



Added value of physical food products as a stimulus during interviewing

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ABSTRACT

Semi-structured interviews are an often-used method for researching consumer perceptions of food products. However, understanding detailed and in-depth how consumers perceive food products is challenging for researchers because it could be difficult for consumers to express their motives and perceptions. In our previous studies using semi-structured interviews, this difficulty to express perceptions was also recognized, especially when concepts like naturalness, sustainability and healthiness were discussed. However, in both studies physical food products were used as stimuli and there was an indication that there might be differences in the number and type of answers given before and after the use of these stimuli products. Therefore, the current research aimed at showing effects and the possible value of using physical food stimuli products during semi-structured interviews. Two different studies were used to reach this aim, one study about the health perception of mothers and the other study about the naturalness, sustainability and healthiness perception of adolescents, both using snack products as physical stimuli. In both studies, the use of physical stimuli products appeared to be effective and useful. The comparison of the answers with and without stimuli products showed that using stimuli products provides more, and more detailed answers on the perception of the products. Therefore, the results of this study could serve as a guideline on the use of food stimuli products during semi-structured interviews.

1. Introduction

For food companies, knowing consumer perceptions of their products and the motives of consumers to purchase their food products is important (van Kleef et al., 2005; Lesschaeve and Bruwer, 2010; Róman et al., 2017; Aschemann-Witzel et al., 2019). Also, for the set-up of interventions and communication related to dietary behavior it is important to have sufficient knowledge about consumers' perceptions of food products (Cleobury & Tapper, 2014; Verhoeven et al., 2015; Damen et al., 2019b). To gain this knowledge about consumers' perceptions of food products, qualitative research could be helpful. Qualitative research is an approach that facilitates the examination of people's perceptions, experiences, beliefs, and behaviors in detail (Hennink et al., 2020). This type of research focuses on the 'why' and the 'how' of certain issues, rather than how often it occurs (Lune et al., 2016; Bryman, 2016). Qualitative research embeds a specific set of research methods like semi-structured or in-depth interviews, focus group discussions, observations, visual methods, and life histories or biographies (Hennink et al., 2020).

Semi-structured interviews are an often-used method for researching consumer perceptions of food products (e.g. Boak et al., 2016; Crofton and Scannell, 2020; Damen et al., 2020b; Hoek et al., 2017; Lovelace and Rabiee-Khan, 2015). However, getting detailed and in-depth understanding of how consumers perceive food products is challenging for researchers because it could be difficult for consumers to express their motives and perceptions (Damen et al., 2020a; Donoghue, 2000; Eldesouky et al., 2015).

In our previous research using semi-structured interviews to explore the naturalness, sustainability and healthiness perceptions of adolescents towards snack bars (Damen et al., under review), this difficulty to express perceptions was also recognized. Adolescents indicated that it was difficult for them to describe the concepts of naturalness and sustainability as they were not aware of it and did not know what was meant by it. We also observed this difficulty in our study among mothers (Damen et al., 2021), when we asked for their healthiness perception of snack products for their children.

However, in both studies (Damen et al., under review, Damen et al., 2021) stimuli products were used and there was an indication that there

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might be differences in the number and type of answers given before and after the use of these stimuli products.

To the best of our knowledge, no other studies exist using physical food products as stimuli during semi-structured interviews. Crofton and Schanell (2020) performed in-depth laddering interviews, using descriptions of different snack products to discuss, but no physical food products. In focus group discussions, the use of stimuli is more common, however, real food products are not often provided. Talati et al. (2016) discussed with respondents in a focus group discussion different front-of-pack nutrition labels and health claims of mock food products. Barone et al. (2021) showed in their focus groups pictures depicting concrete product examples of healthier meat alternatives. This use of images, videos, mock products and descriptions of food products is found in many more studies (e.g. van der Zanden et al., 2014; Tan et al., 2016; Moscato and Machin, 2018; Nyberg et al., 2021; Rondoni et al., 2021). In their study on identifying the preferences of consumers for whole peeled tomatoes, Frez-Muñoz et al. (2016) used real whole peeled tomatoes in their focus group discussion. Tan et al. (2015) used in their focus groups images of products made with insects. During the discussions also real insect-containing products were presented, however tasting of these insects was optional. Also, during ideation, the initial stage of a design process, stimuli products are used to stimulate creativity of people (Gonçalves et al., 2016). However, the effect of using the stimuli products on the data gathered in these previous mentioned researches, was not studied.

Because it looked like that after the presentation of the stimuli products in our previous studies (Damen et al., under review, Damen et al., 2021) the respondents could better express their perceptions and could better formulate their answers, we include the data of both studies in the current research and focus on the effect and possible added value of the use of food product stimuli in semi-structured interviews. The results of this study can be seen as advice and guideline on the use of food stimuli products during semi-structured interviews in order to obtain more in-depth understanding of respondents' perceptions and motives.

2. Methods

2.1. Design of the studies

Data of two studies are presented in this paper on the added value of using food stimuli in interviewing. In both studies semi-structured interviews were conducted using a snack as a stimulus product. The details of the stimuli products are presented in Table 1. The definition of snacks used in both studies was "all foods, excluding beverages, healthy and unhealthy, consumed in between regular meals", based on definitions used in previous studies (Cowan et al., 2020; Damen et al., 2020c; Duffey et al., 2014; Kachurak et al., 2019). The following paragraphs will explain the design of both studies in more depth.

As both studies were carried out by three different interviewers, interview guides were developed and used to maintain consistency in interviewing. Interviews were recorded digitally. The interviews in both studies were piloted (Malmqvist et al., 2019) with at least three participants belonging to the target group, who were not involved in the main study. For both studies only minor changes to the interview guide were made based on the results of the pilot study.

2.1.1. Interview on healthiness perception of mothers

Semi-structured interviews with 22 Dutch mothers, were used to reveal the health perception of snacks provided by mothers to their 2- or 3-years-old children (Damen et al., 2021). To recruit participants, social media, posters at day-care centres and supermarkets in the Netherlands and snowball sampling (Lauder et al., 2018; Allen et al., 2019) were used. The interviews were conducted at a place and time convenient for the participant. First, the mothers were asked general questions about snacks for their child and their perception of healthiness of these snacks.

After these general questions, four different types of cookies targeted at children were presented and discussed. The cookies were presented in their package in a randomized order, one by one. The selected cookies differed in portion size, ingredients, price, being organic or not and claims on the packaging. Some cookies were packed by one, some per two and others with more small cookies in one sachet. Some packages had many health-oriented claims placed on the front, while others had not. Some cookies contained chocolate, others were plain cookies. All these details are presented in Table 1. We choose to select a diverse set of cookies to stimulate the discussion on their different attributes. Cookies were chosen as a stimulus product as this snack is often provided by Dutch mothers (Damen et al., 2019b; Rossum et al., 2016) and because it could be perceived by the mother both as a healthy as well as an unhealthy snack.

2.1.2. Interview on naturalness, sustainability and healthiness perception of adolescents

Semi-structured interviews with 20 Dutch adolescents aged 15–18 years were conducted to characterize their perception of naturalness, sustainability and healthiness (Damen et al., under review). Social media and snowball sampling were used to recruit participants. The interviews have been done by video-call, realizing safety for both the respondent and the interviewer during the COVID-19 pandemic. The interviews started with questions on healthiness, naturalness and sustainability of snacks in general. After these general questions, the healthiness, naturalness and sustainability of snacks were discussed using three snack bars containing chocolate and nuts as a stimulus product. The packed snack bars were presented randomized one after another. Snack bars were chosen because this type of snack is commonly found in vending machines in schools and easily consumed between meals by adolescents (Geurts et al., 2017). The selected snack bars differed in the claims on the packaging, their ingredients and price. Some of the snack bars had claims related to naturalness on the pack, some had not. The details of the snack bars are showed in Table 1.

2.2. Data analysis

Interviews of both studies were transcribed, and the data was qualitatively analyzed with the software program MAXQDA (version 20). We used this program to organize, code and assist in analyzing the qualitative data. For each study, the coding of the interviews was independently done by at least two researchers, including the first author. To obtain consistency in coding, assigned codes were compared and discussed among the researchers until consensus on the codes was reached. Data saturation was reached for both studies.

The data was analyzed per study and per topic. For the study with the mothers, the topic of healthiness was discussed. For the study with adolescents, the topics of naturalness, sustainability and healthiness were discussed. For each topic the related attributes were analyzed before, and after the stimuli products were presented. For each topic a table set-up was designed, containing the relevant attributes. Per attribute, the number of responses before showing the stimuli products and the number of responses after showing the stimuli products are displayed. In addition, it is also showed how many extra (new) responses are obtained with using the stimuli products.

2.3. Ethical procedure

Ethical approval for both studies was obtained from the Social Science Ethics Committee of Wageningen University (the Netherlands). All participants of both studies provided informed consent before participating in the study. The informed consent forms explained that the study was about their perception of either cookies (for the mothers) or snack bars (for the adolescents), however, the exact goal of these studies was not explained to not influence the data. Besides, it was explained to the participants that they could stop at any moment with the interview

Table 1
Details of the stimuli products discussed with the respondents.

	Cookie 1	Cookie 2	Cookie 3	Cookie 4	Snack bar 1	Snack bar 2	Snack bar 3
Brand	Trouwe Vriendjes	Letterkoekjes	Chocokoeko's	Spoorzoeker	Eat Natural	Nákd	Snickers
Description	'Trouwe Vriendjes' Vanilla Cookies	Organic 'Letterkoekjes' sweetened with apple	Organic 'Chocokoeko's' with cocoa	'Spoorzoeker' Cookies	Crunchy nut bars, protein-packed, with peanuts, coconut, chocolate chunks, and soy crisps	Nákd cocoa delight, raw fruit & nut wholefood bars	Milk chocolate bar with an airy filling, caramel, nougat, and crunchy, roasted peanuts
Product name	Verkade	De Kleine Keuken	De Kleine Keuken	Fred & Ed (Royal Smilde)	Crunchy Nut Bars Protein Packed	Wholefoods Bars Cocoa Delight	Snickers
Picture							
Information and claims on the front of the snack bar	1 biscuit: 194 kJ, 46 kcal 9 × 2 cookies	No palm fat included Sweetened with apple No refined sugars Of whole grains Organic From 12 months Four sachets to share 4 × 8 cookies	No palm fat included No refined sugar Of whole grains Organic 8 × 2 cookies	63 kcal per biscuit 12 x single-portion package Wow! Spiced cookies with chocolate cream!	10 g of protein per bar Gluten-free Simple isn't? OK for Veggies	100% natural ingredients 100% vegan No added sugar Planeat Wheat, dairy & gluten-free 1 of 5 a day Simply delicious Simply yummy Love your body Cold-pressed, never baked Gleefully made in Britain	1 bar is 50 g (1009 kJ, 241 kcal)
Portion size	2 cookies in a sachet (19.4 g)	8 cookies in a sachet (20 g)	2 cookies in a sachet (18.75 g)	1 biscuit in a sachet (13 g)	1 bar, 45 g	1 bar, 35 g	1 bar, 50 g
Price (not communicated with participants)	18 cookies €1.48 (per sachet €0.16)	32 cookies €2.59 (per sachet €0.65)	16 cookies €2.59 (per sachet €0.33)	12 cookies €2.18 (per sachet €0.18)	3 bars €2.75 (per bar €0.92)	4 bars €2.99 (per bar €0.75)	5 bars €2.36 (per bar €0.47)
Ingredients	Wheat flour, sugar, palm fat, dried glucose syrup, lactose and milk protein, salt, emulsifier (E472e), sodium carbonate, aroma.	Whole grain, apple concentrate, vegetable oils, rye, spelt flour, oat, raising agent, vitamin B1.	Whole grain, spelt flour, coco blossom sugar, apple concentrate, butter, rice flour, sunflower oil, cacao powder, raising agent.	Wheat flour, sugar, palm fat, whole egg powder, 'speculaas' spices, rapeseed oil, full milk powder, skimmed milk powder, raising agent: E500, E335, E503, fat-reduced cocoa powder, caramelized sugar, salt, cacao mass, glucose syrup, emulsifier: lecithin.	PEANUTS 45%, glucose syrup, dark chocolate 11% (cocoa mass, sugar, dextrose, emulsifier: SOYA lecithin), SOYA protein crispies 8% (SOYA protein isolate, tapioca starch, salt), shredded coconut 7%, honey 7%, crisped rice (rice, sugar), cocoa powder, salt	Dates (48%), CASHEWS (29%), Raisins (17%), Cocoa (6%), a hint of natural flavoring	Sugar, Peanuts, Glucose Syrup, Skimmed Milk Powder, Cocoa Butter, Cocoa Mass, Sunflower Oil, Palm Fat, Lactose and Protein from Whey (from Milk), Whey Powder (from Milk), Milk Fat, Emulsifier (Soya Lecithin), Salt, Coconut Oil, Egg White Powder, Natural Vanilla Extract, Milk Protein, Milk Chocolate contains Milk Solids 14% minimum, Milk Chocolate contains Vegetable Fats in addition to Cocoa Butter
Nutrition table (per 100g)							
Energy	92	89	80	63	510 kcal	386 kcal	481 kcal
Fat	3.4 g	3.0 g	2.5 g	2.9 g	30.5 g	15. g	23.0 g
Saturated fat	1.6 g	0.7 g	1.1 g	1.4 g	9.1 g	3.1 g	7.9 g
Carbs	14 g	13.2 g	11.8 g	8.3 g	32.4 g	49.4gg	61.0 g
Of which sugar	3.8 g	3.3 g	3.6 g	3.8 g	18.8 g	45.3 g	52.0 g
Fiber	0.6 g	0.9 g	1.3 g	0.3 g	7.3 g	6.8 g	1.9 g
Protein	1.4 g	1.7 g	1.7 g	0.9 g	22.8 g	9.4 g	8.6 g
Salt	0.14 g	0.1 g	0.2 g	0.07 g	0.32 g	<0.1 g	0.63 g
Vitamin B1	-	0.1 mg	-	-	-	-	-

without giving a reason and that all results would only be used for scientific research. After finalizing the interviews, the goal of the study was explained, and each participant received a gift voucher as compensation. To ensure anonymity while analyzing and reporting the data, each participant was given a unique number, so no names were displayed in the communication.

3. Results

In this section the mentioned attributes before and after the provision of the stimuli products are discussed. This is done for both studies with mothers and adolescents separately. In the study with the mothers, all respondents were active in answering the questions. In the study with the adolescents two respondents were sometimes inactive during interviewing. For these respondents a bit more effort, like being quite for a while, or asking more why-questions, was needed. However, the answers of these two inactive respondents did not differ from those respondents who were more active. In this result section, healthiness perception is discussed for the study with the mothers. For the study with adolescents, naturalness, sustainability and healthiness perception are discussed.

3.1. Healthiness perception of mothers

The mothers in this study were of Dutch origin and lived in the Netherlands. The average age of these mothers was 33.5 years (SD 3.1 years), ranging from 23 to 39 years. All mothers (n = 22) were higher educated with a Bachelor's degree or higher, and had a paid job. The mothers worked on average 28.6 h a week. All mothers had an oldest child of 2 or 3 years old; when they had a younger child too (n = 15), this child was younger than 12 months.

All interviewed mothers (n = 22) could tell what they perceive as a healthy snack. Before the stimuli products were shown, mothers mentioned healthy snacks should not contain too much sugar (n = 22), contain vitamins (n = 13), nutrients (n = 10) and not too much fat (n = 10) as presented in Table 2. After showing the stimuli products a shift in the type of answers was observed. Some of the attributes mentioned without stimuli products are mentioned again with the stimuli. This is the case for 'not too much sugar is healthy' which is mentioned both times by almost all mothers.

"In my opinion, a healthy snack for my child does not contain any sugar" [ID12, without stimulus product].

"This is a perfect cookie for my child, as it contains almost no sugar, and there is no refined sugar added at all" [ID12, with stimulus product].

Table 2
Number of mothers mentioning healthiness perceptions of snack products (n = 22).

Healthiness perception, healthy is/are ...	Initial without stimuli	After showing stimuli	Extra with stimuli	Total
Not too much sugar	22	19	0	22
Fibers	6	17	13	19
No chocolate	6	16	10	16
Not too much fat	10	8	5	15
Vitamins	13	1	0	13
No additives	8	9	5	13
<i>Sweetened with apple</i>	0	13	13	13
Not too much calories	4	10	8	12
<i>No palm fat</i>	1	11	10	11
<i>No refined sugars</i>	0	10	10	10
Nutrients	10	0	0	10
<i>Organic</i>	5	7	4	9
Not too much salt	5	3	1	6

Attributes in *italic* are explicitly mentioned on the packaging of at least one of the stimuli products.

Some of the attributes mentioned without stimuli are not mentioned at all when the stimuli are shown as can be seen in Table 2. This is the case for the attributes 'vitamins are healthy' and 'nutrients are healthy'. Both attributes were indicated as important for a healthy snack, but not mentioned when the products were shown.

Some of the attributes mentioned without the stimuli are mentioned after showing the stimuli products, but by different respondents, see Table 2. So, the respondents who did initially not mention the attribute, mentioned it after the stimuli products were provided and some of the respondents who initially mentioned the attribute, did not mention it again after the provision of the stimuli products. This is the case for the attributes 'healthy is not too much fat' and 'healthy is no additives'.

Quite some attributes which were mentioned as healthy by some of the respondents before showing the stimuli products, were mentioned by many more respondents after they had seen the stimuli products, as presented in Table 2. For example, the attribute 'fibers are healthy' was mentioned before the stimuli products were provided only six times, after the stimuli products were given this attribute was mentioned 17 times, of which 13 respondents did mention it for the first time. This was also the case for the attributes 'no chocolate is healthy', 'not too much calories is healthy' and 'no palm fat is healthy'.

There are even attributes which were not mentioned at all by the respondents at the beginning of the interview when the stimuli products were not provided but were mentioned only after showing the stimuli products, as can be seen in Table 2 too. This was the case for 'sweetened with apple is healthy' and 'no refined sugars is healthy' both these attributes were presented as a claim on one or more of the stimuli products and therefore got the attention of the respondents.

"This cookie is a healthy choice because the packaging says it contains no refined sugars and because it is sweetened with apple" [ID05, with stimulus product].

"I think this cookie is healthy because of the claims. Organic, sweetened with apple and no refined sugars" [ID21, with stimulus product].

Example: For fibers 19 persons mentioned this attribute, of which 6 before showing the stimuli products, and 17 after showing the stimuli. Of these 17 respondents, 4 repeated it after seeing the stimuli products, and 13 respondents were new.

3.2. Naturalness, sustainability and healthiness perception of adolescents

All adolescents of this study were Dutch high school students living with their parents. The average age of the participating students was 16.2 years (SD 1.1 years), ranging from 15 to 18 years. Thirteen of the adolescents were girls, seven were boys.

3.2.1. Naturalness perception of adolescents

More than half of the adolescents mentioned that naturalness was a difficult concept for them (n = 11). When presenting the snack bars to these adolescents, all 11 respondents could mention at least one aspect of naturalness related to food products. See below an example.

"Eh ... I do not know what natural is ... maybe fruit? I do not know, I think I never eat that" [ID01, without stimulus product].

"I think this bar is less natural because it contains chocolate and caramel, and it is very processed. That is not very natural" [ID01, with stimulus product].

Table 3 shows the effect of the provision of stimuli products on the attributes of naturalness mentioned. Especially the belief that 'natural products are healthier' and the attribute 'certain ingredients are natural/unnatural' were mentioned more often after the use of the stimuli products. This is also shown in the example below.

Table 3
Naturalness perception of adolescents (n = 20) towards snack products.

Naturalness perception, natural is/are ...	Initial without stimuli	After showing stimuli	Extra with stimuli	Total
Natural products are healthier	6	12	10	16
<i>Certain ingredients are natural/unnatural</i>	1	14	13	14
Not processed	9	9	3	12
Natural products have no additives	10	1	1	11
Natural products come from a natural source	8	0	0	8
Not made in a factory	2	5	4	6

Attributes in *Italic* are explicitly mentioned on the packaging of at least one of the stimuli products.

Interviewer: “When do you think a snack is natural?” Respondent: “Oh, eh ... I, eh Difficult question! I have not really an idea” [ID04, no stimulus product].

“This snack bar contains nuts and dates which gives natural sweetness to the product. So less added sugars are needed. This makes the product more natural. Also the cacao in it makes this snack bar natural” [ID04, with stimulus product].

For the attributes ‘natural products have no additives’ and ‘natural products come from a natural source’ this was not observed. These attributes were hardly or not mentioned after showing the stimuli products.

3.2.2. Sustainability perception of adolescents

More than half of the adolescents mentioned not to know what sustainability meant for food products (n = 12). They explicitly mentioned that it was a difficult term for them. When presenting the snack bar stimuli, most of these 12 respondents (n = 10) could mention at least one aspect of sustainability. See below an example.

“Pff, I do not know ... I have no clue about sustainability” [ID20, no stimulus product].

“I think this bar is not sustainable because it is wrapped in plastic” [ID20, with stimulus product].

Table 4 shows the effect of using stimuli while discussing the topic of sustainability. This table shows that for some statements, stimuli gave extra answers. This is the case for the statement ‘sustainability is when it is on the packaging’ which was hardly mentioned without stimuli (n = 4) and mentioned more often while showing the snack bar stimuli (n = 14). For the statement ‘sustainability is related to packaging material’ this is also the case, without stimuli it was mentioned 7 times, after showing the stimuli it was mentioned 12 times. For the other statements this difference was less present.

Table 4
Sustainability perception of adolescents (n = 20) towards snack products.

Sustainability perception Sustainability is ...	Initial without stimuli	After showing stimuli	Extra with stimuli	Total
When it is stated on the packaging	4	14	11	15
Related to (type of) packaging material	7	12	6	13
Good for the environment	6	6	0	6
Produced in the own country	4	2	1	5

3.2.3. Healthiness perception of adolescents

Healthiness is a term of which all participants (n = 20) could tell something about. It was not experienced as unknown, or difficult to explain. However, presenting the stimuli products also helped the respondents to tell in more detail about this definition, which can be seen in Table 5. The general aspects of healthiness like, ‘low in sugar is healthy’, ‘fruits are healthy’, ‘nutrients are healthy’, and ‘vitamins are healthy’ were mentioned initially without the stimuli more often. More detailed, product specific aspects of healthiness like ‘chocolate is unhealthy’, ‘nuts are healthy’, ‘protein is healthy’ were mentioned mostly after showing the stimuli product as can be seen in the quotes below. For the perception ‘no palm fat is healthy’, this is the clearest, because this attribute was not mentioned at all before the stimuli products were presented.

“A product is healthy when it does not contain too much sugar and when it does contain vitamins” [ID12, no stimulus product].

“This product contains proteins, that makes the snack bar healthy” [ID12, with stimulus product].

4. Discussion

The current research aimed at showing effects and the possible value of using food stimuli products during semi-structured interviews. Two different studies were used to reach this aim, one study about the health perception of mothers (Damen et al., 2021) and the other study about the naturalness, sustainability and healthiness perception of adolescents (Damen et al., under review), both using snack products as stimuli products.

In both studies, the use of stimuli products appeared to be effective and useful. From the comparison of the answers with and without stimuli products it was shown that with stimuli products more, and more detailed answers were given on the perceived healthiness, sustainability and naturalness of the products.

With respect to the healthiness perception of the cookies and the snack bars most attributes mentioned before showing the stimuli were related to the absence of ingredients or nutrients e.g. not too much sugar or fat, or no additives. The mentioning of the absence of ingredients or nutrients when describing a healthy product is also often found in the study of Schlinkert et al. (2020). After showing the stimuli products in our current study, relatively more attributes were mentioned which refer to the presence of ingredients and nutrients (e.g. vitamins, nuts, fruits). This makes sense since the information on the packaging mainly focusses on the presence of positively valued ingredients and the absence of the negatively perceived ingredients in the specific product.

The discussion on the topic with the respondents before using the stimuli products provided the general but important attributes. These answers are very valuable because they came spontaneously as an answer and were not steered in any way to a certain direction. However,

Table 5
Healthiness perception of adolescents (n = 20) towards snack products.

Healthiness perception, healthy is/are ...	Initial without stimuli	After showing stimuli	Extra with stimuli	Total
Low in sugar	14	14	4	18
<i>No chocolate</i>	6	15	10	16
<i>Fruits</i>	13	4	2	15
<i>Nuts</i>	4	13	10	14
<i>Protein</i>	4	11	8	12
Not too much fat	6	5	2	8
Vitamins	5	1	0	5
<i>No palm fat</i>	0	5	5	5
Nutrients	4	0	0	4

Attributes in *Italic* are explicitly mentioned on the packaging of at least one of the stimuli products.

these answers had less detail and were formulated in a more general way. While showing the stimuli products to the respondents, they might be steered to a certain extent, not by directly asking for specific attributes, but showing stimuli products influences the way respondents perceive the product and the way respondents approach it. However, the answers after showing the stimuli products had more detail. This could be explained by the fact that giving stimuli products could make the question more clear and helps the respondents to think more in depth about their perceptions. Both types of answers (with and without use of stimuli products), are necessary to obtain a complete overview of the respondents' perceptions of the product.

It was also observed that when certain attributes were mentioned on the packaging of the stimuli products (e.g. sweetened with apple, contains protein, no palm fat) that these attributes were mentioned more often when showing the stimuli products. This shows that the claims and information on the packaging does influence the perceptions of the respondents, which is confirmed by Plasek et al. (2020), Franco-Arellano et al. (2020) and Mediano Stoltze et al. (2021). However, not only the information on the packaging was repeated by the respondents after showing the stimuli products, also new attributes, insights and connections appeared which validates the usefulness of including stimuli products while interviewing.

The type of products selected as stimuli products in the interview is important. Researchers need to determine which topics they want to discuss during the interviews and which type of products fit this topic and their target group. For example, in the study on the healthiness perception of mothers, cookies were chosen as stimuli products because this snack is often provided by Dutch mothers (Damen et al., 2019b; Rossum et al., 2016) and because it could be perceived by the mother as both a healthy or an unhealthy snack (Damen et al., 2019b). In the study on the naturalness, sustainability, and healthiness perception of adolescents snack bars were chosen as stimuli products because this type of calorie-dense snack is consumed often by adolescents, is commonly found in vending machines at schools, and is easily consumed between meals (Geurts et al., 2017). In addition, food products often use claims on the packaging which could be linked to healthiness, naturalness and sustainability (Hemmerling et al., 2016; Pelletier et al., 2013) and so do the selected snack bars. When selecting stimuli products from the same product group (i.e. cookies or snack bars) it is also important that these products have some variation between them, so there are differences present to discuss.

The number of stimuli products used in the interviews is also something to regulate. To keep the participants focused and aligned it is important to not include too many stimuli products as the task to discuss them could become boring. Our advice will be to include preferably not more than 3 stimuli products per interview, as we recognized that in the interviews with the mothers, using 4 products to discuss, the respondents became a bit fed up with it at the end. Therefore, we also advise to present the stimuli products all at once or randomized to the participants to avoid influences due to order of presentation (Lawless and Heymann, 2013).

Some limitations regarding the current studies need to be mentioned. For both studies, interviews were done by more than one researcher. However, we tried to limit effects of this by using a structured interview guide (Bryman, 2016), which was thoroughly discussed among the researchers before the study started. In addition, the interviews with the adolescents had to be conducted by video-call, instead of in-person, due to the COVID-19 restrictions (October 2020). This because the traditional in-person interviewing method became unfeasible during physical distancing (Sy et al., 2020). Interviewing via video-call has its disadvantages, as it is not possible to read body language and facial cues as well as during in-person interviews (Seitz, 2016). However, video calling was chosen because this technology comes closest to in-person interviewing while geographically separated (Krouwel et al., 2019).

In the current research two studies using snack products as stimuli products were used. However, we think that the results of the current

study could be generalized to other food products as well. To be totally sure, future research could repeat this study with other types of food products used for other eating occasions. Besides, this study on stimuli products was conducted with semi-structured interviews, it could be interesting to study if the effect of the use of stimuli products would also be present for other qualitative data techniques, like focus group discussions. One of the hypotheses from the current research was that the answers of the respondents were more detailed after showing the stimuli products which could be caused by the fact that using stimuli products makes the question more clear and helps the respondents to think more in depth about their perception. A verification of this hypothesis could be studied in further research too.

5. Conclusion

The current study provides insights into the effect and possible value of the use of food product stimuli in semi-structured interviews. This was done by using data from two different studies both studying consumer perceptions using stimuli products. In both studies, the use of stimuli products appeared to be effective and useful. The comparison of the answers with and without stimuli products showed that using stimuli products provides more, and more detailed answers on the perception of the products. Therefore, the results of this study could serve as a guideline on the use of food stimuli products during semi-structured interviews about consumer perceptions of food products.

Ethical statement

The authors confirm that ethical approval was obtained from the Social Science Ethics Committee of Wageningen University (The Netherlands) for both studies involved in this manuscript. All participants provided informed consent before starting the interviews in both studies. After finalizing the interview, each participant received a gift voucher as compensation.

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