

## **The influence of brand equity characters on children's food preferences and choices.**

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## **Abstract**

**Objectives** Two studies examined whether the presence of brand equity (BE) characters on food packaging influenced children's food preferences and choices. BE characters are developed specifically to represent a particular brand/product, for example, Coco the Monkey for Kellogg's Cocomops®. To date, no research has assessed the influence of BE characters on children's food choices and, as they almost exclusively promote high fat, salt and sugar foods, it is crucial that we increase our understanding of their impact.

**Methods** In a mixed-measures design, 209 children (4-8yrs) were asked to rate their taste preferences and preferred snack choice for three matched food pairs, presented either with/without a BE character on packaging. Phase 1 addressed congruent food-character associations and Phase 2 addressed incongruent associations. Participants were also asked to rate their recognition and liking of characters used.

**Results** Children were significantly more likely to show a preference for foods with a BE character on the packaging compared to a matched food without a BE character, for both congruent and incongruent food-character associations. The presence of a BE character also significantly influenced the children's within-pair preferences, within-pair choices and overall snack choice (congruent associations only).

**Conclusions** These studies provide novel evidence that BE characters promote unhealthy food choices in children. The findings are consistent with those of studies exploring other types of promotional characters. In the context of a childhood obesity epidemic, the use of BE characters in the promotion of high fat, salt and sugar foods to children should be restricted.

## 1 **Introduction**

2 A growing body of literature demonstrates that food marketing has an effect on children's  
3 food preferences, choices and purchase requests<sup>1-4</sup> and has been identified as an important  
4 target for intervention in the prevention of childhood obesity<sup>1</sup>. Food promotion is  
5 increasingly conducted as part of an integrated and diverse marketing communications  
6 package, by which brand imagery is used across multiple platforms such as websites and  
7 social media, advergames, TV commercials, sponsorship, point-of-sale promotions and  
8 packaging<sup>5</sup>. Promotional characters are a key persuasive tool for advertisers seeking to  
9 engage children with their brand, and between the ages of two and seven years children are  
10 increasingly influenced by imagery and symbolism in advertising<sup>6,7</sup>. Promotional characters  
11 are of particular concern as, although they can have positive effects on choice of healthier  
12 foods such as fruit and vegetables<sup>8-10</sup>, they have been found to predominantly promote foods  
13 which are high in fat, salt and sugar (HFSS). A content analysis of child-targeted television  
14 (TV) advertising across several countries found that up to 49% of food commercials  
15 contained promotional characters, of which 79% were for HFSS foods<sup>11</sup>. Similarly, in an  
16 analysis of 577 child-targeted TV food commercials, Castonguay et al.<sup>12</sup> found that 73%  
17 included familiar characters, of which 72% promoted foods that were classed as being of low  
18 nutritional quality. Promotional characters are also used extensively on food packaging; an  
19 Australian study found that foods and beverages that employed promotional characters on the  
20 packaging were, on average, less healthful than food and beverages that did not<sup>13</sup>.

21 Lawrence<sup>14</sup> suggested that these characters are a tool for fostering a "brand-consumer  
22 relationship" (p.43), whereby characters take on personalities which make them relatable,  
23 enabling them to communicate brand values to consumers. Consumers form affective  
24 relationships with media characters and personalities<sup>15</sup> and children are particularly  
25 susceptible to forming these parasocial relationships with media characters,<sup>10,16-18</sup> which

26 reflect emotional friendships based on the attractiveness of the characters and the messages  
27 that they carry<sup>19</sup>. Thus, de Droog<sup>10</sup> suggests that parasocial relationship theory would predict  
28 that familiar characters elicit a positive elaborate affective response, which may subsequently  
29 lead children to favor products that display these characters<sup>10</sup>.

30 There is a wealth of existing research indicating that promotional characters influence  
31 children's food preferences, choices and consumption in favour of the foods they are  
32 promoting. These studies typically explore the impact of celebrity endorsers<sup>20</sup> or licensed  
33 characters, whereby characters from popular media are licensed by a company to promote  
34 their product<sup>9,10,21-26</sup>. Specifically, Roberto et al.<sup>23</sup> found that licensed characters influenced  
35 children's preferences and choices in favour of those foods presented with characters on the  
36 packaging. Brand equity (BE) characters (also known as trade- or spokes-characters) are  
37 distinct from licensed characters, as they are created by food manufacturers solely for  
38 promoting a particular brand or product, having no identity beyond these associations, for  
39 example, Tony the Tiger for Kellogg's Frosties<sup>®</sup>. They are used to build emotional  
40 relationships which cultivate brand loyalty, and this loyalty often persists into adulthood<sup>4</sup>.  
41 The power of BE characters may lie in the learned associations that consumers make between  
42 the character and the food they are associated with. However, to date, no study has  
43 investigated the influence of BE characters on diet-related outcomes in children. The  
44 distinction is evident in regulatory approaches that restrict the use of licensed, but not BE,  
45 characters<sup>27</sup> when marketing HFSS foods to children, however, this approach does not appear  
46 to be evidence-based.

47 This paper describes two studies which were conducted using a modified version of the  
48 Roberto et al.<sup>23</sup> design, in order to examine the influence of BE characters on food packaging  
49 on both children's food preferences (self-report of perceived liking) and snack food choices.  
50 In the first study, character-product pairs were congruent (characters appeared on products

51 they usually promote) and in the second study, the pairings were incongruent (characters  
52 appeared on products they do not promote). It was hypothesised that i) children would  
53 perceive the food item with the BE character on the packaging as tasting better than the food  
54 item without the BE character and that they would be more likely to select that BE endorsed  
55 food item as a snack. It was also hypothesised that ii) these findings would persist even when  
56 character-food associations were incongruent.

## 57 **Method**

58 In total, 209 children aged 4-8 years took part (102 female and 107 male); 60 for Study 1 and  
59 149 for Study 2 (reflecting the need to randomize to three groups in Study 1 and six groups in  
60 Study 2). Children were recruited from 5 primary schools and 2 childcare centres in the UK.  
61 Head teachers and directors of childcare centres issued letters to parents, which outlined the  
62 study and contained parental consent forms and questionnaires. The questionnaire requested  
63 demographic and lifestyle information including parental education, child's age and gender,  
64 ethnicity and weekly TV and internet usage. Additional factors measured in parental  
65 questionnaire had no influence on findings so are not described here and these data are not  
66 reported. Participating children gave their verbal assent for participation in a food-tasting  
67 study and all data were collected on single-test days between February 2014 and February  
68 2015. The studies were approved by the University of Liverpool's Non-invasive Procedures  
69 Ethics Sub-committee in 2013.

70 Three study foods were selected for use in these studies based on pilot work (unpublished  
71 data) which showed that these were recognised and preferred characters in children of the  
72 target age range: (1) Cheestrings<sup>®</sup> (Kerry Foods<sup>®</sup>), (2) Pom-Bear<sup>®</sup> Potato Snacks – Original,  
73 (Intersnack<sup>®</sup>) and (3) Coco Pops<sup>®</sup> Snack Bar (Kellogg's<sup>®</sup>). Images were selected in which the

74 characters' facial expressions and hand gestures were similar, and were then matched for  
75 size.

76 All foods were presented in clear packaging including a sticker stating the name of the food  
77 in plain text (e.g. 'Cheestrings'). Sticker location, font and color were kept consistent for each  
78 food sample. One package in each matched food-pair also featured a BE character to the left  
79 hand-side of the sticker. In Study 1, the BE character appearing on the packaging was  
80 congruent with the food in the packaging (e.g. Coco the Monkey on a Coco Pops Snack  
81 Bar®) and in Study 2, the character-product associations were incongruent (e.g. Coco the  
82 Monkey on Pom-Bear Potato Snacks®). All possible product and character permutations  
83 were included.

84 Participants were tested individually, whilst seated opposite the investigator at a small table.  
85 Prior to testing, the investigator ensured that children understood and could use the child-  
86 friendly Likert scales featuring smiley faces. Children were presented with the first matched  
87 food pair, and the investigator instructed them to *"Please eat a bit of this food"* whilst  
88 pointing at one of the food items. When the child had finished eating, the investigator pointed  
89 to the other food item and said, *"Now please eat a bit of this food."* When the child had  
90 finished eating, the investigator asked, *"Do they taste the same to you? Or point to the food  
91 that tastes best to you."* The investigator then presented the child with a smiley face Likert  
92 scale, pointed at each of the food items in turn and asked, *"Do you love it, like it, it's OK,  
93 don't like it or hate it?"* Finally the child was asked, *"Which one would you choose for a  
94 snack?"* This was repeated for each of the 3 matched food pairs; food order and placement  
95 of the foods within the matched pairs (i.e. BE character on the left or right) was randomized.

96 Next the children were shown a picture of each of the characters used and asked, *"Do you  
97 recognise this character?"* If they answered 'Yes', they were asked, *"Where have you seen*

98 *this character before?*” The investigator instructed the children to *“Point at the face that best*  
99 *shows how much you like this character”*, while children were presented with a smiley face  
100 Likert scale, providing them with the following possible responses: like a lot, like, it’s OK,  
101 don’t like, hate. Finally, their three final food choices were placed in front of the participant  
102 and they were asked *“Which of these would you like to take away for a snack? You can eat*  
103 *this when your teacher or a member of your family says it’s OK.”* The researcher repeated  
104 each response back to the children, in order to confirm their response was recorded correctly.  
105 Throughout the procedure, children could view only the food item(s) they were evaluating.  
106 Measures of height and weight were recorded discreetly and children were given an age-  
107 appropriate explanation for the study.

108 Our first hypothesis was that, i) when presented with 2 samples of the same food in matched  
109 packaging, children would prefer the food item with the BE character on the packaging, and  
110 that this preference would persist for incongruent character-food associations. To test this, an  
111 average preference score was calculated for each child, where a preference for the BE  
112 character food was coded as +1, no preference as 0 and a preference for the non-BE character  
113 food as -1. A series of Wilcoxon signed rank tests were employed to examine these average  
114 preference scores, the Likert scale ratings of liking across each of the 3 food pairs and also a  
115 combined average of all 3 Likert scale liking scores for each child. To test our second  
116 hypothesis, ii) that children would be more likely to choose the food items with BE characters  
117 on the packaging as a snack, Pearson’s Chi-Square was performed on the total 180 choices  
118 made (60 children making 3 choices each). A further Chi-Square Goodness-of-Fit was  
119 performed on the final snack choice (60 children making one final snack choice). Exploratory  
120 analyses were used to determine whether age, gender, body mass index (BMI), ethnicity,  
121 parental education, TV/internet hours, character recognition or liking moderated children’s  
122 preferences or snack choices. Spearman’s rank correlation was used for scaled variables,

123 Kruskal-Wallis tests for categorical variables and Wilcoxon Mann-Whitney *U*-tests for  
124 dichotomous variables. The significance level was set at a 2-tailed  $\alpha < .05$ . BMI was  
125 calculated using height and weight data and converted to an age- and gender-appropriate *Z*  
126 score using the WHO Anthropometric Calculator software (WHO Anthro for personal  
127 computers, Version 3.2.2., 2011). Weight status was subsequently defined using cut-off  
128 points, equivalent to adult BMIs of 25 kg/m<sup>2</sup> (overweight) and 30 kg/m<sup>2</sup> (obese)<sup>28</sup>. Where  
129 children refused to taste one of the food items or failed to make a clear decision on preference  
130 or choice, responses were deemed invalid and excluded from analysis.

131

## 132 **Results**

133 [Insert Table 1 about here]

134 The participating children predominantly identified as British/Irish - White (77.5% across  
135 both studies), with an age range of 4.0-8.9 years (Mean:  $7.0 \pm 1.1$  years) (Table 1, data  
136 displayed by study). Those defined as normal weight accounted for 81% of the children, with  
137 19% defined as overweight/obese (Table 1). The parental questionnaire was returned by 169  
138 (80.8%) of parents.

### 139 *Study 1*

140 Children significantly preferred both Cheestrings® ( $Z = -3.225, p = .001$ ) and Coco Pops  
141 Snack Bars® ( $Z = -2.245, p = .025$ ) when a BE character was on the packaging, compared to  
142 the same food presented in a package without the character (see Table 2). This effect was not  
143 seen for Pom-Bear Potato Snacks® ( $Z = -0.897, p > .05$ ). The preference for BE characters  
144 remained when a combined average liking score on the Likert scales was used, combining all  
145 3 food pairs ( $Z = -3.266, p = .001$ ). A further Wilcoxon signed-rank test confirmed that

146 overall children did display a preference, favoring the food items with BE characters, when  
147 compared to those presented in plain packaging. Each child's average liking score overall  
148 was  $0.14 \pm 0.42$  (median: 0.33 [interquartile range: =0.25-0.33]) and was significantly greater  
149 than 0 ( $Z = -2.537, p = .01$ ), demonstrating a preference for BE packaged foods. Across all  
150 food pairs, 46% of children correctly identified that there was no difference between the  
151 matched-pairs, 33% preferred the food item with the BE character on the packaging, and 21%  
152 preferred the food item without the BE character.

153 [Insert Table 2 about here]

154 For the final snack choice, children were significantly more likely to choose a BE character  
155 food item than a non-BE character food item, with 73% of children selecting a snack with a  
156 BE character ( $\chi^2(1) = 13.07, p = 0.000$ ) (see Table 3). When looking at the total snack  
157 choices made (60 children x 3 choices, resulting in 179 valid choices), in 69% of cases  
158 children chose the food item with the BE character ( $\chi^2(2) = 5.53, p = 0.06$ ). This difference  
159 was approaching significance, favoring the BE character food items.

160 [Insert Table 3 about here]

## 161 *Study 2*

162 As in Study 1, children were significantly preferred both Cheestrings® ( $Z = -3.57, p < .001$ )  
163 and Coco Pops Snack Bars® ( $Z = -2.10, p = .036$ ) presented with the incongruent BE  
164 characters on the packaging, compared to the same food presented in a package without the  
165 character (see Table 2). The majority of children also chose Pom-Bear Potato Snacks® with  
166 the incongruent BE character present, however, this finding fell just short of significance ( $Z =$   
167  $-1.95, p = .052$ ). This preference for BE characters remained when an average liking score on  
168 the Likert scales was used, combining all 3 food pairs ( $Z = -4.01, p < .001$ ). A further

169 Wilcoxon signed-rank test confirmed that overall, children did display a preference, favoring  
170 the food items with incongruent BE characters compared to those presented in plain  
171 packaging. Each child's average preference score overall was  $0.13 \pm 0.40$  (median: 0.00  
172 [interquartile range: =0.00-0.33]) and was significantly greater than 0 ( $Z = -3.82, p < .001$ ),  
173 demonstrating a preference for BE packaged foods. Across all food pairs, 45% of children  
174 correctly identified that there was no difference between the matched-pairs, 40% preferred  
175 the food item with the BE character on the packaging and 15% preferred the food item  
176 without the BE character.

177 When making within-pair snack choices, children were significantly more likely to choose a  
178 food item with an incongruent BE character on the packaging than those without, with 58%  
179 of the 424 valid responses being for an incongruent BE character snack ( $\chi^2 (1) = 11.56, p =$   
180  $0.001$ ). However, when asked to make a final snack selection, no significant difference was  
181 found, with 50% of the children choosing a snack food with the incongruent BE character on  
182 the packaging and 50% choosing a food item without the character ( $p > .05$ ) (see Table 3).

### 183 *Exploratory Analysis*

184 Exploratory analysis found no associations between the demographic and lifestyle factors  
185 measured (age, gender, ethnicity, parental education, BMI, weekly TV viewing, weekly  
186 internet usage or average character recognition and liking scores), and the outcome measures  
187 (preference, liking or choice). Overall, 69% of children correctly identified the Cheestring®  
188 character, 91% identified the Pom-Bear® character and 92% identified the Coco Pops®  
189 character.

190

191

192 **Discussion**

193 This study provides experimental evidence of a relationship between the presence of BE  
194 characters on food packaging and children's preferences and food choices, similar to that  
195 found for licensed characters<sup>23</sup>. In addition, these data demonstrate that this relationship is  
196 maintained even when food-character associations are incongruent, that is, a BE character is  
197 presented on the packaging of a food they do not normally promote. Overall, children  
198 reported a preference for the foods with a BE character present on the packaging and this was  
199 true across two of the three matched food pairs (Cheestrings® and Coco Pops Snack Bars®),  
200 irrespective of whether the food-character association was congruent (80% and 67%,  
201 respectively) or incongruent (64.4% and 52.1%, respectively).

202 Furthermore, across all three food pairs, the majority of children chose the food with the BE  
203 character when asked which they would prefer as a snack, ranging from 58% - 87% of  
204 children when the food-character association was congruent, to 52% - 64% when  
205 incongruent. The findings of our first study lend support to de Droog et al.,<sup>10</sup> who found that  
206 perceptually congruent character-food associations based on color similarity alone were  
207 inadequate for children to perceive them as congruent and suggest that characters who  
208 display the shape of the food, in addition to the color, were more likely to be perceived as  
209 perceptually congruent. All character-food combinations used in this study were perceptually  
210 congruent, with characters matching foods in color, and, in addition, both Cheestrings® and  
211 Pom-Bear Potato Snacks® also matched their character on shape. However, this does not  
212 explain similar findings from the second study, in which character-food combinations  
213 displayed no perceptual congruency, yet children rated foods with incongruent BE character  
214 as tasting nicer and favored the incongruent BE character foods when making within-pair  
215 snack choices. Similarly, it does not appear that it is a simply a learned association between  
216 congruent food products and their related BE characters. Perhaps the effects of BE characters

217 on children's diet-related outcomes are best explained by parasocial relationship theory,  
218 where exposure to these characters led to the formation of relationships which elicit  
219 conscious affective responses towards the character and also products which then display this  
220 character<sup>10</sup>.

221 Surprisingly, for incongruent combinations, despite displaying a preference for the food items  
222 with an incongruent BE character present on the packaging, children were not significantly  
223 more likely to select the incongruent BE character food as their final snack choice. One  
224 potential explanation for this is that immediately prior to making their final snack selection,  
225 children were questioned about their recognition of the characters and this may have  
226 increased the salience of the incongruence.

227 Overall, these findings suggest that the effects of BE characters may be carried over to  
228 products they are not normally associated with, and add to the current literature detailing the  
229 use of both promotional characters<sup>9,10,21-26,29</sup> and branding<sup>9,30,31</sup> for influencing food choice  
230 and preferences in children.

231 This study had some limitations. Food preference studies cannot possibly include an  
232 exhaustive list of all branded foods, and so personal preference may affect findings. In  
233 addition, there is likely to be variation in the amount of prior exposure children receive to  
234 particular BE characters and products. This study aimed to address this with the inclusion of  
235 the pilot work to ensure that liked and recognised characters for this population were used.  
236 One limitation is the lack of inclusion of healthier and/or less palatable food items, however,  
237 BE characters are used almost exclusively to promote HFSS foods in the UK and no suitable  
238 character/food associations were found which met these criteria. Whilst the order of the foods  
239 being presented was randomised, and the within-pair order of each food was counterbalanced  
240 (character first or no character first), future studies may wish to ensure children rinse their

241 mouths between tasting each item to ensure that lingering tastes do not affect ratings for  
242 subsequent foods. Another limitation of the study was that the investigator was not blind to  
243 the character manipulation or the study aims, rendering the study at risk from the influence of  
244 demand characteristics (the idea that participants may be aware of what the researcher is  
245 trying to investigate, or anticipates finding, and what this implies for how participants may be  
246 expected to behave). The study sample was not ethnically diverse and very few children were  
247 classified as overweight/obese, meaning comparisons between these different populations  
248 could not be drawn.

249 Conversely, the study also had several strengths, including using a randomized design which  
250 allowed for inferences by only manipulating the presence of BE characters on the packaging.  
251 Children did not receive feedback during the study, and the order of the foods and the within-  
252 pair items were randomized. By providing the option for children to say the items tasted the  
253 same, distortion of our findings for preference was minimised. In addition, in order to avoid  
254 demand characteristics for recognition (where children may claim to recognise the character  
255 despite not actually recognising them, believing this to be the response preferred by the  
256 researcher), responses were only recorded as 'yes' if children could then correctly identify  
257 where they had seen the character, e.g. TV advertisements, food type, brand name.

258

## 259 **Conclusions**

260 Overall, the results of this study provide evidence that BE characters on packaging influence  
261 children's food preferences and choices, in favour of the foods the characters appear on.

262 Whilst it is possible that BE characters could be used in a positive way to promote healthier  
263 food items to children, they are currently used predominantly to market HFSS foods and so

264 these findings are of particular concern. To our knowledge, this is the first time this influence  
265 has been demonstrated using BE characters and these findings parallel the current evidence  
266 on the influence of licensed characters on children's food preferences and choices; due to this  
267 existing evidence, some countries (such as the UK) have regulated the use of these licensed  
268 characters in TV advertising. Findings here help to inform the international debate on  
269 effective food marketing policy, suggesting that policymakers should extend current  
270 regulations to include the use of BE characters if we are to reduce the power of HFSS  
271 marketing to influence children's diets.

**Abbreviations:** BE – brand equity; GCSE – General Certificate of Secondary Education  
(UK); HFSS – high fat, salt and sugar; TV – television

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