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Article

Obesogenic Features of Food-Related Content Aimed at Children on YouTube

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Abstract

Obesity, and particularly childhood obesity, is considered an epidemic by the WHO because of the health problems it causes and its impact on the lives and environment of those who suffer from it. In this article, the term “obesogenic features” refers to the set of supposedly aggravating risk factors that could intensify the proven effect on minors of exposure to food-related media content. The article explores the characteristics of food-related content in YouTube videos aimed at children, with the objective of identifying videos that pose a high risk due to the presence of obesogenic arguments, as well as videos with innovative media trends. It presents an exploratory study of 293 videos (22 hr 41 min) aimed at children and containing food and/or food brands, posted from May 2020 to April 2021 on 28 YouTube channels of food brands and child YouTubers with the largest numbers of subscribers. Child YouTubers often appear to explicitly promote calorie intake as a diet alternative and to disseminate content in which the presence of low-nutrition foods undermines childhood obesity prevention policies. The sensitivity of this target audience and the highly emotional nature of the formats in which messages with obesogenic features appear, such as “challenges,” point to an urgent need to adopt ethical standards and legal measures to regulate such content.

Keywords

advertising; children; child YouTubers; food; obesogenic features; YouTube

Issue

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1. Introduction

1.1. Obesity and Obesogenic Factors

Obesity, and specifically childhood obesity, is considered an epidemic because of the health problems it causes and its impact on the lives and environment of those who suffer from it (Ebbeling et al., 2002; Lobstein et al., 2004). On the global level, the number of obese children and youth aged 5 to 19 has increased tenfold in the last 40 years (WHO, 2016). Obesity reflects an imbalance between what is ingested and what is consumed and is detected in the form of excess accumulated body fat (Castro et al., 2012; Correia, 2013; Giugliano & Melo,

2004; Miranda-Chaves et al., 2008; Tenorio & Cobayashi, 2011). In Spain, this condition is on the rise despite an overall decrease in Europe as a whole (Eurostat, 2020). In the last 30 years, the prevalence of child obesity in the country has quadrupled, reaching 10.3% in 2017 (Coduras-Martínez et al., 2019) for the population aged from 2 to 17.

As García-Cortés (2016) observes, obesity is a very complex phenomenon determined by the confluence of several internal and external factors (mass media, social influence, family habits, cultural traditions, etc.). Previous research (Mussini & Temporelli, 2013; Ruvalcaba-Ledezma et al., 2018; among others) has identified some influencing factors: expanded supply of

industrially processed foods; low prices of high-calorie foods containing high levels of salt, fat, and sugar; and high prices of fruit and vegetables (Drewnowski & Darmon, 2005; Food and Agriculture Organization of the United Nations, 2008; French, 2003; Peña & Bacallao, 2005; Temporelli & Monterubbianessi, 2011); increased consumption of fast food and processed food outside of the home by a growing segment of the population (Powell et al., 2006); less free time for food preparation (Chou et al., 2004); and an increased quantity of advertising for convenient and accessible industrial food that facilitates daily intake with a minimum of preparation effort, encouraging sedentary lifestyles (Da-Silva-Pinto et al., 2010; Pergher et al., 2010; Philipson & Posner, 2003; Reis, Vasconcelos, & Barros, 2011; Reis, Vasconcelos, & Oliveira, 2011; Vázquez et al., 2010). Environmental factors are the primary causes of the development of obesity (Procter et al., 2008).

Cairns et al. (2009) reviewed the most rigorous studies of the effects of food product advertising. Children recognize that watching food advertising makes them feel hungry, increases their desire, and affects purchase intentions (Marshall et al., 2007). An Iranian study found that 90% of students surveyed made food choices under the influence of advertising (Maryam et al., 2005). A study by Olivares et al. (2003) reported that 40% of children surveyed had consumed food products that they had seen advertised. Studies by Aktaş-Arnas (2006) and Utter et al. (2006) provide evidence of a correlation between television viewing time and general consumption of the most frequently advertised foods. Exposure to food advertising has an impact on or is associated with significant changes in food preferences among children (Borzekowski & Robinson, 2001; Chernin, 2008; Halford et al., 2008b; Norton et al., 2000; Robinson et al., 2007).

It has also been shown that exposure to food advertising is associated with a more frequent selection of less healthy foods and that it leads to an overall increase in food intake (Halford et al., 2004, 2007, 2008a; Wiecha et al., 2006). Boynton-Jarrett et al. (2003) demonstrated that increased television viewing among children was associated with reduced consumption of fruit and vegetables. Buijzen et al. (2008) identified the influence of parents' income and communication style in the consumption of brand products advertised on television. A prospective observational study (Wiecha et al., 2006) found a positive association between watching television and food calorie intake. Coon et al. (2001) found a significant association between television viewing during meal-times and a lower-quality diet.

According to a study by Borzekowski and Robinson (2001), exposure to food advertising significantly increased the probability that children would choose a food product advertised over a product that was not advertised. Robinson et al. (2007) discovered that children aged three to five preferred the flavor of food and beverages presented with the McDonald's brand logo to the flavor of exactly the same products without the

brand. This reveals that brand presence contributes significant added value.

1.2. Brand Advertising on YouTube and the Role of the YouTuber

As reflected in the literature review, studies of food advertising and consumption have focused largely on television. Qutteina et al. (2019) point to the importance of researching the phenomenon in the digital environment. Since its very first video was posted on April 23, 2005 (*Me at the Zoo*: <http://bit.ly/me-at-the-zoo-yt>), YouTube has grown exponentially and is now the world's largest video viewing platform, offering a new way of creating and sharing audiovisual content: More than 1,9 billion users in 91 countries and with 80 different languages log into YouTube each month (YouTube, n.d.).

YouTube is also the most popular social media platform with advertisers for disseminating related content (Castelló-Martínez et al., 2016). Thanks to the big audiences that many of its videos attract, YouTube has become one of the most profitable sites to invest in advertising aimed at increasingly younger viewers, a target audience of great interest to food product brands. While the first studies of the platform highlighted its philanthropic and collaborative nature (Arthurs et al., 2018), De-Aguilera-Moyano et al. (2018) examine the professionalization of YouTube, showing how it has shifted from an approach that represented a participatory culture toward the creation and dissemination of audiovisual content with commercial objectives (Holland, 2016).

YouTubers express opinions in a very convincing and persuasive way, and food brands are discovering their potential as a means of promoting their products to children (Castelló-Martínez & Tur-Viñes, 2020). The community of followers that develop around their videos is the key to their success, although it is crucial to maintain a balance between specialized content and elements with a commercial objective (Ramos-Serrano & Herrero-Diz, 2016, p. 115). Tur-Viñes and González-Río define YouTubers as:

Influencers who promote products, services, or ideas, authorized by their expertise in the area, who create experiences among their frequently massive audiences characterized by humor, the ability to entertain, and the presence of brands seeking spaces vested with credibility to communicate more effectively and empathetically. (2019, p. 1293)

YouTubers are key figures in teen culture, as influencers whose viewers spend their leisure time following them and are thus introduced to the use of multimedia platforms and formats aimed specifically at them (Aran-Ramspott et al., 2018; Montes-Vozmediano et al., 2018). The professionalization of child YouTubers on this platform is also worth highlighting, as their channels are characterized by a high level of sophistication, featuring

videos that have undergone elaborate post-production and that include products advertised in an extremely natural way (Aznar-Díaz et al., 2019; López-Villafranca & Olmedo-Salar, 2019).

The term “obesogenic features” refers to the set of supposedly aggravating risk factors that could intensify the proven effect on minors of exposure to food-related media content. Based on the contextualization offered above, we have posited the following as our first research question (RQ1): Is food and/or food brand-related content aimed at child audiences on YouTube founded on obesogenic arguments, such as low price, speed, convenience, short cooking time, and/or calorie intake as a diet alternative? Does it in any way encourage sedentary behavior?

1.3. The Food Sector and Food-Related Content on Social Media

The current challenge that the sector faces is responding effectively to new trends: a more aware consumer committed to caring for the environment, animal welfare, and healthier eating (Instituto Nacional del Consumo, 2014). The second research question is thus related to whether food and/or food brand-related content aimed at children on YouTube reflects these new trends (RQ2): Does the content engage with innovative media trends, such as the promotion of the environment, animal welfare, traditional production, or healthy eating practices?

More than half (53%) of all food products bought in Spanish supermarkets contain sugars on their list of ingredients and 64% of regularly consumed products are ultra-processed foods (minimal presence of natural ingredients and excessive saturated fats, salt, and sugars; “Hábitos de alimentación en España,” 2019). Of all sectors in Spain, the food sector has the fifth biggest advertising presence on television (Barlovento Comunicación, 2020), with advertising accounting for 17% of total investments in 2018, amounting to 296,2 million euros (InfoAdex, 2019).

The food sector represents 20.4% of interactions occurring on social media (IAB Spain, 2019). The data reflect the increased presence of advertising by food brands on social media platforms, while advertising investment in television has been in decline (Coduras-Martínez et al., 2019, p. 109). Our third research question (RQ3) relates to the type of products with the biggest presence in food and/or food brand-related content aimed at children on YouTube: Does content related to ultra-processed foods predominate over content involving healthy foods?

2. Method

The objective of this study is to identify obesogenic arguments in food and/or food brand-related content aimed at children on YouTube and the presence of innovative media trends. Innovative media trends are used in the

article to refer to elements that promote healthy eating, environmental care, animal welfare, etc. An exploratory qualitative-quantitative study was conducted based on a content analysis of videos posted from May 2020 to April 2021 on the Spanish YouTube channels of food brands and child YouTubers with the most subscribers according to SocialBlade. The initial universe was made up of 1,031 videos: 733 videos from 15 child YouTuber channels and 298 videos from 13 food brand channels. The final sample, shown in Table 1, consists of 293 videos (22 hr 41 min) that combine the presence of children with the appearance of foods and/or food brands: 222 child YouTuber videos and 71 food brand videos.

A matrix was designed in Excel where the rows were assigned to the videos and the columns to the 11 variables studied (1: Low price; 2: Speed; 3: Convenience; 4: Short cooking time; 5: Calorie intake as a diet alternative; 6: Encouraging sedentary behavior; 7: Environment; 8: Animal welfare; 9: Traditional production; 10: Healthy food practices; 11: Prevalence of ultra-processed versus healthy foods). Data on the interaction with the video were added to complete the study (Subscribers; Videos since creation; Videos May 2020–April 2021; Videos analyzed), as well as the date of creation of each channel. The content analysis sheet is available as a Supplementary File.

Table 2 shows the congruence between the research questions, the dimensions of the study, and their relationship to the variables analyzed.

3. Results

We found obesogenic features in 50 (17.1%) out of the total sample of 293 videos. Of those 50, 41 are videos by child YouTubers (82%), and 18.5% of the videos in this subsample exhibit some kind of obesogenic feature. The most common obesogenic argument is calorie intake as a diet alternative, both in the subsample of brands (we found eight out of nine videos with this feature) and in the child YouTuber subsample (this feature appears in 38 out of 41 videos). Speed appears in two videos (one on the channel of the child YouTuber Lady Pecas and the other on the channel The Crazy Haacks); convenience is mentioned in one video on the Lady Pecas channel and low price is referred to on the Adam Foods brand channel.

Child YouTubers often appear to encourage calorie intake as a diet alternative, expressing it with statements like the following:

— The Crazy Haacks’ Hugo is shopping online: “Only chocolate, only cookies...chocolate is very important and very healthy. I think 20 bars is good...we’re going to add a heap of chocolate, cookies” and he quips: “My mother doesn’t know how to shop” (<http://bit.ly/youtubersmenoresvideo4>).

— Adri’s father in *Juega con Adri* asks: “Who wants hamburgers?” and everyone shouts: “Me!” They end

Table 1. Sample of YouTube channels.

Channel	Creation date (DD/MM/YYYY)	Link	Subscribers	Videos since creation	Videos May 2020–April 2021	Videos analyzed
Child YouTuber						
Las ratitas	18/10/2015	http://bit.ly/lasratitas	23,100,000	204	34	12
MikelTube	30/08/2015	http://bit.ly/mikeltube-yt	7,180,000	757	55	9
The Crazy Haacks	09/03/2015	http://bit.ly/the-crazy-haacks	3,650,000	729	62	38
Los juguetes de Arantxa	02/01/2015	http://bit.ly/juguetes-arantxa	3,750,000	952	82	28
Las aventuras de Dani y Evan	22/01/2015	http://bit.ly/aventuras-dani-evan	2,740,000	550	83	19
La diversión de Martina	05/01/2015	http://bit.ly/ladiversiondemartina	4,070,000	368	53	13
Jugando con Aby	13/12/2015	http://bit.ly/jugandoconaby	2,940,000	433	31	17
El mundo de Clodett	27/12/2016	http://bit.ly/elmundodeclodett	2,760,000	343	63	10
TeamNico	04/11/2013	http://bit.ly/los-mundos-de-nico	3,450,000	532	58	9
Juega con Adri	26/03/2018	http://bit.ly/juegaconadri	3,970,000	153	40	18
Divertiguay	11/10/2016	http://bit.ly/divertiguay-yt	2,540,000	643	61	16
Leotube	15/01/2018	http://bit.ly/leotube-yt	2,340,000	143	48	12
Ladypecas	01/09/2015	http://bit.ly/ladypecas	1,930,000	512	52	19
Pino y Ares	16/04/2018	http://bit.ly/pinoyares	1,140,000	87	5	1
Juguetes MaryVer	09/06/2010	http://bit.ly/maryver	271,000	534	6	1
Food brand						
Nestlé Spain	15/02/2010	http://bit.ly/nestlesp	43,500	383	100	14
Casa Tarradellas	21/06/2011	http://bit.ly/casatarradellas	46,300	215	35	3
Grefusa	31/08/2012	http://bit.ly/grefusayt	21,700	83	12	4
Nocilla	09/02/2012	http://bit.ly/nocillayt	25,900	49	9	6
Dino Aventuras Danonino	19/04/2016	http://bit.ly/danoninoyt	11,700	13	7	7
The Phoskiters by Phoskitos	09/03/2018	http://bit.ly/phoskitosyt	5,100	112	7	7
Nesquik Spain	07/08/2008	http://bit.ly/nesquiksp	5,010	32	15	9
Kellogg's Spain	27/01/2016	http://bit.ly/kelloggs-sp	1,680	13	5	1
ColaCao	25/06/2007	http://bit.ly/colacaoyt	25,300	217	12	9
Hero Spain	11/03/2013	http://bit.ly/hero-sp-yt	1,390	90	10	0
Adams Foods	10/07/2015	http://bit.ly/adamfoods	5,670	60	29	11
Dulcesol	07/10/2015	http://bit.ly/dulcesol	2,230	144	46	0
Galletas Gullón	30/05/2017	http://bit.ly/galletasgullon	894	42	11	0
Total					1,031	293

up eating at a Burger King (<http://bit.ly/youtubersmenoresvideo5>).

— Nico's parents (in Los Mundos de Nico) buy a meal at McDonald's and Nico remarks: "Kids, this challenge is going to be really easy because I'm tired and what could be better than eating heaps, and top of that, that it's McDonald's," while his mother says: "He [referring to Nico] isn't going to like this challenge; he's going to love it," and she adds: "I haven't eaten all day!" (<http://bit.ly/youtubersmenoresvideo6>).

In the entire sample, a total of 45 videos with innovative trends in food-related content were identified (15.4%). Of these 45, 28 are videos by child YouTubers (12.6% of this subsample), while 23.9% of the subsample of food brand videos promote innovative trends (N = 17).

The most popular innovative trend is the promotion of healthy eating practices.

In the food brand subsample, animal welfare appears in six videos, the environment in three, traditional production in one, and healthy eating practices in seven. One video by the brand Nesquik includes the caption: "Eat breakfast every day" (<http://bit.ly/nesquik-practicassaludables>). In the case of the subsample of child YouTuber videos, two promote the environment, 12 advocate traditional production, and 14 encourage healthy eating practices. This last trend is reflected in statements or situations such as:

— Las Ratitas: "I got the lettuce. I love lettuce. Remember that you should eat a lot of fruit and a lot of vegetables" (<http://bit.ly/youtubersmenoresvideo7>).

Table 2. Congruence between research questions, dimensions, and study variables.

Research questions	Dimensions	Study variables
RQ1: Is food and/or food brand-related content aimed at child audiences on YouTube founded on obesogenic arguments? Does it in any way encourage sedentary behavior?	Obesogenic features	1. Low price 2. Speed 3. Convenience 4. Short cooking time 5. Calorie intake as a diet alternative 6. Encouraging sedentary behavior
RQ2: Does the content engage with innovative media trends?	Innovative media trends	7. Environment 8. Animal welfare 9. Traditional production 10. Healthy eating practices
RQ3: Does content related to ultra-processed foods predominate over content involving healthy foods?	Food and food brands	11. Prevalence of ultra-processed vs. healthy foods

— Los juguetes de Arantxa: Arantxa is preparing a snack for her friends and one friend says to her: “Come on, you’re even going to make orange juice?” Arantxa replies: “Yes, because it’s very healthy” (<http://bit.ly/youtubersmenoresvideo8>).

Ultra-processed foods and healthy foods appear together in 65 videos (22.2%). Healthy foods appear on their own in 57 videos (19.5%), and ultra-processed foods in 171 videos (58.4%). This means that ultra-processed food products are present in 80.5% of the total sample, while healthy foods appear in 41.6% of the videos.

In the food brand subsample, we identified 67 videos with ultra-processed foods (94.4%) and four with healthy foods (5.6%). In this subsample, the two types of food never appear together in any video. Two of the 13 food brand channels (17 out of 71 videos, or 23%) with the most subscribers belong to healthy food brands (Nestlé and Casa Tarradellas). However, the three ultra-processed food brand channels (Nocilla, ColaCao, and Grefusa) are responsible for 19 (26.76%) of the 71 videos and they are also among the channels with the most subscribers in this subsample.

The percentage of videos featuring ultra-processed food products is higher in the specific case of the child YouTuber subsample, amounting to 76.1% (104 videos with ultra-processed foods alone and 65 videos with both ultra-processed and healthy foods). Healthy foods

appear on their own in 53 child YouTuber videos, which means they appear in a total of 118 videos in this subsample (53.2%). In addition, we identified communicative elements that indicate a preference for ultra-processed food products over healthy foods. For example, when Martina D’Antiochia doesn’t like the meal prepared for her, her father offers to make her something else: “Right this minute I’ll make you some fried eggs or lasagna or schnitzel, so you won’t go hungry.” Martina smiles and thanks him, but her mother scolds her, saying: “It’s spinach with fish for dinner,” to which Martina makes a retching gesture.

Focusing on the presence of food products in videos by child YouTubers, 128 videos feature foods without a recognizable brand. The most common food types are cakes, pastries, and pies (103 appearances), confections and candies (48 appearances), fruit, vegetables, and legumes (36 appearances), prepared dishes like pizzas, hamburgers, or nuggets (34 appearances), dairy products (25 appearances), and French fries (20 appearances).

Table 3 presents a summary of the study results. Although obesogenic features make more appearances in the sample as a whole than innovative media trends in food and/or food brand-related content aimed at children (17.1% compared to 15.4%), the two subsamples analyzed exhibit inverse patterns for these two dimensions. Videos by child YouTubers contain more

Table 3. Study results.

Dimension	Subsample: Child YouTuber channels (222 videos)		Subsample: Food brand channels (71 videos)		Total sample (293 videos)	
	Count	Percentage	Count	Percentage	Count	Percentage
Obesogenic features	41	18.5%	9	12.7%	50	17.1%
Innovative media trends	28	12.6%	17	23.9%	45	15.4%
Ultra-processed food products	157	76.1%	67	94.4%	224	80.5%
Healthy foods	118	53.2%	4	5.6%	122	41.6%

arguments encouraging obesity (18.5% compared to 12.6% containing innovative media trends). Conversely, in food brand videos innovative media trends associated with consumer concerns are more prominent than obesogenic features (23.9% compared to 12.7%).

However, in both the total sample of videos analyzed and, in each subsample, ultra-processed food products make more appearances than healthy foods. In the case of food brands this constitutes a contradiction, as their videos include more arguments related to healthy eating practices but the food type, they display the most is ultra-processed.

4. Discussion and Conclusions

Based on the findings of this study, it is clear that content related to food products with low nutritional value on digital media platforms like YouTube is undermining obesity prevention policies aimed at children by encouraging them to ingest unhealthy food products by associating them with fun and enjoyment, consistent with the conclusions of Jiménez-Morales et al. (2019).

Although food brands advertising is less controversial than the content featured on child YouTuber channels, the communication of negative obesogenic features (low price, speed, convenience, short cooking time, calorie intake as a diet alternative, or sedentary behavior) offsets the presence of positive trends (promotion of environmentalism, animal welfare, traditional production, or healthy eating habits). The excessive presence of ultra-processed products is striking considering that they should not be present in a healthy diet for growing children.

The child YouTuber subsample is notable for videos featuring “challenges,” tasks tackled by the YouTubers, who recount their experience to their followers in a narrative-based entertainment format. These challenges often involve the presence of foods and/or food brands and the inclusion of messages with a commercial objective, with obesogenic arguments like those identified in this study.

Brands want to show their commitment to effective health promotion by including advice like “walk for 30 minutes a day,” “eat breakfast every day,” “use the stairs,” or “exercise and maintain a healthy diet” in their advertising. However, there are surprisingly few proactive messages of this kind on channels targeting children, which effectively squanders the greater influence and credibility that these channels enjoy with youngsters.

There is an urgent need to introduce ethical standards and legal measures to regulate this type of content in digital media. Further research is needed into digital content on social media starring, created by and/or targeting children.

Lines of future research could include international comparative studies designed to identify the weaknesses of self-regulatory systems. Perception studies of minor creators could also be helpful for identifying narrative

construction strategies, exploring how YouTubers have evolved from creating narratives with toys to introducing products from the food sector into their storylines, the spontaneous or directed nature of their self-editing of content, or the level of their awareness of the effects of their influence on the community. There is also a need for the proposal of actions to raise the awareness of marketing/communication decision-makers in companies that produce high-calorie products. Moreover, extending the analysis of food brands to other sectors, such as technology, toys, or fashion, could provide data on cross-sectoral prevalence. Parental mediation and the potential influence (positive, negative, or neutral) of parents on their children’s content constitutes another interesting line of research.

On the other hand, the responsibility of parents, as their children’s legal guardians, for YouTube practices is a controversial issue. Some families have found their children’s YouTube channels to be a convenient source of income. The monetization of the channel raises the question of the potential exploitation of school-age children. Do parents understand the limits of what is acceptable? What kind of life lessons are they giving their children in an environment where anything goes for the sake of entertainment? What consequences might overexposure have on the child’s future? Are parents aware of the consequences that promoting the consumption of unhealthy products can have on other children?

The results of this study, which constitute an original contribution to the literature given the lack of previous research on the media strategies of food brands aimed at children on YouTube, reveal some disturbing combinations of advertising, social media, and obesity-promoting content. If we want children to grow up healthy, we must ensure that the videos they consume provide them with proper guidance on good nutrition. The media, food brands, politicians, and audiences must all take their share of the responsibility for this as soon as possible.

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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