

Impact of product name and seasonal context on the sensory evaluation of a seasonally themed beverage

MORRIS, Cecile <<http://orcid.org/0000-0001-6821-1232>>

Available from Sheffield Hallam University Research Archive (SHURA) at:

<https://shura.shu.ac.uk/18644/>

This document is the Accepted Version [AM]

Citation:

MORRIS, Cecile (2018). Impact of product name and seasonal context on the sensory evaluation of a seasonally themed beverage. *Journal of Sensory Studies*, 33 (2). [Article]

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

1 Title: Impact of product name and seasonal context on the sensory evaluation of a seasonally
2 themed beverage

3

4 Short running title: Impact of product name and seasonal context

5

6 Cecile Morris

7 Cecile.Morris@shu.ac.uk

8 Ph: +44 (0) 1142252759 Fax: +44 (0) 1142255555

9 Food and Nutrition group, Sheffield Hallam University, Howard street, Sheffield, S1 1WB,
10 United Kingdom

11

12 Abstract:

13 Information can have a powerful impact on liking, however, little is known about the effect
14 of product name on consumer perception. Moreover, the influence of season, as a sensory
15 relevant context, has never been investigated. The aim of this study was to investigate the
16 effect of naming products with season evoking names and to compare responses between
17 seasons. One hundred and fifty three consumers took part in either a summer (n=71) or
18 winter (n=82) tasting of a drink named 'Winter Spice' or 'Refreshing Summer Berries'. Within
19 each campaign, a cross-over design was applied and participants rated the drink for liking and
20 sensory characteristics (check-all-that-apply). Neither the name nor the season had an impact
21 on liking; however, both factors affected attribute description. The drink was described
22 significantly more often as "spice", "Christmassy" and "mulled wine" when named 'Winter
23 Spice', it was described more often as "blackcurrant" and "cherry" during the winter months.

24

25 Practical applications:

26 It appears possible to use product names to deliver different sensorial experiences without
27 impacting negatively on liking providing that the names reflect adequately the product
28 intrinsic qualities. Seasons appear to be a sensory relevant context, developing a greater
29 understanding of the underpinning mechanisms is critical product development and
30 marketing.

31

32 Keywords: season; product name; sensory; context; expectation; liking

33

34

35 1. Introduction:

36 Information of any nature can trigger specific expectations in the consumer and when the
37 experienced product quality or intrinsic properties do not match those expectations,
38 disconfirmation occurs. Four theories (assimilation, contrast, generalized negativity and
39 assimilation-contrast) have been developed to model the impact of disconfirmation on
40 acceptance (Anderson 1973) but all involve some element of shift in liking between blind
41 rating (taken to assess the inherent quality of the product) and the informed rating (to
42 estimate the impact of the information provided). Within this framework, the impact of
43 extrinsic cues have been investigated and it is now well established that branding, health or
44 nutrition claims, country or region of origin, product name or description, and even
45 processing method can have a major effect on how consumers perceive food products and can
46 directly impact on liking (Fernqvist and Ekelund 2014; Vidal *et al.* 2013). However, despite a
47 recent report demonstrating how product descriptions can affect meal choice and vegetable
48 intake (Turnwald *et al.* 2017), the effects of product name or description on liking are
49 comparatively less well understood. The research literature is both limited and conflicting.
50 Chung *et al.* (2012) found that the original Korean name and product description had little
51 impact on liking of Korean-style salad dressings and beverages. Shankar *et al.* (2009) did not
52 find any difference in liking for chocolates described as 'milk chocolate' or 'dark chocolate',
53 while Allison *et al.* (2004) found that product description details did not impact significantly
54 on overall liking of breakfast cereals and cheese crackers. On the other hand, product
55 description of twelve commercial food products increased taste acceptability when
56 expectations and actual experiences were well matched (Imm *et al.* 2012). In realistic
57 settings, the use of evocative and descriptive food item names resulted in increased consumer
58 satisfaction for a range of main meals and desserts (Wansink *et al.* 2005), while labelling
59 beers as "beer" compared with "non-alcoholic beer" had a positive impact on liking (Silva *et*

60 *al.* 2017). In the same vein, salmon ice-cream was rated as significantly better when it was
61 described as "frozen savoury mousse" rather than "ice-cream" (Yeomans *et al.* 2008), and
62 labelling a vanilla ice-cream as natural increased its hedonic ratings (Parker and Penfield
63 2005). Finally, mention of 'soy protein' on labels decreased liking ratings of bars compared
64 to those labelled 'protein' only (Wansink 2003).

65 Although there is comparatively less published on the impact of product description or name
66 on consumer perception of a product's intrinsic sensory characteristics, there is emerging
67 evidence of an effect. For example, chocolates described as 'dark chocolate' were perceived to
68 be more chocolaty than the same chocolates described as 'milk chocolates' (Shankar *et al.*
69 2009), food labelled 'ice-cream' tasted saltier than the same food labelled 'frozen savoury
70 mousse' (Yeomans *et al.* 2008), and changing food item names on a menu was shown to alter
71 the perceived ethnicity of the food items (Meiselman and Bell 1991).

72 The role of context, often understood as the actual physical environment (Petit and
73 Sieffermann 2007; King *et al.* 2004), social interaction (King *et al.* 2004) or even
74 consumption scenario (either provided by the experimenter or participant driven) (Hein *et al.*
75 2012) has long been of interest to sensory scientists and consumer researchers. There are
76 mixed findings surrounding the impact of the physical environment. Studies have often
77 focused on comparing hedonic ratings obtained in sensory booths to those obtained in
78 realistic settings. Of those, some have reported a significant effect of the environment
79 (Bangcuyo *et al.* 2015; Hathaway and Simons 2017) on liking whilst others did not (Garcia-
80 Segovia *et al.* 2015). Environmental auditory cues, such as the music played at the point of
81 consumption has been shown to be influential on liking ratings for example, Spence and
82 Shankar (2010) concluded that the presence of semantically related environmental sounds
83 could enhance ratings of related flavor qualities establishing thus the importance of
84 congruency between the food and the consumption environment. A study reporting how the

85 smell of cinnamon was rated as more pleasant when experienced alongside Christmas carols
86 (Seo and Hummel 2011) demonstrated that cues pertaining to seasons can affect sensory
87 evaluation. In addition to this, certain odorants such as cinnamon have been shown to be
88 associated more closely to Christmas rather than summer, and both familiarity and
89 pleasantness ratings for cinnamon increased during the Christmas season when compared to
90 summer (Seo *et al.* 2009). However, up until now, sensory scientists have mostly focused on
91 the natural quality variation occurring in season dependent primary products (Bunning *et al.*
92 2009; Phillips *et al.* 2010) and the importance of seasonal exposure to odorant identification
93 (Wada *et al.* (2012) but have not specifically examined the impact of season as a sensory-
94 relevant context on a real food product perception (hedonic rating and perception). This
95 omission is surprising considering the growing commercial strategies surrounding non-
96 perishable seasonally themed goods (Lindell 2013) reflected in advertising patterns (Spencer
97 *et al.* 2014) and which have resulted in a sense that seasonal occasions have become too
98 commercialized (Mintel 2013).

99 The aim of this study was to investigate whether seasonally themed product names impact on
100 liking and on consumer perception of the product's intrinsic sensory characteristics when
101 consumed either in-season or out-of-season. In order to achieve this, a commercially
102 available season-themed beverage (Winter Spice Ribena) was tested with different names
103 pertaining to opposing semantic domains: 'Winter Spice' and 'Refreshing Summer Berries'.

104 The hypotheses were as follows:

105 - H₁: product name will have an impact on liking overall.

106 - H₂: the congruency between actual season and seasonally themed product name is critical to
107 liking: the winter themed drink will be better liked in winter while the summer themed drink
108 will be better liked in summer.

109 - H₃: the seasonally themed product name will impact on how consumers perceive the
110 product: attributes belonging to the same season-related semantic domain as the name will be
111 cited more often to describe the product.

112 - H₄: the season in which the testing is carried will impact on how consumers perceive the
113 product: attributes belonging to the same semantic domain as the season in which the testing
114 is carried out will be cited more often to describe the product.

115

116 2. Material and Methods:

117 2.1. Samples:

118 A commercially available (Winter Spice Ribena, Lucozade Ribena Suntory Ltd, Uxbridge,
119 UK) concentrated fruit flavored drink to be made up by the consumer was selected for the
120 purpose of the study as 1) these drinks are popular in many countries 2) they are suitable for
121 all consumers (no alcohol, no major allergens, vegetarian and vegan friendly) 3) they are easy
122 to prepare consistently and the serving temperature is easy to control and 4) season themed
123 fruit flavored concentrated drink have started to appear on the U.K. market and are therefore
124 a good vehicle to study the impact of name and season on consumers' perception.

125 The sample preparation followed exactly the same protocol throughout the study. There was
126 no sensory manipulation of the product. Ribena's Winter Spice was reconstituted from
127 concentrated following the manufacturer's instructions the day before the panels. It was then
128 stored at 4°C until serving in small plastic single shot glasses (4 cl).

129 Each participant tested the same drink (Ribena, Winter Spice) 3 times; only the written
130 information provided on the answer sheet alongside the drink differed as such:

131 - 3 digit code (dummy sample, always presented first, results not used)

132 - The manufacturer describes this product as "Winter Spice" (hereafter WS)

133 - The manufacturer describes this product as "Refreshing Summer Berries" (hereafter SB)

134

135 2.2. Study design:

136 In order to study the effect of name and season on sensory evaluation, two campaigns of
137 identical tests relating to sample name were carried out during the summer and winter
138 months. The attributes of the main study CATA scale were generated during a preliminary
139 study. All sensory testing took place in individual sensory booths under "northern daylight"
140 lighting as specified in BS EN ISO 8589 (2014).

141

142 2.2.1. Preliminary study: attribute generation for the CATA scale

143 The selection of key attributes for check-all-that-apply (CATA) scales is one of the main
144 challenges of the CATA methodology and it has been recommended that results from
145 consumer focus groups should inform its design prior to the main study (Varela and Ares
146 2012). Therefore a focus group of 6 panelists generated and agreed a list of attributes
147 characterizing the sample over 2 sessions. During the 1st session (1 hour), panelists tested the
148 sample in blind condition in individual booths and were instructed to generate as many
149 attributes as they felt was necessary to fully characterize the drink. They then discussed their
150 findings and compared the terms used. In the 2nd second session (1 hour, 1 week later),
151 panelists tested the samples again using the list of attributes generated in the 1st session as a
152 CATA scale. Redundant attributes were then removed through discussion between the
153 panelists.

154 The final list of attributes generated was: artificial sweetener; berry; blackcurrant; cherry;
155 Christmassy; cinnamon; cloves; comforting; cranberry; elderflower; fruity; ginger; light;

156 meadow; medicinal; minty; mulled wine; orange; raspberry; refreshing; spice; star anise;
157 strawberry; sweet; syrupy; thick; thirst quenching and warming. A CATA scale was created
158 using these attributes ("other" was added as an option with the opportunity for the panelists to
159 add any attribute they felt was missing).

160

161 2.2.2. Main study

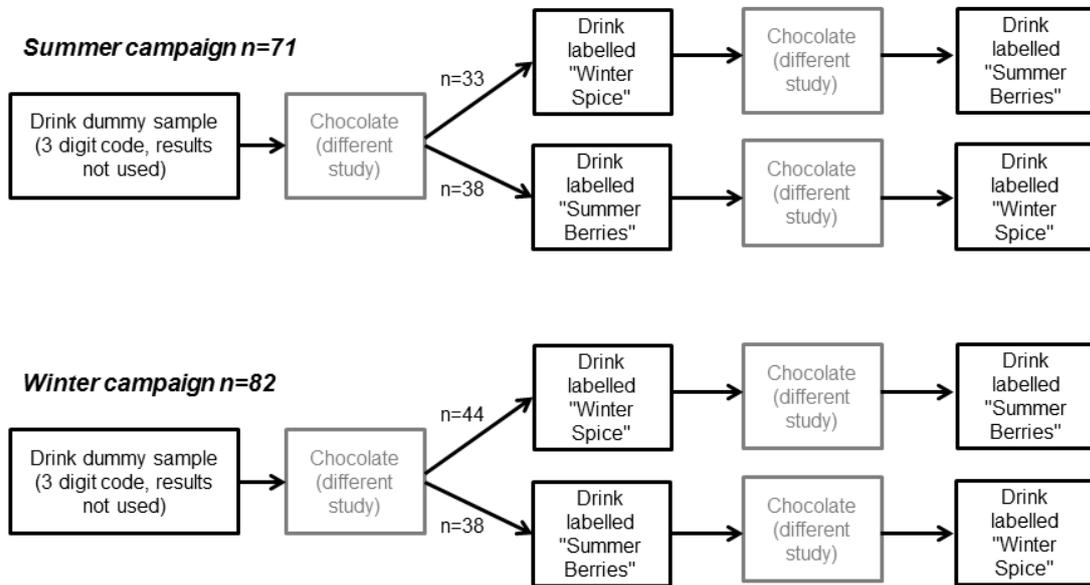
162 The main study took place over 2 campaigns: a summer campaign (mid-June to mi-August
163 with 71 participants) and a winter campaign (January and February with 82 participants). The
164 procedure used during both was identical apart from the temperature in the sensory booths. In
165 order to reinforce the seasonal context, the temperature in the sensory booths and training
166 room (where the participant briefing took place) was controlled and kept at 23°C (+/- 1°C) for
167 the summer campaign and 17°C (+/- 1°C) for the winter campaign.

168

169 2.2.2.1. Main study design

170 Within each campaign (summer/winter), a cross-over design was used so that each panelist
171 tested the same drink under 3 different conditions: without information, with the drink
172 described as 'winter spice' and 'refreshing summer berries'. The participants took part in
173 another study for which chocolate samples were presented in between this study's 3 drinks.
174 This ensured that memory effects were minimized. Participants were randomly allocated to
175 receive SB then WS or WS then SB (Figure 1). The dummy sample was used to counteract
176 the 1st sample effect (Lawless and Heymann 2010) and familiarize the panelists with the task.
177 Samples were presented monadically and water and crackers were available for panelists to
178 cleanse their palate between each.

179



180

181 FIG. 1. STUDY DESIGN (CROSS-OVER, SUMMER N=71 AND WINTER N=82). EACH
 182 PARTICIPANT TESTED THE SAME DRINK UNDER 3 CONDITIONS (NO
 183 INFORMATION, RESULTS NOT SHOWN) AND WITH THE DESCRIPTIONS 'WINTER
 184 SPICE' AND 'REFRESHING SUMMER BERRIES' (RANDOMIZED PRESENTATION
 185 ORDER). GREY FONT IS USED TO DENOTE THAT PARTICIPANTS TASTED OTHER
 186 SAMPLES (CHOCOLATE) FOR ANOTHER STUDY BETWEEN THIS STUDY'S
 187 SAMPLES.

188

189 2.2.2.2. Main study task

190 Panelists were first asked to rate each sample for liking using a 9 point hedonic scale before
 191 moving on to the sample description using the CATA scale derived from the preliminary
 192 study. The order in which the attributes were presented was not balanced within subjects as

193 this does not significantly impact on results (Ares *et al.* 2013); however, 2 different attribute
194 orders were balanced between subjects.

195

196 2.3. Participants:

197 Participants for the preliminary attribute generation panel (n=6) were regular users of soft
198 fruit flavored drinks and volunteers drawn from students registered on a sensory evaluation
199 module. The main consumer panel (n=153) was mostly recruited via a sensory consumer
200 database set up for commercial work as well as by word of mouth. Seventy one panelists took
201 part in the summer campaign and 82 panelists took part in the winter campaign which is well
202 aligned with recommendations on CATA work with consumers (Varela and Ares, 2012). The
203 participants consisted of 99 females (64.7%) and 54 males (35.3%) and 60 participants
204 (39.2%) studied or worked in the field of food and nutrition, this encompasses roles in food
205 manufacturing (the food industry is the largest manufacturing sector in the U.K accounting
206 for 19% of it, Food and Drink Federation, 2017), food retailing, catering hospitality,
207 nutrition, dietetics and health sector. The participants' average age was 33.8 years (standard
208 deviation 16.9 years, range: 17 – 79 years). Participants were informed that they would be
209 tasting fruit flavored drinks made up from concentrated commercial products. They were not
210 required to be regular consumers as the aim of the study was not to compare hedonic scores
211 of different products but to investigate the impact on product name and seasons on product
212 characterization. The participants received a small gift of a value of £3 to £5 as a thank you
213 gesture for their time.

214

215

216

217 2.4. Data analysis:

218 Hedonic ratings: within each campaign, the impact of product name on liking (H_1) was
219 analyzed using a paired t-test. Independent t-tests were carried out to test the impact of season
220 on liking of identically labelled drinks (H_2).

221 CATA results analysis: only attributes selected by at least 25% of the panelists in at least one
222 of the 4 tests (WB in summer / WB in winter / SB in summer / SB in winter) were kept for
223 analysis as the others were not deemed to be sufficiently representative of the samples.

224 Within each campaign, the impact of product name on attribute citation frequency (H_3) was
225 compared using a McNemar test, whereas the impact of actual season on attribute citation
226 frequency across seasons (H_4) was compared using Fischer's exact test as described
227 elsewhere for a similar design (Vidal *et al.* 2013).

228 All significance levels were set at $\alpha=0.05$ and all statistical tests were performed using SPSS
229 v24 (IBM, Armonk, USA).

230

231 2.5. Ethics:

232 The study received approval from the Faculty Research Ethics Committee (Business School).
233 Participants were informed fully of the study procedures and that they had a right to withdraw
234 at any point, written informed consent was obtained from each participant at the outset.

235

236 3. Results

237 3.1. Liking

238 Within the same campaign, there was no significant difference in liking (Table 1) of the drink
239 described as either 'Refreshing Summer Berries' or 'Winter Spice' ($p=0.508$ for the summer

240 campaign and $p=0.081$ for the winter campaign). On the basis of these results, H_1 (product
 241 name will have an impact on liking) was rejected. There was no significant in liking between
 242 the summer and winter campaigns ($p=0.797$ for 'Refreshing Summer Berries' and $p=0.076$ for
 243 'Winter Spice'; Table 1) and H_2 (the congruency between actual season and seasonally
 244 themed product description is critical to liking: the winter themed drink will be better liked in
 245 winter while the summer themed drink will be better liked in summer) was also rejected.

246

247 TABLE 1: AVERAGE HEDONIC RATINGS (ON A 9 POINT HEDONIC SCALE) AND
 248 STANDARD DEVIATION (IN BRACKETS) FOR THE SAME DRINK LABELLED
 249 EITHER REFRESHING SUMMER BERRIES OR WINTER SPICE. NO SIGNIFICANT
 250 DIFFERENCE WAS OBSERVED WITH RESPECT TO NAME OR SEASON.

251

	Summer berries	Winter Spice
Summer campaign	5.64 (1.70)	5.78 (1.54)
Winter campaign	5.57 (1.67)	5.26 (1.80)

252

253

254 3.2. Effect of product name on drinks' characterization

255 Panelists selected significantly different attributes to characterize the same product depending
 256 on whether it was described as 'Winter Spice' or 'Refreshing Summer Berries' (Figure 2). The
 257 same trend was observed in the summer and winter campaigns (Figure 2a and Figure 2b
 258 respectively).

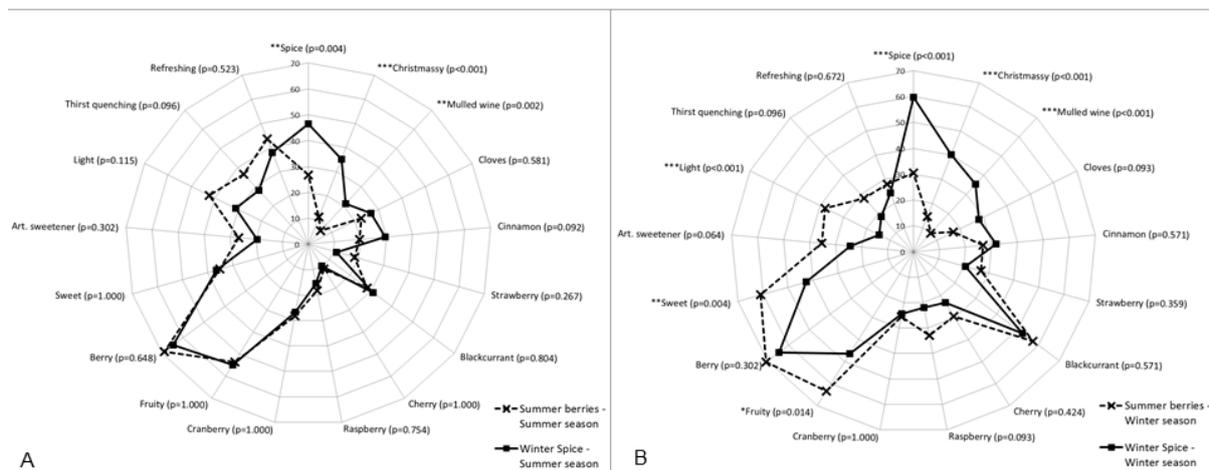


FIG. 2 EFFECT OF PRODUCT NAME ON DESCRIPTIVE ATTRIBUTES (% PARTICIPANTS SELECTING ATTRIBUTE ON CATa SCALE) A) DURING THE SUMMER B) DURING THE WINTER

259

260 Naming the drink 'Winter Spice' rather than 'Refreshing Summer Berries' had a profound
 261 effect on the prevalence of the drink being described as "spice", "Christmassy" and "mulled
 262 wine" both in the summer and winter months (see p-values in Figures 2a and 2b).
 263 Additionally, the 'Refreshing Summer Berries' drink was described significantly more often
 264 as "fruity", "sweet" and "light" than the drink named 'Winter Spice' during the summer
 265 months (see p-values in Figures 2a and 2b). H₃ (the seasonally themed product name will
 266 impact on how consumers perceive the product: attributes belonging to the same semantic
 267 domain as the name will be cited more often to describe the product) was therefore accepted.

268

269 3.3. Effect of season on product characterization

270 Both the drinks named 'Refreshing Summer Berries' (Figure 3a) and 'Winter Spice' (Figure
 271 3b) were described as significantly more "blackcurrant" and "cherry" during the winter
 272 months than the summer months. Additionally, 'Refreshing Summer Berries' was described
 273 significantly more often as "raspberry" and "sweet" during the winter months than the
 274 summer months and the 'Winter Spice' sample was described significantly more often as
 275 "light" in the summer months than the winter months. In this respect, H₄ (the season in which
 276 the testing is carried will impact on how consumers perceive the product: attributes belonging

277 to the same semantic domain as the season in which the testing is carried out will be cited
 278 more often to describe the product) was only partially accepted as the difference in product
 279 characterization observed did not reflect the season related semantic domain tested and was
 280 therefore not the one which was expected.
 281

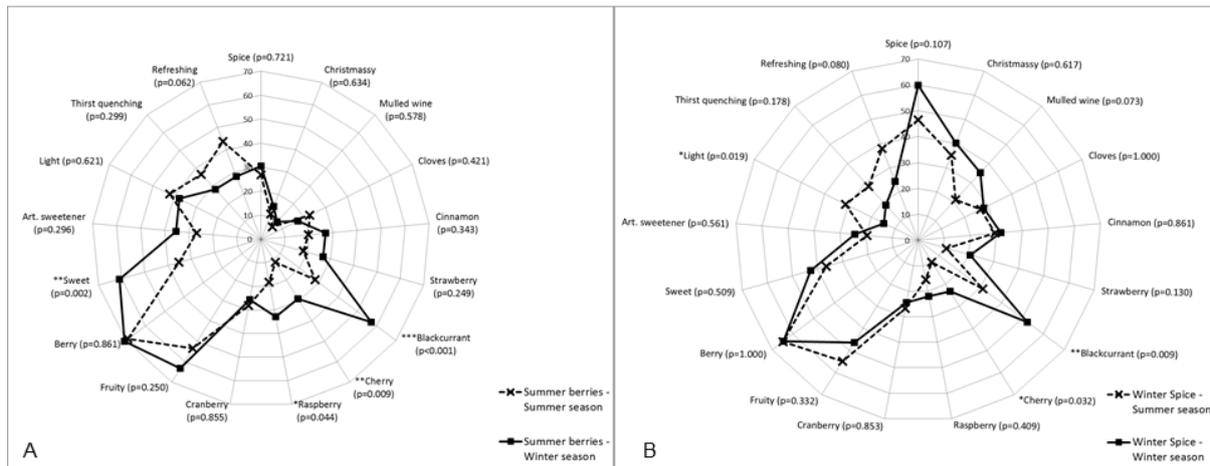


FIG. 3. EFFECT OF SEASONS ON DESCRIPTIVE ATTRIBUTES (% PARTICIPANTS SELECTING ATTRIBUTE ON CATASCALE)
 A) "REFRESHING SUMMER BERRIES" B) "WINTER SPICE"

282

283 4. Discussion

284 Stating that the manufacturer described the drink as "Refreshing Summer Berries" or "Winter
 285 Spice" did not have an impact on liking of the drink which is in agreement with other studies,
 286 for example, Allison *et al.* 2004; Chung *et al.* 2012; Bell *et al.* 1994 and Shankar *et al.* 2009
 287 have all reported a lack of impact of descriptive labelling information (product name and/or
 288 description) on liking. However a significant impact is more commonly observed (Wansink
 289 2003; Wansink *et al.* 2005; Silva *et al.* 2017; Yeomans *et al.* 2008; Imm *et al.* 2012; Parker
 290 and Penfield 2005). The reason for the discrepancy is likely due to the nature of the
 291 description or name and the expectations they may trigger (Deliza and MacFie 1996). In the
 292 instances where no impact was noted, the name or description used were very factual and
 293 closely aligned with the reality of the product: "chocolate-flavoured breakfast cereals"

294 (Allison *et al.* 2004), "salad with Korean style mustard dressing" (Chung *et al.* 2012) and
295 "milk chocolate" (Shankar *et al.* 2009). In contrast, when an impact was noted, the product
296 name or description was more likely to be evocative and emotionally charged: "succulent"
297 (Wansik *et al.* 2005), "artificial"/"natural" (Parker and Penfield 2005) or offer a drastic
298 contrast between expectations and experience as in the case of the frozen savory mousse
299 labelled ice-cream (Yeomans *et al.* 2008). It is therefore likely that the product names or
300 descriptions used in the studies where no impact was observed (including this one) did not
301 trigger expectations at odds with the actual sensory experience which can affect liking (Imm
302 *et al.* 2012). This is not surprising considering that the product names used in this study were
303 carefully selected to match the semantic domains covered by the list of attributes generated in
304 blind testing conditions.

305 Whether the drink was described as "Refreshing Summer Berries" or "Winter Spice" had a
306 striking effect on the attributes which panelists selected to characterize the drink. There is
307 less work looking specifically at the impact of product name on how consumers perceive its
308 sensory characteristics. When it has been reported, a significant impact was noted (Shankar *et*
309 *al.* 2009; Yeomans *et al.* 2008; Meiselman and Bell 1991) however, the attributes considered
310 were generally highly specific and few. Similar to this study, altering both food names and
311 environment decoration (British/Italian themes) did not affect liking although it impacted
312 significantly on the perceived ethnicity of the food items (Bell *et al.* 1994). It has been
313 suggested that using descriptive wording to characterize a product generates expectations of
314 what the product should be (Tuorila *et al.* 1994) and makes those elements more salient,
315 directing the consumers' attention to related attributes whilst other attributes are less well
316 attended or unattended (Piqueras-Fiszman and Spence 2015).

317 Whilst the actual testing season did not have an impact on liking, panelists used different
318 attributes to characterize the same sample with the same description in summer and winter,

319 for example the drink was significantly more often characterized as "cherry" and
320 "blackcurrant" during the winter months than during the summer and this regardless of
321 whether it was named "Winter Spice" or "Refreshing Summer Berries". These findings
322 provide an interesting example of how a product with the same name but consumed in a
323 different context with respect to season can be perceived differently. This is not surprising
324 considering that familiarity ratings for odorants associated with a specific season increase in
325 that season (Seo *et al.* 2009). The role of actual physical environment or evoked environment
326 on liking or perception has been of interest to others with mixed findings (Bangcuayo *et al.*
327 2015; García-Segovia *et al.* 2015; Hathaway and Simon 2017; Jaeger *et al.* 2017). It must be
328 noted that the changes in environment between the summer and winter seasons were subtle
329 and far from the more drastic changes usually operated in other studies where data acquired
330 in sensory booths and realistic environment are compared (Bangcuayo *et al.* 2015; García-
331 Segovia *et al.* 2015; Hathaway and Simon 2017). Moreover, the changes to the environment
332 were implicit rather than explicit as is often the case in studies where context is evoked by
333 asking the consumers to imagine themselves in a specific situation. Considering the fact that
334 sensory responses to evoked contexts have been shown to be similar to those where no-
335 context is evoked (Jaeger *et al.* 2017), it is therefore not surprising that the impact of season
336 as a subtle and implicit context was found to be modest compared to that of name in this
337 study. Social and cultural context can have an impact on liking and characterization. For
338 example, Lahne *et al.* (2014) showed that liking and product characterization were moderated
339 by consumers' general involvement with food. There is therefore an understanding that
340 "sensory perception is a learned, active, and directed practice" rather than the sole result of an
341 external stimuli. In the context of this study, the social and cultural element is framed by the
342 consumer's past experience and appropriation of seasons' cultural manifestations. Although
343 there was a significant effect of season on product characterization, the link between the

344 semantic domains of the actual season and attributes selected by participants was not obvious
345 or systematic (for example, blackcurrants and cherries are in season during the summer
346 months rather than the winter months however these attributes were selected more often to
347 describe the drink during the winter months). In this respect, the direction of the effect was
348 not the one expected. It can be speculated that although the seasonal context in which the test
349 was carried out had an impact on how the product was perceived, the underpinning
350 mechanism was not the result of the seasonal context evoking a specific season-related
351 semantic domain. As the sensory booths' temperature had been manipulated to reinforce the
352 seasonal context, one possibility could be that either the temperature of the environment
353 and/or the contrast in temperature between the environment and the drink are driving factors
354 for the sensory experience. To the author's knowledge there are no studies on the topic to
355 either support or reject this. Another possible explanation is that olfactory discrimination
356 performance differs with seasons (Goel and Grasso 2004). As a result some odorants may be
357 better detected during the winter rather than summer and get cited more often to characterize
358 a sample while other odorants may show the opposite pattern.

359 The study's main limitations relate to the generalizability of the results to other products /
360 product categories which should be expanded to get a comprehensive picture of the subject.
361 Additionally, the two product names used in this study were congruent with the product's
362 intrinsic characteristics. Using an incongruent product name may have resulted in different
363 outcomes by generating expectations at odds with the subsequent sensory experience. In this
364 respect, comparing congruent and incongruent product names may be of academic interest
365 however, its bearing on real world application would be more limited.

366

367

368 5. Conclusions

369 Overall, liking was driven by the product sensory characteristics rather than the name or
370 season. It could be hypothesized that liking is more readily affected by the product name or
371 description when it is at odds with the reality of the product or possesses a strong affective
372 valence and this should be formally tested in further studies. In contrast, it appears possible to
373 prime subjects to detect specific sensory characteristics and thus generate different sensory
374 experiences by carefully selecting the name or description of the food product. Season, as a
375 sensory relevant context, had a more modest impact than name and more work is required to
376 understand the underpinning mechanism.

377

378 References

- 379 ALLISON, A., GUALTIERI, T. and CRAIG-PETSINGER, D. 2004. Are young teens
380 influenced by increased product description detail and branding during consumer testing?
381 *Food Qual Prefer.* *15*(7-8), 819-829.
- 382 ANDERSON, R. 1973. Consumer dissatisfaction - effect of disconfirmed expectancy on
383 perceived product performance. *J Marketing Res.* *10*(1), 38-44.
- 384 ARES, G., JAEGER, S. R., BAVA, C. M., CHHEANG, S. L., JIN, D., GIMENEZ, A.,
385 VIDAL, L., FISZMAN, S.M. and VARELA, P. 2013. CATA questions for sensory product
386 characterization: Raising awareness of biases. *Food Qual Prefer.* *30*(2), 114-127.
- 387 BANGCUYO, R. G., SMITH, K. J., ZUMACH, J. L., PIERCE, A. M., GUTTMAN, G. A,
388 and SIMONS, C. T. 2015. The use of immersive technologies to improve consumer testing:
389 The role of ecological validity, context and engagement in evaluating coffee. *Food Qual*
390 *Prefer.* *41*, 84-95.

391 BELL, R., MEISELMAN, H., PIERSON, B. and REEVE, W. 1994. Effects of adding an
392 Italian theme to a restaurant on the perceived ethnicity, acceptability, and selection of foods.
393 *Appetite*. 22(1), 11-24.

394 BUNNING, M. L., KENDALL, P. A., STONE, M. B., STONAKER, F. H. and
395 STUSHNOFF, C. 2009. Effects of seasonal variation on sensory properties and total phenolic
396 content of 5 lettuce cultivars. *J Food Sci.* 75(3), S156-S161.

397 BS EN ISO 8589: 2010 +A1:2014 (2014) Sensory analysis — General guidance for the
398 design of test rooms

399 CHUNG, L., CHUNG, S.J, KIM, J.Y., KIM, K.O., O'MAHONY, M., VICKERS, Z., CHA,
400 S.M., ISHII, R., BAURES, K. and KIM, H.R. 2012. Comparing the liking for Korean style
401 salad dressings and beverages between US and Korean consumers: Effects of sensory and
402 non-sensory factors. *Food Qual Prefer.* 26(1), 105-118.

403 DELIZA, R. and MACFIE, H. 1996. The generation of sensory expectation by external cues
404 and its effect on sensory perception and hedonic ratings: A review. *J Sensor Stud.* 11(2), 103-
405 128.

406 FOOD AND DRINK FEDERATION. 2017. https://www.fdf.org.uk/about_fdf.aspx.
407 Accessed 08.10.17.

408 FERNQVIST, F. and EKELUND, L. 2014. Credence and the effect on consumer liking of
409 food - A review. *Food Qual Prefer.* 32, 340-353.

410 GARCIA-SEGOVIA, P., HARRINGTON, R. J. and SEO, H. 2015. Influences of table
411 setting and eating location on food acceptance and intake. *Food Qual Prefer.* 39, 1-7.

412 GOEL, N. and GRASSO, D.J. 2004. Olfactory discrimination and transient mood change in
413 young men and women: variation by season, mood state, and time of day. *Chronobiol Int*,
414 *21(4-5)*, 691-719.

415 HATHAWAY, D. and SIMONS, C. T. 2017. The impact of multiple immersion levels on
416 data quality and panelist engagement for the evaluation of cookies under a preparation-based
417 scenario. *Food Qual Prefer.* *57*, 114-125.

418 HEIN, K. A., HAMID, N., JAEGER, S. R. and DELAHUNTY, C. M. 2012. Effects of
419 evoked consumption contexts on hedonic ratings: A case study with two fruit beverages.
420 *Food Qual Prefer.* *26(1)*, 35-44.

421 IMM, B., LEE, J. H. and LEE, S. H. 2012. Effects of sensory labels on taste acceptance of
422 commercial food products. *Food Qual Prefer.* *25(2)*, 135-139.

423 JAEGER, S. R., FISZMAN, S., REIS, F., CHHEANG, S. L., KAM, K., PINEAU, B.,
424 DELIZA, R. and ARES, G. 2017. Influence of evoked contexts on hedonic product
425 discrimination and sensory characterizations using CATA questions. *Food Qual Prefer.* *56*,
426 138-148.

427 KING, S., WEBER, A., MEISELMAN, H. and LV, N. 2004. The effect of meal situation,
428 social interaction, physical environment and choice on food acceptability. *Food Qual Prefer.*
429 *15(7-8)*, 645-653.

430 LAHNE, J., TRUBEK, A. B. and PELCHAT, M. L. 2014. Consumer sensory perception of
431 cheese depends on context: A study using comment analysis and linear mixed models. *Food*
432 *Qual Prefer.* *32*, 184-197.

433 LAWLESS, H. T. and HEYMANN, H. 2010. Principles of good practice. In *Sensory*
434 *evaluation of food: Principles and practices*. 2nd ed., pp. 57-77, New York, London:
435 Springer.

436 LINDELL, C. 2013. Seasonal candy doesn't just mean Christmas and Easter anymore. *Candy*
437 *Industry*. 178(4), 50.

438 MEISELMAN, H. L. and BELL, R. 1991. The effects of name and recipe on the perceived
439 ethnicity and acceptability of selected Italian foods by British subjects. *Food Qual Prefer.*
440 3(4), 209-214.

441 MINTEL. 2013. *Seasonal lifestyles - UK - July 2013. Holidays and special occasions that*
442 *people celebrate*. Mintel Group Ltd.

443 PARKER, A. R. and PENFIELD, M. P. 2005. Labeling of vanilla type affects consumer
444 perception of vanilla ice cream. *J Food Sci.* 70(8), S553-S557.

445 PETIT, C, and SIEFFERMANN, J. M. 2007. Testing consumer preferences for iced-coffee:
446 Does the drinking environment have any influence? *Food Qual Prefer.* 18(1), 161-172.

447 PHILLIPS, K., HAMID, N., SILCOCK, P., DELAHUNTY, C., BARKER, M. and
448 BREMER, P. 2010. Effect of season on the sensory quality of sea urchin (*Evechinus*
449 *chloroticus*) roe. *J Food Sci.* 75(1), S20-S30.

450 PIQUERAS-FISZMAN, B. and SPENCE, C. 2015. Sensory expectations based on product-
451 extrinsic food cues: An interdisciplinary review of the empirical evidence and theoretical
452 accounts. *Food Qual Prefer.* 40, 165-179.

453 SEO, H., BUSCHHÜTER, D. and HUMMEL, T. 2009. Odor attributes change in relation to
454 the time of the year. Cinnamon odor is more familiar and pleasant during Christmas season
455 than summertime. *Appetite*. 53(2), 222-225.

456 SEO, H. and HUMMEL, T. 2011. Auditory-olfactory integration: Congruent or pleasant
457 sounds amplify odor pleasantness. *Chem Senses*. 36(3), 301-309.

458 SHANKAR, M. U., LEVITAN, C. A., PRESCOTT, J. and SPENCE, C. 2009. The influence
459 of color and label information on flavor perception. *Chemosens Percept*. 2(2), 53-58.

460 SILVA, A. P., JAGER, G., VOSS, H., VAN ZYL, H., HOGG, T., PINTADO, M. and DE
461 GRAAF, C. 2017. What's in a name? the effect of congruent and incongruent product names
462 on liking and emotions when consuming beer or non-alcoholic beer in a bar. *Food Qual*
463 *Prefer*. 55, 58-66.

464 SPENCE, C. and SHANKAR, M. U. 2010. The influence of auditory cues on the perception
465 of, and responses to, food and drink. *J Sensor Stud*. 25(3), 406-430.

466 SPENCER, R. J., RUSSELL, J. M. and BARKER, M. E. 2014. Temporality in British young
467 women's magazines: Food, cooking and weight loss. *Public Health Nutr*. 17(10), 2359-2367.

468 TUORILA, H., MEISELMAN, H., BELL, R., CARDELLO, A. and JOHNSON, W. 1994.
469 Role of sensory and cognitive information in the enhancement of certainty and liking for
470 novel and familiar foods. *Appetite*. 23(3), 231-246.

471 TURNWALD, B. P., BOLES, D. Z. and CRUM, A. J. 2017. Association between indulgent
472 descriptions and vegetable consumption: Twisted carrots and dynamite beets. *JAMA Intern*
473 *Med*, New Online.

474 VARELA, P. and ARES, G. 2012. Sensory profiling, the blurred line between sensory and
475 consumer science. A review of novel methods for product characterization. *Food Res Int.*
476 *48(2)*, 893-908.

477 VIDAL, L., BARREIRO, C., GOMEZ, B., ARES, G. and GIMENEZ, A. 2013. Influence of
478 information on consumers' evaluations using check-all-that-apply questions and sorting: A
479 case study with milk desserts. *J Sensor Stud.* *28(2)*, 125-137.

480 WADA, Y., INADA, Y., YANG, J., KUNIEDA, S., MASUDA, T., KIMURA, A.,
481 KANAZAWA, S. and YAMAGUCHI, M.K. 2012. Infant visual preference for fruit
482 enhanced by congruent in-season odor. *Appetite.* *58(3)*, 1070-1075.

483 WANSINK, B. 2003. Overcoming the taste stigma of soy. *J Food Sci.* *68(8)*, 2604-2606.

484 WANSINK, B., VAN ITTERSUM, K. and PAINTER, J. 2005. How descriptive food names
485 bias sensory perceptions in restaurants. *Food Qual Prefer.* *16(5)*, 393-400.

486 YEOMANS, M. R., CHAMBERS, L., BLUMENTHAL, H. and BLAKE, A. 2008. The role
487 of expectancy in sensory and hedonic evaluation: The case of smoked salmon ice-cream.
488 *Food Qual Prefer.* *19(6)*, 565-573.

489 Acknowledgements: the author is very grateful to Dr. Margo Barker for constructive
490 feedback on an earlier version of the manuscript.
491