

ShopTrip pilot study

The preference-conscious choice modelled and observed

Preliminary Report

(Figures and tables found in Appendix)

Version 1.0, published online December 2014, www.fairspeak.org

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Introduction

The goal of the current pilot study was to construct and test a new kind of setup for observing the consumer's purchasing behaviour, with a particular focus on fairness and misleadingness issues as opposed to marketing and sales. The setup described represents a compromise between ecological validity and experimental control in at least two ways: the way the consumer's behaviour is monitored and the way the consumer's behaviour is brought about. The first part of the pilot study involved a simulation of an 'e-shopping environment' which had the advantage of creating a relatively realistic purchasing situation, while automatically recording many aspects of the participant's purchasing behaviour. Here an essential feature was a cover story about 'going shopping for friends' which enhanced the participant's *preference consciousness* without imposing any specific constraints.¹ In the second part of the pilot study, the participants were presented with actual products and instructed to assume the role of 'health detectives' in order to enhance the degree of preference consciousness even further. In the third and final part of the pilot study, the participants were asked to fill out a questionnaire in order to test their general knowledge of food and food-related issues.

Methodology

In empirical research, a fundamental distinction can be made between experimental studies with tightly controlled conditions and descriptive (or observational) studies which address something that occurs 'out there' in the field. Both approaches have their advantages and disadvantages, with different levels of ecological validity being traded off for different levels of experimental control. The current study is primarily intended as an instance of the latter: namely, a descriptive (observational) study of how Danish consumers interact with existing food products on the Danish market. At the same time, the current study shares certain similarities with experiments conducted in the laboratory, in terms of both the method of stimulus presentation and the fact that certain variables were recorded automatically by computer as opposed to being recorded manually by a human observer.

¹ For further details, see Smith, Barratt & Møgelvang-Hansen (forthcoming). The terms 'preference consciousness' and 'preference-conscious choice' are motivated and explained in Smith et al. (2009) and Smith et al. (2011).

There are a number of methods for observing how consumers interact with products when making purchasing decisions. One option is to observe and/or videotape the consumer interacting with actual products and to manually record how many times the consumer looks closely at each product, how many times the consumer turns each product to look at the reverse side, and so forth. This option has the benefit of a relatively high level of ecological validity, but is labour intensive and subject to various inaccuracies. A second option is to use a similar setup with a head-mounted camera and eye-tracking device. This option allows the experimenter to track the focus of the participant's attention more precisely but is both obtrusive and labour intensive, with subsequent data analysis requiring 'areas of interest' (AOIs) to be drawn on a frame-by-frame basis.

To construct the present multi-purpose experimental paradigm, we decided to employ a third option: to present products in a simulated e-shopping environment, created using E-Prime software with inline scripts written in E-Basic (Psychology Software Testing, Pittsburgh, PA). In this setup, a shelf of three food products could be simulated by presenting bitmaps of the package fronts for three products on a CRT monitor display. The action of picking up a product to take a closer look ('zooming') could be simulated by presenting a larger image of the product contingent on a keyboard button press, while the action of turning the product could be simulated by contingently presenting the reverse side of the product. The experiment was programmed so that each of these actions (in terms of number, duration, and sequence) could be logged automatically. In effect, then, the setup allowed us to create two AOIs for each product (front of package, back of package) and to obtain data roughly analogous to fixation number, duration, and sequence.

Stimuli / food products

The stimuli for the study were 36 food products: 12 general food categories with three examples in each. All food items were taken from the current Danish market. For each food product, three bitmaps of the corresponding package were created: a relatively small view of the package front which could be shown on a 'shelf' alongside two competing items; an enlarged view of the package front which could be shown if the participant wanted to look at the item more closely; and an enlarged view of the package back which could be shown if the participant wanted to look at the product information. The enlarged views were scaled so that they were exactly twice the dimensions of the original view in terms of both width and height (573 x 573 pixels vs. 286 x 286 pixels respectively). The details of the original packaging were preserved whenever possible and digital manipulations of the bitmaps were kept to a

minimum. For the package fronts, the main manipulation was to the numerical weight information (in order to ensure that all three products were an equivalent net weight). The package backs were presented in their entirety unless the product information was too small to read, in which case the ingredients list and nutritional information boxes were cut and pasted so that they occupied the whole of the visible surface.

Each triad of food products was divided into a ‘category A’ (allegedly healthy) product, a ‘category B’ (allegedly tasty) product, and a ‘category C’ (inexpensive) product. The first criterion for distinguishing these categories was the presence or absence of a ‘potentially misleading element’ (PME; Clement et al., in review). The package for the category A product contained an element which had the potential to mislead the average consumer (with PME), whereas the packages for the B and C products did not contain such elements (without PME). The second criterion was price: the A and B products were the same price, whereas the C product was a lower price (by approximately a third). For three ‘target’ products – namely, hamburgerryg, leverpostej, and skinke – we had specific research questions (see Study 2, described below). For each of the, all three items had an equivalently low fat content. The package for the category A product contained a numerical low-fat claim (with PME), whereas the packages for the B and C products did not highlight the low fat content (without PME).

Participants

The participants were 100 students and members of the public (49 female, 51 male; age range 18 to 76 years, mean age 35.2 years) randomly recruited in a public place between a university campus and a busy shopping centre. For part 1, the data for one of the participants was lost due to a computer error. The participants were reimbursed with either a bottle of wine, a box of chocolates, or a package of coffee, each with a monetary value of between 37.5 and 40 Danish kroner. All of the participants were either native Danish speakers or fluent in Danish.

Apparatus

The experiment was run on five IBM-compatible desktop computers. The presentation of stimuli and the recording of responses were controlled by E-Prime software (Psychology Software Testing, Pittsburgh, PA). The stimuli were displayed on CRT monitors: the aspect ratio was 4:3, and the resolution was 1024×768 pixels. The viewing distance was approximately 60 cm. Responses were entered on the keyboard.

Part 1a: E-shopping trip

In the first part of the pilot study, the participants were instructed to imagine that they had to buy 12 food items for a Sunday lunch picnic with friends by using an e-shopping environment. For each of the 12 items on the shopping list, there were three options to choose from: a category A (healthy) product, a category B (tasty) product, and a category C (inexpensive) product (the participants were not informed about these categorisations). The 12 items (= trials) were presented in random order.

At the beginning of each trial, the name of the food item was briefly presented followed by a fixation cross. The shopping experience itself comprised four main displays: ‘shelf’, ‘zoom’, ‘turn’, and ‘buy’ (see Figure 1). The experiment was programmed so that the participant could jump between these four displays by moving the mouse cursor and clicking on simulated buttons and activated areas. In addition, the experiment was programmed so that each of these actions (in terms of number, duration, and sequence) was logged automatically. The experiment began with a practice session of three additional food items, also presented in random order.

Shelf display. In the opening ‘shelf’ display, the three options were lined up from left to right with the corresponding prices shown underneath (see Figure 1a). The position of each product (left, centre, or right) was selected randomly. For any given product, the participant was given two options: (1) they could see more information about the product either by clicking on the ‘Zoom’ (*Se nærmere*, lit. ‘Look closer’) button or by clicking on the product itself; and (2) they could purchase the product by clicking on the ‘Buy’ (*Køb*) button.

Zoom display. If the participant selected the ‘Zoom’ option, then they were presented with an enlarged view of the *front* of the given package with the two remaining products lined up in a column on the right-hand side of the display (see Figure 1b). At this point, the

participant was given the following five options: (1) they could return to the original shelf display by clicking on the ‘Back’ (*Tilbage*) button; (2) they could ‘turn’ the chosen product either by clicking on the ‘Turn’ (*Vend*) button or by clicking on the product itself; (3) they could purchase the chosen product by clicking on the ‘Buy’ (*Køb*) button; (4) they could see more information about one of the two remaining products either by clicking on the ‘Zoom’ (*Se nærmere*) button or by clicking on the product itself; and (5) they could purchase one of the two remaining products by clicking on the ‘Buy’ (*Køb*) button.

Turn display. If the participant chose the ‘Turn’ option, then they were presented with an enlarged view of the *back* of the given package with the two remaining products once again lined up in a column on the right-hand side of the display (see Figure 1c). At this point, the participant was given the same five options as described above, the one exception being that the ‘turn’ option would result in a return to the front view of the given product.

Buy display. If the participant chose the ‘Buy’ option at any point, then they were presented with a medium-sized view of the front of the given package and asked the question ‘Put in shopping basket?’ (*Læg i indkøbskurv?*) (see Figure 1d). If the participant chose the ‘Yes’ (*Ja*) button, then they were presented with a confirmation screen reading ‘Product in shopping basket’ (*Varen ligger i kurven*) and given the option to continue to the next trial. If the participant chose the ‘No’ (*Nej*) button, then they returned to the original shelf display with the three products.

Part 1b: Rating the importance of price, expected taste, and relative health

In the second part of the e-shopping trip, the participants were asked to evaluate each of their purchasing decisions by considering the factors of price (*prisen*), expected taste (*forventet smag*), and relative health (*relativ sundhed*). For each product type, the original shelf with the three products was presented once again, this time with the purchased product identified by a green border. For each of their purchasing decisions, the participant was asked to rate how much importance they had placed on price, expected taste, and relative health by selecting a point on a corresponding nine-point scale ranging from 1 (‘Not important’ / *Ingen betydning*) to 9 (‘Crucially important’ / *Helt afgørende*). The participant was also given the opportunity to add their own comments (free text responses via pop-up input boxes).

Part 1c: Elaborating on the importance of health

In the third part of the e-shopping trip, the participants were asked to elaborate on their purchasing decisions for those products for which they had rated the factor of health as being relatively high in comparison with both price and expected taste. The factor of health was considered to have played an important role if either of the following conditions was satisfied:

Condition 1: $\text{health} > \text{price}$ AND $\text{health} > \text{taste}$

Condition 2: $\text{health} > 5$ AND $\text{health} \geq \text{price}$ AND $\text{health} \geq \text{taste}$

As in the second part of the e-shopping trip, the original shelf with the three products was presented with the purchased product identified by a green border. This time, the participant was given the opportunity to select specific factors that might have influenced their decision both with respect to the product itself and the product's packaging (see Figures 3a and 3b respectively). The list of factors relating to the product itself were: lower fat; higher fibre content; less calories; better product quality; lower salt; lower sugar; fewer additives; and any other comments (free text response). The list of factors relating to the product's packaging were: the brand or product line; the labelling system (e.g., ecological symbol, keyhole symbol); highlighted text; highlighted pictures; additional stylistic elements; information on the back of the package; familiarity with the product; and any other comments (free text response).

Part 2: 'Health detective' paradigm

In the second part of the pilot study, we wished to ascertain to what degree consumers were capable of distinguishing and choosing between different ways of being 'less unhealthy' when applying their full knowledge and analytical capacities to the task (regardless of whether they personally cared much about health or not). For this purpose, we presented the participants with actual products and instructed them to assume the role of a 'health detective', thereby increasing their level of preference consciousness even further while directing their attention towards one particular consideration among others, namely healthiness.

Fifty of the 100 participants were presented with three examples of liquorice products (*lakrids*) available on the current market: one produced by Toms, one by Katjes, and one by Malaco. The remaining 50 participants were presented with three examples of sandwich rye bread (*sandwich-rugbrød*) products: one produced by Schulstad, one by Kohberg, and one by Pågan. For each of the presented products, the participants were free to pick up and examine the package at their leisure, but were not allowed to open the package or to taste the contents.

The first question was numbered 1.1. For the familiar liquorice products, the participants were asked how often they bought the product for either themselves or others on a scale from 1 ('Never touch it' / *Rør det aldrig*) to 9 ('Several times a day' / *Flere gange daglig*). For the new sandwich rye bread products, on the other hand, the participants were asked how often they had tried the product on a scale from 1 ('No, never' / *Nej, aldrig*) to 9 ('Yes, buy it often' / *Ja, køber det ofte*). For Question 1.2, the participants were asked how much they liked the given product on a scale from 1 ('No way' / *Overhovedet ikke*) to 9 ('Ingenious invention!' / *Genial opfindelse!*). For Questions 2 and 3 respectively, the participants were asked whether health or some additional factors were important to them when purchasing the product in question, and, if it was assumed that health *was* an important factor, then which product would they choose to buy and why. For both of these questions, we recorded written responses in order to obtain a better idea of the types of criteria spontaneously used by consumers.

Part 3: Assessing the level of knowledge regarding food and food-related issues

In the third and final part of the pilot study, the participants were asked to fill out a questionnaire in order to test their general knowledge of food and food-related issues. This questionnaire was developed as a generic tool for assessing consumer knowledge levels in combination with a series of experimental investigations into the misleadingness of hazards of individual food labelling solution, among which the present study is one (Selsøe Sørensen et al., 2013).

The questionnaire contains 45 factual questions and 15 questions relating to the recognition of signpost labels. The 45 factual questions were selected on the following four grounds: first, that they represented a broad range of common food products and categories; second, that they represented a wide selection of those types of labelling elements which commonly cause consumers to be misled; third, that they did not assume expert knowledge about such matters as nutrition and food law; and fourth, that they leant themselves to

creating three possible answers which would all seem plausible to participants who did not know the correct answer beforehand. The multiple choice model was chosen so that the analysis of the participants' answers would not rely too much on the experimenter's interpretations. The 15 signpost labels were selected from those labels most commonly found on Danish food packages: for example, the ecological logo and the recycling logo. In this case, a version of the free response model was chosen, as otherwise it would have been too easy for the participants to guess the correct answers. There were three options to choose from: I do not know the label, I know the label but I cannot say what it stands for, and I know the label and it stands for [insert answer].

Study 1: The 'big picture' / investigating preference consciousness

The first study concerned more general measures of the decision-making process in a purchasing situation and focused on the e-shopping paradigm described above. What can be learned about consumers' shopping behaviour in situations with enhanced preference consciousness (as opposed to more 'free' shopping trials)? And, more generally, what sort of information on online decoding and decision-making processes is our setup able to deliver?

Research questions

1. *On average, how much time do participants spend looking at a shelf of three food products in an e-shopping environment? Is it close to the 8-second estimate cited by other researchers for in-store shopping?* It is a widespread observation that during routine shopping customers spend only a few seconds looking at each food package (e.g., Hoyer, 1984; Pieters & Warlop, 1999; Clement, 2007; Fasolo, Carmeci, & Misuraca, 2009; Food Standards Agency, 2010).
2. *On average, how many times do participants zoom and turn those three food products?* It is also a widespread observation that during routine shopping customers rarely look at the backside of the packaging (ibid.).
3. *Do participants tend to purchase the product that they zoom and turn most frequently?* There seems to be some truth to the general marketing wisdom that 'what you see is what you buy' (e.g., Mormann et al., 2012).

4. *Do participants tend to purchase the product presented in the centre of the shelf; i.e., is there a 'central tendency'?*
5. *Do the more informed participants (re. the questionnaire) zoom and turn the packages more frequently and for longer durations?*
6. *Do the more health conscious participants zoom and turn the packages more frequently and for longer durations than those prioritizing taste or price?*

Results and analysis

1. On average, the participants spent 10.6 seconds looking at the shelf display (a number comparable to the 8-second estimate cited by other researchers) and 21.0 seconds on the entire transaction (including the zoom, turn, and buy displays).
2. On average, the participants zoomed the products 1.16 times and turned the products 0.63 times.
3. On average, the participants zoomed the chosen product more frequently than the two rejected products (0.53 vs. 0.32), lending support to the 'what you see is what you buy' hypothesis. On average, the participants also turned the chosen product more frequently than the two rejected products (0.26 vs. 0.19).
4. There was no apparent central tendency: the participants chose the right-hand product most frequently (35.9 %), followed by the central product (33.3 %) and the left-hand product (30.8 %).
5. There was no strong evidence that the more informed participants tended to zoom and turn the packages more frequently and for longer durations. The data does suggest, however, that the more informed participants tended to rate the factor of health as playing a less important role in their purchasing decisions ($r = -0.189, p < 0.10$).
6. For the question as to whether the more health conscious participants zoom and turn the packages more frequently and for longer durations, there were some weak-to-medium correlations. The more health conscious participants tended to turn the packages more frequently and for longer durations ($r = 0.213, p < 0.05$; $r = 0.241, p < 0.05$). There was also a slight tendency for those participants to zoom the packages more frequently and for longer durations ($r = 0.130, p = 0.201$; $r = 0.176, p < 0.10$).

Study 2: Can ‘being misled’ be replicated and measured online? *The case of factually correct low-fat claims*

The legal definition of ‘being misled’ is to have an incorrect expectation which leads one to make a purchasing decision that one would not have made otherwise (Unfair Commercial Practices Directive; 2005/29/EC). Lawyers, authorities, and courts assess this on the basis of common-sense judgments of likeliness. The goal of the second study was to ascertain whether or not such criteria can be operationalized so that one can actually ‘see it happening’. We focused on numerical low-fat claims of the types ‘only 3% fat’ (no explicit comparison), ‘30% less fat’ (non-specified comparison), and ‘3% fat’ (integrated in brand logo). Whether or not such claims are capable of making consumers believe that the product contains less fat than the alternatives on the shelf (with an equivalent fat content) is subject to debate in actual cases on misleading labelling (Smith et al., 2009).

In this study, we will not go into the various arguments and explanations surrounding this issue, but simply see if a misleading effect can be observed for at least some products and for at least some consumers. We adopted the working definition that the consumer has been misled IFF the following three conditions have been met: (1) the consumer chooses a product with such a claim in preference to alternatives which contain the same or a lesser amount of fat; (2) (s)he afterwards declares that healthiness was important to his/her choice; and (3) (s)he points out ‘low fat content’ as (one of) the reasons for seeing the product as more healthy.

Stimuli

The stimuli comprised three sets of cold meat products: smoked pork (*hamburgerryg*), liver paste (*leverpostej*), and boiled ham (*kogt skinke*). In each set, one product (A) carried one of the three sub-types of claims mentioned above. The two remaining products (B and C) carried no such claims. The products were all authentic brands and available on the Danish market at the time of testing. The prices in the setup were close to real-life prices (which vary to a large degree over time and between stores), so that products A and B had the same price and product C was approximately one-third cheaper.

Procedure

The procedure comprised all three stages of the e-shopping paradigm: namely, the shopping trip itself; rating the importance of price, expected taste, and relative health; and elaborating on the importance of health. For the latter, the participants were asked to elaborate on their purchasing decisions only for those products for which they had rated the factor of health as being relatively high in comparison with both price and expected taste (according to the two conditions described above).

Research questions

1. *For the 12 food products on the shopping list, which category products are purchased most frequently: A's, B's, or C's?*
2. *For those same products, which category products are zoomed and turned most frequently: A's, B's, or C's?*
3. *For the target products (hamburgerryg, leverpostej, and skinke), do those participants who rate health most highly tend to choose the category A products? And do they tend to do so because the product has 'lower fat content' and the product package has 'highlighted words and figures'?*
4. *For the target products, do those participants who rate expected taste most highly tend to choose the category B products?*
5. *For the target products, do those participants who rate price most highly tend to choose the category C products?*

Results and analysis

1. For the 12 food products on the shopping list, the category C products were purchased most frequently (40.3%), followed by the A products (31.6%) and the B products (28.1%).
2. On average, the participants zoomed and turned the category B products most frequently (zooms = 1.31, turns = 0.68), followed by the A products (zooms = 1.13, turns = 0.59) and the C products (zooms = 0.92, turns = 0.49).
3. Those participants who rated health most highly tended to choose the category A products for the target products hamburgerryg ($r = -0.327$, $p < 0.01$) and skinke ($r = -0.323$, $p <$

0.01), but not for the target product leverpostej ($r = -0.030$, $p = 0.768$). The numbers of participants who both rated health most highly *and* chose the ‘lower fat content’ option are cited in Table 1 below. According to the working definition of misleadingness cited above, these participants can be said to have been misled. The question remains as to whether the number (or proportion) of participants who are classified as ‘being misled’ is within acceptable limits. This is an issue to be addressed and discussed further in the future.

4. Those participants who rated taste most highly tended to choose the category B products for all three target products: hamburgerryg ($r = -0.294$, $p < 0.01$), leverpostej ($r = -0.188$, $p < 0.10$), and skinke ($r = -0.385$, $p < 0.001$).
5. The strongest correlations were for price. Those participants who rated price most highly tended to choose the category C products for all three target products: hamburgerryg ($r = -0.676$, $p < 0.001$), leverpostej ($r = -0.476$, $p < 0.001$), and skinke ($r = -0.679$, $p < 0.001$).

Table 1

Hamburgerryg						
Correlation	-0.327					
Sig.	0.001					
Chose A	28	out of	99	=	28.3	%
Qualified	12	out of	28	=	42.9	%
Chose low fat option	6	out of	12	=	50.0	%
Leverpostej						
Correlation	-0.030					
Sig.	0.768					
Chose A	42	out of	99	=	42.4	%
Qualified	10	out of	42	=	23.8	%
Chose low fat option	10	out of	10	=	100.0	%
Skinke						
Correlation	-0.323					
Sig.	0.001					
Chose A	28	out of	99	=	28.3	%
Qualified	14	out of	28	=	50.0	%
Chose low fat option	7	out of	14	=	50.0	%

Study 3a: Limits to consumer understanding of subtle health and nutrition messages: A matter of attention or (lack of) knowledge? *The case of healthi(er) candy*

Although many products carry nutrition and health claims (NHCs), many consumers display an insufficient understanding of what exactly makes those products more healthy (Roe, Levy, & Derby, 1999; Williams, 2005; Shandon & Wansink, 2006). This limits the usefulness of nutrition and health information when it comes to the making of more ‘intelligent’ choices. The key questions are: Is this because consumers do not pay sufficient attention to the packaging surrounding such products? Or is it because the relevant information is so subtle and/or complex that consumers do not have the knowledge necessary to comprehend and make use of it?

Case study: Candy products such as wine gums and liquorice are generally considered to be unhealthy. The increased societal focus on health issues, however, has led some manufacturers to develop ‘less unhealthy’ alternatives. One strategy employed by manufacturers can be described as ‘more of the good stuff’ (e.g., including fruit juices and natural liquorice root) as illustrated by the products of the candy manufacturer Katjes. Another strategy can be described as ‘less of the bad stuff’ (e.g., reducing sugar and calories) as illustrated by the products of Toms. A third strategy can be thought of as a ‘hybrid’ of the two, as illustrated by the products of Malaco. We tested consumer responses to these three products using first the e-shopping paradigm and then the additional ‘health detective’ paradigm in order to enhance the consumers’ preference consciousness even further.

Part 1: E-shopping trip paradigm

In the first part of the study, we used wine gum products. We wished to compare consumer responses to the two most different variants of ‘less unhealthy’ candy mentioned above (Katjes versus Toms) in contrast to a popular mainstream product not claiming to be healthy (Haribo). The rationale was that this would give us information both about the degree to which consumers were interested in the ‘less unhealthy’ variants of candy at all (and whether healthiness was a factor in their purchasing decision) and about the possible differences in their preferences for and evaluations of the two alternative ‘ways of being’ less unhealthy illustrated by Katjes and Toms. The prices were approximated to fluctuating

market prices, with the same price set for products A and B and a somewhat lower price set for product C.

Research questions and preliminary results

1. *What percentage of consumers chose to buy product A (Toms), product B (Katjes), and product C (Haribo)?* Out of 99 consumers, 40.4% chose to buy product A (Toms), 19.2% product B (Katjes), and 40.4% product C (Haribo).
2. *Did the consumers who chose products A and B (Toms and Katjes) rate health higher than the consumers who chose product C (Haribo)?* The consumers who chose products A and B (Toms and Katjes) tended to rate health higher (mean score 5.0) than the consumers who chose product C (Haribo; mean score 2.2).
3. *Did the consumers who chose product C (Haribo) rate price higher than the consumers who chose products A and B (Toms and Katjes)?* The consumers who chose product C (Haribo) tended to rate price higher (mean score 4.9) than the consumers who chose products A and B (Toms and Katjes; mean score 2.4).
4. *Did the consumers who chose product C (Haribo) rate taste higher than the consumers who chose products A and B (Toms and Katjes)?* The consumers who chose product C (Haribo) did not rate taste higher (mean score 7.0) than the consumers who chose products A and B (Toms and Katjes; mean score 7.1).
5. *Did the consumers who chose products A or B zoom and turn the packages more frequently and for longer durations (possibly in search for nutrition and health information) than the consumers who chose product C?* The consumers who chose products A or B turned the packages for longer durations (mean duration 1629 ms) than the consumers who chose product C (mean duration 1298 ms).
6. *Was there any relationship between knowledge level and preference for products A, B, and C?* The relationship between knowledge level and preference for products A, B, and C was negligible, with the consumers who chose products A or B obtaining an average score of 56.9% on the food knowledge questionnaire, and the consumers who chose product C obtaining an average score of 53.0%.

Part 2: 'Health detective' paradigm

In the second part of the study, we used liquorice rather than wine gum products in order to reduce the interference between the two tasks. The two 'less unhealthy' alternatives from Part 1 (Katjes and Toms) were included, however, in the shape of 'sister' products building on the same philosophies. Since the explicit focus was on alternative ways of making candy products less unhealthy, we replaced the mainstream Haribo product with a hybrid variant of 'less unhealthy' candy produced by Malaco. This time, the prices were not an issue.

Research questions

- 1. What is the full array of criteria verbalized as being relevant for the making of healthiness judgments regarding the product of liquorice in general?*
- 2. Do the consumers expressing a low, medium, and high preference for health tend to cite different criteria (re. Question 2)?*
- 3. Were there any differences in the criteria used for motivating the specific choice of the Katjes, Toms, and Malaco products (re. Question 3)?*
- 4. Which 'technicalities' in terms of nutrition and health information are consumers able to grasp and relate to (e.g., that reduced sugar content does not always mean reduced calories) and which 'technicalities' tend to go unnoticed (e.g., that fibres play a dual role as both nutrients and stabilizers)?*
- 5. To what extent do health-unrelated criteria such as brand loyalty play a role (even if the consumers were instructed to focus on healthiness)?*

Observations

The main results are visualised and summarised in Figures 2 to 4. The majority of participants (70%) did not care about health when choosing the liquorice products (re. Question 2). Nevertheless, the majority of participants, regardless of health-orientation (50%), identified the Toms product as the most healthy if they had to choose the healthiest option (re. Question 3). What is interesting, however, is that the preference for the Toms product was less pronounced for those participants who did care somewhat (= 2) or very

much (= 3) about health. This may indicate that those participants had more subtle and/or more numerous reasons for regarding a candy product as healthy than, say, simply looking at the number of calories. The assumption that consumers have different reasons for seeing the Toms, Malaco, and Katjes products as healthy is further supported by the very different ‘green’ (health-related) criteria mentioned for the respective products (re. Question 3).

Another interesting, though expectable, observation (relating to Question 2) is that those participants who rated health as high (= 3) spontaneously mentioned ‘green’ (health-related) criteria more, and ‘orange’ (non-health-related) criteria less, and vice versa for those who rated health low (= 1), while the ‘somewhat’ group (= 2) was somewhere in between.

Study 3b: Limits to consumer understanding of subtle health and nutrition messages: A matter of attention or (brand) loyalty? *The case of rye sandwich bread*

Although some product types are not considered to be particularly unhealthy, they come in both more and less healthy variants. When competing for the segment of consumers who demand a high level of healthiness, manufacturers sometimes come up with products which are ‘extra healthy’ in much the same way. The key question is: are consumers – even the more health-oriented – able to detect the subtle between-brand differences in nutrition and health value, or do consumers tend to prefer these products ‘en bloc’ over standard ones and let their final choice depend on non-health-related parameters such as brand loyalty or looks, taste, and feel. Addressing this question may help us to assess the scope and limits of nutrition and health claims in supporting intelligent and healthier choices.

Case study: A good example of such a product type is a new kind of sandwich bread made with rye, fibres, and whole grains. In Denmark, this product type has been launched more or less in parallel by the manufacturers Schulstad, Kohberg, and Pågan. We tested consumer responses to three corresponding products using first the e-shopping paradigm and then the additional ‘health detective’ paradigm in order to enhance the consumers’ preference consciousness even further.

Part 1: E-shopping trip paradigm

The first part of the study was integrated into the e-shopping trip setup. Here, we wished to learn more about possible differences in the behaviour and choices of more versus less health-conscious consumers when presented with a choice of ‘extra healthy’ alternatives only. For this reason, we did not include a more standard (‘less healthy’) alternative such as soft white sandwich bread. Because the products had an equal status in terms of health, they were all given an equivalent price.

Research questions and preliminary results

1. *What percentage of consumers chose to buy product A (Schulstad), product B (Kohberg), and product C (Pågen)?* Out of 99 consumers, 56.6% chose to buy product A (Schulstad), 31.3% product B (Kohberg), and 12.1% product C (Pågen).
2. *Were the three products A, B, and C (Schulstad, Kohberg, and Pågen) equivalent in terms of ratings of the importance of health?* The three products were roughly equivalent: the mean health ratings for Schulstad, Kohberg, and Pågen were 5.8, 5.3, and 4.8 respectively.
3. *Were the three products A, B, and C (Schulstad, Kohberg, and Pågen) equivalent in terms of ratings of the importance of taste?* The three products were roughly equivalent: the mean taste ratings for Schulstad, Kohberg, and Pågen were 7.2, 7.2, and 7.9 respectively.
4. *Were the three products A, B, and C (Schulstad, Kohberg, and Pågen) equivalent in terms of ratings of the importance of price?* The three products were roughly equivalent: the mean price ratings for Schulstad, Kohberg, and Pågen were 2.4, 2.6, and 2.4 respectively.
5. *Did the consumers who chose products A or B zoom and turn the packages more frequently and for longer durations (possibly in search for nutrition and health information) than the consumers who chose product C?*
6. *Was there any relationship between knowledge level and preference for products A, B, and C?* The consumers who chose product A obtained an average score of 58.3% on the food knowledge questionnaire, the consumers who chose product B obtained an average score of 53.0%, and the consumers who chose product C obtained an average score of 47.7%.

Part 2: 'Health detective' paradigm

The second part of the study employed the 'health detective' paradigm. Here, we wished to ascertain whether the participants would refer to those subtle details (e.g., level of fibre content) which differentiated the three products or whether they would rely on heuristic parameters such as brand loyalty or looks, taste, and feel. As before, the prices of the three products were not an issue.

Research questions

The research questions for the respective sandwich rye bread products were the same as for the respective liquorice products.

Observations

The main results are visualised and summarised in Figures 5 to 7. In contrast to the liquorice products, the majority of participants (86%) *did* care about health when choosing the sandwich rye bread products (re. Question 2). In this case, there was a clear preference for one product, namely Schulstad (68%), across all three health-oriented groups (re. Question 3). A possible reason for this is that the three products were so close in terms of healthiness that other factors such as brand loyalty decided the matter. Still, the 'green' (health-related) reasons given for choosing between the three products were different which indicates that many consumers still made subtle distinctions (re. Question 3).

Another interesting observation (relating to Question 2) is that the 'green' (health-related) criteria become more numerous (more differentiated) when the participants rate health more highly; that is, those participants not only think about the issue of health more, they also go into it in more depth. The picture is in some respects similar, but not identical, to that for the liquorice products.

(a)

Figure 1

(b)

Vingummi



14^{ss}



14^{ss}



12^{ss}



14^{ss}



14^{ss}



12^{ss}

(c)

(d)



14^{ss}



14^{ss}



12^{ss}

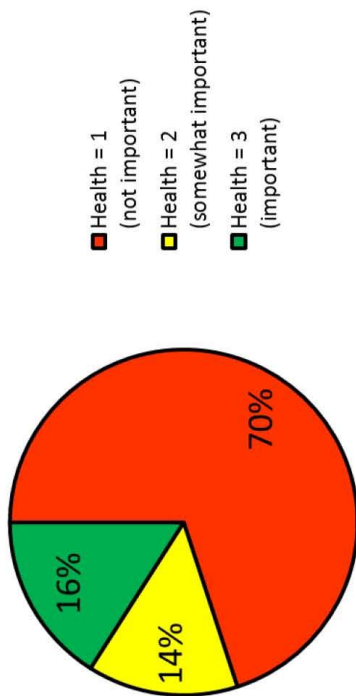
Læg i indkøbskurv?



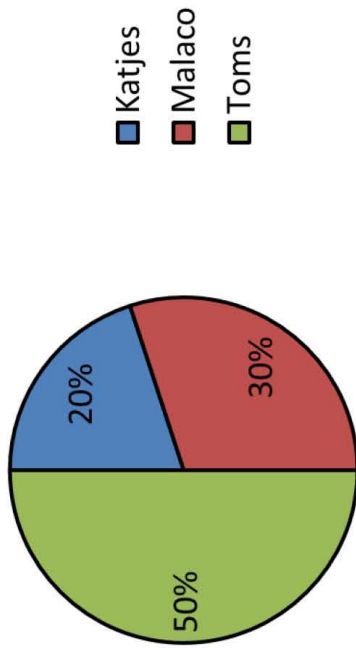
14^{ss}

Figure 2

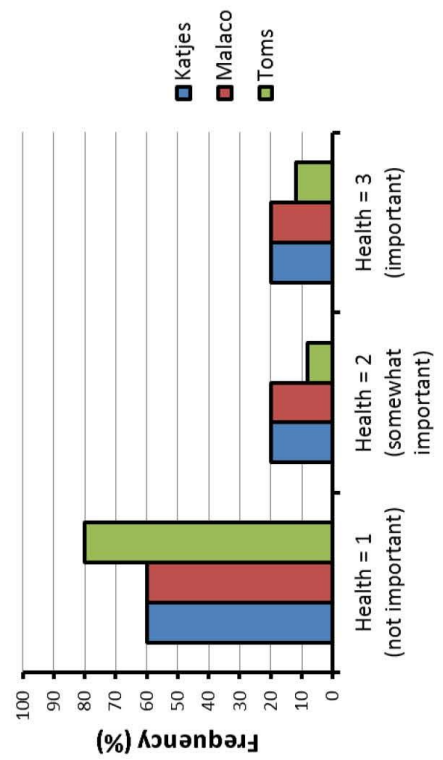
Lakrids



Lakrids



Lakrids



Lakrids, Q1

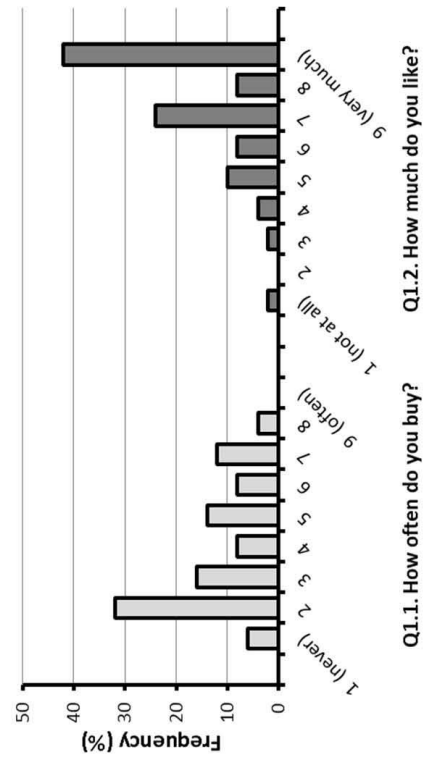
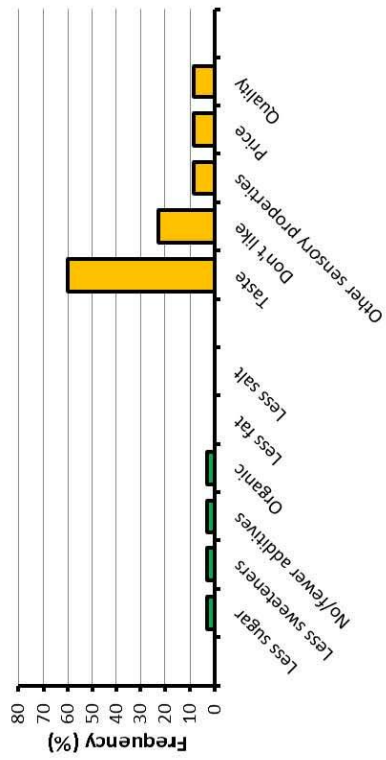
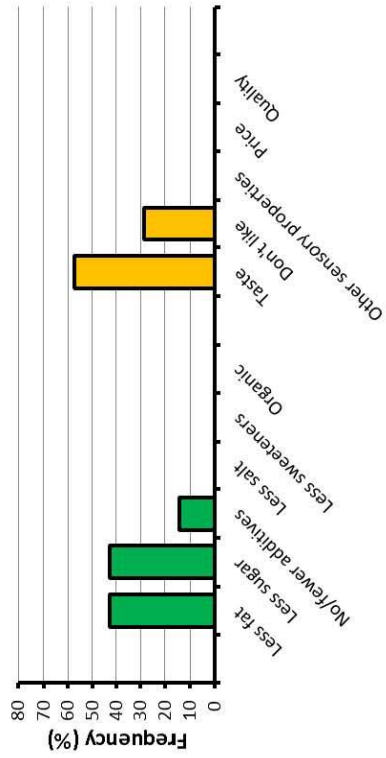


Figure 3

Lakrids, Q2:
Health = 1 (not important)



Lakrids, Q2:
Health = 2 (somewhat important)



Lakrids, Q2:
Health = 3 (important)

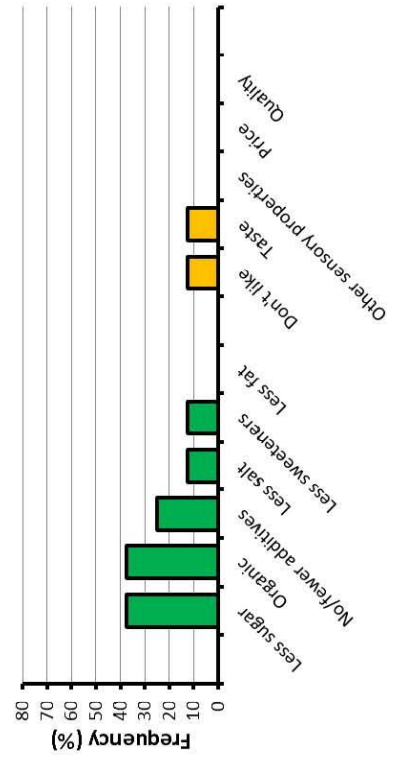
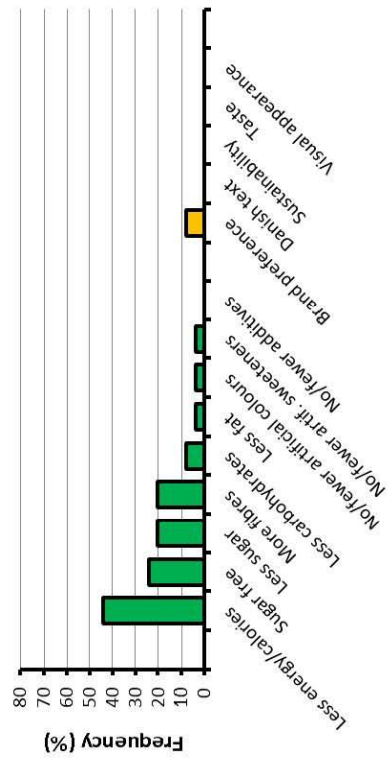
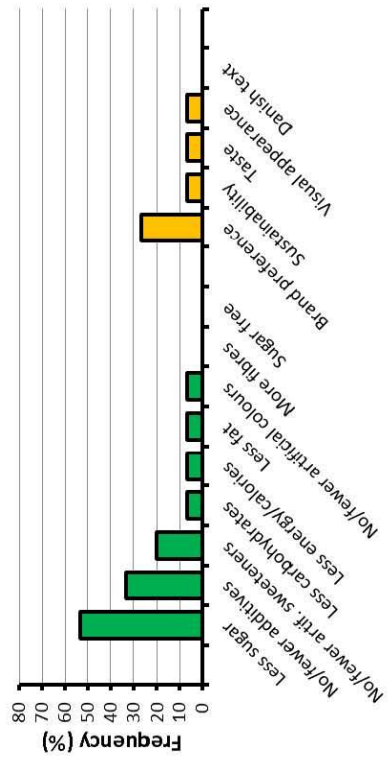


Figure 4

**Lakrids, Q3:
Toms**



**Lakrids, Q3:
Malaco**



**Lakrids, Q3:
Katjes**

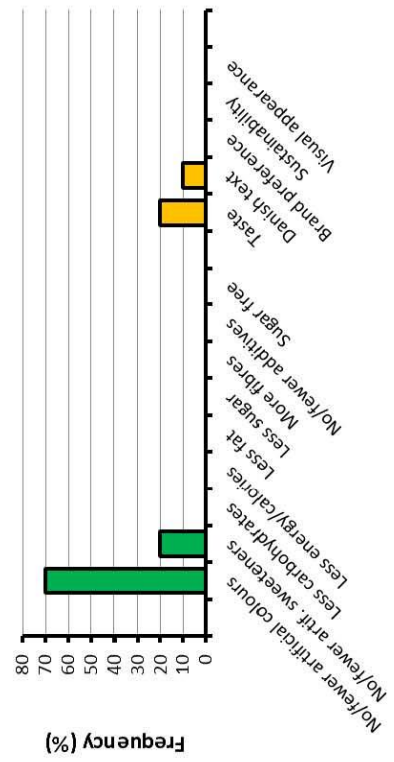
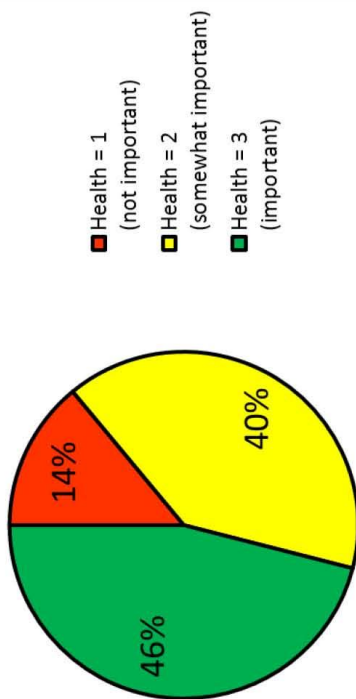
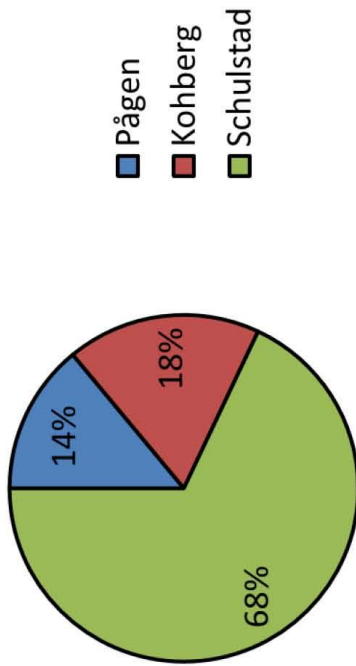


Figure 5

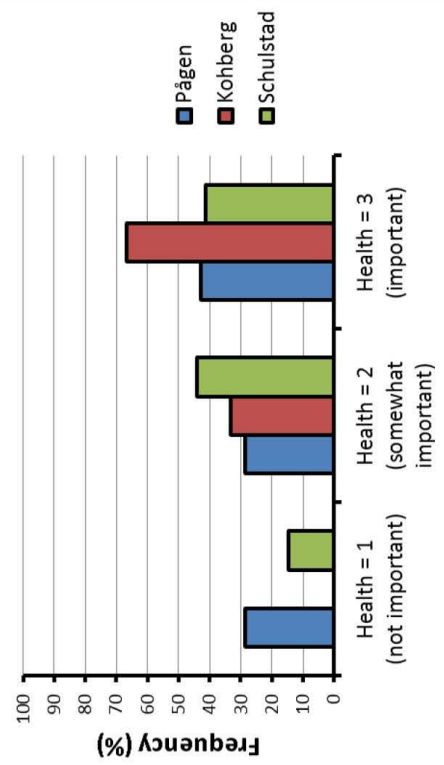
Sandwich-rugbrød



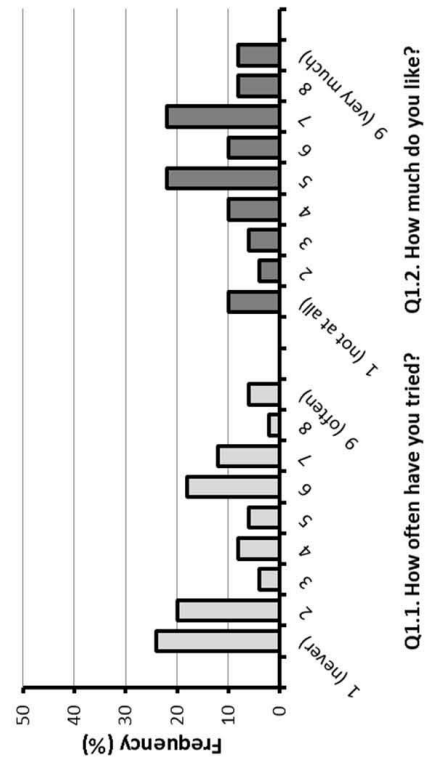
Sandwich-rugbrød

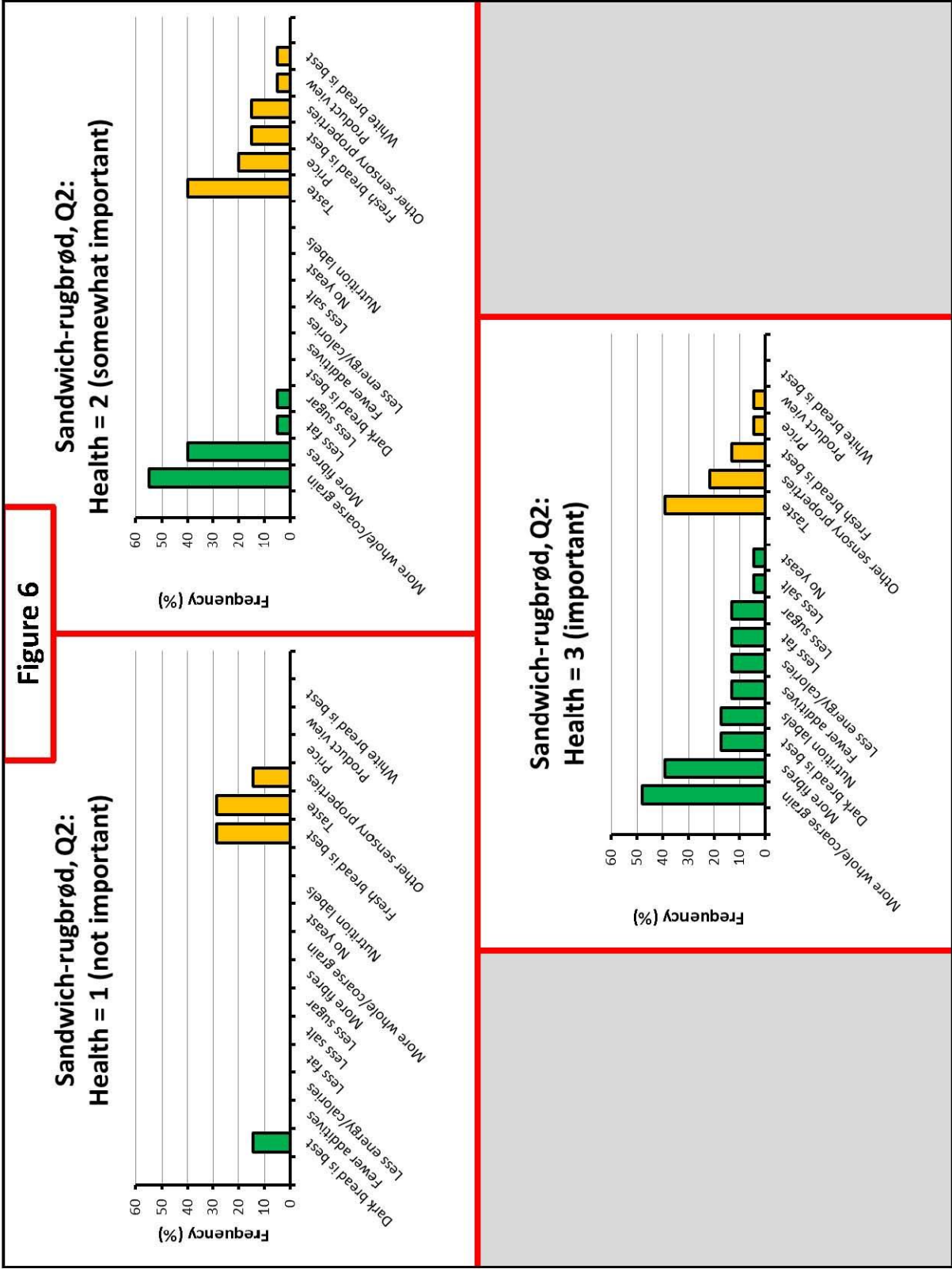


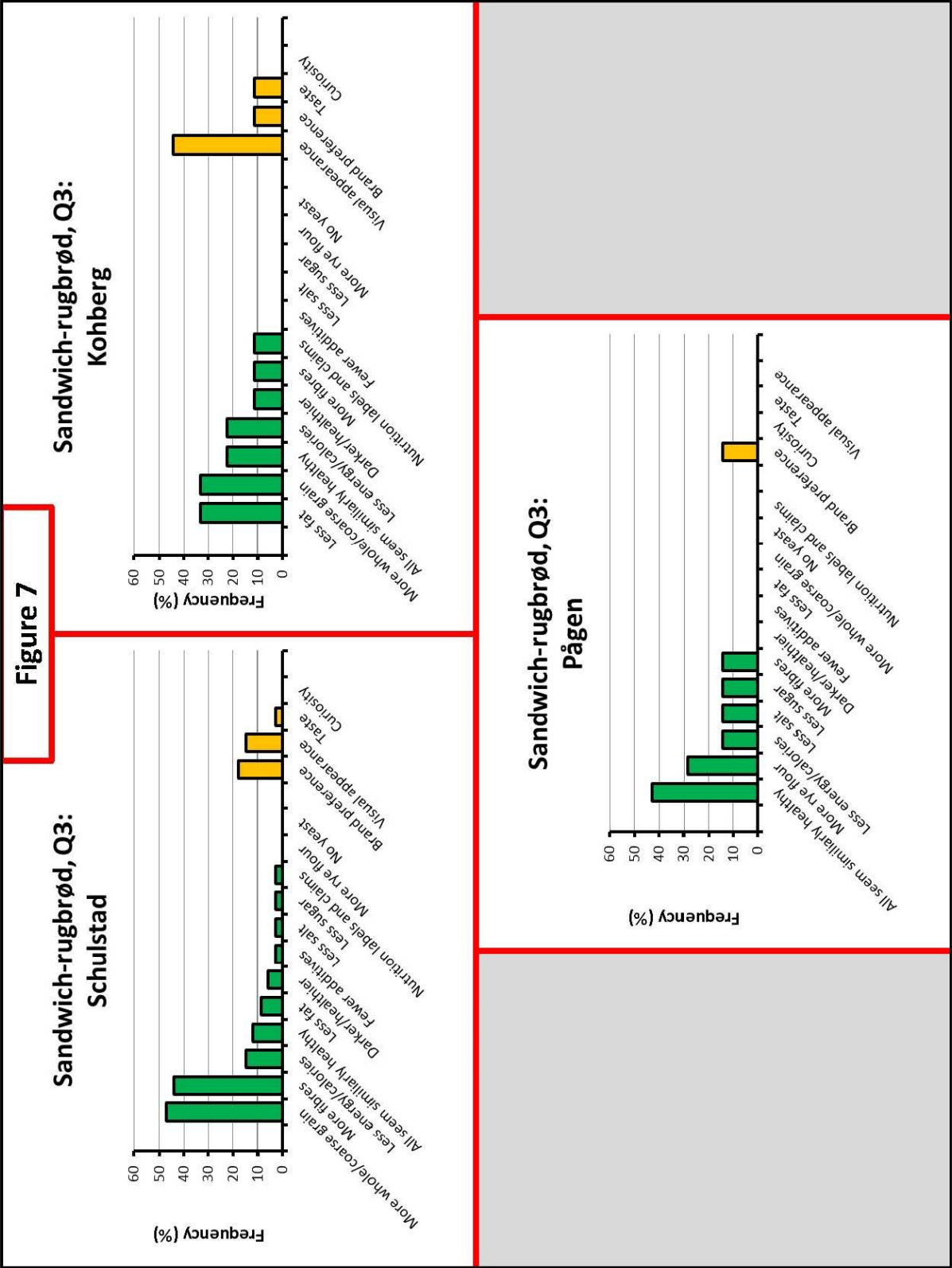
Sandwich-rugbrød



Sandwich-rugbrød, Q1







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