effects based on market data in conjunction with advertising exposure data. The results show that the study design clearly has an influence on the reported outcome, with the difference between reported effect sizes significant (\( z = 59.20, p < 0.005 \)).

As can be seen from Table 1, only experimental studies showed significant effects, while observational studies failed to demonstrate any effect. However, only two experimental studies reported a moderate effect above 0.3 (Cohen, 1977). Conversely, all observational studies report effect sizes well below the threshold of a small effect size (between 0.021 and 0.002).

DISCUSSION
The results from the meta-analysis suggests that media advertising alone may have only a very small effect in the short term, for example, immediately after watching an advertisement, such as in a laboratory experiment. Therefore, there is still no persuasive evidence to support any long term, direct effect of advertising on children’s food choices. Further, the experimental studies find significant effects which may, in turn, influence policy, yet their results are not consistent with the ‘reality’ exhibited in the observational data studies. This provides additional support for Young’s (1996) rationale to remove experimental studies.

This finding has important consequences regarding the current calls for more regulation, or even bans of advertising. These initiatives are likely to be misdirected as they will have only a very limited impact. This does not mean, of course, that marketing has no role to play in addressing obesity among children. However, by singularly focusing on advertising as a potential remedy, advocates may be diverting the regulatory effort away from areas that matter more in the fight against obesity.

For researchers, there are several areas that would benefit from more attention. First, it is clear that more research is needed regarding the direct impact of advertising on consumption. Further, the relatively limited data available that is not experiment based also opens up avenues for future research to more clearly determine long-term effects.

A second issue is that academics should be clear that television advertising is unlikely to be the sole culprit, and they can play a leading role by advancing knowledge, and examining the need for regulation in areas other than traditional media advertising. For example, we know that playing advergames has an effect on preferences for products (Mallinckrodt and Mizerski 2007), yet this area is a virtually unregulated. Likewise, food pricing has been shown to influence consumption significantly (cf. Wansink and Payne 2012) but, again, receives only marginal attention in the debate about regulation. Moreover, more work is urgently needed comparing advertising effects with effects of other promotional tools.

Finally, since no marketing campaign is based on television advertising exclusively, the impact of coordinated forms of communications needs to be investigated and included in the debate. There are already some studies of the effects of other marketing techniques, but they are often ‘siloed’, studying only the effects of the technique.
under consideration and missing the opportunity for looking at the wider picture. Although the effects confirmed in this study may be small, such effects may be significant and cumulative over a longer period of time, especially if these are compounded by simultaneous media use (Schultz, Block, and Raman 2012; Bardhi, Rohm, and Sultan 2010) and exposure to multiple promotional vehicles. In a unique study, brand recognition and packaging have been found to have a significant influence on children (Levin and Levin 2010).

But the buck does not stop with academia and policy makers: The industry itself needs to ask itself what effect their behavior has on the debate. Specifically, as the public debate often conflates behavior in regulated and unregulated areas, several studies have shown less than exemplary behavior by some industry members, particularly regarding promotions using new media forms (e.g. Dahl, Eagle, and Baez 2009; Quilliam et al. 2011). A failure from industry members to show commendable behavior in all areas is likely to fuel further calls for the imposition of greater restrictions on marketing for all members.

REFERENCES


