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

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**Short title:** Influence of brand characters on children’s food choices

**Funding Source:** No external funding for this manuscript.

**Financial Disclosure:** All authors and individuals who have been acknowledged have indicated they have no financial relationships relevant to this article to disclose.

**Conflict of Interest:** All authors and individuals who have been acknowledged have indicated they have no potential conflicts of interest to disclose.

**Key Words:** foodmarketing, food packaging, brand equity, characters, food choice, food preference, children

The first draft of the manuscript was written by Ms Lauren McGale, and no honorarium, grant, or other form of payment was given to anyone to produce the manuscript.

**Abstract**

**Objectives** To assess the influence of brand equity (BE) characters on food packaging on children's food preferences and choices, two studies were conducted. BE characters are developed specifically to represent a particular brand/product. Despite existing literature suggesting promotional characters influence children’s food choices, to date, no research has assessed the influence of BE characters specifically.

**Study Design** 209 children (4-8yrs) were recruited from schools and childcare centres in the UK. In a mixed-measures design, the children 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. Study 1 addressed congruent food-character associations and Study 2 addressed incongruent associations. Participants were also asked to rate their recognition and liking of characters used. A series of Wilcoxon’s signed-rank tests and Chi-Square analyses were 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.

**Introduction**

A growing body of literature demonstrates that food marketing has an effect on children’s food preferences, choices and purchase requests(1–4) and has been identified as an important target for intervention in the prevention of childhood obesity(1). Food promotion is increasingly conducted as part of an integrated and diverse marketing communications package, by which brand imagery is used across multiple platforms such as websites and social media, advergaming, TV commercials, sponsorship, point-of-sale promotions and packaging(5).

Promotional characters are a key persuasive tool for advertisers seeking to engage children with their brand, and between the ages of two and seven years children are increasingly influenced by imagery and symbolism in advertising(6,7). Promotional characters are of particular concern as, although they can have positive effects on choice of healthier foods such as fruit and vegetables(8–10), they have been found to predominantly promote foods which are high in fat, salt and sugar (HFSS). A content analysis of child-targeted television (TV) advertising across several countries found that up to 49% of food commercials contained promotional characters, of which 79% were for HFSS foods(11). Similarly, in an analysis of 577 child-targeted TV food commercials, Castonguay, Kunkel, Wright and Duff(12) found that 73% included familiar characters, of which 72% promoted foods that were classed as being of low nutritional quality. Promotional characters are also used extensively on food packaging; an Australian study found that foods and beverages that employed promotional characters on the packaging were, on average, less healthful than food and beverages that did not(13).

Lawrence(14) suggested that these characters are a tool for fostering a “brand-consumer relationship” (p.43), whereby characters take on personalities which make them relatable, enabling them to communicate brand values to consumers. Consumers form affective relationships with media characters and personalities(15) and children are particularly susceptible to forming these parasocial relationships with media characters,(10,16–18) which reflect emotional friendships based on the attractiveness of the characters and the messages that they carry(19). Thus, de Droog, Buijzen and Valkenburg (10) suggest that parasocial relationship theory would predict that familiar characters elicit a positive elaborate affective response, which may subsequently lead children to favor products that display these characters(10).

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

In order to examine the influence of BE characters on food packaging on both children’s food preferences (self-report of perceived liking) and snack food choices, this paper describes two studies which were conducted using a modified version of the Roberto et al.(23) design. Roberto et al. asked children to taste three pairs of identical foods presented in matched packaging either with or without a licensed character and their subsequent preferences and snack choices were recorded. In the current first study, character-product pairs were congruent (characters appeared on products they usually promote) and in the second study, the pairings were incongruent (characters appeared on products they do not promote). It was hypothesised that children would i) prefer the food item with the BE character on the packaging and that this preference would persist even when character-food associations were incongruent and ii) be more likely to choose the food items with BE characters on the packaging as a snack.

**Method**

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

Three study foods were selected for use in these studies based on pilot work (unpublished data) which showed that these were recognised and preferred characters in children of the target age range: (1) Cheestrings® (Kerry Foods®), (2) Pom-Bear® Potato Snacks – Original, (Intersnack®) and (3) Coco Pops® Snack Bar (Kellogg’s®). Images were selected in which the characters’ facial expressions and hand gestures were similar, and were then matched for size. Cheestrings® and Coco Pops® Snack Bars were both presented each time in their entirety, as per the recommended portion size (both 20g portions). In order to avoid the risk of children selecting the potato snacks as their final snack choice simply because the portion offered was larger than the other available snacks, approximately half the recommended portion of Pom-Pear® Potato Snacks (approximately 9.5g) were given to the children each time, ensuring that the amount of each type of food offered was visually similar.

All foods were presented in clear packaging including a sticker stating the name of the food in plain text (e.g. ‘Cheestrings’). Sticker location, font and color were kept consistent for each food sample. Children were presented with the foods in matched pairs, that is, two identical foods in matched packaging were offered, with the only variation being that one package in each pair also featured a BE character to the left hand-side of the sticker. In Study 1, the BE character appearing on the packaging was congruent with the food in the packaging (e.g. Coco the Monkey on a Coco Pops Snack Bar®) and in Study 2, the character-product associations were incongruent (e.g. Coco the Monkey on Pom-Bear Potato Snacks®). All possible product and character permutations were included.

Participants were tested individually, whilst seated opposite the investigator at a small table. Prior to testing, the investigator ensured that children understood and could use the child-friendly 5-point Likert scales featuring smiley faces. Children were presented with the first matched food pair, and the investigator instructed them to *“Please eat a bit of this food”* whilst pointing at one of the food items. When the child had finished eating, the investigator pointed to the other food item and said, *“Now please eat a bit of this food.”* When the child had finished eating, the investigator asked, *“Do they taste the same to you? Or point to the food that tastes best to you.”* The investigator then presented the child with a 5-point smiley face Likert scale, pointed at each of the food items in turn and asked, *“Do you love it, like it, it’s OK, don’t like it or hate it?”* Finally the child was asked, *“Which one would you choose for a snack?”* This was repeated for each of the 3 matched food pairs; food order and placement of the foods within the matched pairs (i.e. BE character on the left or right) was randomized.

Next the children were shown a picture of each of the characters used and asked, *“Do you recognise this character?”* If they answered ‘Yes’, they were asked, *“Where have you seen this character before?”* The investigator instructed the children to *“Point at the face that best shows how much you like this character”,* whilechildren were presented with a 5-point smiley face Likert scale, providing them with the following possible responses: like a lot, like, it’s OK, don’t like, hate. Finally, their three final food choices were placed in front of the participant and they were asked *“Which of these would you like to take away for a snack? You can eat this when your teacher or a member of your family says it’s OK.”* The researcher repeated each response back to the children, in order to confirm their response was recorded correctly. Throughout the procedure, children could view only the food item(s) they were evaluating. Measures of height and weight were recorded discreetly and children were given an age-appropriate explanation for the study.

Our first hypothesis was that, i) when presented with 2 samples of the same food in matched packaging, children would prefer the food item with the BE character on the packaging, and that this preference would persist for incongruent character-food associations. To test this, an average preference score was calculated for each child, where a preference for the BE character food was coded as +1, no preference as 0 and a preference for the non-BE character food as -1. A series of Wilcoxon signed rank tests were employed to examine these average preference scores, the Likert scale ratings of liking across each of the 3 food pairs and also a combined average of all 3 Likert scale liking scores for each child. To test our second hypothesis, ii) that children would be more likely to choose the food items with BE characters on the packaging as a snack, Pearson’s Chi-Square was performed on the combined total of all choices made in each study A further Chi-Square Goodness-of-Fit was performed on the final snack choice in each study. Exploratory analyses were used to determine whether age, gender, body mass index (BMI), ethnicity, parental education, TV/internet hours, character recognition or liking moderated children’s preferences or snack choices. Spearman’s rank correlation was used for scaled variables, Kruskal-Wallis tests for categorical variables and Wilcoxon Mann-Whitney *U*-tests for dichotomous variables. The significance level was set at a 2-tailed α < .05. Where multiple comparisons were carried out, Holm-Bonferroni corrections were used (28) in order to robustly correct for type 1 errors whilst incurring less of a reduction in power than is found with the original Bonferroni procedure (29). BMI was calculated using height and weight data and converted to an age- and gender-appropriate Z score using the WHO Anthropometric Calculator software (WHO Anthro for personal computers, Version 3.2.2., 2011). Weight status was subsequently defined using cut-off points, equivalent to adult BMIs of 25 kg/m² (overweight) and 30 kg/m² (obese)(30). Where children refused to taste one of the food items or failed to make a clear decision on preference or choice, responses coded as missing data.

**Results**

[Insert Table 1 about here]

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

*Study 1*

Children significantly preferred both Cheestrings® (*Z* = -3.225, *p* = .001) and Coco Pops Snack Bars® (*Z* = -2.245, *p* = .025) when a BE character was on the packaging, compared to the same food presented in a package without the character (see Table 2).This effect was not seen for Pom-Bear Potato Snacks® (*Z* = -0.897, *p*> .05). The preference for BE characters remained when a combined average liking score (across all 3 food pairs) on the Likert scales was used (*Z* = -3.266, *p* = .001). A further Wilcoxon signed-rank test confirmed that overall children did display a preference, favoring the food items with BE characters, when compared to those presented in plain packaging. Each child’s average liking score overall was 0.14 ± 0.42 (median: 0.33 [interquartile range: =-0.25-0.33]) and was significantly greater than 0 (*Z* = -2.537, *p* = .01), demonstrating a preference for BE packaged foods. Across all food pairs, 46% of children correctly identified that there was no difference between the matched-pairs, 33% preferred the food item with the BE character on the packaging, and 21% preferred the food item without the BE character.

[Insert Table 2 about here]

For the final snack choice, children were significantly more likely to choose a BE character food item than a non-BE character food item, with 73% of children selecting a snack with a BE character (χ² (1) =13.07, *p* < 0.001 (see Table 3). When looking at the total snack choices made (60 children x 3 choices, resulting in179 valid choices), in 69% of cases children chose the food item with the BE character (χ²(2) =5.53, *p* = 0.06). This difference was approaching significance, favoring the BE character food items.

[Insert Table 3 about here]

*Study 2*

As in Study 1, children significantly preferred the Cheestrings® item (*Z* = -3.57, *p* < .001) presented with the incongruent BE characters on the packaging, compared to the same food presented in a package without a character (see Table 2). The majority of children also chose both Coco Pops Snack Bars® and Pom-Bear Potato Snacks® with the incongruent BE character present more often, however, these findings fell just short of significance (*Z* = -2.10, *p* = .036 and *Z* = -1.95, *p* = .052, respectively). Preference for BE characters remained when an average liking score on the Likert scales was used, combining all 3 food pairs (*Z* = -4.01, *p* < .001). A further Wilcoxon signed-rank test confirmed that overall, children did display a preference, favoring the food items with incongruent BE characters compared to those presented in plain packaging. Each child’s average preference score overall was 0.13 ± 0.40 (median: 0.00 [interquartile range: =0.00-0.33]) and was significantly greater than 0 (*Z* = -3.82, *p* < .001), demonstrating a preference for BE packaged foods. Across all food pairs, 45% of children correctly identified that there was no difference between the matched-pairs, 40% preferred the food item with the BE character on the packaging and 15% preferred the food item without the BE character.

When making within-pair snack choices, children were significantly more likely to choose a food item with an incongruent BE character on the packaging than those without, with 58% of the 424 valid responses being for an incongruent BE character snack (χ² (1) =11.56, *p* = 0.001). However, when asked to make a final snack selection, no significant difference was found, with 50% of the children choosing a snack food with the incongruent BE character on the packaging and 50% choosing a food item without the character (*p* > .05) (see Table 3).

*Exploratory Analysis*

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

**Discussion**

This study provides experimental evidence of a relationship between the presence of BE characters on food packaging and children’s preferences and food choices, similar to that found for licensed characters(23). In addition, these data demonstrate that this relationship is maintained even when food-character associations are incongruent, that is, a BE character is presented on the packaging of a food they do not normally promote. Overall, children reported a preference for the foods with a BE character present on the packaging and this was true across two of the three matched food pairs (Cheestrings® and Coco Pops Snack Bars®) when food-character associations were congruent and one of the three (Cheestrings®) when food character associations were incongruent. Furthermore, it is worth noting that when associations were incongruent, the greater preference for both Coco Pops Snack Bars and Pom Bear Potato Snacks with characters present was also approaching significance.

Across all three food pairs, the majority of children chose the food with the BE character when asked which they would prefer as a snack, ranging from 58% - 87% of children when the food-character association was congruent, to 52% - 64% when incongruent. The findings of our first study lend support to de Droog et al.,(10) who found that perceptually congruent character-food associations based on color similarity alone were inadequate for children to perceive them as congruent and suggest that characters who display the shape of the food, in addition to the color, were more likely to be perceived as perceptually congruent. All character-food combinations used in this study were perceptually congruent, with characters matching foods in color, and, in addition, both Cheestrings® and Pom-Bear Potato Snacks® also matched their character on shape. However, this does not explain similar findings from the second study, in which character-food combinations displayed no perceptual congruency, yet children rated foods with incongruent BE characters as tasting nicer and favored the incongruent BE character foods when making within-pair snack choices. Similarly, it does not appear that it is simply a learned association between congruent food products and their related BE characters. Perhaps the effects of BE characters on children's diet-related outcomes are best explained by parasocial relationship theory, where exposure to these characters led to the formation of relationships which elicit conscious affective responses towards the character and also products which then display this character(10).

There are several ways in which BE characters differ from licensed characters, with the association of the BE character being limited to one particular brand/product and licensed characters having a myriad of potential platforms via which associations can be formed, for example, television shows, movies, food packaging, toys and/or cereal bowls. This multi-faceted approach could potentially lead to much stronger perceived relationships between a consumer and the licensed character. Considering these differences, it is interesting that the effects of these two types of promotional characters (BE and licensed) on children’s food choices and preferences appear to be so similar. This may suggest that it is not the learned associations that are the driving factor behind the influence of promotional characters, but simply the presence of any well-liked and/or recognised character on the food packaging.

This explanation is consistent with our findings for Study 2, where the food-character associations were incongruent, yet children still displayed a preference for the food items with an incongruent BE character on the packaging. However, it does not explain why children were not significantly more likely to select the incongruent BE character food as their final snack choice. One potential explanation for this finding could be that immediately prior to making their final snack selection, children were questioned about their recognition and liking of the characters. This may have increased the salience of the incongruence, which in turn may have deterred them from selecting foods with an incongruent character on the packaging.

Overall, these findings suggest that the effects of BE characters may be carried over to products they are not normally associated with, and add to the current literature detailing the use of both promotional characters(9,10,21–26,31) and branding(9,32,33) for influencing food choice and preferences in children.

This study had some limitations. Food preference studies cannot possibly include an exhaustive list of all branded foods, and so personal preference may affect findings. In addition, there is likely to be variation in the amount of prior exposure children receive to particular BE characters and products. This study aimed to address this with the inclusion of the pilot work to ensure that liked and recognised characters for this population were used. One limitation is the lack of inclusion of healthier and/or less palatable food items, however, BE characters are used almost exclusively to promote HFSS foods in the UK and no suitable character/food associations were found which met these criteria. Whilst the order of the foods being presented was randomised, and the within-pair order of each food was counterbalanced (character first or no character first), future studies may wish to ensure children rinse their mouths between tasting each item to ensure that lingering tastes do not affect ratings for subsequent foods. Another limitation of the study was that the investigator was not blind to the character manipulation or the study aims, rendering the study at risk from the influence of demand characteristics (the idea that participants may be aware of what the researcher is trying to investigate, or anticipates finding, and what this implies for how participants may be expected to behave). The study sample was not ethnically diverse and very few children were classified as overweight/obese, meaning comparisons between these different populations could not be drawn.

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

**Conclusions**

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

Whilst it is possible that BE characters could be used in a positive way to promote healthier food items to children, they are currently used predominantly to market HFSS foods and so these findings are of particular concern. To our knowledge, this is the first time this influence has been demonstrated using BE characters and these findings parallel the current evidence on the influence of licensed characters on children's food preferences and choices; due to this existing evidence, some countries (such as the UK) have regulated the use of these licensed characters in TV advertising. Findings here help to inform the international debate on effective food marketing policy, suggesting that policymakers should extend current regulations to include the use of BE characters if we are to reduce the power of HFSS 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

**Acknowledgements**

We wish to thank the schools and children who took part in this study. We would also like to acknowledge Sophie Bowyer, Rosemary Halcrow, Anna Kenchington and Bethany Trail for their contribution to the data collection for this study.

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