

Impact of health claims in prebiotic enriched breads on purchase intent, emotional response and product liking

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1 Impact of health claims in prebiotic enriched breads
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3 liking

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Abstract:

The impact of health claims on purchase intent, emotional response and liking has never been previously reported. In this study prebiotic enriched bread was used as a model functional food. Purchase intent, emotional response and liking were investigated in 3 phases: 1: focus groups were used to gauge consumer perception of health claims and functional foods. 2: the impact of health claims on purchase intent and emotional responses were measured using an online survey (n = 122) and 3: hedonic ratings on bread rolls presented with or without any associated claims were obtained (n = 100). A cluster analysis of the purchase intent data identified two clusters of consumers who were either receptive or non-receptive to health claims. Receptive and non-receptive consumers significantly differed in the emotions they reported with respect to the claims. The hedonic ratings did not significantly differ between the breads tasted with or without health claims.

INTRODUCTION

The market for functional foods is expanding rapidly (Siró et al. 2008), and the definition of functional food has been the subject of a number of revisions. However, the idea that it provides a health benefit beyond that of a regular food product is well established (Diplock et al. 1999; Doyon and Labrecque 2008). These health benefits are often communicated to consumers through health claims which have been described as a "short-cut cue" to prompt the consumer to further check the labelling (Hodgkins et al. 2012).

The nature of the claim used (enhanced nutrient content, health benefit or reduced disease risk) has been investigated with mixed findings. Verbeke, Scholderer and Lähteenmäki (2009) reported that reduced disease risk claims were not perceived as positively as health or nutrition claims while van Kleef, van Trijp and Luning (2005) found that reduced disease risk claims were more attractive to consumers than psychological or appearance related claims. This was further supported by van Trijp and van der Lans (2007) who showed that claims related to "infections" scored significantly higher than "weight" which in turn obtained higher scores than "stress" or "concentration" claims. Ares, Giménez and Gámbaro (2009) did not observe any difference in "healthiness" or "willingness to try" between "enhanced function" and "reduced disease risk" claims although both resulted in higher scores than the control (no claim). It appears likely that interactions between the product and the claim exist: Lähteenmäki et al. (2010) reported a strong active ingredient \times claim type interaction on "healthiness" while Ares and Gámbaro (2007) found that both "healthiness" and "willingness to try" were higher when the functional ingredient was inherent to the original product. Thus, the success of a functional food concept may be partially dependent on the congruency between the product, the active ingredient and the claim. In turn, perceived congruency may be enhanced by familiarity with the active ingredient and health claims which has been suggested to impact on perceived healthiness (Lähteenmäki et al., 2010).

Over the last decade, a number of authors have researched different segments of the population in order to identify consumers who are more likely to be receptive to

functional foods and health claims. The parameters of interest most often studied were age and gender. While some studies have reported that older (Ares et al. 2009; Baglione et al. 2012) and female (Ares et al. 2009; Baglione et al. 2012; Childs and Poryzees, 1997) consumers were more likely to consume functional foods; others have not shown any trend with respect to socio-demographic parameters (Sabbe et al. 2009; Verbeke 2005; Verbeke 2006; Verbeke et al. 2009). Gender \times type of functional food interactions were reported (Ares and Gámbaro, 2007) suggesting that different product categories may appeal more to one gender or the other. Overall, recent reviews of the literature on functional food consumers concluded that it was not possible to predict the parameters (age, gender, education) which may impact on functional food consumption (Lähteenmäki 2013; Ozen et al. 2012); this is presumably due to the numerous interactions reported. In the absence of obvious demographic factors to rationalise consumer perception of health claims, themes such as price (Lalor et al. 2011a), the consumer's health or the health of other family members (Dean et al. 2012; van Kleef et al. 2005) have been explored and there is evidence that reduced disease risk claims may appeal more to consumers directly affected by the disease. Under these circumstances, health claims may trigger an emotional response impacting on purchase intent.

The role of emotions in marketing has been researched for some time (Bagozzi, et al. 1999) but the focus on food and emotions is more recent. The interaction between food and emotions is complex and the mechanisms by which emotions result in; or are elicited by; eating have been well described, highlighting the impact of sensory, physiology and psychology on emotions related to food (Gibson 2006). In relation to the product itself, sensory attributes have been identified as one of five potential sources of emotions in the food experience (Desmet and Schifferstein 2008). It has been suggested that hedonic ratings alone may not be enough to discriminate between equally liked products; and emotions elicited by the product itself need investigating in an effort to fully understand the consumer's experience and align the product with the brand. This has resulted in a number of research outputs on emotions elicited by food and food names (Cardello et al. 2012) or unbranded food products (Manzocco et al. 2013; Thomson et al. 2010). The emotions elicited by the overall buying, preparing and eating

experience have also been studied (Schifferstein et al. 2013) acknowledging the role of packaging in generating emotions linked to food consumption.

The nutritional information, typically found on the packaging, has often been reported to impact negatively on consumers' expectations (Carrillo et al. 2012; Lähteenmäki et al. 2010; Raghunathan et al. 2006; Verbeke 2006). However, taste is widely acknowledged to be the main driver for the overall consumer experience (Pothoulaki and Chryssochoidis 2009). Despite this, there appears to be relatively few studies directly investigating the impact of health claims on product liking. Miele et al. (2010) found no impact of nutrition claims for walnut oil enriched mayonnaise while Sabbe et al. (2009) and Vidigal, et al. (2011) reported a significant increase in overall liking of unfamiliar functional fruit juices when nutrition information was supplied.

In the light of the current literature, it is clear that there are conflicting reports around both the impact of the nature of the claim and the profile of a "typical" functional food consumer. This is very likely due to the fact that factors such as familiarity with the bioactive element, perceived healthiness of the base product, congruency between the base product, the bioactive element and the claim as well as relevance to self are all likely to play an important role in consumer perception and those need to be investigated on a case-by-case basis. It is also clear that emotions have a strong impact on both purchasing and the overall food experience. Despite, this, to the best of our knowledge, the impact of health claims; which form an integral part of the food experience; on emotions has never been reported.

This study sought to investigate consumer' purchase intent, emotional response and liking of a model functional food associated with different claims.

Prebiotic enriched breads were chosen as a recent review by Morris and Morris (2012) indicated that a supplementation of up to 5 % inulin should not result in significantly less acceptable bread. There is evidence that, if consumed on a regular basis, inulin can promote a range of health benefits such as prevention of colorectal cancer (Taper and Roberfroid 1999; Pool-Zobel 2005; Pool-Zobel and Sauer 2007; Asad et al. 2008);

increased mineral absorption (Roberfroid 2000; Hawthorne and Abrams 2008; Rastall 2010); improved immune response (Macfarlane et al. 2007; Seifert and Watzl 2008); satiety and weight management (Weickert et al. 2006; Willis et al. 2009). These putative health benefits were used in this study as the basis for different health claims.

MATERIALS AND METHODS

Focus groups:

It has been hypothesised that nutrition knowledge and understanding may impact on the perception of health claims and emotional responses; therefore two focus groups were set up for this explorative work:

A consumer group: the participants (n = 12, 9 females, aged 20 to 65 years) were recruited via advertisement and were not affiliated to a nutrition/food related profession or course.

A nutrition group: final year and master students studying towards a nutrition based degree (n = 8, 6 females, aged 22 to 45 years) were recruited during lectures and seminars.

All participants were regular bread eaters. Each participant signed an informed consent sheet and agreed to being recorded before taking part in study. The focus groups were moderated by two researchers, one of which was an experienced panel leader. The qualitative data was analysed thematically.

Health claims selection:

The claims investigated were chosen to be representative of the categories identified in the literature: nutritional claim (enhanced nutrient content); health claim (enhanced health benefit); reduced disease risk (prevention) and appearance and to have a credible link to the model functional food under study (see introduction):

1. Nutritional claim: “This product contains added prebiotic”

2. Health claim: “This product contains inulin, which is a type of fibre that can increase satiety” and “This product contains added fibre which could help you feel fuller for longer”

3. Appearance: “This product contains inulin which could aid weight management” and “This product contains inulin, a type of fibre which can support weight loss”

4. Reduced disease risk: “This product contains added inulin, a prebiotic which could help in the prevention of colorectal cancer” and “This product contains added inulin, a prebiotic which could help in the prevention of cancer”

5. Health claim: “This product contains inulin which could help improve mineral absorption”

Impact of health claims on purchase intent and emotional responses:

An online survey (www.esurveypro.com, Outside Software Inc, Bucharest, Romania) was set up to present a picture of white bread together with a different claim on each page (in all cases the image of the bread presented was identical). The claims were worded as follows

1. “White flour bread”. Hereafter referred to as the control claim.

2. “White flour bread, this product contains the prebiotic inulin”. Hereafter referred to as the prebiotic claim.

3. “White flour bread, this product contains added fibre which could help you feel fuller for longer”. Hereafter referred to as the satiety claim.

4. “White flour bread, this product contains inulin, a type of fibre which can support weight loss”. Hereafter referred to as the weight claim.

5. “White flour bread, this product contains added inulin, a prebiotic which could help in the prevention of cancer”. Hereafter referred to as the cancer claim.

6. “White flour bread, this product contains inulin which could help improve mineral absorption”. Hereafter referred to as the minerals claim.

Participants were asked to rate their purchase intent in the form of the question “how likely would you be to buy this bread?” on a scale from 1 (definitely would NOT buy) to 5 (definitely would buy). On the same page, participants were then presented with a check all that applies (CATA) list of 20 emotions and asked to check all the emotions

that applied (see emotion selection section). While CATA scales provide less scope for statistical analysis than Likert scales, they are also less cumbersome for the participant and they have been found to produce similar emotional spaces (Ng et al. 2013). The last page of the questionnaire related to the participant's personal information: age (18-25, 26-35, 36-45, 46-55, 56-65, 66-75, 76-85 and ≥ 86), gender and self-reported nutrition knowledge, ranging from 1 -5 (1: no interest or knowledge whatsoever, 2: basic (I read food labels), 3: Intermediate (I read and understand food labels), 4: Advanced (I use my nutrition/food understanding to make informed decisions about what I eat), 5: Expert (I am a registered nutritionist/I have a degree in food or nutrition). Self-reported nutrition knowledge was used as purchase intent of functional foods and has been previously shown to vary with differing levels of self-reported nutrition knowledge (Baglione et al. 2012).

Emotions selection:

An emotion lexicon specific to health claims was derived from a mixture of existing literature on food related emotions, specifically the EsSense profile method (King and Meiselman 2010) and consumer input (focus groups). This approach was successfully adopted elsewhere (Ferrarini et al. 2010; Rousset et al. 2005). Emotions not listed in the literature but explicitly expressed by participants (*e.g.* annoyed) were added; emotions present in the literature but conspicuously absent from the discussions (*e.g.* wild) were removed. The final list of emotions selected comprised 20 terms: angry, annoyed, anxious, bored, confused, energetic, good, guilty, healthy, helpless, offended, optimistic, patronised, reassured, self-conscious, surprised, threatened, upset, virtuous and worried. Additionally, participants were able to type in any other emotion they felt was relevant, this option was provided to ensure that all the relevant emotions were captured. While "good" and "healthy" are not often considered as emotions per se; "good", as an emotion, was found to discriminate between food products elsewhere (Manzocco et al. 2013) and "feeling healthy" was deemed indicative of an emotional response relevant to health claims.

Participants:

The participants were recruited by e-mail using a bank of consumers who routinely perform commercial sensory work. 141 respondents started the questionnaire and 122 completed it. **Table 1** details the gender, age and self-reported nutrition knowledge of the 122 respondents who completed the survey.

Table 1: Age, gender and self-reported nutrition knowledge of volunteers (n=122) who completed the online survey. * see definitions in Materials and Methods.

Gender	Male	n=37
	Female	n=85
Age	18-25	n=50
	26-35	n=12
	36-45	n=15
	46-55	n=11
	56-65	n=24
	66-75	n=10
	≥ 76	n=0
Self-reported nutrition knowledge*	None	n=2
	Basic	n=26
	Intermediate	n=44
	Advanced	n=39
	Expert	n=11

Hedonic rating – consumer panel:

Based on the survey results in section 3.2 and using the specific criteria of increased purchase intent and high emotional contrast, 3 claims (control, weight and cancer) were selected to investigate the impact of health claims on consumer liking. 100 regular bread eaters were recruited via e-mail to assess the impact of health claims on liking using a 9 point hedonic scale (1: dislike extremely to 9: like extremely). Identical bread rolls (white flour, 60 g) were used for all cases. The control sample was always presented first and the order of the two remaining claims was balanced between the sessions. Claims were read out to the panellists twice as the samples were being distributed.

Statistical analysis:

SPSS v20 (IBM Corporation, Armonk, USA) was used to conduct all statistical analysis. P values lower than 0.05 were considered as significant.

Purchase intents: a 1 way (factor: claims) repeated measures ANOVA with a Bonferroni post-hoc test was used to compare purchase intent from the online survey. A Greenhouse-Geisser correction was applied. In order to investigate the effect of the claim rather than attitude towards the basal product (white bread), the corrected purchase intent was calculated by subtracting the purchase intent score for the control (no claim) from each claim's score.

Cluster membership: a Hierarchical Cluster Analysis (Ward's linkage method, squared Euclidean distance) was performed to identify consumer clusters from the corrected purchase intents of each health claims. Two tailed t-tests were used to compare the corrected purchase intents between clusters for each claim. A reliability test (Cronbach's alpha) was conducted to test the independence of the health claims from one another.

Cluster membership, emotions and participants' characteristics: Pearson's Chi-square were performed on cluster membership, participants' gender, age (collapsed into 3 categories: < 36, 36-55 and \geq 56), reported emotions and self-reported nutrition knowledge (categories collapsed into 3 categories: \leq 2, 3 and \geq 4).

Sensory consumer panel: a 1 way ANOVA (fixed factor: claim) and Tukey's HSD post-hoc test were used to analyse the hedonic consumer data.

RESULTS

Focus groups: three themes emerged from the focus groups:

Nutrition knowledge and trust/distrust of health claims:

The impact of nutrition knowledge and differences between the 2 focus groups were reflected in statements such as "no one will know what inulin is" from the consumer group to comments which reflected an understanding of prebiotics and their function

e.g. “probiotics are bacteria themselves whereas prebiotics are things that make the environment friendlier” from the nutrition group. Participants from the nutrition group understood the claims and the regulatory processes involved in the application to use health claims “companies have to be really careful on the wording they use on packaging because of the whole EU legislation” or “I think if it was scientifically justified by the FSA etc I think a lot of people would be at least intrigued to buy it” but most felt confident they knew how to eat to keep healthy without resorting to functional food “I would much rather buy my five fruit and vegetables a day and know that that is working towards my health”. In contrast, participants from the consumer group expressed confusion “I wouldn’t have a clue” and “would that be a health claim?” The emotional content was sometimes strongly verbalised as in “it would cause confusion and upset if people did not know what it meant”. Participants from the consumer group were more likely to be negative about claims “I am in the category of being dubious of all claims on food labels” or “I would be like, where is the proof?” or “I think it’s important that consumers really understand claims as my grandparents would just buy into anything”. In general, concerns were expressed around the validity of the claim: “I would just be a bit worried about the validity of that statement”.

Price/marketing ploy:

Price was mentioned a number of times, the view that functional foods are pricier was expressed often “they are quite expensive though aren’t they, functional foods. The price would put me off” or “if two products were similar in nutritional content but differed in price I would probably buy the cheaper one at the end of the day”. The price issue was raised more often amongst the consumer group participants and was linked to the concept of marketing scam: “it’s a marketing ploy to put the price up”.

Emotional response/relevance to self:

The responses to claims were often highly emotional. The cancer claim, specifically drew out a lot of personal comments such as: “I would buy it but I don’t know if I would get that anyway” or “I wouldn’t associate myself with that” and generally, the responses to the cancer claim were negative “I think people think they are never going to get it”; “mentioning cancer would put me off, I wouldn’t like it”; “a claim with the word cancer

in would annoy me!"; "claims like that annoy me, it would annoy me. I think to have things about cancer on a food is wrong and emotive for a lot of people". Only 2 participants expressed that they would be likely to buy bread associated with a cancer claim but did not elaborate on why. In contrast, the emotional responses to the weight claim were lighter: "Oh, I think that would sell" or "that would probably be a huge seller", "if you put it in chocolate, I'd try it!"

Summary:

Three main themes emerged, two of them loosely related and centred on trust/distrust of health claims and the marketing techniques used to capture consumers' attention and increase prices. The emotional element was well articulated and often correlated to one's personal health or wellbeing. The impact of nutrition knowledge was only observed in relation to trust/distrust of health claims and the existing mechanisms to validate them; the core emotions in reaction to the claims were very similar in both groups.

Impact of health claims on purchase intent and emotional response - survey data

The purchase intent for inulin enriched white bread presented with different claims is presented in **Table 2**.

Table 2: Average purchase intent and standard deviation (on a scale of 1: definitely would NOT buy to 5: definitely would buy) for bread presented with different claims (n = 122). The letters indicate significantly different average purchase intent ($p < 0.05$).

Claim	Average purchase intent
Control (no information)	2.55 ^a (1.03)
Prebiotic	3.00 ^b (0.92)
Satiety	2.58 ^a (0.99)
Weight	2.93 ^b (1.22)
Cancer	2.89 ^b (1.16)
Minerals	3.11 ^b (0.99)

There was a significant effect of the factor "claim" ($p < 0.001$). Overall, all the claims tended to increase purchase intent when compared to the control. The claims

“prebiotic”, “weight”, “cancer” and “minerals” resulted in a significant increase in purchase intent, although “satiety” did not.

In order to identify segments of population which may respond positively or negatively to specific claims, a hierarchical cluster analysis was carried out on the corrected purchase intent. A two-solution cluster was deemed optimum. **Figure 1** presents the corrected average purchase intents per cluster for each claim. Cluster 1 (n = 90) was not receptive to health claims and, on average, the presence of any claim resulted in a drop in purchase intent compared to the control (no claim). In contrast, cluster 2 (n = 32) was found to be largely receptive to the different claims (with the exception of "satiety") and this resulted in a marked increase in purchase intent compared to the control (no claim).

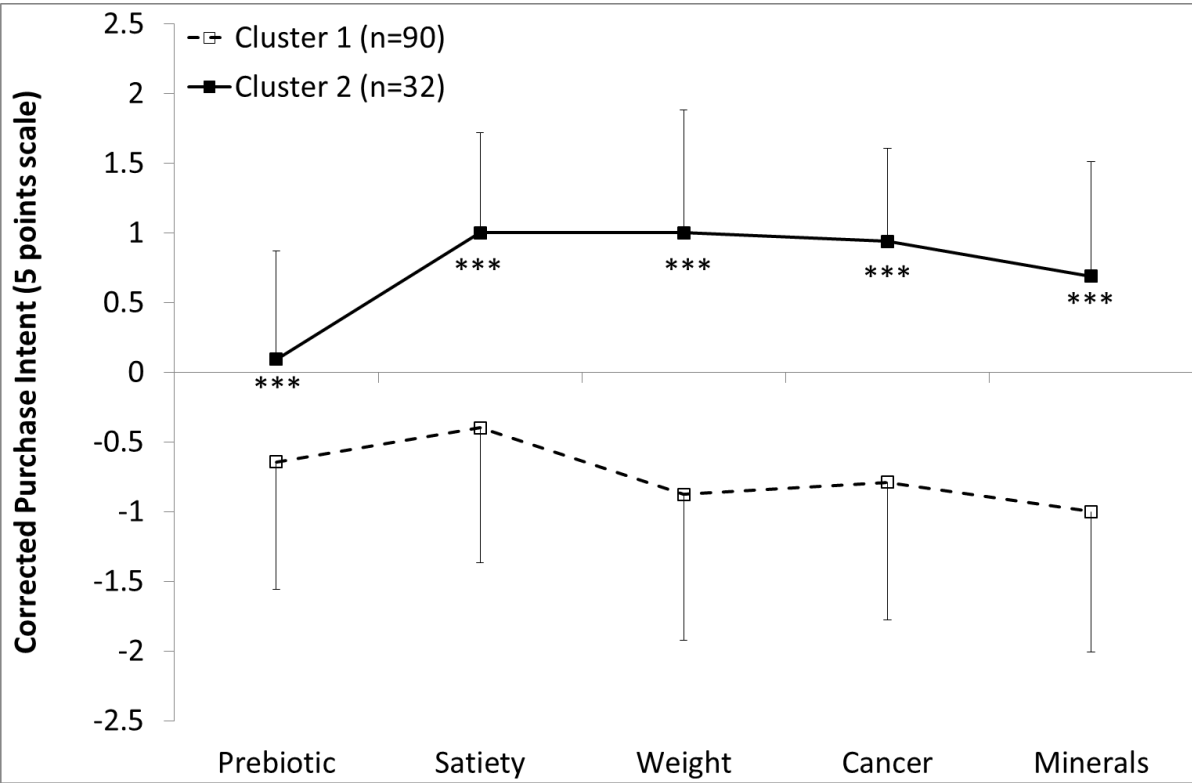


Figure 1: average corrected purchase intent per claim and per cluster. *** indicates that the average corrected purchase intents for clusters 1 and 2 are significantly different (p<0.001) for each claim. Error bars represent + 1 standard deviation (cluster 2) or -1 standard deviation (cluster 1).

The nature of the claim used did not appear to have a major impact on purchase intent, this was confirmed by a reliability test on the corrected purchase intent for all the claims, Cronbach's alpha was 0.888 indicating a high internal reliability (> 0.7) between the claims.

No trend in cluster membership was observed with respect to age ($p = 0.382$), gender ($p = 0.895$) or self-reported nutrition knowledge ($p = 0.385$).

Figures 2 - 7 present the emotions elicited in each cluster by each of the different claims. The figure for the control (no claim) is not presented as the emotions it elicited did not differ significantly between the two clusters. Only the emotions which varied significantly between the clusters at any point are presented.

Cluster 2 reported feeling significantly more "healthy" than cluster 1 ($p = 0.008$) when viewing white bread associated with the prebiotic claim (**Figure 2**).

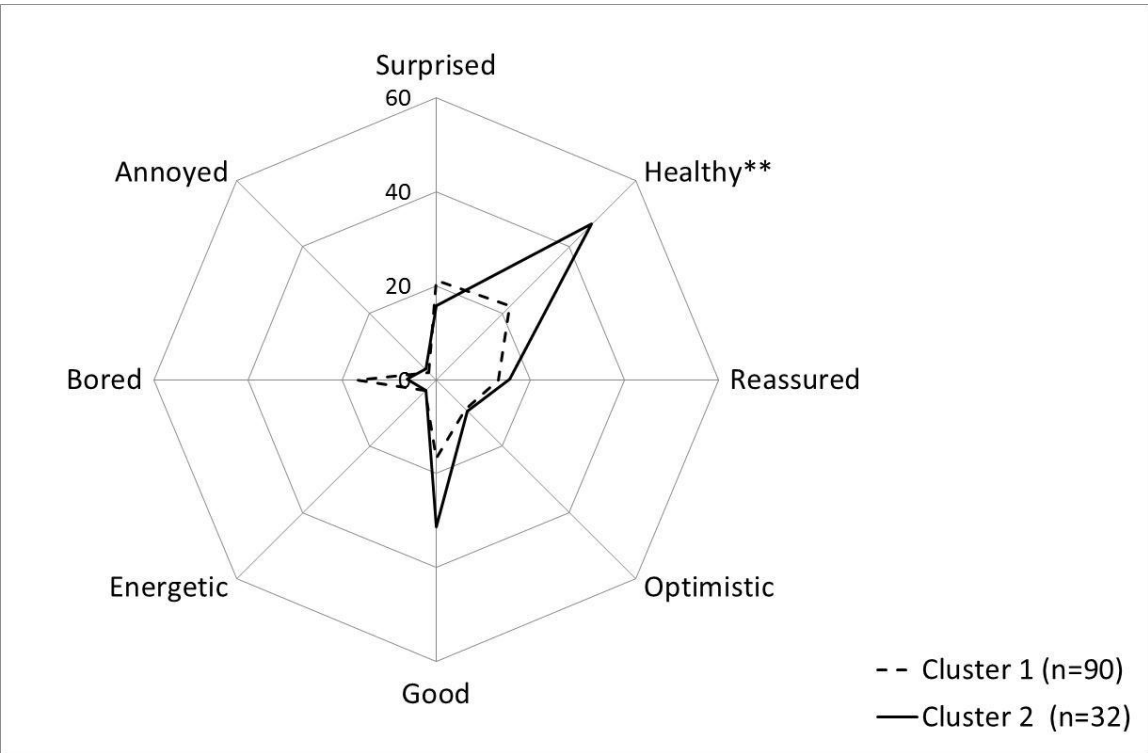


Figure 2: percentage of respondent in each cluster citing the emotion in response to the "prebiotic" claim. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The satiety claim (**Figure 3**) elicited significantly more feelings such as "good" and "energetic" in cluster 2 than in cluster 1 ($p = 0.016$ and $p = 0.032$, respectively). Cluster 2 also reported more often other positive emotions such as healthy and reassured while cluster 1 reported feeling "bored" and "annoyed" more often than cluster 2, however, this did not reach significance levels.

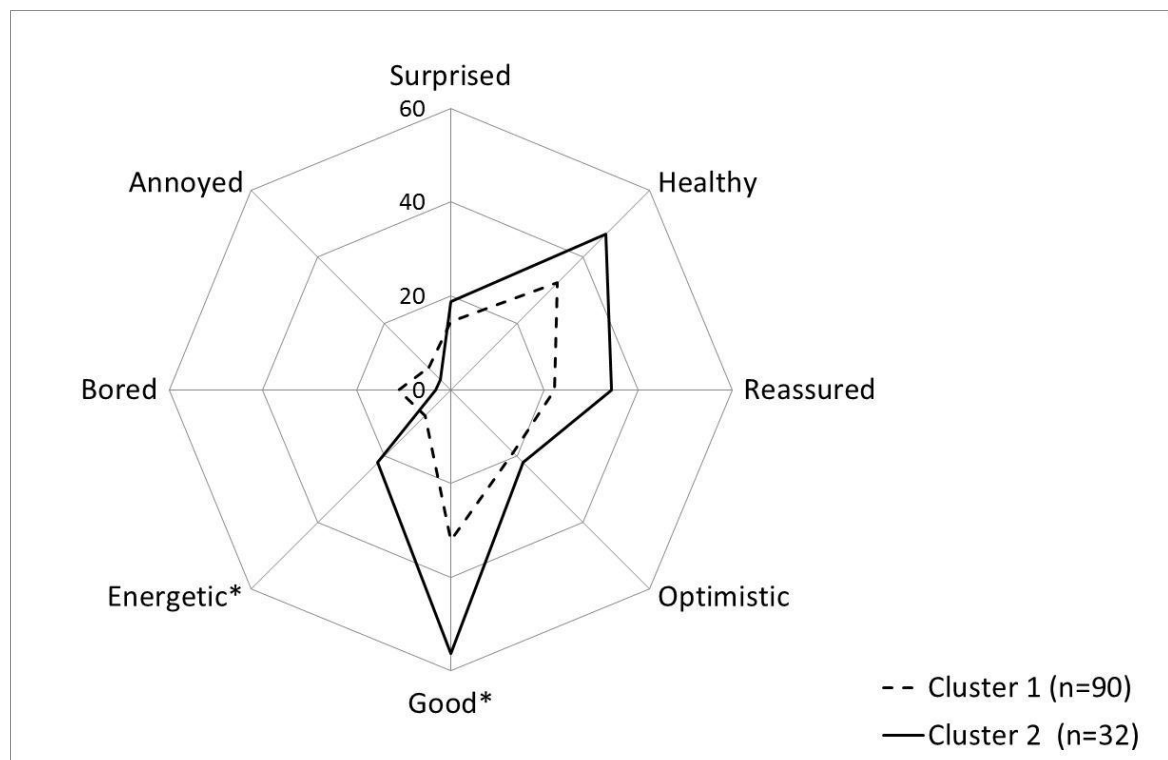


Figure 3: percentage of respondent in each cluster citing the emotion in response to the "satiety" claim. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The weight claim (**Figure 4**) elicited strong emotional responses in both clusters. Cluster 2 reported feeling "surprised", "healthy", "optimistic", "good" and "energetic" significantly more often than cluster 1 ($p = 0.002$, $p = 0.002$, $p = 0.015$, $p = 0.001$, $p = 0.001$ respectively) while cluster 1 reported feeling "bored" more often than cluster 2 ($p = 0.023$).

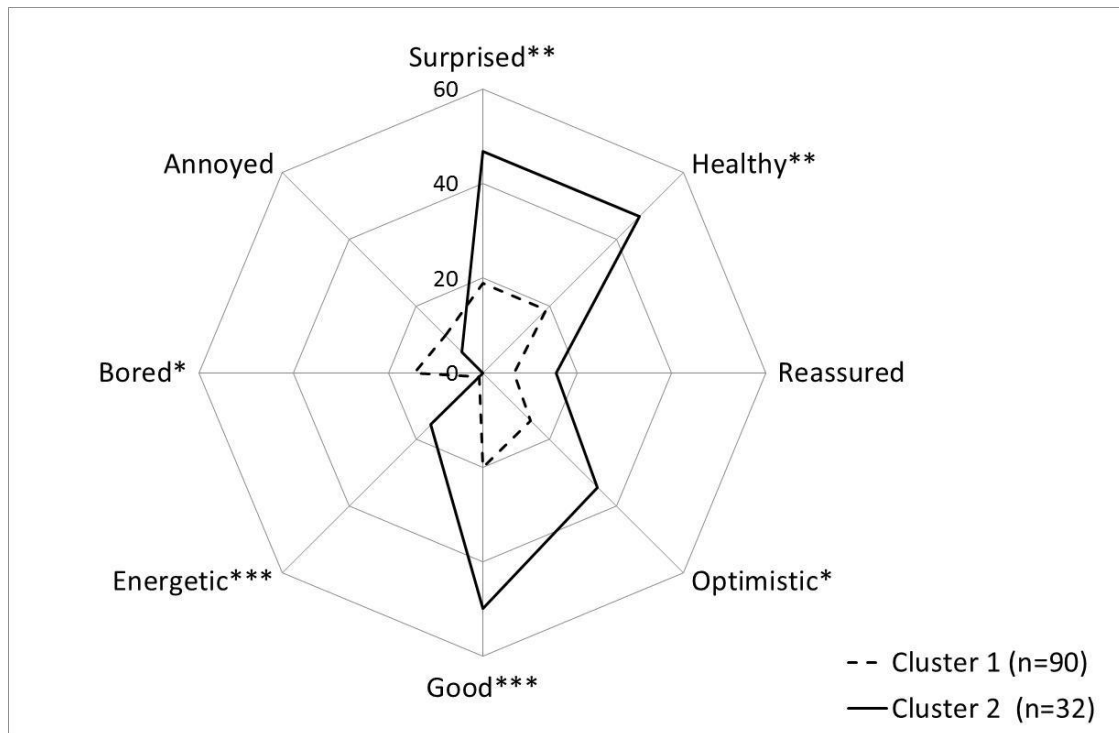


Figure 4: percentage of respondent in each cluster citing the emotion in response to the "weight" claim. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The cancer claim (**Figure 5**) tended to elicit significantly more positive emotions in cluster 2: healthy ($p = 0.028$), reassured ($p = 0.003$) and good ($p = 0.001$) than in cluster 1 while it elicited significantly more negative emotions (bored, $p = 0.049$ and annoyed, $p = 0.023$) in cluster 1 than in cluster 2.

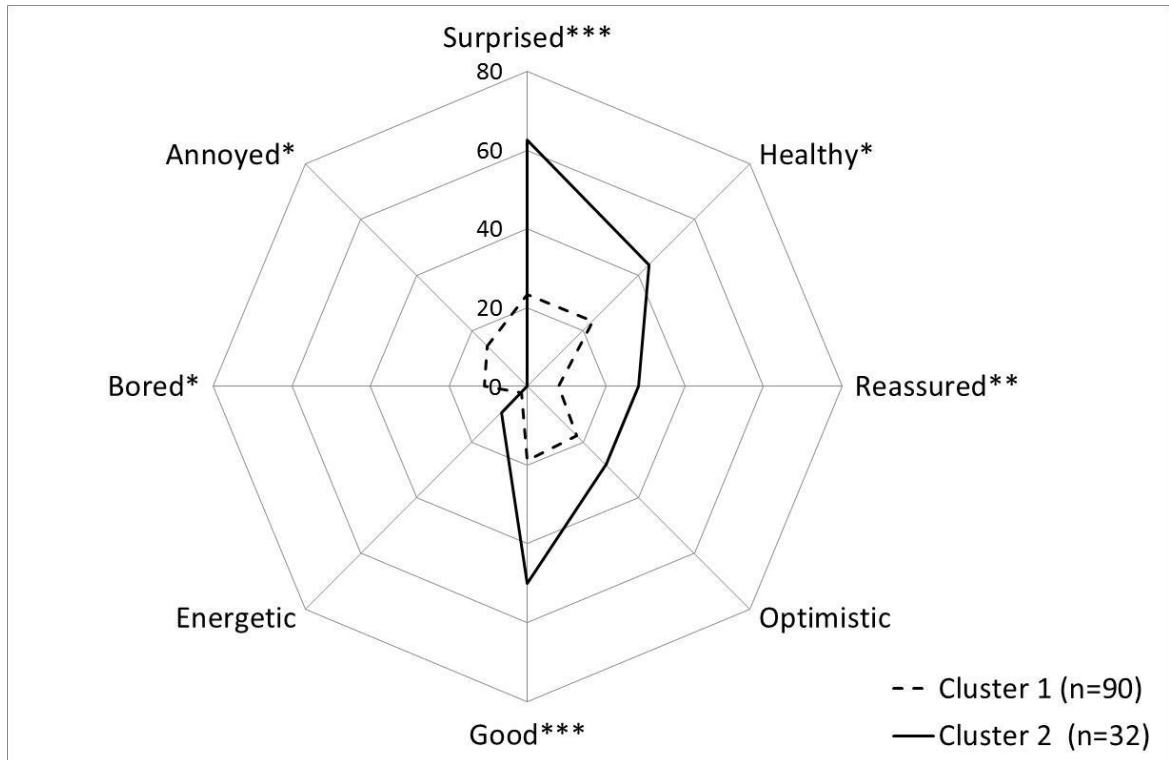


Figure 5: percentage of respondent in each cluster citing the emotion in response to the "cancer" claim. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The minerals claim (**Figure 6**) elicited significantly more positive emotions in cluster 2 than cluster 1: healthy ($p = 0.001$), reassured ($p = 0.001$) and good ($p = 0.044$). Cluster 1 reported more negative emotions (bored and annoyed), although this did not reach significance.

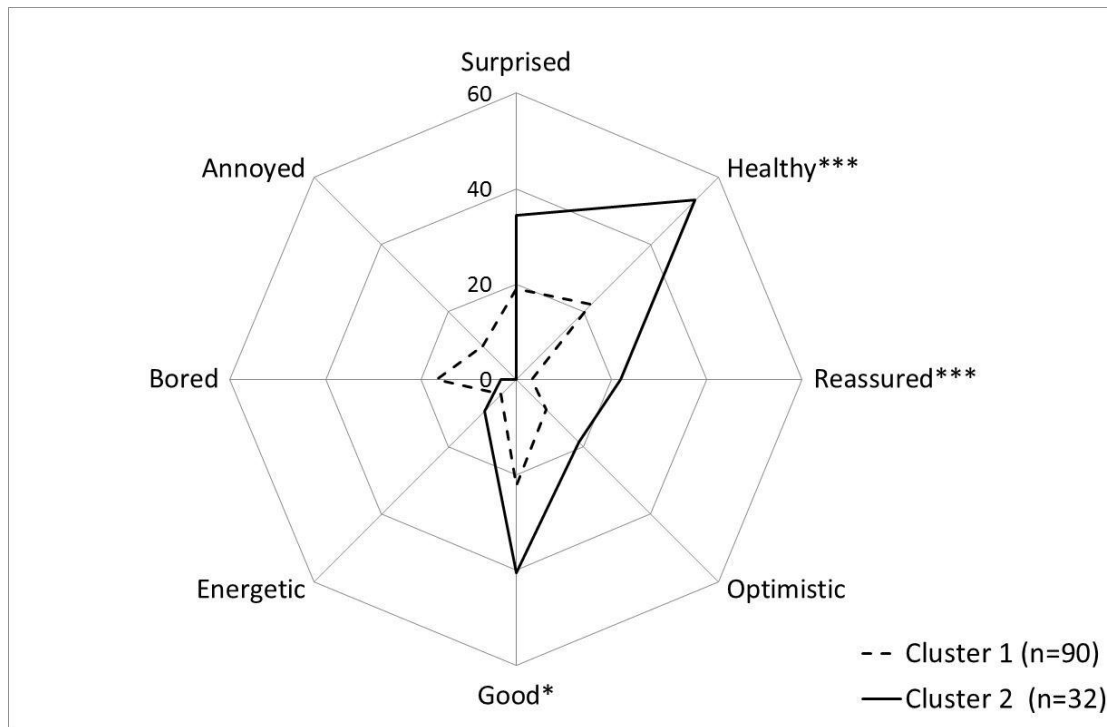


Figure 6: percentage of respondent in each cluster citing the emotion in response to the "minerals" claim. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Overall, the emotional responses of the 2 clusters differed significantly. The cluster of consumers receptive to claims as assessed by an increase in purchase intent in the presence of claims largely reported positive emotions more frequently than the consumers in cluster 1 (non-receptive to claims as assessed by a decrease in purchase intent in the presence of a claim).

The weight and cancer claims were selected to further investigate their impact on liking compared to the control (no claim). These particular claims were selected as they elicited the greatest number of contrasting emotions (Figures 4 and 5) while resulting in an increased overall purchase intent (Table 2).

Consumer hedonic rating of bread rolls with or without claims

Identical bread rolls were submitted for tasting by 100 consumers. They were presented with or without weight and cancer claims. Table 3 presents the average hedonic ratings for overall liking (9 point hedonic scale).

Table 3: Average overall liking scores and standard deviations for bread rolls presented with or without claims.

Claim	Average overall liking (n = 100) 9 point hedonic scale
Control: no claim	5.23 (1.75)
Weight	5.30 (1.68)
Cancer	5.53 (1.57)

Reading out claims to the participants during tasting did not impact on overall liking and the rolls associated with either the weight or cancer claims produced scores which were not significantly different from the control roll ($p = 0.413$).

DISCUSSION

While it is worth noting that the use of focus groups is exploratory in nature and was not aimed at producing data which is directly transferable to the whole population or directly comparable to data obtained in the survey, it is remarkable that the overall feeling about health claims in the focus groups were quite negative and ranged from irrelevant at best to marketing scams at worst. This echoes the findings by Lalor et al. (2011a) where the theme of trust/distrust was found to be prevalent and the notion of "marketing gimmick" was introduced. This is in line with the cluster distribution observed from the survey whereby 73.8 % of respondents reported a decrease in purchase intent for breads associated with the health claims. The strong negative emotions elicited by the cancer claim in the focus groups were reflected to some extent by the survey's results in which the cancer claim attracted the greatest number of participants reporting negative emotions such as "patronised", "worried" and "anxious". This resonates with the concept of "life marketing" and "death marketing", the respective successes of which have been hypothesised to depend on the nature of the claim with death marketing proving more successful in relation to physiologically related illnesses such as cardiovascular diseases (or cancer in this study) than in relation to psychologically related diseases such as stress (Siró et al. 2008). Despite this strong negative emotion content, positive emotions remained predominant for the cancer claim and overall, although there was no significant difference in purchase intents for the control (no claim) and the satiety (health claim), all the other claims: weight (health/appearance claim), prebiotics (nutritional claim), minerals (health claim) and cancer (reduced disease risk claim) resulted in an overall increased purchase intent in line with the findings of van Trijp and van der Lans (2007) who showed that the presence of a health-nutrition claim increased consumer appeal across the board. This increase was strongly driven by the positive reaction of a modest proportion (26.2 %) of consumers (cluster 2). This lack of discrimination in purchase intents based on the nature of the claims (as highlighted by a strong internal reliability); indicates that all the claims measured the same underlying response from the consumer, whether this was a positive or negative one. This is consistent with the findings of Ares et al. (2009) who did reported a lack of significant difference between "enhanced function" and "reduced disease risk" even if both resulted in higher healthiness and willingness to try ratings

than the control (no claim) and to some extent with the findings of van Trijp and van der Lans (2007) who reported that consumer appeal did not vary strongly with claim type. However these contrast with the findings of Verbeke et al. (2009) and Dean et al. (2012) with the former finding that nutritional and health claims performed better than disease risk reduction claims while the latter found that disease risk reduction claims were more successful than benefit claims; especially when those related to a disease relevant to the respondent. Following a review of consumers' perception of health claims, Pothoulaki and Chryssochoidis (2009) also reported a contrasting effect of health claims on purchase decisions, highlighting the fact that price and taste were often driving purchase intent to a greater extent than health claims.

The absence of any trend in consumers who are “receptive to health claims” with respect to age and gender has been reported elsewhere (Lähteenmäki 2013; Pothoulaki and Chryssochoidis 2009; Sabbe et al. 2009; Verbeke 2005; Verbeke 2006; Verbeke et al. 2009). No correlation between self-reported nutrition knowledge and purchase intent was observed in this study which is in line with the findings by Lalor et al. (2011b) who, overall, reported no correlation between objective nutrition knowledge and claim credibility. Baglione et al. (2012) identified two consumer clusters based on their purchase intents for a number of claims and reported higher purchase intents in consumers who were knowledgeable about the nutrients on which the claims focused. This discrepancy may come from the fact that the nutrients and claims selected for their study were less common and of a more technical nature providing greater potential to discriminate between consumers on this basis.

These preliminary results show that where socio-demographic parameters fail to correlate with functional food purchase intent; the emotional response to health claims may be one of the underlying drivers, as consumers whose purchase intent increased with health claims reported significantly more often positive emotions and significantly less often negative emotions than consumers whose purchase intent decreased with the presence of a health claim. This may be directly or indirectly related to consumers' personal or familial health history which has been suggested to impact on consumer perception by van Kleef et al. (2005) and Dean et al. (2012). This would be supported

by a number of comments from the focus groups where the link between the cancer claim, highly emotionally charged responses and relevance to self was evident. Mortality salience, which is expected to be relevant to consumers' choices when faced with a disease risk reduction claim, has been shown to impact differently on food choices in volunteers with different sources of self-esteem (Ferraro et al. 2005).

The overall liking ratings for the bread rolls with and without health claims were not statistically different indicating that the impact of health claims on tasting was minimal. This has been previously reported in walnut oil enriched mayonnaise (Miele et al. 2010) while others (Sabbe et al. 2009; Vidigal et al. 2011) have reported increased acceptance in the presence of nutritional information. This discrepancy between our results and the latter two studies may be due to an exposure effect to unfamiliar products (as the session with information occurred after the no-information session in their study). Another possible explanation may be that the impact of claims on liking is product dependent as product \times claim interactions have been reported to impact on consumer perception if not on taste (Ares and Gámbaro 2007; Lähteenmäki et al. 2010).

Study limitations and future work:

The number of consumers in cluster 2 is borderline ($n = 32$) to generalise the finding, additionally, for the sake of participants' comfort, actual nutrition knowledge was not assessed; instead self-reported nutrition knowledge was used and while we accept that there may not be a direct correlation between them, self-reported nutrition knowledge has been shown to be relevant to purchase intent of functional foods (Baglione et al. 2012). These preliminary findings suggest that purchase intent of functional food may be related to emotions elicited by health claims. Future work should focus on exploring this relationship using a greater number of participants and health claims / food products dyads as well as exploring the links between participants' health (and that of their close family members) and their emotional responses to health claims

CONCLUSIONS

Qualitatively investigating in-depth emotional responses to health claims in focus groups produced strong positive and negative emotions around the themes of trust/distrust and relevance to self. In terms of purchase intent; claims, regardless of their nature, tended to increase the overall purchase intent, however two clusters of consumers (receptive and non-receptive to health claims) were identified. While they did not significantly differ in age, gender or self-reported nutrition knowledge, they reported significantly different emotions to health claims. Consumers who were more likely to purchase a bread associated with a health claim (26.2 % of respondents) reported positive emotions more often and negative emotions less often than consumers whose purchase intent was decreased by the presence of a health claim (73.8 % of respondents). The origin of these emotions needs to be investigated further to better understand consumer response to functional food.

CONFLICT OF INTEREST

The authors do not have any conflict of interest to disclose.

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