

The Persuasiveness of Child-Targeted Endorsement Strategies:

A Systematic Review

Tim Smits^a

Heidi Vandebosch^b

Evy Neyens^a

Emma Boyland^c

a Institute for Media Studies, KULeuven, Leuven, Belgium

b Department of Communication Studies, University of Antwerp, Belgium

c Department of Psychological Sciences, University of Liverpool, UK.

Corresponding author: Tim Smits, Institute for Media Studies, Faculty of Social Sciences, University of Leuven, Parkstraat 45, 3000 Leuven, Belgium.

Tim.smits@soc.kuleuven.be

+32 16323097

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Abstract

Several European and U.S. reviews have established the link between food marketing and childhood obesity (EU Pledge, 2012; FTC, 2006; Persson, Soroko, Musicus & Lobstein, 2012), which has stimulated researchers to investigate the effects of the most prevalent child-targeted marketing technique: the use of endorsing characters. This systematic review of these studies (15 identified; participants age 3-12 years) focuses on three important questions: (a) Does a basic endorser effect exist?, (b) Is the strength of the endorsement effect influenced by endorser type?, and (c) Does the endorsement strength differ according to the type of food being promoted?

Keywords: food, children, marketing, endorsement, characters, persuasion

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The Persuasiveness of Child-Targeted Endorsement Strategies: A Systematic Review

It has been argued that advertising aimed at children (up to age 12) is “fundamentally unfair”, because children lack an adult-like understanding of an advertisement’s selling intent (Rozendaal, Buijzen, and Valkenburg, 2010, p. 86). However, food marketers employ many techniques in their promotions in order to grab children’s attention and persuade them. The use of an endorser to promote products is one of the techniques most often used in food marketing to children (Boyland, Harrold, Kirkham & Halford, 2012). Friedman and Friedman (1979) discerned three types of endorsers: the celebrity¹, the expert, or the typical consumer. Although all three are used to target children, this chapter provides an up-to-date systematic review of available insights into celebrity endorsement effects only, as this technique is particularly widely used to promote mainly unhealthy foods to children via TV, packaging and the Internet (e.g., Elliott, 2008; Boyland et al., 2012; Alvy & Calvert, 2008; Hebden, King & Kelly, 2010).

The current review focuses on research conducted with children between the ages of 3 and 12 years because within these age limits there are large differences in children’s susceptibility to (endorsement) advertising. As proposed by Rozendaal, Lapierre, Van Reijmersdal and Buijzen (2011), resisting persuasion not only requires conceptual and attitudinal advertising literacy, but also the ability to apply the former during advertising exposure. For children under 7 years old, their conceptual advertising knowledge is not yet fully developed, which makes them particularly

¹ As well as famous people (typically in the field of entertainment or sport), this definition can also include fictional characters. These can either be licensed characters, in which case they are known outside of the endorsed product (e.g., a cartoon character known from a movie or series) or branded characters, which are created specifically to promote the brand and/or product (e.g., Tony the Tiger for Kellogg’s Frosted Flakes; or Captain Birdseye, also known as Captain Iglo, for Birds Eye or Iglo frozen seafood products).

vulnerable. Between 8 - 12 years old, children largely possess conceptual advertising literacy but cannot spontaneously retrieve and apply it while processing the commercial (John, 1999; Brucks, Armstrong & Goldberg, 1989; Rozendaal, Buijzen & Valkenburg, 2012; Dixon et al., 2013). Children above twelve years old, on the other hand, are expected to be able to employ their advertising literacy as a defense (Buijzen, Van Reijmersdal, & Owen, 2010).

The aim of this systematic review is to answer a set of specific questions on the effects of endorsement advertising of foods targeted to children. In our reviewed set of studies, authors typically refer to “the endorsement effect” but vary in the control condition to which this term is applied. Some refer to the impact of endorsement relative to a within- participants pre-treatment measure. This interpretation corresponds with an individual effect measuring the reaction to a known food that suddenly gets endorsed. Others use it relative to a between-participants control group, which corresponds with a group effect measuring the actual gain in product liking or consumption attributable to endorsement. Such subtle differences are important and we will explore these, while demonstrating the multitude of effect types documented. A systematic review must also identify yet to be replicated initial findings and hypotheses and corollaries that require further examination, the current article provides such a research agenda.

The use of endorsers as an advertising technique is widespread among marketing targeted at both adults and children. For marketing aimed at adults, Money, Shimp, and Sakano (2006) estimated a worldwide prevalence of endorsements in 17% of commercials, with figures as high as 25% in the United States. For children, the same technique is even more prevalent because advertisers use it to appeal to their fantasy-oriented nature (Rose, Merchant & Bakir, 2012; cf. Acuff & Reiher, 1997). In

Kelly et al.'s (2010) cross-national content analysis of child targeted TV advertising, 9%–49% of all food advertisements (ads) contained promotional characters. The foods these characters promoted were categorized as 'non-core' (i.e., high in undesirable nutrients or energy, as defined by dietary standards) in 79% of cases. In their 2011 analysis of 577 TV ads for food targeting children, Castonguay, Kunkel, Wright, and Duff (2013) found that 73% of ads included familiar characters and 72% of these promoted foods of low nutritional quality. In their 2009 systematic review of food marketing to children, Cairns, Angus, Hastings, and Carahar (2013) also identified "animated and other fictional characters [as]... more likely to be used in food ads than in non-food ads aimed at children" (p. 213). However, it is not just in television advertising that endorsers are used to promote foods to children.

Hebden, King, Kelly, Chapman, and Innes-Hughes (2011) audited three Australian supermarket chains for the use of promotional characters on food packaging. On average, the foods and beverages that were promoted by characters were categorized as less healthful than those without characters on the packaging. Similarly, researchers found endorsers on packaging to be very popular in Dutch supermarkets (Van Assema et al., 2011). In focus groups among elementary school children, Elliott (2009) learned that children derive the healthfulness of foods from the dullness of their packaging. Though little empirical data are available to our knowledge, given the extent to which endorsers appear in online marketing (such as websites or advergames), they are likely to play an important role there as well (Moore & Rideout, 2007). One study in Sweden estimated that 17% (in 2007) to 28% (in 2005) of brand incentives on websites targeting children were mascots (Sandberg, 2011).

Despite their presumed illiteracy with respect to advertising, the literature shows that young children do process advertising cues such as brand logos and characters to a considerable extent. For instance, in a groundbreaking paper in the early 1990s, Fischer, Schwartz, Richards, Goldstein, and Rojas (1991) demonstrated that up to 30% of 3-year-old children could correctly identify such cues. Approximately 30% of 3-year-olds could even match the cartoon character Old Joe with the correct product, Camel cigarettes, the advertising of which was claimed to not be child-targeted. Six-year-olds in the same study could recognize almost 90% of all ten brands in the study that explicitly targeted children, including food brands such as McDonald's, Burger King, Domino's Pizza, Coca-Cola, Pepsi, Kellogg's, and Cheerios. Given this deep processing of cues, the effects of marketing techniques such as endorsement advertising should not be underestimated. For adults endorsers could be considered mere peripheral cues—except maybe when they are relevant to the product (e.g., a professional model is a more relevant endorser for toothpaste than most sportsmen; see Sengupta, Goodstein, & Boninger, 1997). In contrast, the intimate relationship children often build with characters could result in strong attitudinal effects and associated food preferences.

Food endorsement could be described as an easy strategy to convince the more naive viewers of the purported value and desirability of a product, and therefore, it may be particularly harmful when targeted at children. Recent research shows, however, that even adults can be easily misled. In an online study, Dixon and colleagues (2011) asked parents to choose between a high calorie food item and a healthier option. Most parents did not read the product's nutrition information panel before making their choice. However, when one of the two products was endorsed by a sports celebrity this increased the odds of the participants choosing the endorsed

item. Moreover, the sports endorsement changed their perceptions of the typical consumers buying these items and resulted in participants believing the product to be healthier than the same food item without the endorsement.

Athletes often promote such foods. For instance, Bragg, Yanamalada, Roberto, Harris, and Brownell (2013a) found that from the top 100 endorsing athletes, 24% of their endorsements pertained to food (76% of which were unhealthy) and beverages (93% of which were unhealthy). Bragg et al., (2013b) also found that their sample of athlete or sport endorsed foods and beverages heavily targeted children (34%). Additionally, there were more unhealthy endorsed food and beverage products targeted at children than there were for adults. Similarly, Harris, Brownell, and Bargh (2009) found that endorsement effects are likely to be persuasive for both advertising literate parents and their less literate children because they have an automatic effect on brand and product associations. Such automatic effects are hard to counteract, even for the thoughtful parent making informed consumer decisions. The difference between parents and children might be that adults are better able to discern endorsement marketing when the endorser belongs to the child's environment (e.g., an animated character from a TV program) rather than to the adult's (e.g., a sports celebrity). This demonstrates the important effect endorsers can have, as they are a marketing strategy that often goes unnoticed, even for the more advertising literate consumers.

From an academic perspective, the question of how this endorsement marketing technique actually influences children (and possibly their parents) is a multidisciplinary one. Communication scientists have studied the phenomenon as part of a recent expansion of the literature on advertising literacy, which lacked comprehensive studies demonstrating the impact of advertising techniques (Harris et

al., 2009; Institute of Medicine, 2006; Livingstone & Helsper, 2006). Childhood obesity and its relation with marketing communications has also been studied in several other disciplines, therefore in this review we have included studies from the perspectives of psychological consumer behavior and medical pediatrics, as well as from the multidisciplinary field of nutrition research. The journals in which the studies were published are very diverse. The lack of cross-referencing between the different articles further demonstrates that a review combining all available insights is necessary; this should ensure a full understanding of the topic is achieved and that future research is driven to explore gaps in knowledge using a multidisciplinary approach.

Given this diversity of disciplines, it is perhaps unsurprising that the studies reviewed in this chapter approach researching endorsement effects from a number of different perspectives. These differences are apparent both in the dependent measures and the manipulations. In studies originating from a communication perspective, attention has predominantly been given to attitudinal measures such as actual attitudes or parent purchase requests. In other studies, such as those originating within the field of psychology, the focus has been on choice behaviors (e.g., do endorsers influence the choice between a healthy and an unhealthy food item?). In other, more recent studies the focus has been on actual food consumption. With respect to the manipulation, many studies investigated a pure endorsement effect, testing whether the endorsed food was more attractive when compared to a non-endorsed food. Others specifically addressed questions related to types of endorsers (do some endorsers result in stronger effects than others?) or types of food (does the endorsement effect hold for both unhealthy and healthy foods?).

The multidisciplinary nature of academic interest in the topic also seems to have impacted the conceptual design of relevant studies. Each of the design options has its own merits but only portrays part of the persuasive impact of endorsers. Each design also taps into another type of implication, and thus, it is important to sketch the different types of results and their implications.

Therefore, three different research questions will be discussed in the literature review below.

RQ1: Does a basic endorser effect exist?

RQ2: Is the strength of the endorsement effect influenced by endorser type?

RQ3: Does the endorsement strength differ according to the type of food being promoted?

For each of these questions, researchers could use one of a number of different research study designs. Therefore, for each question we will discuss to what extent published studies applied these different design factors:

Factor 1: Is the dependent variable an attitude measure or a choice/behavior measure?

Factor 2: Does the manipulation occur between participants or within participants?

Factor 3: Is it a control-experimental design or an experimental-experimental design?

Research Designs

It is clear that in order to study the above research questions and the underlying causal processes to which they refer, a valid experimental design with appropriate manipulations is necessary. It does not suffice to simply ask children whether they think an endorser would have an effect. Neither is a design without proper randomization sufficient to answer these questions. For instance, Ülger (2008) asked children to choose between an endorsed food item and an item without an endorser, but for each participating child the pairing between endorsement and food item was the same. Effects found in such a design can be attributed to the endorser, the food, or a combination of both, so they do not provide clear evidence for our research questions. Therefore, and because the research on this topic stems from different disciplines each with their own habits of experimentation, it is necessary to first consider the different experimental designs that are acceptable for our purpose.

A few prototypic designs are summarized in Table 1, though this is not an exhaustive set. As this table makes clear, a key consideration with any experimental design is whether a between-participants or within-participants format is most appropriate. One benefit of a within-participants design is that there is greater statistical power to detect possible effects, because no intra-individual differences disturb the comparison between conditions. On the other hand, within-participants manipulations in which similar types of outcome measures are repeatedly taken could induce participant awareness of the hypotheses, create answering tendencies or increase the artificiality of the manipulation (e.g. when participants are asked for two ratings of the same food item (not endorsed, then endorsed)).

[INSERT TABLE 1]

After considering the manipulation in these designs, the outcome variables must also be considered. As mentioned above, different outcome variables can be deemed relevant to address the question of whether children display endorsement effects with regard to food. Researchers from a communication or psychology background often focus on cognitive measures such as attitudes or preferences. Researchers from a nutrition background are somewhat more prone to test variables such as choice or actual amount of consumption. Again, each of these options are valid and sensible, but the chosen measures qualify the interpretation that can be attached to the results. Of course, cognitive effects are easier to study than behavioral ones that typically involve more researcher time and encoding and accordingly, cognitive effects are more frequently reported in the literature. Moreover, persuasive communication can be expected to have stronger effects on cognitive attitudinal measures than on behavioral measures (Fazio & Roskos-Ewoldson, 2005).

In sum, these designs all have their own merits in answering the three basic research questions outlined above and, of course, variations and combinations of these basic designs exist to answer even more specific questions. In this review we will discuss the extent to which published studies provide answers to these questions, with reference to the particular design factors used in the cited research.

Method

We conducted a systematic review of the published literature concerning the causal impact of endorsement advertising on children's attitudes and behaviors toward food. A systematic review is: "a scientific investigation with pre-planned methods that summarizes, appraises, synthesizes and communicates the results of multiple previous studies" (Jones & Evans, 2000, p. 67). Our goal was to review experimental studies

from 2005 to 2014 which measured the impact of endorsers on children's attitudes and food preferences, choices, or consumption. We set 2005 as the starting date because that year can be marked as the starting point of an explicit research focus on child targeted food advertising techniques (see the major review commissioned by the US Federal Trade Commission, 2008).

In this review we have focused on research studies examining endorsement effects for children between 3 and 12 years old, because children notice the perceptual dimension of advertising from this age on, whereas 12-year-old children slowly develop an adult-like understanding of persuasive techniques (John, 1999). Acuff and Reiher (1997) also claim that character-based marketing is most effective for younger children. Older children (from the age of 13) show a stronger appeal towards adult celebrities (such as sports or TV or music celebrities). Furthermore, factors influencing early childhood eating habits are critical because their impact extends to adult health (Owen, 1997).

The literature search was conducted in February 2014. In the first phase, a list of relevant keywords was determined. A few articles were gathered to sample keywords based on a *brief search strategy* and the authors' prior knowledge of the field. The search terms used were combinations of: *endorsement advertising, endorsers, spokes-characters, brand characters, licensed characters, cartoon characters, celebrity endorsement, food promotion, food marketing, children, kids, (un)healthy, (non)celebrity, attitudes toward food, purchase (request) intention, taste, food choice, eating behavior, food intake, food consumption, food preferences, childhood obesity and nutrition*. Next, we used these keywords to scan the following electronic databases: Google Scholar, Psych INFO, and Web of Knowledge. The keyword combinations yielded between 142 and 16800 hits on Google Scholar, between 0 and

40 hits on Web of Knowledge, and 6 articles on Psych INFO. Potentially relevant articles were read and retained only if they matched our *a priori* inclusion criteria: empirical studies in which manipulation was used to causally verify a basic endorser effect, differences between different types of endorsers, and/or between different types of food, presented to children between 3 and 12 years old. The dependent variables needed to be attitudes, choices, or behavior. The experimental design had to be a between-participants or within-participants control-experimental or experimental-experimental design (see Table 1). Finally, we used a snowball search strategy by investigating the references of the suitable articles of the first phase. In total we reviewed fifteen articles from eleven journals: *Journal of Health Communication*, *Appetite*, *Journal of Communication Science*, *Journal of the American Academy of Pediatrics*, *Journal of Pediatrics*, *Archives of Pediatrics and Adolescent Medicine*, *Pediatric Obesity*, *Journal of Consumer Behavior*, *Journal of Advertising*, *Journal of Human Nutrition and Food Science*, and *Communications*. The articles were categorized according to our research questions, the design factors, and participants' age. An overview is presented in Table 2.

[INSERT TABLE 2]

Results

RQ1: Does a Basic Endorsement Effect Exist?

Attitude studies. A few studies addressed the basic endorser effect using a between-participants design in which at least one group of participants rated foods presented without an endorser and others saw the food endorsed. De Droog, Valkenburg, and Buijzen (2011) asked children ($N = 216$, 4 to 6 years old) to rate a healthy and an unhealthy snack for liking and request intent. Between-participants

they manipulated whether the snack was endorsed by a familiar endorser, an unfamiliar endorser, or no endorser. The endorsement did not have an effect on the liking of the unhealthy snack (possibly due to a ceiling effect as all children rated the unhealthy snack very positively), but it did increase the liking of the healthy snack. Similarly, Lapierre, Vaala, and Linebarger (2011) found that supposedly “new” cereals were considered more tasteful by 5- to 6-year-old children ($M_{age} = 5.6$, $SD = 0.96$; $N = 80$) if these were endorsed on the packaging by licensed characters versus when no endorser was present. This effect particularly occurred for those cereals branded as sugary (i.e., unhealthy), whereas it did not occur for the same cereals branded as healthy foods. Here, the lack of an effect for the healthier cereals could be attributed to a ceiling effect because even in the no endorsement condition children already found these supposedly healthy cereals extremely tasteful. However, with only twenty participants per condition in a between-participants design, the study also lacks power².

In Kotler, Shiffman, and Hanson (2012; $N = 343$; 3- to 6-year-old, $M_{age} = 4.08$, $SD = 0.99$) children were asked for relative preference ratings. One third of the participants in their first study rated each of nine food pairs that were not endorsed. The other participants rated the same pairs but each item within the pair was endorsed, either by a familiar endorser or an unfamiliar one. In line with the results discussed above, they found that comparative to the baseline condition, the relative preference increased for the foods endorsed by the familiar character.

Roberto, Baik, Harris, and Brownell (2010) presented children between 4 and 6 years old ($N = 40$; $M_{age} = 5$, $SD = 0.7$) with three different identical food pairs of

² For inferences about the statistical power of studies in this review, we used the rule of thumb that n should reach about 50 per condition, as suggested by Simmons, Nelson, and Simonsohn (2013). We rely on this rule of thumb because the different design approaches in the reviewed literature do not allow the use of a pooled effect size to perform proper power calculations.

which one item was endorsed by a licensed character. They found a significant taste preference for the endorsed food items. In fact, this study was an endorsement alternative to an earlier study (Robinson, Borzekowski, Matheson & Kraemer, 2007, $N = 63$, $M_{age} = 4.6$, $SD = 0.5$, ranged 3.5-5.4 year olds) in which identical foods in a pair were either presented in McDonald's branded packaging or in non-branded packaging. Similar to the endorsement effect, the McDonald's brand logo increased the relative taste preference for the branded foods.

Similarly, Levin and Levin (2010) applied a within-participants design, but their 43 participating children (7 to 8 years old) rated eight different foods that were either endorsed or not, healthy or not, and from a known or (artificial) unknown brand. Their measures focused on perceptions of how nutritionally good or bad these children perceived the foods to be, which is strikingly different from the actual attitude and liking measures used in the other studies reviewed here. Their analyses showed no overall endorsement main effect; however, for unhealthy products from an unknown brand, endorsement did have an effect. Though sufficiently powered due to the within-participants design, the simultaneous orthogonal manipulation of three different variables could have disturbed a clear manifestation of an endorsement effect.

Finally, Smits and Vandebosch (2012) demonstrated that when previously non-endorsed foods became endorsed this led to better attitudes towards the items (increased liking, wanting to consume and intentions to request the food from parents) among the same participants ($N = 57$, 6- to 7-year-old, $M_{age} = 6.8$). In sum, these studies clearly demonstrate that the endorsement effect does exist for attitudinal measures, with only Levin and Levin's study (2010) showing no endorsement effect. Interestingly, though, the studies in this category focus on the younger part of our age

range (up until 7 years old) with Levin and Levin's being the oldest sample. The basic endorsement effect on attitudinal measures should thus be further confirmed among older children.

Choice/behavior studies. Some studies also tapped into actual food choice. Comparable to their relative preference questions, Roberto et al., (2010) found that an endorser also positively affected the forced choice between two similar food items such that children were significantly more likely to select the endorsed food item as a snack. Kotler and colleagues (2012) also assessed choices. A subset of their participants in the first study (where they gave relative preference scores) also participated in a second phase of the data collection (Study 2 in the paper). Here, children could eat from each item of three food pairs. Extending the findings of their first study, it was found that the foods endorsed by *Sesame Street's* Elmo were somewhat more likely to be eaten than those endorsed by an unfamiliar character or those not endorsed.

In an Australian web survey (Dixon et al., 2014) 11-year-old children ($N = 1302$, $M_{age} = 11.0$, $SD = 0.7$) chose between an energy-dense nutrient-poor product (EDNP) and a healthier variant; they did so for five food categories. The EDNP product pictures were manipulated to include no specific promotion (control) or front-of-pack promotions such as a male sports celebrity endorser, a premium offer, or a nutrient content claim. Relative to the control condition, the odds of choosing the EDNP rather than the healthier option increased significantly when boys saw the EDNP with the male athlete endorser. For girls, however, the athlete endorser did not have an effect. It is unclear whether this gender difference is indeed attributable to the gender of the endorser, but it seems conceivable. Certainly, the large sample size makes the study well powered to find even a modest effect, should it exist. More

research is needed to test whether other endorsers could have an effect on girls of this age (equivalent to the effect of male athlete endorsers on the boys in this study).

Boyland and colleagues (2013) extended the measurement of choice behavior to a measure of the *ad libitum* amount of food intake. In their study, children ages 8 to 11 ($N = 181$, $M_{age} = 10$, $SD = 0.9$) were presented with one of four television clips (three of which were commercials, the other a TV clip of similar duration) and afterwards children could eat from two identical bowls of potato chips that were labeled as a national brand (Walker's Crisps) or a 'supermarket' private label. Children generally ate more from the so-called national brand than from its private label alternative. More importantly, children exposed to a commercial for Walker's featuring its long-standing endorser Gary Lineker (a former soccer player and current celebrity) ate more of the Walker's Crisps than those in the control conditions (with a non-related food or non-food commercial). Interestingly, children exposed to a television clip featuring the endorser in his other role as a television presenter also ate more of the Walker's Crisps than the children in the control condition. British children seemingly have such strong mental connections between Lineker and Walker's that exposure to the endorser without reference to the potato chips already works as an implicit ad for those chips.

An intervention study by Bezbaruah, Stastny, and Brunt (2013) on fourth graders (typically 9 to 10 years old, $N_{t1} = 256$, $N_{t2} = 237$) applied a repeated measures design and non-celebrity endorsement of green beans. Three weeks after the initial measurement of typical bean consumption, the same beans were served during school lunch, but accompanied by a graphic of a spokes character (the article does not specify the character). A comparison of consumption at both time points revealed that

when beans were endorsed, more children (a 10% increase) chose the beans but that portion sizes were smaller (particularly for boys).

Wansink, Just, and Payne (2012) also studied 8- to 11-year-old ($N = 208$) children and used Elmo as an endorser. They did a five day study with a pre-test day, a post-test day and three intermediate intervention days. Though the use of an Elmo sticker increased the odds of an apple being chosen, it did not do so for cookies. Again, the lack of an effect could be attributable to a ceiling effect because even at baseline the cookies had a very high probability of being chosen. Statistical power could not be an issue here given the number of participants. They also found a smaller, but significant positive effect of an unknown endorser for apples.

The previously reported studies mostly used still images, manipulated packaging, or existing TV advertisements to represent the food endorsement. De Droog, Buijzen, and Valkenburg (2014) had a novel approach with an intervention study using picture books. Children, 4 to 6 years old ($N = 160$), participated in a five day intervention study where four different experimental groups had daily reading sessions of a picture book that used a congruent (rabbit) or incongruent (turtle) endorser to promote the consumption of carrots. On the fifth day, the 5 minute free consumption of carrots, cucumber, cheese, and salty sticks was compared between these experimental groups and a control group. Relative to the control group (that did not participate in any study-related activity such as reading a specified non-endorsement book), the children exposed to the picture book (with either endorser) ate more carrots, less cucumber and less cheese. Interestingly, they did not cut down on the salty snacks. In all, the study suggests that there is an endorser effect on carrot consumption though it might be bounded by very appealing consumption alternatives.

To summarize, basic endorsement effects were reported in various ways and on the full age spectrum we consider so on the basis of this evidence we can answer RQ1 positively – yes, a basic endorser effect does exist. It is important to note the diversity of study designs resulting in similar patterns of findings since this attests to the stability and ecological validity of the effect. Cognitive measures were most often used for younger age ranges, whereas the choice or behavior measures were more spread out over the age continuum from 3 to 12 years.

RQ2: Is the Strength of the Endorsement Effect Influenced by Endorser Type?

Though a number of different dimensions categorizing endorsers could be imagined, attention has largely been dedicated to the difference between familiar and unfamiliar endorsers. At least two (related) reasons can be given for this specific interest. First, from a policy perspective it taps into the question of how harmful the proliferation of celebrity endorsers is when they seem to disproportionately promote unhealthy foods. Second, from a health promoting perspective it is interesting to know the complement: to what extent can an unfamiliar (and thus cheaper) endorser increase the preference for a (healthy) food item?

De Droog, Valkenburg, and Buijzen (2011) presented children (4 to 6 years old, $N = 216$) with both healthy and unhealthy foods (see above) and manipulated between participants whether each food was not endorsed, endorsed by a familiar character (*Dora* for girls and *SpongeBob* for boys), or endorsed by an unfamiliar character (a monkey). In this between-participants design, they did not find differences in the endorsement effect for the familiar versus the unfamiliar endorser. Given the large sample size, the lack of a significant effect should not be attributed to a lack of statistical power.

All other studies addressing RQ2 used a within-participants design. For instance, de Droog, Buijzen, and Valkenburg (2012) presented 4 to 6-year-old children ($N = 166$) with a carrot that was endorsed by a familiar character (*Dora* for girls and *Diego* for boys) and four unfamiliar characters differing in perceptual and conceptual congruence with the product. Contrary to their previous between-participants design, this study revealed more positive attitudes for carrots endorsed by the familiar endorser, followed by the conceptually congruent characters. Note that in their study with the picture books (see above; de Droog, Buijzen, & Valkenburg, 2014), they did not find stronger endorsement effects for the congruent endorser (rabbit endorsing carrots) than for the incongruent one (turtle endorsing carrots). Kotler, Shiffman, and Hanson (2012) found that children (3 to 6 years old) choosing between food items endorsed by *Sesame Street* characters versus unknown (though professionally designed) “Crumbsnatcher” characters preferred (Study 1, $N = 343$, $M_{age} = 4.08$, $SD = 0.99$) and ate (Study 2, $N = 207$) the former rather than the latter. Wansink, Just, and Payne (2012; children ages 8 to 11) found that *Elmo* was a better endorser to promote the choice of an apple (offered together with a cookie) than an unknown endorser. Still, that unknown endorser had a significant effect compared to a no endorsement condition (see above).

Finally, Smits and Vandebosch (2012; children ages 6 to 7, $N = 57$, $M_{age} = 6.8$) applied a mixed design in which the familiarity of the endorser was both manipulated within-participants and between-participants (cf. a Latin square design). They too found that familiar characters resulted in stronger effects than unfamiliar ones. Interestingly, their design is the only one of the within-participants studies that tests whether the unfamiliar characters are actually persuasive relative to a control condition. Indeed, the other studies used an experimental-experimental design where

only the relative effect can be assessed. Smits and Vandebosch (2012) did find endorsement effects (increased liking, wanting to consume and intentions to request the food from parents) for both the familiar and the unfamiliar characters.

Related to the aforementioned study, Neeley and Schumann (2004; children ages 2 to 5) conducted two studies where they designed TV ads in which endorsers were paired with products. After three exposures to these ads (embedded in a TV show), the attitudinal and choice effects concerning the endorsed cheese crackers were measured. In contrast to the previously mentioned studies, Neeley and Schumann (2004) did not manipulate the endorsers *per se*, but rather manipulated the interaction between the endorser and the product (Study 1, $N = 67$, $M_{age} = 3.83$) and the vocal interaction between two endorsers (Study 2, $N = 37$, $M_{age} = 3.58$). They found the strongest endorsement effects when the endorser interacted with the product and when the ad did not feature a complex auditory communication between the endorsers.

In sum, unfamiliar characters can produce endorsement effects but the strongest relative effect is to be expected from familiar endorsers. Notably, this evidence stems from within-participants designs, with the only between-participants design (de Droog et al., 2011) unable to detect significant differences between familiar and unfamiliar endorsements. So again, the evidence supports a positive response to RQ2 – yes, the strength of the endorsement effect is impacted by the type of endorser used. However, too little is known about the magnitude of the absolute endorsement effect for unfamiliar characters. This is crucial because it applies to the situation of healthy but unprocessed foods where the profits are lower, and thus, relatively cheap characters are the only endorsement possibility.

RQ3: Does the Endorsement Strength Differ According to the Type of Food Being Promoted?

There is an underlying dichotomy in food items typically studied: healthy versus unhealthy products. Again, the focus is dual for good reasons. We do need to know how pervasive endorsement is as a marketing technique used to promote unhealthy foods. We also need to know to what extent the same technique can be applied to promote more healthy foods.

Lapierre, Vaala, and Linebarger (2011; children ages 5 to 6, $N = 80$, $M_{age} = 5.6$, $SD = 0.96$), used a between-participants manipulation to brand the exact same cereals either as “Sugar Bits” or “Healthy Bits” (thus suggesting that the food is unhealthy or healthy rather than using different food items). The children who participated in their study reported liking the so-called healthy option more (4.65 ± 0.84 on a 5 point rating scale) than the ‘less healthy’ version (4.22 ± 1.27). No endorsement effect was found for the “Healthy Bits” (possibly due to a ceiling effect and/or a lack of power). For the unhealthy option, adding an endorser did result in increased liking.

Roberto and colleagues (2010; children ages 4 to 6, $N = 40$; $M_{age} = 5$, $SD = 0.7$) used both unhealthy items and a healthy item (baby carrots) in a within-participants presentation to their participants. Their licensed endorsers (*Scooby Doo*, *Dora*, and *Shrek*) increased the liking of the foods, but the effect was smaller for the healthy option. De Droog, Valkenburg, and Buijzen (2011; children ages 4 to 6, $N = 216$) also presented each participant with both a healthy option and a less healthy option. Endorsement did have an effect for the healthy option and not for the unhealthy one (again this is a possible ceiling effect; given the sample size it is not likely to be due to a lack of power). The endorsed healthy option was still less liked than the non-endorsed unhealthy option.

Smits and Vandebosch (2012) applied a mixed design where the healthiness of the foods were manipulated both within- and between-participants. They found that endorsement effects were stronger for unhealthy foods than for healthy foods. Although the endorsement effects were smaller for healthy foods, it did occur relative to a pre-test no-endorsement baseline measure among the same participants.

Kotler, Shiffman, and Hanson (2012; children ages 3 to 6) offered an interesting alternative design. For some of their stimuli pairs, one item was healthy and the other unhealthy. As discussed above, children in the Kotler et al., (2012) study saw pairs of food items and in the experimental conditions both items were endorsed (one by a familiar endorser, one by an unfamiliar one). For these pairs, the familiar *Sesame Street* character used to endorse a healthy option did not convince children to like or choose that option above the unhealthy option endorsed by an unknown character. Similarly, Wansink, Just, and Payne (2012) studied 8- to 11-year-old ($N= 208$) children and found that an *Elmo* sticker increased the odds of an apple being chosen, but it did not do so for cookies. This null effect for cookies could be due to a ceiling effect; up to 90% of children chose to have a cookie in the control condition. Given the large sample size, statistical power is not a likely reason for not finding the effect here.

In sum, healthy foods can profit from endorsement effects, although these effects can be expected to be smaller than for a similar endorsement of an unhealthy food option. Again, those endorsement effects were demonstrated across the age range from 3 to 11 and no age-specific pattern of findings seemed to emerge. Similar to RQ2, too few studies reported on actual food choice and consumption, but the evidence supports a positive response to RQ3 also. The strength of the endorsement effect does appear to differ according to the type of food being promoted.

Of course, the strict categorization scheme for endorser effects as outlined above (see Table 1) does not represent the full spectrum of possibilities. At least one exception to this scheme should be noted and credited for its demonstration of what could be called an atypical and non-marketing endorsement effect. Wansink, Shimizu and Camps (2012) conducted a within-participants study (with pre-test and post-test for baseline measures). They asked 22 children, ages 6 to 12 ($N = 22$, $M_{age} = 8.5$), what they expected to be the food choice of real and fictional models (like *Batman*). Asking these children whether the models would prefer apple fries or French fries increased the odds that they would choose the apple fries themselves. This effect was most pronounced for those children who expected the admirable models to choose the apple fries. This study has at least two implications. The first is that endorsement effects could exist even for incidental pairings of the endorsing character and the endorsed foods such that, for instance, parents can adaptively use the endorsement technique to boost their children's healthy preferences. Second, the study also demonstrates that the pairing between food and endorser is not necessarily a top-down given fact, but that it could also work as a bottom-up free association starting from the child's expectations about the endorser.

Conclusion

This review focused on an emerging topic in research: experimental studies measuring the effect endorsers have on attitudes, food preferences, choices and intake in children. Though this taps into a longstanding interest of academics, parents, and policy makers, the empirical evidence is very recent, as demonstrated by the publication dates of the reviewed studies. Studies on this topic mostly emerged after 2005, and the majority were published in the last few years. These studies clearly

demonstrate that characters have the persuasive capability of increasing the liking of and preference for foods they endorse, among children aged 3 to 12 years. Together, these studies also suggest that both familiar and unfamiliar characters have the potential to generate these effects, although the evidence up to now suggests that the effects are strongest for familiar characters. Finally, these studies also suggest that both unhealthy and healthy foods can be promoted through endorsement techniques, but that, possibly, the effect is smaller for healthy foods.

Given the potential of endorsement advertising to guide children's food choices, it seems desirable to urge governments to restrict the use of this strategy in the promotion of unhealthy foods to children. One practical implication is that it is important that policy makers realize that the persuasive impact of such endorsements is not constrained to typical mass media advertising such as TV (for example, several studies discussed in this review used characters on packaging as the experimental stimuli). We therefore urge policy makers to restrict endorsement-based marketing strategies for unhealthy foods targeted at children irrespective of the medium in which they are displayed. At the same time, governments could support the use of endorsers to encourage children to eat healthily by using them in public health campaigns, school intervention programs, on healthy food packages and vending machines, and so forth.

Next to active, and possibly subsidized, support, governments could also think of co-branding policies where the use of endorsement strategies is only allowed if the same endorsement campaign also includes balanced promotion of generic healthy options (e.g., in a general health campaign or with promotion of healthy products within the brand's portfolio). Some of the reviewed studies already pertain to this topic. Robinson et al. (2007) already demonstrated the persuasiveness of the

McDonald's logo with respect to more healthy options such as milk or carrots. Smits and Vandebosch (2012) showed that their celebrity endorser was effective in endorsing fruits as well as cookies. That same endorser (Kabouter PlopTM) has since been used commercially in Belgium and the Netherlands to endorse child-targeted fruits and vegetables as well as cookies. More research is needed, however, to ensure that such dual promotion (on the level of the food brand or the endorser) produces sufficiently positive effects on diet and health.

Notably limited in the published research were studies measuring actual food consumption. Despite the demonstration of persuasiveness by endorsers to promote the liking, choice, and even consumption of healthy foods, it remains unclear whether this technique will lead to additional consumption (next to unhealthy foods) or the replacement of unhealthy consumption with healthy products.

If academic research wants to move on to detecting how to protect children from negative influences of marketing on their food consumption, as suggested by Harris and colleagues (2009), clear insight is needed into which effects occur and how they occur. The present overview tried to systematically shed light on the most widely adopted marketing technique across all marketing communication tools (such as TV advertising, packaging, in-store promotions), namely endorsement marketing. Certainly, endorsement marketing is only part of the marketing spectrum applied to target children; many other techniques exist.

One limitation of this review is that only experimental studies focusing on the effect itself have been studied, while neglecting the equally interesting question of the underpinning cognitive processes. So, while the overview of studies gives a clear insight into the causality of endorsement effects, it does not provide insight as to what is driving these effects. It should be noted that the studies reviewed here did not exist

in a theoretical vacuum; however, a general scheme on how to interpret the findings is not apparent. Next to studies demonstrating effects of endorser type and food type on actual food consumption, researchers should also design future studies that can better explain the underlying cognitive processes.

This absence of a clear theoretical process model of childhood persuasion by endorsers is illustrative for the full spectrum of childhood persuasion insights. Whereas adult persuasion literature is clearly covered by many theoretical models and empirical demonstrations of these models (such as elaboration likelihood model, heuristic-systematic model, or transportation theory) only few researchers (e.g., Te'eni-Harari, Lampert, Lehman-Wilzig, 2007; Buijzen, Van Reijmersdal & Owen, 2010) have empirically studied underlying persuasion processes in childhood. We can only further subscribe to the claim that more research is needed to understand precisely how cognitive processes persuade children. The findings of the current review suggest that endorsement marketing is a powerful persuasion mechanism, but we do not yet know enough to explain how it works.

A second limitation of the current review, and related to the previous limitation, is that too few studies exist to adequately map a developmental path of endorser persuasion. The studies included in this review focused on children aged up to 12 years old. It could be that different processes underlying the endorsement effect co-exist within these age categories. It could equally be possible that these children are all persuaded in a similar cognitive manner and that the only difference is to be found in the type of endorser, which should of course match the child's preferences. Although endorsement is used as an advertising technique for adults as well, it is also worthwhile to study the effects for older children, a focus that is currently missing in the literature. Are endorsers equally persuasive for all age groups? Most studies seem

to focus on children between 4 and 8 years old, only some studied children between 8 and 12. But what happens afterwards? And what is the developmental path of the persuasion processes?

A last limitation of the current review is that it singles out endorsement as the most prevalent technique, but it does not take into account possibly relevant medium-specific effects. Most existing studies either present the endorser as an on-pack or similar endorser (e.g., a sticker on a piece of fruit) or as appearing in a TV commercial. Of course, other options exist as well, with website advertising, in-game advertising, apps, books (cf. de Droog et al., 2014), premiums, etc. Does endorsement have a similar effect irrespective of the communication medium? If endorsement works via processes such as fantasy (Rose et al., 2012), it seems likely that a more narrative endorsement (with an endorser actually interacting with the endorsed foods) would work better than rather static depictions of an endorser with a food item. Following Dixon and colleagues (2014) we could also wonder how effective endorsers are compared to other popular persuasive techniques like premiums, humor, nutrient claims, advergames, and so forth. Future research should therefore study the relative effectiveness of different techniques or, rather, the interactive effectiveness of these techniques.

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POST-PRINT VERSION - Communication Yearbook

The Persuasiveness of Child-Targeted Endorsement Strategies: A Systematic Review**Table 1 – Research Designs**

Design	Manipulation	Uses	Examples of published studies
Between-participants control-experimental	Control group views product without endorser. Experimental group views product with endorser.	To explore if an endorsement effect exists.	De Droog, Valkenburg & Buijzen (2011). Dixon et al. (In Press). Lapierre, Vaala & Linebarger (2011).
Between-participants experimental-experimental	One group views product with endorser A. Other group views product with endorser B.	To explore the relative endorsement effect: which of the two endorsers is more effective? Does NOT show net endorsement effect.	de Droog, Buijzen & Valkenburg (2014).
Between-participants experimental-experimental food item	One group views product A with endorser. Other group views product B with same endorser.	To explore the relative endorsement effect: for which of the two foods is the endorser more effective? Does NOT show net endorsement effect.	Smits & Vandebosch (2012; mixed design).
Within-participants control-experimental	Participants view product with endorser at one session, and without endorser at another session (order counterbalanced, with suitable time gap to ensure previous response is not readily	To explore if an endorsement effect exists.	Roberto, Baik, Harris & Brownell (2010). Smits & Vandebosch (2012). Bezbaruah, Stastny & Brunt

	recalled) OR participants view product without endorser first, then later view product with endorser.		(2013).
Within-participants experimental-experimental	Participants view product with endorser A at one session, and with endorser B at another session (order counterbalanced, with suitable time gap to ensure previous response is not readily recalled).	To explore the relative endorsement effect: which of the two endorsers is more effective? Does NOT show net endorsement effect.	De Droog, Buijzen & Valkenburg (2012).
Within-participants experimental-experimental food item	Participants view products A and B (or more) with same endorser.	To explore the relative endorsement effect: for which of the two (or more) foods is the endorser more effective? Does NOT show net endorsement effect.	Smits & Vandebosch (2012; mixed design).

The Persuasiveness of Child-Targeted Endorsement Strategies: A Systematic Review

Table 2. Overview of all included studies and their most important characteristics

	Year	Author(s)	Research questions	Participants	Research design	Type of measurement	Dependent variables	Independent variables	Results
Study 1	2013	Bezbaruah, Stastny & Brunt	Q1	Time 1: 73; Time 2: 92: 9-10 years old	Pre-experimental repeated measures design	Eating behavior	Food selection and consumption	Character presence (time 1-2), gender, ethnicity	Q1: more children consumed endorsed beans in comparison with time 1 regular beans, but average amount per serving decreased
Study 2	2013	Boyland, Harrold, Dovey, Allison, Dobson, Jacobs & Halford	Q1	181: 8-11 years old	Between-subjects mixed control - experimental, posttest only design	Eating behavior	Food intake	Commercial condition, age, gender, BMI	Q1: children exposed to endorsed commercial or endorser alone ate more endorsed chips than regular chips than control (no food commercial) condition
Study 3	2011	De Droog, Valkenburg & Buijzen	Q1;Q2;Q3	216: 4-6 years old	Between-subjects control-experimental, posttest only design	Attitudes	Liking, purchase request intent	Character condition (no, (un)familiar), snack condition ((un)healthy), gender, age	Q1: brand characters can increase children's liking of and purchase request intent for fruit up to a level similar to candy. Q2: no different endorser effect between familiar and unfamiliar characters. Q3: only endorsement effect for healthy option
Study 4	2012	De Droog, Buijzen & Valkenburg	Q2	166: 4-6 years old	Within-subjects experimental-experimental, posttest only design	Attitudes	Automatic and elaborate affective responses toward character-product combinations	Character congruence, character familiarity, perceived congruence, character liking	Q2: more positive elaborate attitudes for the familiar endorser, followed by the conceptual-perceptual congruent character. for automatic affective responses no difference between familiar and unfamiliar conceptually congruent characters
Study 5	2014	De Droog, Buijzen & Valkenburg	Q1;Q2	104: 4-6 years old	Between-subjects control- experimental posttest only design	Attitudes + food intake	Cognitive response/ automatic and elaborate affective response to carrots / product consumption	Reading style and character condition , BMI, hunger, time of snacking	Q1: conceptually congruent character did not enhance the impact of the book on carrot consumption, only effect of interactive shared reading. Q2: congruent character induces an automatic positive response toward carrots after a single exposure, after five exposures no difference with incongruent character
Study 6	In press	Dixon et al.	Q1	1302: 10-12 years old	Between-subjects control-experimental, web-based design	Attitudes + food choice	Product ratings, product choice	Promotion condition	Q1: endorser effect only for boys

Study 7	2012	Kotler, Shiffmann & Hanson	Q1;Q2;Q3	343: 2-6 years old 207: 3-6 years old	Between-subjects control-experimental, posttest only design	Attitudes + actual food choice	Food preference + consumption	1: Character condition, age, gender, liking of characters. 2: food condition, fan condition added	Q1: higher preference for foods endorsed by familiar character relative to the baseline condition. Q2: children preferred and ate more of the familiar character endorsed foods than the unknown character foods. Q3: unhealthy-unfamiliar combination preferred over healthy-familiar combination.
Study 8	2011	Lapierre, Vaala & Linebarger	Q1;Q3	80: 5-6 years	Between-subjects control-experimental, posttest only design	Attitudes	Taste perception	Character condition (presence) , name condition (healthy vs sugary), character identification and liking, age, gender, parent's education , media-use	Q1: better taste if endorsed, but only for cereals with unhealthy cue. Q3: no endorsement effect for 'healthy' cereals
Study 9	2010	Levin & Levin	Q1; Q3	43: 7-8 years old	Within-subjects control-experimental, posttest only	Attitudes	Product good or bad	Product healthiness, brand name familiarity, character presence, gender	Q1-Q3: endorser effect only relevant for unhealthy unfamiliar product. Brand name familiarity more effective than cartoon characters
Study 10	2004	Neeley & Schumann	Q2	1: 68 2: 37: 2-5 years old	Between-subjects, control-experimental, posttest only design	Attitudes + food choice	Attention, character-product association, recognition and liking, product preference, intention and choice	Commercial condition, age, gender, ethnicity, media-use, food experience	Q2: strongest endorsement effects when endorser interacts with product and without complex auditory communication between the endorsers
Study 11	2010	Roberto, Baik, Harris & Brownell	Q1;Q3	40: 4 - 6 years old	Within-subjects control-experimental, posttest only design	Attitudes + actual food choice	Taste preference + food choice	Character and food condition, character identification and liking , age, gender, ethnicity, media-use	Q1: preference for the endorsed food items, positive endorser effect on forced choice between two similar food items. Q3: smaller effect for healthy option
Study 12	2007	Robinson, Borzekowski, Matheson & Kraemer	Q1: branding	63: 3-5 years old	Within-subjects control-experimental, posttest only design	Attitudes	Taste preference	5 food pairs ((un)branded), age, ethnicity, media-use	Q1: children preferred branded foods and drinks
Study 13	2012	Smits & Vandebosch	Q1;Q2;Q3	57: 6-7 years old	Mixed design: within-subjects control experimental, pre -and posttest design	Attitudes	Frequency of consumption, appetite, purchase request intention	Food type and set, character distribution and order, age, gender, character identification	Q1: higher attitudes toward endorsed foods versus baseline measure among same participants. Q2: effects for both familiar and unfamiliar characters and stronger effects for familiar characters. Q3: stronger effects for unhealthy food
Study 14	2012	Wansink, Just & Payne	Q1;Q2;Q3	208: 8-11 years old	Repeated measures control-experimental; pre-posttest design	Food choice + eating behavior	Food choice and consumption	Character condition (presence, (un)familiar), food type	Q1: increased odds of choosing endorsed apple over regular apple. Q2: no effect of unknown character. Q3: only effective with healthy item, no effect for cookie
Study 15	2012	Wansink, Shimizu & Camps	Q2	22 : 6 - 12 years old	Within-subjects, pre-test post-test design	Food choice	Food choice	What would role-model eat? perceived healthiness of food	Q2: children who expected admirable models to eat healthy chose healthy option more often

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