The effectiveness of parental communication in modifying the relation between food advertising and children’s consumption behaviour

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The aim of this study was to examine the effectiveness of various types of parental communication in modifying children’s responses to television food advertising. In a combined diary-survey study among 234 parents of 4- to 12-year-old children, I investigated how different styles of advertising mediation (active vs. restrictive) and consumer communication (concept-oriented vs. socio-oriented) moderated the relation between children’s advertising exposure and their consumption of advertised energy-dense food products. Interaction analysis in regression showed that active advertising mediation (i.e. explaining the purpose and nature of advertising), and socio-oriented consumer communication (i.e. emphasizing control and restrictions) significantly reduced the impact of advertising on children’s food consumption. Parental restrictions of advertising exposure were only effective among younger children (<8). These results suggest that critical discussion about advertising and rule making about consumption are most effective in countering the impact of food advertising.

In many Western societies, the topic of television advertising and children has always been accompanied by public and regulatory debate (Kunkel et al., 2004; Young, 1990). Over the past few years, public and political attention has increasingly been drawn towards the role of advertising in the growth of childhood obesity. Critics hold advertising responsible for the problem of childhood obesity because of its abundant promotion of energy-dense food, that is products containing relatively high proportions of fat, sugar, and salt (Hastings et al., 2003; Matthews, Cowburn, Rayner, Longfield, & Powell, 2004; Schor, 2005).

Concerns about the possible effects of food advertising have been fuelled by empirical evidence that children’s exposure to advertising may indeed affect their

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consumption patterns (for reviews, see Hastings et al., 2003; McGinnis, Gootman, & Kraak, 2006). Consequently, many countries are implementing regulatory policies (Gantz, Schwartz, Angelini, & Rideout, 2007; Gunter, Oates, & Blades, 2005). For instance, the UK and The Netherlands have recently introduced policies restricting the amount, nutritional claims, and marketing techniques used in food advertising. Australia is considering a complete ban on food advertising to children (McGinnis et al., 2006).

In both the public and academic debate, far less attention has been given to the role of parents and caretakers in modifying the impact of food advertising. This is remarkable for two reasons. First, parental communication is often considered the most effective tool in the management of television's influence on children (Donohue & Meyer, 1984). Children usually watch television in a family context that is largely provided by their parents. This family context not only influences how children use the medium and the messages they get from it, but also how literate children become as television viewers (Dorr, 1986; Gunter & Furnham, 1998).

Second, the family context also plays an important role in children's food consumption patterns (Kremers et al., 2006). Although children exert increasing influence on family purchases (Valkenburg, 2004), parents are still the primary gatekeepers to children's food intake. In general, they are the ones controlling financial expenditures and making the final purchase decision in the retail environment (Mangleburg, 1990). In addition, most parents can control access to food at home, for instance by family rules on snacking and by determining what's for dinner (Bolton, 1983; Cullen et al., 2001; Kremers, Brug, & de Vries, 2003).

Therefore, this study investigates how parental communication modifies the impact of food advertising on children's consumption behaviour. More specifically, in a diary-survey study among parents of 4- to 12-year-old children, I investigate the effectiveness of different types of parental communication in reducing the relation between food advertising and children's consumption of energy-dense food products. In the literature two types of verbal communication strategies have been identified that parents can use to modify children's responses to advertising (Buijzen & Valkenburg, 2005; Carlson & Grossbart, 1988; Robertson, 1979). First, advertising-related communication, or advertising mediation, involves communication strategies specifically relevant to advertising. Second, consumer communication involves more general consumption-related communication patterns.

**Advertising-related communication: Parental advertising mediation**

In the literature on young people and media, specific media-related verbal communication is mostly referred to as parental mediation (e.g. Abelman & Pettet, 1989; Nathanson, 1999; Robertson, 1979). There is an impressive body of research on the role of parental mediation in modifying children's responses to television, including media-induced aggression, fear responses, and alcohol use (e.g. Austin, 1997; Austin, Pinkleton, & Fujioka, 2000; Buijzen, Walma van der Molen, & Sondij, 2007; Nathanson, 1999, 2004).

One line of research has explored the effectiveness of parental mediation in modifying children’s responses to advertising (e.g. Bijmolt, Claassen, & Brus, 1998; Boush, 2001; Buijzen & Valkenburg, 2005; Fujioka & Austin, 2003; Wiman, 1983). This literature has so far identified two mediation styles that parents can use to reduce the effects of advertising. Active advertising mediation includes making deliberate comments and judgments about television commercials and actively explaining the nature and selling intent of advertising. Restrictive advertising mediation involves
sheltering children from advertising by reducing their exposure to it. This mediation style includes family rules restricting children’s viewing of commercial television channels (Robinson, Saphir, Kraemer, Varady, & Haydel, 2001).

Parental advertising mediation can affect children’s understanding of advertising (Bijmolt et al., 1998; Wiman, 1983), their scepticism towards advertising (Wiman, 1983), their preferences or requests for advertised products (Buijzen & Valkenburg, 2005; Prasad, Rao, & Sheikh, 1978; Wiman, 1983), and their materialistic orientations (Buijzen & Valkenburg, 2005). Two studies have found that active mediation was more effective in modifying advertising effects than restrictive mediation (Bijmolt et al., 1998; Buijzen & Valkenburg, 2005). Buijzen and Valkenburg argued that restrictive mediation strategies do not necessarily prevent children from being exposed to television advertising. Children are reached by advertising in many ways, and it is often unfeasible to avoid their exposure to it.

However, previous studies have mainly focused on school-aged children. It is conceivable that active mediation strategies are not understood by younger children. Media intervention studies suggest that up to the age of 7 or 8, children lack the cognitive and information-processing skills to process and apply instructional comments while watching television, whereas older children are progressively able to do so (Buijzen, 2007; Lang, 2000; Nathanson, 2004). On the other hand, restrictive mediation strategies may be more effective among younger children, because parents generally still have control over their television viewing behaviour.

Consumption-related communication: Parental consumer communication

In addition to specific advertising-related communication, more general consumption-related communication styles can influence children’s responses to advertising (Buijzen & Valkenburg, 2005; John, 1999; Moschis, 1985). Two consumer communication styles are generally distinguished. Concept-oriented consumer communication emphasizes open and critical discussion, individual ideas and opinions, and focuses on increasing children’s autonomy. Socio-oriented consumer communication is aimed at obedience and conformity, and stresses control over and restrictions of children’s consumption (Carlson & Grossbart, 1988; Fujioka & Austin, 2002; Moschis & Moore, 1979; Ritchie, 1991).

Concept-oriented communication may be an effective tool in modifying advertising-induced food consumption, because family discussions on consumption behaviour increase children’s understanding and autonomy. For instance, earlier studies have shown that children from concept-oriented families have more knowledge about consumer matters, are better able to see through selling techniques in advertising, and display less materialistic values (Buijzen & Valkenburg, 2005; Churchill & Moschis, 1979; Moschis, 1985; Moschis & Moore, 1982).

In contrast, children from families with a socio-oriented communication style have been shown to be more susceptible to television advertising (Buijzen & Valkenburg, 2005; Moschis, 1987). However, earlier studies have mainly focused on children’s attitudes and behavioural intentions rather than their subsequent actual consumption behaviour. It is conceivable that the more controlling socio-oriented communication style is a more effective tool in influencing children’s actual diet. By strict and clear family rules parents can regulate their children’s food intake. After all, as noted above, parents are generally the ones controlling the availability of and access to food at home.

Socio-oriented strategies may become less effective as children grow up and obtain increasing control over what they consume. As most children start to receive a weekly or
monthly allowance during the elementary school years (McNeal, 1992), they have means to purchase their favourite foods and beverages. With declining parental influence, socio-oriented communication is likely to become less effective. Strict parental control practices may even increase children’s preferences for restricted foods and diminish self-control in eating (Carper, Fisher, & Birch, 2000; Fisher & Birch, 1999). Therefore, older children may benefit more from concept-oriented communication strategies such as open and critical discussion, which help them deal with their consumption autonomy.

Research hypotheses

Parental communication styles with respect to media and consumer behaviour are related to more general parenting styles (Carlson & Grossbart, 1988; Fujioka & Austin, 2002; Moschis, 1985). On the one hand, active advertising mediation and concept-oriented consumer communication are focused on family discussions and increasing children’s autonomy, and are associated with permissive and authoritative parental styles (Carlson & Grossbart, 1988). On the other hand, restrictive advertising mediation and socio-oriented consumer communication are mainly focused on restricting children’s consumption and media exposure, and are more related to protective and authoritarian parental styles (Carlson & Grossbart, 1988; Moschis, 1985).

The present study compares the effectiveness of different communication styles for each type of parental communication. The first aim is to test and compare the effectiveness of active versus restrictive advertising mediation styles in reducing the relation between children’s exposure to food advertising and their consumption of energy-dense food products, and how this differs for younger and older children. The following hypotheses are investigated:

\[ H1: \text{ Active advertising mediation is more effective than restrictive mediation in reducing the relation between children's advertising exposure and their consumption of energy-dense food products.} \]

\[ H2: \text{ The effectiveness of active mediation increases with children’s age, while the effectiveness of restrictive mediation decreases with age.} \]

The second aim of the study is to compare the effectiveness of concept-oriented versus socio-oriented communication styles in reducing the relation between children’s exposure to food advertising and their consumption of energy-dense food products, and how this varies with age. The following hypotheses are investigated:

\[ H3: \text{ Both concept-oriented and socio-oriented consumer communication modify the relation between children’s advertising exposure and their consumption of energy-dense food products.} \]

\[ H4: \text{ The effectiveness of concept-oriented communication increases with age, while the effectiveness of socio-oriented communication decreases with age.} \]

Method

Sample and procedure

The results of this study are part of a larger household diary-survey study on television and childhood obesity, which was conducted in The Netherlands early 2006 (see also Buijzen, Bomhof, & Schuurman, 2008; Buijzen, Schuurman, & Bomhof, 2008). Parents were approached via eight elementary schools, representing various
socio-economic and cultural backgrounds. Of the 380 parents who agreed to participate, 62% returned a completed questionnaire and food diary, resulting in a total sample of 234 parents of children between the ages of 4 and 12 years ($M$ age = 7.84 years; 52% boys). In the sample, all educational levels of parents were represented: 33% had completed high school; 37% were college graduates; and 21% had a master’s degree. The remaining parents indicated a lower education (6%) or did not report their educational level (3%). Family incomes ranged from less than 12,500€/year (approximately £9,240; 12% of the sample) to more than 48,000€/year (£35,490; 18% of the sample). The average household income in The Netherlands in 2006 was 29,100€ (£21,520).

The children were given an envelope to take home to their parents that contained a food diary and a questionnaire. The package was accompanied by instructions, asking the primary caregiver to report all of the food products and beverages their child consumed each day during a 4-day period, which covered two specific week- and two weekend days. In addition to the diary, parents were asked to fill out a questionnaire assessing children’s television viewing behaviour and parental communication styles. After the packages were returned, two coders listed and coded all foods and beverages consumed by each child during the time of investigation. In order to estimate the amount and nature of television food advertising, I used a dataset provided by Nielsen Media Research of all advertisements broadcast in The Netherlands in the month leading up to the investigation.

**Measures**

**Food advertising exposure**

To assess children’s food advertising exposure, I followed Slater’s (2004) strategy to accurately assess exposure to specific media content. Slater has argued that the accuracy and specificity of exposure reports can be increased by assessing which programs or channels children watch. These data can then be combined with information on the amount and nature of advertisements broadcast on these channels. Therefore, I combined children’s viewing preferences with advertising broadcast data (Gantz et al., 2007; Slater, 2004).

Parents were asked to indicate which channel their child watched the most. Based on the Nielsen data I analysed how many commercials for energy-dense food product categories (i.e. sugared breakfast cereals, confectionery, savoury snacks, soft drinks, and products from fast food restaurants; see Hastings et al., 2003) were broadcast on each of the 15 television channels reported by parents. The amount of commercials varied from 0 to 1,684 per channel. A food advertising exposure score was created for each child, based on the amount of energy-dense food commercials broadcast on his or her favourite channel in the month leading up to the investigation. ($M = 295.5$ commercials, $SD = 275.05$). The most popular channels were Jetix (watched most frequently by 38% of the children; broadcast 308 commercials), Z@pp (37%; 176 commercials), and Nickelodeon (8%; 114 commercials). Because this variable was highly skewed, analyses were conducted with its standardized scores.

**Energy-dense food intake**

The dependent consumption measure expressed the total number of advertised energy-dense food products or beverages a given child consumed during an average day. First,
the coders listed all food products and beverages consumed by each child during the
time of investigation. Then, using the same set of advertising broadcast data as
mentioned above, the coders assessed whether or not the product consumed belonged
to one of the advertised energy-dense product categories. Of the total food products
consumed, 17% belonged to one of these product categories. To create a measure for
daily energy-dense food intake, total scores were divided by the total number of days
included in the investigation (\(M = 2.56, SD = 1.22\)).

**Parental communication measures**

To determine the extent to which parents engaged in advertising mediation and
consumer communication, a measurement instrument was adopted from earlier
advertising mediation research (Buijzen & Valkenburg, 2005; see the Appendix for the
complete scales). A principal component analyses on the 22 items yielded four
dimensions explaining 50.5% of the variance, representing two scales for advertising
mediation, and two for consumer communication. Correlations between the
communication measures ranged from \(r = .03\) (ns) between concept- and socio-
oriented communication to \(r = .37\) (\(p < .001\)) between active advertising mediation
and concept-oriented consumer communication.

**Advertising mediation**

The active mediation scale consisted of five items measured on a four-point scale.
Examples of questions were ‘How often do you tell your child that the purpose of
advertising is to sell products?’ and ‘How often do you tell your child that advertising
does not always tell the truth?’ (see Appendix). Parents’ scores on the five questions
were averaged to create an active advertising mediation scale (\(\alpha = .86, M = 2.13,
SD = 0.70\)). The restrictive mediation scale also consisted of five items, including
questions such as ‘How often do you tell your child to turn off the television when (s)he
is watching commercials?’ and ‘How often do you tell your child that (s)he shouldn’t
watch television advertising at all?’ (\(\alpha = .74, M = 1.47, SD = 0.57\)).

**Consumer communication**

The concept-oriented communication scale consisted of six items measured on the
same four-point scale, and contained questions such as ‘How often do you tell your child
to consider the advantages and disadvantages of products and brands?’ and ‘How often
do you tell your child to give his/her opinion about products and brands?’ (\(\alpha = .74,
M = 2.19, SD = 0.53\)). The socio-oriented communication scale consisted of six items.
Examples of questions were ‘How often do you tell your child that you know which
products are best for him/her?’ and ‘How often do you tell your child that you have strict
and clear rules when it comes to product purchases?’ (\(\alpha = .66, M = 2.39, SD = 0.53\)).

**Results**

The aim of this study was to investigate how different parental communication styles
interact with the relation between children’s advertising exposure and their food
consumption. Before conducting the interaction analyses, I first tested the main relation
in a regression analysis with children’s advertising exposure as the independent and
their energy-dense food consumption as the dependent variable. As anticipated, the 
analysis yielded a significant and positive relation ($\beta = 0.22, B = 0.27; SE = 0.08, 
p < .001). Children’s advertising exposure explained 5% of the variance in children’s 
consumption of energy-dense food products, $F(1, 231) = 12.11, p < .001$.

**Interaction analysis of active and restrictive advertising mediation**

The first research aim was to investigate how active and restrictive advertising 
mediation strategies modified the relation between children’s advertising exposure and 
their consumption of energy-dense food products (H1) and how this varied for children 
of different ages (H2). To do so, an interaction design in regression analysis was used 
with children’s consumption of energy-dense food products as the dependent variable 

Eleven predictors were entered: the independent variable (i.e. advertising 
exposure); the interaction variables (i.e. active mediation, restrictive mediation, and 
age); and the two-way product terms of the independent and interaction variables 
(i.e. active mediation $\times$ advertising exposure, restrictive mediation $\times$ advertising 
exposure, and age $\times$ advertising exposure). In addition, to investigate whether age 
would moderate the effectiveness of different mediation strategies, three-way product 
terms were entered for age (active mediation $\times$ advertising exposure $\times$ age and 
restrictive mediation $\times$ advertising exposure $\times$ age). Results of the interaction analyses 
are reported in Table 1. The predictors are grouped by advertising mediation style.

**Table 1.** Relation between children’s exposure to food advertising and their consumption of energy-
dense food products as conditional on advertising mediation style – regression analysis

<table>
<thead>
<tr>
<th></th>
<th>Energy-dense food consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
</tr>
<tr>
<td>Advertising exposure</td>
<td>0.22</td>
</tr>
<tr>
<td>Age</td>
<td>0.13***</td>
</tr>
<tr>
<td>Age $\times$ advertising exposure</td>
<td>$-0.02$</td>
</tr>
<tr>
<td>Active mediation</td>
<td>$-0.01$</td>
</tr>
<tr>
<td>Active mediation $\times$ advertising exposure</td>
<td>$-0.41***$</td>
</tr>
<tr>
<td>Active mediation $\times$ age</td>
<td>0.05</td>
</tr>
<tr>
<td>Active mediation $\times$ advertising exposure $\times$ age</td>
<td>0.02</td>
</tr>
<tr>
<td>Restrictive mediation</td>
<td>$-0.39*$</td>
</tr>
<tr>
<td>Restrictive mediation $\times$ advertising exposure</td>
<td>$-0.57$</td>
</tr>
<tr>
<td>Restrictive mediation $\times$ age</td>
<td>0.00</td>
</tr>
<tr>
<td>Restrictive mediation $\times$ advertising exposure $\times$ age</td>
<td>0.28*</td>
</tr>
</tbody>
</table>

$R^2$ (adjusted) = .16  
$F(11, 221) = 4.99***$

* $p < .05$; *** $p < .001$.

A significant regression coefficient for one or more product terms would indicate 
that the relation between advertising exposure and food consumption was indeed 
affected by the interaction variable (Aiken & West, 1991). Table 1 shows that active 
mediation significantly and negatively interacted with advertising exposure, whereas 
restrictive mediation did not. However, the analysis did yield a significant three-way
interaction for restrictive mediation and age. In order to more thoroughly understand what the significant interactions meant, these interaction effects were plotted and probed (cf. Preacher et al., 2006).

The upper interaction plot in Figure 1 illustrates the relation between children’s advertising exposure and their consumption of energy-dense food as conditional on active advertising mediation. The broken regression line indicates the relation between advertising exposure and energy-dense food consumption for children from parents who often applied active mediation, while the solid line indicates the same relation for children with parents who applied less or no active mediation. The slopes of the lines indicate the direction and strength of the relations. As can be seen in the figure, the relation between advertising exposure and food consumption was considerably weaker for children who often received active mediation than for children who less often received active mediation. Post hoc probing analysis confirmed that the relation between advertising exposure and energy-dense food consumption disappeared for children whose parents actively discussed the nature and intent of advertising.

**Figure 1.** Relations between children’s exposure to food advertising and their consumption of energy-dense food products as conditional on active and restrictive advertising mediation – interaction plots.
The lower plot in Figure 1 illustrates the relation between advertising exposure and consumption of energy-dense food as conditional on (1) restrictive advertising mediation and (2) children’s age. The broken lines indicate the advertising-consumption relation for children from parents who often applied restrictive mediation, and the solid lines indicate the same relations for children from parents who applied less or no mediation. Furthermore, triangles mark relations for children younger than 8 (\(M_{\text{age}} - 1SD\), cf. Aiken & West, 1991), and squares indicate relations for children of 8 years and older (\(M_{\text{age}} + 1SD\)). As can be seen in the figure, restrictive mediation only interacted with advertising exposure among the younger children, meaning that the advertising-consumption relation was strongest among younger children who did not receive restrictive mediation.

**Interaction analysis of concept- and socio-oriented consumer communication**

The second aim was to investigate how concept- and socio-oriented consumer communication modified the relation between advertising exposure and energy-dense food consumption (H3–H4). Again, a regression analysis was conducted with children’s consumption of energy-dense food products as the dependent variable. Eleven predictors were entered, including the independent and interaction variables (advertising exposure, concept-oriented communication, socio-orientated communication, and age), their two-way interaction terms, and the three-way interaction terms with age. As can be seen in Table 2, only the socio-oriented communication style significantly interacted with advertising exposure. In addition socio-oriented communication significantly interacted with age. Although not the primary research focus, this latter interaction called for further exploration and was also plotted and probed.

**Table 2. Relation between children’s exposure to food advertising and their consumption of energy-dense food products as conditional on consumer communication style – regression analysis**

<table>
<thead>
<tr>
<th></th>
<th>(B)</th>
<th>(SE)</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising exposure</td>
<td>0.13</td>
<td>0.13</td>
<td>0.11</td>
</tr>
<tr>
<td>Age</td>
<td>(0.13^{***})</td>
<td>0.03</td>
<td>(0.27^{***})</td>
</tr>
<tr>
<td>Age (\times) advertising exposure</td>
<td>-0.06</td>
<td>0.05</td>
<td>-0.13</td>
</tr>
<tr>
<td>Concept-oriented communication</td>
<td>-0.22</td>
<td>0.15</td>
<td>-0.10</td>
</tr>
<tr>
<td>Concept-oriented communication (\times) advertising exposure</td>
<td>-0.13</td>
<td>0.30</td>
<td>-0.05</td>
</tr>
<tr>
<td>Concept-oriented communication (\times) age</td>
<td>0.03</td>
<td>0.06</td>
<td>0.03</td>
</tr>
<tr>
<td>Concept-oriented communication (\times) advertising exposure (\times) age</td>
<td>0.03</td>
<td>0.11</td>
<td>0.03</td>
</tr>
<tr>
<td>Socio-oriented communication</td>
<td>-0.12</td>
<td>0.16</td>
<td>-0.05</td>
</tr>
<tr>
<td>Socio-oriented communication (\times) advertising exposure</td>
<td>(-0.48^{*})</td>
<td>0.27</td>
<td>(-0.24^{*})</td>
</tr>
<tr>
<td>Socio-oriented communication (\times) age</td>
<td>(0.13^{*})</td>
<td>0.06</td>
<td>(0.14^{*})</td>
</tr>
<tr>
<td>Socio-oriented communication (\times) advertising exposure (\times) age</td>
<td>-0.1</td>
<td>0.09</td>
<td>-0.06</td>
</tr>
</tbody>
</table>

\(R^2\) (adjusted) = .14
\(F(11, 221) = 4.45^{***}\)

*\(p < .05, ^{***}p < .001\).

Figure 2 depicts the plots for the significant interactions. The upper interaction plot illustrates the relation between advertising exposure and food consumption as conditional on socio-oriented consumer communication. The broken regression line
represents the relation between advertising exposure and food consumption for children who were confronted with socio-oriented communication strategies, while the solid line indicates the same relation for children whose parents reported less or no socio-oriented communication. Figure 2 shows that the relation between advertising exposure and food consumption was significantly weaker for children from parents with a high socio-oriented communication orientation. More specifically, probing analysis showed that the relation only held for children from less socio-oriented parents.

Figure 2. Relations between children’s exposure to food advertising and their consumption of energy-dense food products as conditional on socio-oriented consumer communication and age – interaction plots.
The lower interaction plot indicates the relation between age and energy-dense food consumption as conditional on socio-oriented communication. The regression analyses had shown that age was positively related to energy-dense food consumption (see Tables 1 and 2). As can be seen in the figure, that relation was stronger among children from parents who often used socio-oriented communication. In other words, children in late elementary school from highly socio-oriented parents consumed more energy-dense food products than children from less socio-oriented parents.

Discussion
In this study, two types of parental communication were distinguished: advertising mediation and consumer communication. For each type of communication, I compared the effectiveness of different parental styles in reducing the relation between children’s exposure to food advertising and their consumption of energy-dense food.

Effectiveness of active versus restrictive advertising mediation
The first aim was to investigate how active and restrictive mediation affected children’s advertising-induced food consumption, and how this varied by age (H1–H2). The regression results indicated that, overall, active mediation was considerably more effective in reducing advertising effects than restrictive mediation. These results confirm the first research hypothesis and are in line with earlier research findings on parental mediation of children’s responses to advertising (Bijmolt et al., 1998; Buijzen & Valkenburg, 2005). Contrary to expectations, active advertising mediation was effective among younger as well as older children.

However, in agreement with the second hypothesis, among the younger children in the sample (ages 4–8) restrictive mediation was also effective in reducing the relation between advertising and food consumption. These results appear to contradict earlier findings that rule making is ineffective in the management of television influence on children (see Austin, 2001; Buijzen & Valkenburg, 2005; Nathanson, Eveland, Park, & Paul, 2002). However, these earlier studies focused on school-aged children. Parental attempts to restrict their children’s exposure to advertising may be more successful among younger children, because parents still have control over their media exposure. Parental influence on children’s television viewing behaviour diminishes as children grow older, for instance because they watch television in their bedroom more often (Christakis, Ebel, Rivara, & Zimmerman, 2004).

Thus, restrictive policies may not lead to sufficient reductions in older children’s exposure to food advertising. It is conceivable that restrictive mediation can be effective among school-aged children when accompanied by parental explanation (cf. Austin, 2001). If children understand why they are not allowed to watch certain programs, they may perhaps learn how to manage their own exposure to advertising. Future research could investigate the effectiveness of restrictive mediation in combination with active mediation. In addition, future research could further explore the mediation content, for instance comparing positive versus negative (e.g. Fujioka & Austin, 2002) and factual versus evaluative approaches (Buijzen & Mens, 2007).

Effectiveness of concept-oriented versus socio-oriented consumer communication
The second aim of this study was to investigate the effectiveness of concept- and socio-oriented consumer communication in modifying children’s responses to food
advertising (H3–H4). Socio-oriented consumer communication was more effective than concept-oriented communication in reducing the relation between children’s advertising exposure and their consumption of energy-dense food products. In other words, parental control and rule making was more successful than open discussion about consumption. An explanation might be that socio-oriented communication strategies prevent children from gratifying advertising-induced desires, while concept-oriented strategies do not.

The fourth hypothesis, which predicted that the effectiveness of the two consumer communication styles would differ with age, was not supported. However, the analysis did yield an unexpected interaction effect, meaning that the positive relation between age and energy-dense food consumption only held for children from highly socio-oriented parents. Earlier studies have shown that strict parental control practices diminish children’s self-control in eating (Carper et al., 2000; Fisher & Birch, 1999). With increasing age, children obtain more autonomy in their consumption choices. It is conceivable that children from socio-oriented parents lacked the nutrition-related knowledge to deal with that autonomy, because their parents failed to explain the motivation behind their restrictions.

Although tentative, this possible explanation does indicate that the results for socio-oriented communication should be interpreted with caution. It is plausible that socio-oriented communication is more effective, on the short term as well as the long term, when parents explain why they imply certain rules and restrictions. Because the investigated sample was too small to test this explanatory hypothesis, more research is needed to investigate the interaction between socio- and concept-oriented communication styles in modifying children’s consumption behaviour. In addition, there is a need for longitudinal research examining the effectiveness of parental communication over time.

Conclusions and implications
In conclusion, this study showed that both advertising- and consumer-related parental communication styles can be effective tools in reducing the impact of advertising on children’s diets. The findings suggest that with (a) critical and open discussion about advertising and (b) control and rule making about consumption, parents can reduce the impact of food advertising on children’s energy-dense food consumption. Restrictions of advertising exposure were effective among preschool and early elementary schoolchildren, but not among the older children.

However, several limitations should be taken into account. First, it should be noted that the findings are based on correlational data. To come to definite conclusions about the causal directions of the observed relations, causal-correlational research is needed. Second, parent reports of parental communication were used because they are the ones administering the mediation and may therefore give more account to their actual behaviour (Buijzen, Rozendaal, Moorman, & Tanis, 2008). However, parent reports may be subject to social desirability bias. Future research is needed to test whether the observed patterns also hold with child reports. Finally, the study focused on television and has not taken into account other types of advertising. Further research should investigate how these results hold for advertising in other media, including internet, games, and mobile phones.

Taking these reservations into account, the study has implications for those involved in the daily care of children as well as for academics investigating media effects. First, the
findings can help parents and educators to deal with potentially undesired consequences of advertising. Even though most Western countries have protective policies concerning child-directed advertising, the lion’s share of the responsibility is still shouldered by the parents, who are usually the first to experience inconvenience as a result of advertising (Buijzen & Valkenburg, 2003). This study indicates that parents are able to counteract the effects of advertising by talking with their children about advertising and controlling their consumption behaviour.

In addition, this study’s findings might contribute to the ongoing political and socio-legal debate on child-directed advertising, and help establish guidelines for its regulation. In many Western societies, concerns about the possible adverse effects of marketing efforts directed at children have led not only to advertising restrictions, but also to an increased attention for media education (Gunter et al., 2005; Kunkel et al., 2004). In recent years, several countries, such as the UK, Canada, and The Netherlands, have introduced school-based media literacy programs. Although the importance of enhancing children’s media literacy should not be underestimated (Donohue, Henke, & Meyer, 1983; Robinson et al., 2001), such programs could also incorporate parent-directed materials and focus, for instance, on raising parental awareness on advertising and a healthy life-style.

Finally, this study also contributes to child and advertising research, in exploring how family variables interact with advertising behaviour relations. In the early 1990s, Young (1990) already noted that the body of child and advertising research had evolved as a product of societal and regulatory debates rather than as a subject of unbiased cumulative scholarship. As a result, most child and advertising research has been characterized by an input–output orientation, which has neglected the specific ways in which advertising can lead to certain undesired effects (cf. Buijzen & Valkenburg, 2003).

Future research could further explore the causal mechanisms underlying the relations between media and energy balance-related behaviour, and how individual and environmental factors interact with these relations. To identify possible moderators and mediators of advertising persuasion processes, future research could be guided by insights from adult persuasion models (e.g. Eagly & Chaiken, 1993; Petty & Cacioppo, 1996) as well as health and nutrition research (e.g. Kremers et al., 2006). The study reported here might form an inspiration and encouragement for future theoretical and empirical analysis on the processes and effects of child-directed advertising.

References


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**Appendix**

**Parental advertising mediation scales**

How often do you tell your child . . .

**Active advertising mediation**

(1) . . . that advertising depicts products as better than they really are?
(2) . . . that advertising does not always tell the truth?
(3) . . . that the purpose of advertising is to sell products?
(4) . . . that not all advertised products are of good quality?
(5) . . . that some advertised products are not good for children?

**Restrictive advertising mediation**

(6) . . . to turn off the television when (s)he is watching commercials
(7) . . . that (s)he should not watch commercial channels because they broadcast too many commercials?
(8) . . . to switch to a channel that broadcasts fewer commercials?
(9) . . . that (s)he should not watch television advertising at all?
(10) . . . to watch specific channels that broadcast relatively few commercials?

**Parental consumer communication scales**

How often do you tell your child . . .

**Concept-oriented consumer communication**

(1) . . . that every member of your family should have some say in family purchase decisions?
(2) . . . to give his/her opinion when discussing family purchases?
(3) . . . to give his/her opinion about products and brands?
(4) . . . that you respect his/her expertise on certain products and brands?
(5) . . . to consider the advantages and disadvantages of products and brands?
(6) . . . that (s)he can codecide when you make purchases for him/her?

**Socio-oriented consumer communication**

(7) . . . that you know which products are best for him/her?
(8) . . . not to argue with you when you say no to their product request?
(9) . . . that you expect him/her to accept your decisions about product purchases?
(10) . . . which products (s)he should or should not buy?
(11) . . . that you have strict and clear rules when it comes to product purchases?
(12) . . . the (s)he is not allowed to ask for products?