

RESEARCH

Open Access



The power of product: how food advertising affects children's perceptions of child and non-child targeted food advertising?

Julia Soares Guimaraes¹, Meghan Pritchard², Soulene Sabir², Lana Vanderlee³, Timothy Ramsay², Charlene Elliott⁴ and Monique Potvin Kent^{2*}

Abstract

Background Food advertising shapes children's preferences for unhealthy foods, contributing to poor diets and increased risk of obesity and non-communicable diseases. This study explored children's perceptions of child and non-child-targeted food advertising.

Methods Open-ended online interviews with 17 participants, recruited through convenience sampling, were conducted where children were prompted with four advertisements (ads): a child-targeted and non-child-targeted ad for both healthy (plain milk) and unhealthy (chocolate) foods. A thematic analysis was conducted.

Results Most children expressed positive perceptions of the ads, and the reasons children described liking the ads included: (i) people in the ad eating the product, (ii) positive emotional appeal, (iii) pre-existing affinity with the product, and (iv) visibility of the product. However, most children expressed "negative purchase intent" to all ads due to a pre-existing aversion to the product. Many children who expressed pre-existing affinity with the product still expressed negative purchase intent because they preferred other brands or flavours of the product. Most children considered the type of product over the marketing techniques when asked about perceived targeted audience. The main themes found were: (i) product for everyone, and (ii) product for people that like the product.

Conclusions Children's perceptions, purchase intent and perceived targeted audience did not change between child-targeted and non-child-targeted ads. This study underscores the critical role of the product itself in influencing children's responses to ads. It highlights the need for public policies and advertising regulations to focus on restricting promotions of unhealthy products rather than solely addressing marketing techniques or target audiences.

Keywords Food advertising, Children, Interview, Purchase, Thematic analysis, Perceptions

*Correspondence:

Monique Potvin Kent
mpotvink@uottawa.ca

¹Interdisciplinary School of Health Sciences, Faculty of Health Sciences,
University of Ottawa, 75 Laurier Ave E, Ottawa, ON K1N 6N5, Canada

²School of Epidemiology and Public Health, Faculty of Medicine,
University of Ottawa, 600 Peter Morand Crescent, Ottawa, ON
K1G 5Z3, Canada

³School of Nutrition, Université Laval, 2425 Rue de l'Agriculture, Québec
City, QC G1V 0A6, Canada

⁴Faculty of Arts, Department of Communication, Media and Film,
University of Calgary, 2500 University Drive, Calgary, AB T2N 1N4, Canada



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

Background

The World Health Organization (WHO) reported that, in 2022, approximately 20% of children and adolescents aged 5 to 19 years old had overweight, and 8% were living with obesity [1]. Recent trends indicate a global increase in childhood obesity. The average prevalence of obesity among children and adolescents rose from 7.0% during the first decade of the 2000s (2000–2011) to 11.3% in the second decade (2012–2023) [2]. Childhood obesity rates in Canada have reached concerning levels, with approximately 30% of Canadian children aged 5 to 17 have overweight or obesity [3]. Studies indicate that the diets of Canadian children, like those in many other developed countries, are predominantly composed of ultra-processed foods (UPFs), with severe implications for children's health and development [4, 5]. UPFs account for 49.1% of the total caloric intake among Canadian children aged 2–5 years old and 54.2% among Canadian children aged 6–12 years old [6, 7]. UPF products are often high in added sugars, unhealthy fats, and sodium, while being low in essential nutrients, such as fiber, vitamins, and minerals. High consumption of UPFs among children is associated with increased rates of childhood obesity, cardiovascular disease, and dental cavities [8].

Food advertising has played a significant role in driving this dietary shift and maintaining poor dietary intake among children [9, 10]. In Canada, children (2–11 years old) are exposed to almost 2,000 advertisements (ads) for unhealthy foods annually on television [11] and more than 4,000 on digital platforms [12]. These figures reflect the volume of marketing children encounter across media platforms. Extensive research has demonstrated that the majority of food and beverage ads in various media (e.g. television, digital, etc.) are for unhealthy foods [12–15]. This is worrisome as food advertising influences children through a hierarchy of effects that progresses from brand awareness and attitude formation to purchase intent, actual consumption, and post-consumption health impacts, including obesity [9, 16]. In fact, multiple reviews of the literature have shown that children (under the age of 18 years old) exposed to such ads are more likely to choose unhealthy food products over healthier options [9, 10, 14, 17, 18].

Food advertising directed at children employs a diverse range of marketing techniques designed to attract their attention and shape their preferences, consumption behaviors, and brand loyalty [19–21]. Literature has shown that common marketing techniques that appeal to children are the use of characters, including brand mascots, licensed or animated figures, celebrities, influencers appealing to children, and child actors, all of which enhance product appeal [22–24]. Furthermore, research has outlined that marketing campaigns frequently leverage emotional appeals, portraying food products as

sources of fun, excitement, or social benefits, such as increased popularity or happiness [25]. Another key element that could appeal to children involves the integration of audiovisual elements, including music, animation, and child-oriented visual designs, to enhance engagement and influence food preferences [26]. The strategic use of lively music and dynamic animations fosters an entertaining and immersive experience, akin to emotional appeals, that captures children's attention and reinforces the memorability and desirability of the advertised products [19, 25, 27]. However, research is still limited in determining the factors that shape child appeal, especially from the children's perspective. A study looking to determine these factors on digital food marketing found low agreement (based on Fleiss' Kappa and S scores reported in the study) among children, which suggests that the extent to which different marketing strategies appeal to children varies and is not well known yet [28].

The WHO recommends stronger policies to protect children from the harmful impact of food marketing including the enforcement of measures that restrict the promotion of foods high in saturated fat, trans fat, added sugars, or salt to children [29, 30]. These policies, according to the WHO, should be mandatory, apply to children aged 18 and under, and rely on a government-led nutrient profile model to classify foods [29]. Additionally, the policies should be broad enough to prevent marketing from shifting to different platforms or environments and should reduce the persuasive impact of food advertising on children [29]. Numerous countries have implemented policies to limit food and beverage advertising during children's programming. Many countries have focused on restricting unhealthy food advertising that are directed at children. This is the case in Sweden [31], Norway [32] and Chile [33]. The alternative approach is the one taken by the United Kingdom (UK) where, as of January 2026, the government will be implementing regulations banning junk food ads on television before 9 pm and restricting online ads for products high in fat, salt, and sugar regardless of who is targeted in the ad [34].

In Canada, food marketing is primarily self-regulated by the food industry; however, in the province of Quebec, the Consumer Protection Act (CPA) prohibits all commercial advertising targeting children under the age of 13 in all media forms with few exceptions (ads are permitted when the medium or format used is capable of reaching a general audience beyond children, and the content is not specifically crafted to attract children's attention; or if the product or service is intended for teenagers and adults, and does not possess features that appeal to children, the advertisement may be allowed, provided the messaging is not designed to engage children's interest) [35]. At the federal level, in 2016, Health Canada announced plans to regulate ads for unhealthy food products targeting

children under 13 years [36]. The proposed policy aims to reduce children's exposure to child-appealing food ads with products high in sodium, free sugars, or added fats that exceed established nutrient thresholds on television and digital media, however, these regulations have yet to be adopted [36].

Current self-regulatory approaches, proposed Health Canada regulations on food advertising directed at children and the CPA in Quebec primarily address the intent of the advertising (i.e. the child appeal or targeting), the marketing techniques employed, and the time and media through which ads are delivered. However, there are important research gaps regarding what elements make an advertisement appealing to a child from their point of view; and what drives a child's desire to purchase a promoted product. Although a small number of qualitative studies have examined young people's perceptions and attitudes toward food marketing, these have primarily focused on digital platforms, such as social media [37–39]. While these studies offer valuable insights, they differ in scope from the present research, which focuses specifically on television food and beverage advertising. Moreover, existing qualitative studies tend to focus on older children [39] or adolescents [37, 38], whereas the current study addresses an important gap by examining the perceptions, attitudes, and preferences of children aged 6 to 12 years. This age group is particularly relevant given their developmental stage and susceptibility to marketing influences in traditional media formats [40].

A comprehensive narrative review of studies published between 2009 and 2013, examined the influence of food advertising on children. The authors proposed a hierarchy of effects model that outlines a sequential pathway beginning with exposure to advertising and progressing through multiple stages—namely, awareness, attitudes and preferences, purchase intention, actual purchase, and post-consumption effects [16]. The model illustrates how food marketing not only shapes children's immediate preferences but can also contribute to long-term health outcomes [16]. This theoretical framework informed the present study by providing a structured lens through which to explore children's own perspectives on food advertising, thereby addressing an important gap in the literature concerning how children interpret and are affected by various stages of marketing influence. Understanding how children are influenced by food advertising is primordial for developing regulations that protect them from unhealthy food advertising exposure and the resulting health impacts including unhealthy eating habits. Therefore, this study sought to understand children's perceptions of child and non-child-targeted food advertising, and, most importantly, the features of ads that elicit positive attitudes and various behavioural outcomes.

Methods

Study design

This study employed a qualitative methodology, focusing on individual open-ended interviews to explore how food advertising may affect children and how they perceive various ads. Interviews were chosen for their ability to capture children's perspectives in detail, adapt to their communication styles, and interpret non-verbal cues (such as children nodding or shaking their heads to indicate agreement or disagreement when responding to questions), fostering trust and honest responses [41]. Online interviews (using Zoom) were selected as the primary data collection method because the study commenced during the concluding phase of the COVID-19 pandemic. Although in-person activities had resumed by the time the study began, restrictions on conducting in-person research with children remained in place. A notable advantage of online interviews was the ability to include participants from provinces beyond the researcher's location, thereby enhancing the geographical diversity of the participants.

Recruitment and Sampling

A convenience sampling method was utilized, with invitations to participate posted on social media platforms. The inclusion criteria required participants to be English-speakers, between the ages of 6 and 12 years, in good health (no food allergies, or food related health conditions, such as diabetes and celiac disease), and with normal or corrected-to-normal vision, ensuring they could engage with the study materials and interviews. Children aged 6 to 12 years were selected as the target population for this study for both practical and theoretical reasons. This age group comprises school-aged children who generally possess the cognitive and linguistic abilities necessary to attend to interview questions, engage in discussion, and articulate their thoughts in a meaningful way [42, 43]. Their developmental stage allows for a sufficient level of comprehension and reflection on media content, including food advertising, while still being within a critical period of vulnerability to marketing influence [43]. Moreover, this age range aligns with policy and regulatory frameworks, as many food and beverage marketing restrictions—both in Canada and internationally—specifically define children as individuals under the age of 13 [33–35]. Thus, focusing on children aged 6–12 enables the study to generate insights that are directly relevant to current and proposed public health policies aimed at protecting children from the harmful effects of unhealthy food marketing.

Data saturation was assessed iteratively throughout the data collection and analysis process. Saturation was considered achieved when no new themes, perspectives, or relevant information emerged from additional interviews.

In the final interviews, responses began to repeat prior insights, indicating that the data collected was sufficiently rich to address the research questions. This determination aligns with guidance from a systematic review, which found that in qualitative health research, thematic saturation is often reached within a range of 9 to 17 interviews when using empirical data [44]. Based on the literature, the study aimed to include 17 children, which falls within this range and was deemed adequate for capturing the diversity of perceptions and attitudes relevant to this study. The interviews lasted between 20 and 50 min, with an average duration of approximately 35 min, allowing for in-depth exploration of participants' perceptions and experiences. Children unable to maintain attention for this duration were excluded (for example, one participant disengaged midway through the interview and expressed unwillingness to continue responding to questions). Participants received a C\$10 gift card for participation. This study was approved by the University of Ottawa's Health Sciences and Science Research Ethics Board H-04-22-8028, and conducted in accordance with the Declaration of Helsinki.

Parents interested in enrolling their children contacted the research team and received an eligibility survey via email. Eligible participants were sent informed consent (for parents) and assent (for children) forms electronically, alongside a brief study description. Parents were instructed to review the assent form with their child, ensuring the child understood the purpose and voluntary nature of the study. This process was reviewed and approved by the University of Ottawa Research Ethics Board, in accordance with ethical standards for research involving minors. Upon parental authorization, a video call interview was scheduled. Verbal parental consent and child assent were obtained once more at the beginning of the video call after a brief description of the study.

Procedure

The interviews were semi-structured and developed for this study (the interview script can be found in the Additional File 1). Interviews were conducted by the lead researcher (JSG), a female PhD student trained in qualitative research and experienced in teaching pre-school aged children. All interviews were conducted online via Zoom to ensure accessibility and convenience for participants. Children joined the interviews from their homes using a computer or tablet. Prior to the start of each interview, parents were asked to leave the room to help ensure privacy and minimize external influence. In cases where parents preferred to remain present, they were instructed not to assist or interfere with their child's responses in any way, in order to preserve the authenticity and independence of the child's perspective. During the interviews, participants watched four ads: first,

a one-minute child-targeted chocolate advertisement (hereinafter referred to as AD1), followed by questions on awareness, attitudes, purchase intent, and perceived targeted audience. The same process was followed with the three other ads: a 30-second child-targeted milk advertisement (hereinafter referred to as AD2), a one-minute non-child-targeted chocolate advertisement (hereinafter referred to as AD3), and a 30-second non-child-targeted milk advertisement (hereinafter referred to as AD4).

To collect information on participant's awareness, they were asked what product was advertised, which brand created the advertisement (in cases where children did not understand what "brand" was, the questions was rephrased in different ways so they could understand), and whether they had ever seen ads by this brand before. This approach aligns with the logic model developed by Kelly et al. (2015), which outlines brand awareness as the first step in the hierarchy of effects, reflecting the initial impact of advertising on unconscious brand memory [16]. Although the selected advertisements featured brands not commonly available in Canada—minimizing prior familiarity—this measure aimed to explore whether children paid attention to and retained brand-related information following exposure. To gather data on participant's attitudes, they were asked whether they liked the advertisement, their reason for their opinion, and their favorite part of the ad. To investigate participants' purchase intent, they were asked whether they would buy the product, whether they would ask their parents to buy it for them, and what specific aspects of the advertisement made them want to buy the product or ask their parents to buy it for them.

Finally, participants were asked who they thought the product was intended for, to analyse the perceived target audience of the ads. Understanding the perceived target audience of each advertisement was relevant for assessing whether children can accurately identify when an ad is directed at them. This insight is critical because children's ability to recognize targeted marketing influences their interpretation, engagement, and susceptibility to persuasive intent [45]. If children are unable to discern that an advertisement is aimed at them, they may be more vulnerable to its influence [45]. Evaluating children's perceptions of audience targeting helps inform whether existing advertising strategies effectively blur or reveal their intent, and whether children possess the cognitive awareness needed to critically evaluate such content. This has important implications for policy development and regulatory measures aimed at protecting children from harmful marketing.

To collect sociodemographic information and information about participant's screen time habits, parents completed an online survey through SurveyMonkey®. The sociodemographic variables included child's age,

ethnicity and perceived income adequacy. We also queried children's daily screen time habits. Evidence suggests that prolonged daily screen time is associated with increased consumption of unhealthy foods and reduced intake of healthy foods [46, 47]. To collect information on participant's daily screen time, parents answered questions about how often the child uses a tablet, a cell phone/smartphone, and a computer; how often the child watches television; as well as the approximate number of hours per day that the child uses a screen for leisure and for educational purposes.

Advertisements

To examine the influence of product type and marketing strategies on children's responses to food advertisements, the study included four distinct advertisements: (1) a child-targeted advertisement for an unhealthy food product (milk chocolate), (2) a child-targeted advertisement for a healthy food product (plain milk), (3) a non-child-targeted advertisement for an unhealthy food (dark chocolate), and (4) a non-child-targeted advertisement for a healthy food (plain milk). The selection of advertisements representing both healthy and unhealthy foods was intended to allow for comparative analysis across product categories. Product healthfulness was classified using the NOVA classification system, which categorizes foods based on the extent and purpose of processing rather than nutrient content alone [48]. According to this system, plain milk is classified as a minimally processed food (Group 1), while both milk chocolate and dark chocolate are classified as ultra-processed foods (Group 4) due to the presence of added sugars, fats, and other industrial ingredients [48]. This framework provided a consistent and evidence-based method to differentiate between the

healthfulness of the advertised products. Furthermore, the inclusion of both child-targeted and non-child-targeted advertisements aimed to explore whether marketing strategies specifically designed to appeal to children had a greater impact on their awareness, attitudes, purchase intent, and perceived intended audience. This approach is grounded in previous research demonstrating that marketing techniques targeting children—such as the use of animated characters, bright colors, and playful narratives—are particularly influential in shaping children's preferences and behaviors [16, 21].

The classification of ads as either “child-targeted” or “non-child-targeted” was based on literature review of marketing techniques [20–22]. Ads employing features known to appeal to children—such as vibrant settings, engaging music, animation, child actors, child-appealing characters, and child-centric narratives—were categorized as child-targeted (Table 1). Conversely, ads lacking these techniques and instead focusing on elements designed to resonate with adults were classified as non-child-targeted. To minimize bias, all ads were sourced from brands not easily available in Canada. The advertisements used in the interviews were pre-existing television commercials that were publicly available online. Selection criteria included high video quality, English language, and having been aired within the past 10 years to ensure relevance. Three brands were chosen based on their alignment with the study's product categories and marketing techniques observed on the literature: Milka (milk chocolate), Dove (dark chocolate), and Arla (milk). Notably, Arla was the only brand for which both a child-targeted and a non-child-targeted advertisement for the same product were available. The interview sessions were

Table 1 Details of each advertisement

Advertisement	Product (Brand)	Storyline	Marketing techniques	Classification
AD1	Milk chocolate (Milka)	Boy goes to the circus at a school trip and shares a chocolate bar with a circus performer.	Music, yellow school bus, games, circus setting, child actor, adult-child interaction.	Child-targeted
AD2	Plain milk (Arla)	An animated story of a cookie boy who swims in a lake of milk, loses his head because it melts on the milk. His cookie mom repairs his head while the family enjoys some milk. The story is narrated through music.	Animation, cartoon characters, a fun narrative story, music, child-adult interaction.	Child-targeted
AD3	Dark chocolate (Dove)	A woman, portrayed by Audrey Hepburn, is seated on a bus that becomes stuck in traffic. She then engages in a flirtatious exchange with a man driving a convertible. In response to his invitation for her to join him, she accepts—on her own terms—reversing the expected dynamic by positioning him as her chauffeur, while she sits in the back seat enjoying a piece of chocolate during the ride.	Vintage music, celebrity familiar primarily to adults, flirtation.	Non-child-targeted
AD4	Plain milk (Arla)	A man, portrayed as the “milk lover”, incorporates a glass of milk into various adult-oriented activities, including visiting a bar, doing laundry, and riding a bull.	Soft male narrator voice, humor tailored to adult sensibilities, and settings that resonate with adult audiences (e.g. bar, laundry mat).	Non-child-targeted

audio recorded for analysis, with one researcher conducting all interviews to maintain consistency.

The child-targeted advertisement for the unhealthy food depicted a boy in a circus setting, sharing a chocolate bar with a circus performer (more details on Table 1). This advertisement included music, games, a child actor, and adult-child interaction. For the healthy food, the child-targeted advertisement showcased an animated story of a cookie boy who swims in a lake of milk, loses his head, and is repaired by his cookie mother while the family enjoys milk. This ad leveraged animation, cartoon characters, a fun narrative, and child-adult interaction to appeal to children. In contrast, the non-child-targeted advertisement for unhealthy food featured a woman (Audrey Hepburn) in a flirtatious scenario enjoying a piece of chocolate during a car ride. The ad included elements such as vintage music and a celebrity familiar primarily to adults. Finally, the non-child-targeted advertisement for healthy food depicted a man incorporating milk into various adult-oriented activities, including visiting a bar, doing laundry, and riding a bull, all while drinking milk. This ad employed a soft narrator voice, humor tailored to adult sensibilities, and settings that resonate with adult audiences. This deliberate selection process ensured the inclusion of diverse and contextually rich ads, enabling the study to investigate children's perceptions across varied types of advertising.

The advertisements selected for this study varied in duration, with two ads lasting approximately 30 s and the other two approximately one minute. Importantly, ad length was kept consistent within each food category: both healthy food advertisements (one child-targeted and one non-child-targeted) were one minute long, and both unhealthy food advertisements (one child-targeted and one non-child-targeted) were 30 s long. This decision was made to maintain internal consistency when comparing children's responses to ads within each nutritional category. The variation in ad length was due to the limited availability of suitable pre-existing advertisements that met all selection criteria: each ad had to represent one of four categories—child-targeted healthy, child-targeted unhealthy, non-child-targeted healthy, and non-child-targeted unhealthy—and feature brands not available in the Canadian market to reduce the influence of prior exposure or brand recognition. Given these requirements, it was not feasible to standardize ad length across all categories.

Data analysis

First, one researcher (JSG) conducted the interviews, and another researcher (SS) transcribed the audio from all interviews. Second, coding was conducted by two other researchers (JSG and MP). Thematic analysis was used to code and analyze the data, which provides a systematic

approach to interpreting the data by focusing on recurring ideas, meanings, and perceptions articulated by participants [49, 50]. A hybrid coding approach was used, combining both deductive and inductive strategies: deductive codes were initially informed by prior research and theoretical constructs relevant to food advertising—specifically, awareness, attitudes, purchase intent, and perceived target audience—as outlined in Kelly et al.'s (2015) hierarchy of effects model [16]. Simultaneously, the analysis remained open to inductive insights that emerged organically from participants' own language and interpretations. The researchers began by getting familiarized with the data. In the initial coding phase, the researchers systematically examined every line and segment of the transcripts. A quotation was considered "relevant" if it provided meaningful insight into one of the overarching concepts (e.g., awareness, attitudes, purchase intent, and perceived target audience). These were coded without immediate concern for thematic organization to preserve the openness of the analysis. After this, one researcher (JSG) conducted the focused coding and developed the themes. In the focused coding phase, the most salient and recurring initial codes were selected for further development into broader categories and themes. Codes were deemed "most useful" based on their frequency, relevance to the research questions, and conceptual depth. Finally, the researcher grouped related focused codes into themes based on conceptual similarity, their relationship to the research questions, and theoretical coherence. Themes were refined in consultation with co-researchers and were validated through iterative comparison across the data set to ensure consistency and depth. Microsoft 365© tools (Excel and Word versions 2412) were used in the coding and analysis process. Throughout the entirety of this study's process, participants were identified using their unique participation codes, which consisted of the study year combined with their recruitment order (e.g., P2301, P2302, P2303, etc.).

Results

Sociodemographic and screen habits

Overall, 17 participants (11 girls, 6 boys) aged 6–11 years old were interviewed (Table 2). Most participants were between ages 9–11 years (64.7%), Latino (47.1%), and with parents who declared that it was difficult to make ends meet (41.2%). Most children used a tablet several times a day (29.4%); a cell phone or smartphone once a day (23.5%) or several times a week (23.5%); used a computer several times a day (29.4%); and watched television once a day (35.3%). Also, most children used a screen for leisure purposes for either 2–4 h per day (41.2%) or 4–6 h per day (41.2%); and used a screen for educational purposes for 0–2 h per day (47.1%).

Table 2 Sociodemographic information of study participants (N = 17)

	Total (%)	Sex	Total (%)
Age			
6–8 years	6 (35.3)	Female	11 (64.7)
9–11 years	11 (64.7)	Male	6 (35.3)
Ethnicity		Income adequacy	
White	5 (29.4)	Very Difficult	(0.0)
Latino	8 (47.1)	Difficult	7 (41.2)
Other	4 (23.5)	Neither easy nor difficult	5 (29.4)
Usage of tablet		Easy	2 (11.8)
Several times a day	5 (29.4)	Very Easy	1 (5.9)
Once a day	1 (5.9)	Refused to answer	2 (11.8)
Several times a week	4 (23.5)	Watch television	
Once or twice a week	4 (23.5)	Several times a day	5 (29.4)
Rarely	2 (11.8)	Once a day	6 (35.3)
Never	1 (5.9)	Several times a week	2 (11.8)
Usage of cell phone/smartphone		Once or twice a week	2 (11.8)
Several times a day	3 (17.6)	Rarely	2 (11.8)
Once a day	4 (23.5)	Never	(0.0)
Several times a week	4 (23.5)	Screen time for leisure	
Once or twice a week	2 (11.8)	0–2 h per day	3 (17.6)
Rarely	2 (11.8)	2–4 h per day	7 (41.2)
Never	2 (11.8)	4–6 h per day	7 (41.2)
Usage of computer		Screen time for educational purpose	
Several times a day	5 (29.4)	0–2 h per day	8 (47.1)
Once a day	4 (23.5)	2–4 h per day	5 (29.4)
Several times a week	4 (23.5)	4–6 h per day	2 (11.8)
Once or twice a week	(0.0)	11 or more hours per day	2 (11.8)
Rarely	4 (23.5)		
Never	(0.0)		

Children's awareness of the advertisements

Overall, the major themes that emerged from the data related to children's awareness were understanding of the ad content, and a lack of brand awareness and/or familiarity with the brand. Examples of quotes for each theme are below:

*"It was about **chocolate**." (P2313, Boy, 9, AD3) – Understanding of the ad content.*

*"No, I **didn't catch the brand**." (P2304, Girl, 11, AD3) – No brand awareness.*

*"I've seen ads about milk, but I **don't know if it was exactly the same company**."*

(P2304, Girl, 11, AD3) – Unfamiliar with the brand

Most of the children were able to clearly articulate the main message of the advertisement and identify the product being promoted and this was consistent for both child-targeted and non-child-targeted ads. However, the child-targeted advertisement AD2 exhibited the lowest occurrence of this pattern, possibly due to the nature of the product being advertised. While the advertisement promoted milk, its main character—a boy made of a cookie—may have led some children to mistakenly perceive cookies as the advertised product rather than milk.

Most children had "no brand awareness" and were "unfamiliar with the brand," as expected due to brands being from out of the country, with one child not knowing the meaning of brand and couldn't answer the questions, even when asked in different ways about who created the ad:

*"Maybe **people that made chocolate and milk**?" (P2303, Girl, 7, AD1).*

Children's attitudes towards the advertisements

The main theme that emerged from the data for children's perceptions of the ads was "positive perception of the ad."

*"Well, I **liked it that it was at a circus, and it was a good background. So, I like this advertisement about the chocolate**" (P2311, Girl, 10, AD1).*

This theme emerged among both child-targeted and non-child-targeted ads. This theme was not commonly expressed in AD2; some children found the cookie character unsettling, describing it as "creepy" or "disturbing" when its head crumbled in the ad. Other participants found the ad confusing due to the focus on the cookie instead of the milk.

*"It was funny, but **not really** [didn't like the ad]. I thought that it was kind of **creepy**." (P2307, Girl, 8, AD2).*

*"I **didn't really like** the design of the cookie. The cookie didn't really look. It looked like something else when the head came off, the cookie, **it just looked weird like a new one**." (P2311, Girl, 10, AD2).*

The main reasons children gave for liking the ad was (i) seeing people in the ad eating the product, (ii) positive emotional appeal, (iii) pre-existing affinity with the product, and (iv) visibility of the product. The presence

of these themes was similarly frequent among child-targeted and non-child-targeted ads. However, children described “visibility of the product” and “people in the ad eating the product” more for AD1 (milk chocolate ad), possibly because the person consuming the product was a child actor and that in the end of the ad different flavors of the chocolate appear as options for consumers. Examples of quotes for each theme are below:

*“Because **I like to eat chocolate**. And it tastes good.” (P2314, Girl, 6, AD3) - pre-existing affinity with the product.*

*“Because it has a lot of colors and **like a lot of the chocolate involved in in the in the in the ad.**” (P2311, Girl, 10, AD1) - visibility of the product and pre-existing affinity with the product.*

*“Because they had milk, and **I like milk**.” (P2302, Boy, 8, AD4) - visibility of the product and pre-existing affinity with the product.*

*“When he gave the boy, the chocolate, the milk chocolate. He felt better, and then, **like they were eating it all happy.**” (P2308, Girl, 10, AD1) - people in the ad eating the product and positive emotional appeal.*

*“When **she bit into the chocolate**. It’s kind of like telling everyone like, and **then she smiled** like, it’s good, right?” (P2323, Girl, 9, AD3) - people in the ad eating the product and positive emotional appeal.*

Children’s purchase intent

Overall, the major themes that emerged from the data for children’s purchase intent were “negative purchase intent”, related to “pre-existing aversion to the product” and “preference for other brand/type” regardless of whether the ad was child-targeted or non-child-targeted. Children expressed higher “negative purchase intent” and “pre-existing aversion to the product” for both ads for milk (AD2 and AD4) and AD3 (dark chocolate), however, they expressed higher “positive purchase intent” related to “previous affinity with the product” for AD1 (milk chocolate ad). The prevalence of negative purchase intent on ads that children had a positive perception of was primarily driven by their preference for other brands/type of product. Examples of quotes for each theme are below:

*“Um, **I don’t really like chocolate**” (P2301, Girl, 9, AD1).*

*“Because I don’t, **I don’t like milk**.” (P2308, Boy, 10 AD2).*

*“Cause as I mentioned before, **I don’t like dark chocolate.**” (P2313, Boy, 9, AD3).*

*“**There are other brands. I like the best**” (P2304, Girl, 11, AD1).*

*“I feel like there’s a lot of **other chocolates that are better** with like, like caramel filling, or stuff like that” (P2322, Girl, 11, AD3).*

When children were asked what elements in the ad makes them want to buy the product or ask their parents to buy it for them, they described that it was because people were shown consuming the product and because they had a pre-existing affinity with the product. For children who had negative purchase intent (or no intention of asking their parents to buy it for them), the participants emphasized that they had a pre-existing aversion to the product. Again, these themes did not differ between child-targeted and non-child-targeted ads.

*“When **she opened it. It looks really good.**” (P2305, Boy, 9, AD3).*

*“**I just like chocolate**. And um **when I see it, I want it.**” (P2310, Girl, 10, AD1).*

*“Cause as I mentioned before, **I don’t like dark chocolate**” (P2313, Boy, 9, AD3).*

Children’s perceived targeted audience

When asked who the product was for, most children considered the type of product over the marketing techniques used in the advertisement. Children described that the product was for everyone or was for people that like the product. Children considered that anyone can drink milk or eat chocolate, and that those products are also for people who already have an affinity with them. These themes also had no difference between child-targeted and non-child-targeted ads.

*“I saw a lot of people drink milk before. So, I think it’s **meant for everyone not specifically kids.**” (P2313, Boy, 9, AD2).*

*“I think it’s **for all ages**, because it’s milk, **everybody can drink milk.**” (P2320, Boy, 10, AD2).*

*“**People who like to drink milk.**” (P2311, Girl, 10, AD4).*

*“It could be **for everyone**, depends on what chocolate they like.” (P2322, Girl, 11, AD3).*

Some children considered the product for children and these answers varied between child-targeted ads versus non-child-targeted ads, however, since the nature of the product was so different (AD1 – milk chocolate; and AD3 – dark chocolate), it is possible that these themes were based on the product rather than the advertising techniques. Some children described milk chocolate as a product for children and some children considered dark chocolate for adults. For AD4 (milk, non-child-targeted) only one girl responded that it was for adults (with no

explanation) and two other girls considered it for adults because they are who make the purchases at home. But some children took the question very literally and said that the product was for the main character in the advertisement.

*“I think **mostly kids and like teenagers** will buy it.” (P2310, Girl, 10, AD1).*

*“Probably **more towards adults**. because, you know, kids don’t eat that much dark chocolate it’s all milk these days.” (P2308, Boy, 10, AD3).*

Children’s screen time habits and purchase intent

Children who expressed favorable reactions to at least one food advertisement—such as “positive perception of the ad”, and “positive purchase intent”—were predominantly between 9 and 11 years of age, female, and from households reporting financial difficulties. These children also exhibited high levels of daily screen use, especially for leisure purposes, and engaged with various digital devices, including smartphones, tablets, and television.

Discussion

Overall, most children’s perceptions did not differ between the child-targeted ads and non-child-targeted ads. Rather, they differed according to the product advertised. Children’s purchase intent did not differ regardless of the target audience of the ad. Many children reported having a pre-existing aversions to milk and dark chocolate, therefore they presented negative purchase intent and did not report the marketing techniques used in the ad as the reason for not desiring to purchase the product. Children who said they did not like milk said they would not buy the product regardless of whether it was a child-targeted ad or non-child-targeted ad. These findings align with previous research indicating that advertisements promoting familiar food products tend to generate notably stronger responses among children, including increased product preference, heightened purchase intentions, and greater likelihood of requesting the advertised items [51]. Similarly, children’s perception of the target audience was also related to the product rather than the ad being child-targeted or non-child-targeted. Most children described the product advertised as suitable for anyone or for people who like such products. However, some difference was noted between milk chocolate (AD1) and dark chocolate (AD3) ads because some children considered milk chocolate as a product for children and dark chocolate as a product for adults. Once more, the marketing techniques were not mentioned as a reason for their perception of the target audience.

An important finding from this study is that all participating children expressed “positive perception of the ad”

for at least one advertisement, regardless of whether it was child-targeted or non-child-targeted. Notably, most children expressed a positive perception of two or more ads. The primary reasons for their positive perception were people in the ad eating the product, positive emotional appeals, pre-existing affinity with the product, and visibility of the product. Their positive attitudes toward the ads were thus product-driven, even in cases where they were unfamiliar with the brand. Previous research indicates that children, even when capable of identifying food ads and their persuasive intent, remain receptive to these ads due to their preference for the marketed food items [52].

However, even though most children had positive attitudes towards the ads, most children expressed negative purchase intent, which was also influenced by the product itself. As previously mentioned, some children expressed pre-existing aversion to milk and dark chocolate, leading to negative purchase intent, while others who initially expressed affinity for the product still showed a preference for other brands/products naming brands that they prefer or other flavours that they would prefer buying. The major theme related to the reason for positive purchase intent was people in the ad eating the product and pre-existing affinity with such products. These findings suggest that the product itself and the brand, rather than the specific marketing techniques used, drives children’s purchase intent as well. Whether the advertisement targeted children or not was less relevant; familiarity with the product was the critical factor.

The findings suggest that children who responded more favorably to food advertisements—expressing positive perception of the ad, and positive purchase intent—were primarily between the ages of 9 and 11, female, and from households reporting financial difficulties. These children also reported high levels of screen time for leisure, with frequent use of multiple digital devices, including smartphones, tablets, and television. This pattern aligns with existing literature indicating that children from lower socio-economic backgrounds may be more vulnerable to persuasive advertising due to greater media exposure and fewer resources for critical media literacy [10, 53]. Moreover, studies have shown that older children within the pre-adolescent age group demonstrate increasing brand awareness and consumer autonomy, making them more responsive to advertising messages [54, 55]. The combination of age, high screen exposure, and socioeconomic vulnerability may amplify children’s receptiveness to marketing cues and reinforce existing consumption behaviors, particularly when exposed to advertisements for familiar foods. These findings underscore the importance of addressing screen time behaviors and socio-demographic factors in future food marketing regulations and interventions.

For the perceived target audience, the findings remained consistent with the effects of food advertising on children: the primary factor influencing children's perceptions was the product advertised, rather than the marketing techniques employed. While the literature [20–22] and policy makers looking to restrict food advertising to children might classify ads AD1 and AD2 as child-targeted and AD3 and AD4 as non-child-targeted, these distinctions were irrelevant to the participants. For instance, children perceived ads for chocolate as suitable for everyone, or they focused on milk chocolate (AD1) as more specifically for kids, while dark chocolate (AD3) was considered more appropriate for adults. Similarly, milk (AD2 and AD4) was viewed as a product for everyone. This perception persisted regardless of the marketing techniques used. Ads AD1 and AD2, which incorporated child-oriented techniques such as animation, music, and the presence of characters appealing to children, did not lead to a stronger identification of the intended audience as children than AD3 and AD4, which employed adult-oriented strategies, such as settings associated with adults (e.g., a bar) or celebrities familiar only to adults. The determining factor for children was the product itself. If the product was commonly associated with kids (e.g., milk chocolate), adults (e.g., dark chocolate), or all age groups (e.g., milk), children assumed the advertisement was directed at the corresponding audience.

These findings suggest a potential mismatch between current food advertising regulations, such as the self-regulatory Code for the Responsible Advertising of Food and Beverage Products to Children, the proposed Health Canada regulations, and Quebec's Consumer Protection Act, which all focus on child-targeted and child-appealing food advertising. Existing policies predominantly focus on identifying ads explicitly directed at children, often based on set list of marketing techniques designed to identify the intention of the ad and the company selling the product. However, if children prioritize the product over the marketing intent, it makes it difficult to reliably determine whether an advertisement targets them. Moreover, as previously noted, children are more likely to desire and consume products they already know and enjoy. The results suggest that food advertising regulations that prioritize the nutritional quality of the advertised products rather than solely focusing on the intent behind the marketing may be more likely to reduce the influence of unhealthy food ads on children's preferences and purchasing intentions. Reducing exposure to unhealthy food and beverage advertising would reduce the stimuli for the consumption of such products. This requires a shift toward regulating ads for products with low nutritional value, accompanied by the implementation of a robust and comprehensive classification

system to assess the healthfulness of such products. This approach aligns with the goals of the United Kingdom's new regulation [34], which will prohibit all paid food and beverage advertising of unhealthy products online and on television before 9pm [34]. Evaluation of such policies will be critical and could provide evidence to encourage other countries to follow suit.

Strengths and limitations

This study presents several notable strengths that increase its validity and richness. Firstly, the inclusion of one-on-one interviews with 17 children aged 6 to 11 years allowed for a comprehensive understanding of children's perspectives. The diverse age range facilitated the capture of a variety of viewpoints, ensuring a more holistic representation of the population. Additionally, the wide range of questions per advertisement permitted a comprehensive exploration of children's perspectives. The inclusion of various scenarios—targeted ads for children, adults, healthy, and unhealthy food products—allowed for a comprehensive examination of the different types of advertising and how it affects children.

Despite these strengths, there are a few limitations that must be acknowledged. One notable limitation is the ethnic composition of the sample. Due to the convenience sampling method, the study included a higher percentage of Latino participants (47.1%) compared to the Canadian population, where Latinos account for only 1.6% [56]. This discrepancy arose from the study's recruitment strategy, which relied on social media posts and the principal investigator's background, potentially influencing the algorithm to deliver posts primarily to Latino users. While this limitation may affect the generalizability of the findings to other ethnic groups, it is important to note that the sample still reflects diverse viewpoints within the Latino community. Future studies should aim to recruit more ethnically representative samples that reflect the broader Canadian population to enhance the generalizability of findings across diverse cultural groups. Employing stratified or purposive sampling methods may help ensure greater diversity in participant demographics, particularly in terms of ethnicity and cultural background.

Another limitation is the socio-economic status of the participants. A significant portion of parents reported financial difficulties, which could be attributed to the study's convenience sampling method. While this may limit the broader applicability of the findings to higher-income groups, it also provides valuable insights into the perceptions of children from lower socio-economic households, an often-underrepresented group in food advertising research. Additionally, future research should consider incorporating socio-economic diversity more systematically. While this study provided valuable

insights from children in lower-income households—an often underrepresented group in food advertising research—additional studies are needed to explore how children from varied income levels perceive and respond to food marketing, particularly given the potential influence of socioeconomic context on media consumption and food preferences.

The online format of the interviews, necessitated by the timing of the study during the end stage of the pandemic, introduced some technical challenges. Variations in internet connection quality at times led to disruptions in the video quality, which may have impacted the participants' engagement with the interview process. Although these issues were beyond the researcher's control, they represent a potential source of bias that could have influenced the children's responses.

One limitation of this study is that pilot interviews were not conducted with children prior to data collection. As a result, the interview guide was not pre-tested for clarity, comprehension, or age-appropriateness, which may have affected the consistency or depth of responses in the initial interviews. Although the selection of ads was reviewed and approved by multiple researchers, post-data collection analysis revealed that children interpreted one advertisement (AD2) differently than anticipated. AD2 featured an unconventional narrative that appeared to influence children's perceptions; several participants reported that they did not enjoy the advertisement, with some even describing it as "creepy." This reaction contrasted with the interpretation of the adult researchers, who did not perceive the advertisement in the same way during the selection process. Although the selection criteria focused on marketing techniques appealing to children, it is possible that a different advertisement with similar marketing techniques might have yielded different results. In AD2, the central character was a cookie-shaped boy, which led some children to interpret "cookies" as the primary product being advertised. Since cookies are typically classified as unhealthy food items, this characterization may have introduced confounding effects in the ad. Additionally, the product selection was based on familiar food items (milk and chocolate), which may have influenced children's preferences. The lack of unfamiliar products in the study presents a limitation, though it is acknowledged that identifying suitable ads for unfamiliar products would have been a difficult task. As a result, we focused on brands that were unfamiliar to children. Future research should seek to include a wider range of healthy and unhealthy food products to further explore children's perceptions and responses across diverse food categories. Lastly, the marketing techniques selected as child-targeted or non-child-targeted were related to the ad and not the products. It is impossible to know, based on this study, if the use of marketing

techniques within the products (e.g. animal shapes, child appealing flavour, etc.) would affect the results and how it would impact children's preferences.

A potential limitation of this study relates to the variation in advertisement length. Two of the ads were approximately 30 s long, while the other two lasted about one minute. However, to minimize the potential impact of this variation, the length of advertisements was matched within food categories: both unhealthy food ads were 30 s in duration, and both healthy food ads were one minute long. This approach aimed to support a balanced comparison of children's responses within each nutritional category. Nonetheless, differences in exposure time may have influenced levels of attention, recall, or engagement, particularly when comparing across categories. These factors should be taken into account when interpreting the findings. Future studies might consider producing or selecting ads of equal length across all categories to eliminate this potential source of variation while still meeting content and targeting criteria.

Conclusions

This study highlights the pivotal role of the product itself in shaping children's responses to ads. The findings demonstrated that children's attitudes and perceptions toward the ads and their desire to purchase or request the products were primarily influenced by their familiarity with and preference for the advertised product. Those outcomes were not to be related to the marketing techniques employed in the advertising. Moreover, children's perception of the intended audience of an advertisement was also guided by the product's typical consumer base on their point of view, rather than by the advertisement's marketing techniques.

These findings underscore that, for this sample of children, the product being advertised outweighed the influence of specific marketing techniques. This insight carries significant implications for public policy and advertising regulations. Efforts to protect children from the promotion of unhealthy eating habits that regulate ads based on the healthfulness of the products themselves rather than focusing on the marketing techniques or the intended target audience of the ads, may be more likely to have a greater effect of reducing marketing influence. Such an approach would more effectively address the root cause of children's vulnerability to unhealthy food marketing and contribute to fostering healthier dietary habits among this demographic.

Abbreviations

WHO	World Health Organization
UPFs	Ultra-processed Foods
Ads	Advertisements
UK	United Kingdom
CPA	Consumer Protection Act

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-025-24281-z>.

Additional file 1. Interview script for study: *"The power of product: how food advertising affects children's perceptions of child and non-child targeted food advertising?"*.

Acknowledgements

Not applicable.

Authors' contributions

Authors JSG and MPK conceptualized the study and recruitment protocol. JSG participated in review of study materials and data collection. SS transcribed the audio. JSG and MP coded the transcripts. JSG wrote the first draft of the manuscript and co-authors MP, SS, LV, TR, CE, and MPK revised it to make the final manuscript. All authors have approved the final manuscript.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. LV is supported by the Canada Research Chairs program.

Data availability

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the University of Ottawa's Health Sciences and Science Research Ethics Board H-04-22-8028, and conducted in accordance with the Declaration of Helsinki. This statement is included in the manuscript within the methods section. Eligible participants were sent informed consent (for parents) and assent (for children) forms electronically, alongside a brief study description. Verbal parental consent and child assent were obtained once more at the beginning of the video call after a brief description of the study. This too can be found in the methods section.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 1 May 2025 / Accepted: 4 August 2025

Published online: 30 September 2025

References

- WHO. World Health Organization. 2024 [cited 2025 Jan 31]. Obesity and overweight. Available from: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
- Zhang X, Liu J, Ni Y, Yi C, Fang Y, Ning Q, et al. Global prevalence of overweight and obesity in children and adolescents: A systematic review and Meta-Analysis. *JAMA Pediatr.* 2024;178(8):800.
- PHAC. Tackling obesity in Canada: Childhood obesity and excess weight rates in Canada [Internet]. 2018 Feb [cited 2025 Jan 3]. Available from: <https://www.canada.ca/en/public-health/services/publications/healthy-living/obesity-excess-weight-rates-canadian-children.html>
- Marino M, Puppo F, Del Bò C, Vinelli V, Riso P, Porrini M, et al. A systematic review of worldwide consumption of Ultra-Processed foods: findings and criticisms. *Nutrients.* 2021;13(8):2778.
- Moubarac JC, Batal M, Louzada ML, Martinez Steele E, Monteiro CA. Consumption of ultra-processed foods predicts diet quality in Canada. *Appetite.* 2017;108:512–20.
- Polsky JY, Moubarac JC, Garriguet D. Consumption of ultra-processed foods in Canada. *Health Rep.* 2020;31(11):3–15.
- Statistics Canada. Consumption of ultra-processed foods in Canada [Internet]. 2020 [cited 2021 Jul 20]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-003-x/2020011/article/00001-eng.htm>
- Mescoloto SB, Pongiluppi G, Domene SMÁ. Ultra-processed food consumption and children and adolescents' health. *J Pediatr (Rio J).* 2023;100(Suppl 1):S18–30.
- Boyland EJ, McGale L, Maden M, Hounsome J, Boland A, Angus K, et al. Association of food and nonalcoholic beverage marketing with children and adolescents' eating behaviors and health: A systematic review and Meta-analysis. *JAMA Pediatr.* 2022;176(7):e221037.
- Boyland EJ, Nolan S, Kelly B, Tudur-smith C, Jones A, Halford JCG, et al. Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *Am J Clin Nutr.* 2016;103:519–33.
- Potvin Kent M, Guimaraes JS, Bagnato M, Remedios L, Pauzé E, Pritchard M, et al. Broadcast television is not dead: exposure of children to unhealthy food and beverage advertising on television in two policy environments (Ontario and Quebec). *An Observational Study. J Nutr.* 2023;153(1):268–78.
- Potvin Kent M, Bagnato M, Remedios L, Soares Guimarães J, Gillis G, Soto C, et al. Child and adolescent exposure to unhealthy food marketing across digital platforms in Canada. *BMC Public Health.* 2024;24(1):1740.
- Kelly B, Vandevijvere S, Ng SH, Adams J, Allemanni L, Bahena-Espina L, et al. Global benchmarking of children's exposure to television advertising of unhealthy foods and beverages across 22 countries. *Obes Rev.* 2019;20(52):1–13.
- Boyland EJ, Backholer K, Potvin Kent M, Bragg MA, Sing F, Karupaiah T, et al. Unhealthy food and beverage marketing to children in the digital age: global research and policy challenges and priorities. *Annu Rev Nutr.* 2024;44(1):471–97.
- Kelly B, Bosward R, Freeman B. Australian children's exposure to, and engagement with, Web-Based marketing of food and drink brands: Cross-sectional observational study. *J Med Internet Res.* 2021;23(7):e28144.
- Kelly B, King L, Chapman K, Boyland E, Bauman AE, Baur LA. A hierarchy of unhealthy food promotion effects: identifying methodological approaches and knowledge gaps. *Am J Public Health.* 2015;105(4):e86–95.
- Tsochantaridou A, Sergentanis TN, Grammatikopoulou MG, Merakou K, Vasiliakou T, Kornarou E. Food advertisement and dietary choices in adolescents: an overview of recent studies. *Children.* 2023;10(3):442.
- Boyland E, Muc M, Coates A, Ells L, Halford JCG, Hill Z, et al. Food marketing, eating and health outcomes in children and adults: a systematic review and meta-analysis. *Br J Nutr.* 2025;133(6):781–805.
- Elliott C, Truman E. Measuring the power of food marketing to children: a review of recent literature. *Curr Nutr Rep.* 2019;8(4):323–32.
- Hebden L, King L, Kelly B. Art of persuasion: an analysis of techniques used to market foods to children. *J Paediatr Child Health.* 2011;47(11):776–82.
- Mulligan C, Potvin Kent M, Christoforou AK, L'Abbé MR. Inventory of marketing techniques used in child-appealing food and beverage research: a rapid review. *Int J Public Health.* 2020;65(7):1045–55.
- Boyland EJ, Harrold JA, Kirkham TC, Halford JCG. Persuasive techniques used in television advertisements to market foods to UK children. *Appetite.* 2012;58(2):658–64.
- Kraak VI, Story M. Influence of food companies' brand mascots and entertainment companies' cartoon media characters on children's diet and health: a systematic review and research needs. *Obes Rev.* 2015;16(2):107–26.
- Shuja K, Ali M, Anjum MM, Rahim A. Effectiveness of animated spokes character in advertising targeted to kids. *Eur J Bus Manag.* 2016;8(22):16–24.
- Velasquez A, Parra MF, Mora-Plazas M, Gómez LF, Taillie LS, Dillman Carpentier FR. Food for thought or food for emotions? An analysis of marketing strategies in television food advertising seen by children in Colombia. *Public Health Nutr.* 2023;26(11):2243–55.
- Ng SH, Kelly B, Se CH, Sahathevan S, Chinna K, Ismail MN, et al. Reading the Mind of children in response to food advertising: A cross-sectional study of Malaysian schoolchildren's attitudes towards food and beverages advertising on television. *BMC Public Health.* 2015;15(1):1–14.
- Praveen CK, Srinivasan K. Psychological Impact and Influence of Animation on Viewer's Visual Attention and Cognition: A Systematic Literature Review, Open Challenges, and Future Research Directions. Asghar M, editor *Comput Math Methods Med.* 2022;2022:1–29.
- Valderrama CE, Olstad DL, Lee YY, Lee J. Identifying factors that shape whether digital food marketing appeals to children. *Public Health Nutr.* 2023;26(6):1125–42.

29. WHO. Policies to protect children from the harmful impact of food marketing [Internet]. 2023. Report No.: ISBN 978-92-4-007541-2. Available from: <https://iris.who.int/bitstream/handle/10665/370113/9789240075412-eng.pdf?sequence=1>
30. WHO. Set of recommendations on the marketing of foods and non-alcoholic beverages to children. [Internet]. Geneva: WHO. World Health Organization Library Cataloguing-in-Publication Data; 2010. Available from: <https://www.who.int/dietphysicalactivity/publications/recsmarketing/en/>
31. Ullberg E, Jönsson J, Lexology. 2023 [cited 2025 Feb 3]. In brief: prohibited and controlled advertising in Sweden. Available from: <https://www.lexology.com/library/detail.aspx?g=b2a5d37c-bf5a-48db-9294-cdeb2775f512>
32. Galvin Geuronews. 2024 [cited 2025 Feb 3]. Inside Norway's plan to ban unhealthy food ads that target teens. Available from: <https://www.euronews.com/health/2024/09/08/norway-wants-to-ban-unhealthy-food-ads-that-target-teens-how-far-will-it-go>
33. Government of Chile. Reglamento sanitario de los alimentos [Internet]. Health Ministry. 2018. Available from: <http://extwprlegs1.fao.org/docs/pdf/ch/i9315.pdf>
34. Government of United Kingdom. GOV.UK. 2021 [cited 2021 Oct 28]. New advertising rules to help tackle childhood obesity. Available from: <https://www.gov.uk/government/news/new-advertising-rules-to-help-tackle-childhood-obesity>
35. Quebec Government. Consumer Protection Act [Internet]. P-40.1 1980. Available from: <http://www.legisquebec.gouv.qc.ca/en/ShowDoc/cs/P-40.1>
36. Health Canada. Policy update on restricting food advertising primarily directed at children: Proposed policy [Internet]. 2023 [cited 2025 Jan 7]. Available from: <https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating-strategy/policy-update-restricting-food-advertising-primarily-directed-children/proposed-policy.html>
37. Van Der Bend DLM, Jakstas T, Van Kleef E, Shrewsbury VA, Bucher T. Adolescents' exposure to and evaluation of food promotions on social media: a multi-method approach. *Int J Behav Nutr Phys Act* [Internet]. 2022 Dec [cited 2025 Jul 21];19(1). Available from: <https://ijbnpa.biomedcentral.com/articles/https://doi.org/10.1186/s12966-022-01310-3>
38. Amson A, Pauzé E, Ramsay T, Welch V, Hamid JS, Lee J, et al. Examining gender differences in adolescent exposure to food and beverage marketing through go-along interviews. *Appetite*. 2024;193:107153.
39. Coates AE, Hardman CA, Halford JCG, Christiansen P, Boyland EJ. It's just addictive people that make addictive videos: children's Understanding of and attitudes towards influencer marketing of food and beverages by YouTube video bloggers. *Int J Environ Res Public Health*. 2020;17(2):449.
40. Lapiere MA. Development and persuasion understanding: predicting knowledge of persuasion/Selling intent from children's theory of Mind. *J Commun*. 2015;65(3):423–42.
41. O'Reilly M, Dogra N. The importance of interviewing children for research. In: *Interviewing Children and Young People for Research* [Internet]. 1 Oliver's Yard, 55 City Road London EC1Y 1SP: SAGE Publications Ltd; 2017 [cited 2025 Jan 9]. Available from: <https://sk.sagepub.com/books/interviewing-children-and-young-people-for-research-sk>
42. Kortessluoma RL, Hentinen M, Nikkonen M. Conducting a qualitative child interview: methodological considerations. *J Adv Nurs*. 2003;42(5):434–41.
43. Savin-Baden M, Major CH. *Qualitative research: the essential guide to theory and practice*. Milton Park, Abingdon, Oxon New York: Routledge; 2013. p. 1.
44. Hennink M, Kaiser BN. Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523.
45. Rozendaal E, Buijzen M. Children's vulnerability to advertising: an overview of four decades of research (1980s–2020s). *Int J Advert*. 2023;42(1):78–86.
46. Barros AKC, de Jesus GM, Vieira GO, Dias LA. Use of screens and intake of unhealthy food among children and adolescents: association with physical activity in a cross-sectional study. *BMC Nutr*. 2023;9(1):104.
47. Shang L, Wang J, O'Loughlin J, Tremblay A, Mathieu MÈ, Henderson M, et al. Screen time is associated with dietary intake in overweight Canadian children. *Prev Med Rep*. 2015;2:265–9.
48. Monteiro CA, Cannon G, Levy RB, Moubarac JC, Louzada ML, Rauber F, et al. Ultra-processed foods: what they are and how to identify them. *Public Health Nutr*. 2019;22(5):936–41.
49. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101.
50. Naeem M, Ozuem W, Howell K, Ranfagni S. A Step-by-Step process of thematic analysis to develop a conceptual model in qualitative research. *Int J Qual Methods*. 2023;22:16094069231205789.
51. Mulligan C, Remedios L, Ramsay T, Pauzé E, Bagnato M, Potvin Kent M. The impact of brand advertising on children's food preferences and behavioural intentions: an experimental study. *Public Health Nutr* [Internet]. 2025 [cited 2025 Jul 23];28(1). Available from: https://www.cambridge.org/core/product/identifier/S1368980025000369/type/journal_article
52. Carroll JE, Emond JA, Griffin LL, Bertone-Johnson ER, VanKim NA, Sturgeon SR. Children's perception of food marketing across digital media platforms. *AJPM Focus*. 2024;3(3):100205.
53. Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. *Am Psychol Assoc*. 2009;28(4):404–13.
54. Buijzen M, Valkenburg PM. The effects of television advertising on materialism, parent–child conflict, and unhappiness: A review of research. *J Appl Dev Psychol*. 2003;24(4):437–56.
55. Tatlow-Golden M, Hennessy E, Dean M, Hollywood L. Young children's food brand knowledge. Early development and associations with television viewing and parent's diet. *Appetite*. 2014;80:197–203.
56. Government of Canada SC. Racialized groups - Canada at a Glance, 2022 [Internet]. 2022 [cited 2025 Jan 9]. Available from: <https://www150.statcan.gc.ca/n1/pub/12-581-x/2022001/sec3-eng.htm>

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.