Brands and food-related decision making in the laboratory: How does food branding affect acute consumer choice, preference, and intake behaviours?

A systematic review of recent experimental findings.

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**Abstract**

Background: Several studies have explored factors influencing consumer choice of foods and non-alcoholic beverages (hereafter, foods), and brand information has been shown to affect potential determinants of eating behaviour, such as consumer attitudes. However, experimental studies have yet to fully elucidate the impact of brand information (presence versus absence of brand imagery) on actual behaviour, in terms of acute food-related decision making. This study aimed to review recent developments and identify key methodological considerations and future directions for this field.

Methods: This was a systematic review of recent experimental studies in which actual foods were presented to participants, with brand information manipulated at the point of taking an acute outcome measure of preference, choice or intake. Three electronic databases were searched for relevant publications (Web of Science, PubMed and PsycINFO). In order to capture recent research developments, searches were limited to English language papers published in the last five years (2010-) and electronic searches were supplemented by a manual search of reference sections in eligible papers.

Results: Ten papers were eligible for inclusion in this review, reporting on eleven experiments. Overall, the results did not show conclusively whether or not brand information affects acute food-related decision making, although effects on food intake were more consistent than effects on preference and choice. Where an impact of brand information was found, it appeared to be moderated by individual differences, specifically weight status, gender and psychological profile (particularly restraint).

Conclusion: This study highlighted the small number of relevant recent studies on this topic, and the substantial heterogeneity in design that exists across this literature. There is a clear need for more high quality, methodologically consistent research of branding effects on immediate food-related decisions. Consistent outcome reporting (such as demarcation of reporting across pertinent participant sub-groups) should also be encouraged to enable accurate comparisons and allow reliable conclusions to be drawn.

**Introduction**

Within the context of rising levels of obesity worldwide, the food environment and its impact on eating behaviour has come under particular scrutiny in recent years (Swinburn et al., 2011). The ubiquitous availability of highly palatable, energy dense foods, the lack of physical effort required to acquire them, and their pervasive marketing, particularly to children, all contribute to a food environment that has been described as ‘toxic’ and ‘obesogenic’ (Keller et al., 2012). Several large scale systematic reviews have linked this unhealthy food promotion to poorer diet-related outcomes (Cairns, Angus, & Hastings, 2009; Hastings et al., 2003; IOM, 2006). In addition, although many studies, predominantly in children, have found high levels of brand logo recognition (Arredondo, Castaneda, Elder, Slymen, & Dozier, 2009; Kopelman, Roberts, & Adab, 2007; Ueda et al., 2012) and even that knowledge of unhealthy food brands is a significant predictor of child BMI (Cornwell, McAlister, & Polmear-Swendris, 2014), the specific role of branding in acute food-related decisions in adults and children remains to be fully clarified.

A well-known brand is one of the most valuable intangible assets a company can have (Neumeier, 2006), as it not only serves as a marker for the products of that company but also symbolises quality, reduced risk, and often evokes consumer trust (Keller & Lehmann, 2006). Foods are a highly branded commodity and marketers seek to build brand awareness and preference as key antecedents to purchase behaviour (Story & French, 2004). How the pathway of influence occurs is yet to be fully elucidated, however recent hierarchy of effects model posits a logical sequence that links branded food promotion to downstream diet-related health outcomes (e.g. body weight) (Kelly et al., 2015). This model, and the evidence underpinning it, supports the view that influence of branding over preference and consumption can occur through a complex interlinking of individual steps which includes behavioural determinants (awareness, recall, attitudes, beliefs), cue exposure (e.g. marketing at point of sale), and purchase intent. However, Kelly et al., (2015) also note that these factors must be considered in parallel with physiological influences over food decisions (e.g. epigenetic phenomena) and contextual influences such as food price and availability.

Branding is undoubtedly a central component of food marketing, especially in an increasingly competitive retailing environment where imagery used on product packaging has a fraction of a minute to make a difference (Dickson & Sawyer, 1990). Brand information needs to be prominent to be noticed, as it is competing with the complexity of other packaging information simultaneously being processed by the consumer (Cavanagh, Kruja, & Forestell, 2014). Given that we use brands to create and communicate self-concepts such as user characteristics and personality traits (Chaplin & John, 2005), particularly in childhood and adolescence when brands are key to expressing individual and collective identity (John & Sujan, 1990), it is likely that brands will have different impacts upon behavioural outcomes depending on the associations that the brands raise in consumers.

Research has demonstrated that a consumer’s food or beverage (hereafter referred to as food)-related decision making is influenced by a myriad of factors, some of which relate to the physical characteristics of the food (e.g. nutritional composition, physical form), others to the personal characteristics of the consumer (e.g. age, gender, psychological profile) and the wider environment in which the food-related decision is being made (e.g. cultural habits, price) (Costell, Tárrega, & Bayarri, 2010). Within this, brand information (in the retail environment this may take the form of brand names, logos, mascots, packaging colours and design) forms an integral part of the non-sensory cues that an individual uses when making a food purchasing decision (Guerrero, Colomer, Guàrdia, Xicola, & Clotet, 2000). Its importance was powerfully demonstrated in an influential study by McClure et al., (2004), in which relative to an anonymous delivery of Coke® and Pepsi®, brand-cued delivery had a potent effect on behavioural preference and neurological response, showing that branding can override a product’s sensory characteristics. In another prominent study, Robinson et al., (2007) showed that McDonalds® branded packaging had a dramatic influence on children’s taste perceptions, even for foods not sold by McDonalds® at the time (carrot sticks).

Several studies have demonstrated the impact of branding on potential determinants of behaviour, such as perceived quality evaluations of foods and consumer attitudes to foods and brands (Banovic, Grunert, Barreira, & Fontes, 2010; Di Monaco, Cavella, Di Marzo, & Masi, 2004) but fewer have focused on the more critical measure for health outcomes - actual behaviour, i.e. consumer choice and intake. Therefore, the aim of the current paper is to address the following primary research question: within the trade-off of sensory and non-sensory cues that a consumer experiences when making an everyday food decision (Jaeger, 2006) at the point of actual exposure to a food, what impact does brand information (when experimentally manipulated to either be present or absent) have on acute preference, choice and intake? The article aims to provide an overview of recent experimental developments, identify research gaps and highlight methodological considerations that researchers should take into account when seeking to address these gaps.

**Methods**

***Data sources and search strategy***

Three electronic databases were searched during June-July 2015: Web of Science, PubMed and PsycINFO. Searches included a combination of key words relevant to food brands and consumer decision making: ((food OR beverage) AND (brand or branding) AND (food intake OR beverage intake OR energy intake OR food consumption OR energy consumption OR choice OR taste OR preference OR taste preference)). Searches were limited to English language papers published in the last five years (2010-). The formal electronic searches were supplemented by a manual search of reference sections in eligible papers.

***Study selection***

For inclusion, studies were required to have presented actual foods or non-alcoholic beverages to participants and experimentally manipulated the food or beverage brand information provided (e.g. presence versus absence of brand imagery such as brand names, logos, mascots etc) at the point of taking an acute outcome measure of preference, choice or intake. The focus of this review is specifically on actual behaviour and not potential determinants of behaviour, and therefore these criteria do not include studies using pictorial food stimuli only or solely measuring potential determinants of behaviour such as neurological activity, anticipated liking, quality perception, purchase intention or general food-related beliefs. Both authors were responsible for the evaluation of papers for inclusion by screening the titles, abstracts and full texts of the articles that appeared to meet the criteria. There were no disagreements.

***Data synthesis***

Studies similar in terms of outcome measures (preference/choice, intake) were grouped together in a tabulated summary for narrative synthesis and methodological critique.

**Results**

***Studies identified***

Database searches initially retrieved 2,286 studies; after automated and manual removal of duplicates, 2,079 studies remained, with 1 additional record identified by searching other sources. Preliminary screening led to the exclusion of 2,048 studies. Of the remaining 31 studies, for which the full text was obtained, 10 studies met the inclusion criteria and were included in the narrative synthesis (see Fig. 1).

[FIGURE 1 ABOUT HERE]

***Study results***

The main experimental characteristics and results from included studies are shown in Table 1 and described here, classified into two groups on the basis of outcome measures. For each group, following the narrative synthesis of findings, we provide an in-depth methodological critique of the experimental approach. We then use these two elements to draw an overall conclusion that identifies considerations and directions for future research in this field.

[TABLE 1 ABOUT HERE]

***Group 1: Studies exploring the impact of brand information on consumer preference, liking or choice of foods or non-alcoholic beverages.***

*Narrative synthesis*

Of the eight studies included in this group, only one reported a clear main effect of brand information on all consumer ratings (Cavanagh & Forestell, 2013). In that study, adult participants rated cookies associated with a healthful brand as superior for taste, flavour, satisfaction and gave a greater overall rating for that food than participants who tasted the same cookies but associated with an unhealthful brand. A similar study conducted by the same authors found the same pattern for flavour and overall rating (higher scores for the healthful brand cookies), but only a trend in this direction for satisfaction ratings (Cavanagh et al., 2014).

The remaining four studies with adult participants (Paasovaara, Luomala, Pohjanheimo, & Sandell, 2012; Spinelli, Masi, Zoboli, Prescott, & Monteleone, 2015; Torres-Moreno, Tarrega, Torrescasana, & Blanch, 2012; Varela, Ares, Giménez, & Gámbaro, 2010) all used blind and informed taste test conditions, to investigate the impact of purely sensory information (blind test) and a non-sensory variable (brand; informed test) on consumer perception of products. Participants invariably provided product ratings on 9-point Likert scales anchored at either end as ‘greatest imaginable liking’ and ‘greatest imaginable disliking’ or similar. Using this methodology, the provision of brand information in the informed taste test condition tended to either have no effect on ratings of liking, or significantly increased ratings for some, but not all, brands. In Paasovaara et al., (2012), when brand information was provided, compared to the blind taste test, liking ratings increased for one brand of yoghurt and did not change for the other brand. In Spinelli et al., (2015) ratings of liking increased for two of the 6 hazelnut and cocoa spread brands tested (and did not change for the other four), and for Varela et al., (2010) brand info increased liking ratings for four of the ten orange drink brands given and others did not significantly differ. Interestingly, Torres-Moreno et al., (2012) found that brand information actually reduced liking for one of the six chocolate brands tested, with the remaining five showing no difference across conditions.

For the other studies, children were offered identical pairs of foods packaged in such a way as to manipulate the brand information present. Gunnarsdottir and Thorsdottir (2010) asked children to taste five pairs of items, one of each pair was presented in LazyTown branded packaging and the other was in plain packaging, and indicate whether they thought the two items tasted the same (the ‘right’ answer) or whether one tasted better than the other. A majority of children correctly reported that both items tasted the same, but between 27-42% of participants reported preferring the taste of the branded foods (whereas only 3-8% of participants rated the taste of the unbranded items as superior). In a mixed design, Elliott et al., (2013) asked children to perform a similar taste and rate procedure as the above study, but they were randomised to three groups in which one group saw items in either McDonalds branded packaging or plain packaging, another group saw items in McDonalds packaging or matched colourful packaging, and the third group were offered items in either McDonalds packaging or Starbucks branded packaging. Whilst the children in the McDonalds versus plain group showed a significant taste preference for the McDonalds branded items in two of the five pairs offered, this reduced to one item for the McDonalds versus colourful packaging group, and there were no differences in taste ratings for any item in the McDonalds versus Starbucks group.

*Methodological Critique*

Only Cavanagh & Forestell (2013) found any consistent effects of branding on consumer ratings. However this study failed to find any effects on specific perceptual qualities of food, with the effects being found in four out of six consumer ratings (at moderate effect sizes). Furthermore, the authors did not analyse the effect of restraint on consumer ratings despite this being done for perceptual qualities and *ad libitum* consumption. A follow up and expansion of this experiment (Cavanagh et al., 2014) failed to replicate these findings, with only overall rating of branded cookies showing an effect. Importantly, it appears that this main effect was carried by restrained eaters. This suggests that findings in Cavanagh & Forestell (2013) may also have been carried by the restrained eaters. Given that the brands compared were healthful and non-healthful brands it seems likely that healthful connotations led to restrained eaters evaluating more healthy brands more positively as the food was consistent with their restraint goals. Taken together these findings indicate that there is no overall effect of branding on preference and liking in an adult population. Overall, branding significantly increased liking in only eight out of twenty-four assessments across the two studies, with brands decreasing liking in one case.

Other studies reporting branding effects need to be interpreted in light of some caveats. For example, findings in study two of Paasovaara et al., (2012) suggest branding effects also depend upon individual difference in identification with brand values (although even then results are inconsistent). In addition, a fundamental problem in some of these studies (e.g. Paasovaara et al., (2012)) is non-equivalence of control conditions. Specifically, if different brand effects are to be investigated in *isolation* then it would be pertinent to include conditions in which the same product is branded in different ways and a third control condition with no brand information. This means perceptual qualities of foodstuffs will be identical but brand information will differ.

Indeed the two studies conducted in children used this methodology (same food different packaging). Although Elliot et al., (2013) found some significant effects of McDonalds branding compared to non-branded these effects were marginal (p=.048-.049) and would not survive even partial correction for multiple comparisons. The use of non-ubiquitous branding (i.e. creating a food brand from a well-known child’s TV show) also showed limited effects; with a minority of children preferring the “branded” compared to the standard foods (Gunnarsdottir & Thorsdottir, 2010).

***Group 2: Studies exploring the impact of brand information on intake of foods or non-alcoholic beverages.***

*Narrative synthesis*

Of the five experiments reported in four articles included in this group, three found a significant main effect of brand information on food intake (Boyland et al., 2013; Cavanagh & Forestell, 2013; Cavanagh et al., 2014; Keller et al., 2012). Of these, one study (Boyland et al., 2013) found that when offered potato chips labelled either as a well-known commercial brand or as a purported ‘supermarket brand’ (the foods offered were actually the same commercial brand), children consumed significantly more of the commercially branded chips. The other two studies presented adult participants with cookies labelled with the name of a brand associated with either healthful or unhealthful eating (Cavanagh & Forestell, 2013; Cavanagh et al., 2014). For both experiments, intake of the cookies associated with the healthful brand name was significantly higher, although in the 2013 study this overall effect was driven by the restrained eaters only, as the non-restrained eaters showed no difference in consumption between the two brands.

The remaining two experiments not reporting a main effect of brand information, both in the same paper (Keller et al., 2012), did find interactions between brand and a participant characteristic. One experiment showed an interaction with weight status, such that overweight children consumed approximately 40 calories more from a multi-item buffet when the foods were served in their original brand packaging versus in plain containers whereas normal weight children showed the opposite response. The other found that boys consumed similar amounts of foods regardless of whether they were branded or not, whereas girls ate more of the branded than non-branded foods.

*Methodological Critique*

*Ad libitum* intake studies show broadly consistent results, inasmuch as branding has an effect on intake albeit in specific sub–samples or following manipulations. As with findings for preference, restraint drove the effects of branding on *ad lib* consumption in both Cavanagh & Forestell (2013) and Cavanagh et al., (2014). This finding is likely to be an outcome of the healthy brands assessed and the motivational ambivalence found in restrained eaters. Specifically, being presented with healthy food gives restrained eaters an opportunity to satisfy the urge to consume food while simultaneously not damaging their resolution to limit calorific intake. The fact that these effects were not observed in unrestrained individuals suggests that branding of healthy foods has little impact in a non-restrained population and these studies do not fully explore the critical issue of effects of unhealthy food branding.

 However, although both Boyland et al., (2013) and Keller et al., (2012) found effects of branding on *ad lib* consumption, it is notable that within both these studies brand labels on tasted products may not have had an effect if assessed in isolation. In experiment one from Keller et al., (2012) there was no main effect of branding on consumption - branding did interact with weight status, although this was not replicated in experiment two. This suggests a weak, BMI-dependent effect of branding on intake in children. Although Boyland et al., (2013) found that pre-exposure to brand adverts or celebrities associated with brands produced increased consumption of like-branded potato chips, it is notable that an unrelated food-brand advert also primed intake. In addition, where participants were not pre-exposed to stimuli associated with food in general, they did not display brand-preference. As advertisements associated with food brands in some way (even if incongruent to actual brands offered during *ad lib* consumption) primed consumption, it could be that generally priming motivational states increases brand consumption.

**Conclusions and future directions**

There is a limited amount of recent research dedicated to identifying the impact of brand information on acute outcome measures of preference, choice and intake. Across the few existing studies, the methods to assess branding effects are inconsistent between adults and children, and the evidence for branding effects across these groups is very limited. It is likely that individual differences in eating styles, notably restraint, may moderate any branding effects. It is clear that more, well-conducted, studies are needed. These studies should pay particular attention to the methodology to be used, as there is a need for consistency and high quality experimental design (e.g. strong construct validity) in order to clarify the extent to which brand information truly impacts upon these critical elements of eating behaviour. It is also likely that individual level brand associations play a key role in determining the influence of brand information over food decisions, and therefore researchers should seek to address this in future studies so as to minimise heterogeneity in findings.

In terms of specific methodological recommendations that arise from the present review, researchers should: 1) ensure that control groups (between-participant designs) or control conditions (within-participant designs) are well matched to the experimental comparator; 2) identify, measure and analyse the role of key moderating variables, notably restraint and identification with brand values; 3) consider the impact of both healthful and unhealthful branding on food-related decision making, and it might be particularly useful to explore this with respect to restraint (would we expect the opposite effect of that found by Cavanagh & Forestell (2013) and Cavanagh et al., (2014)?); and 4) investigate further the effect of cross-priming (e.g. exposing participants to food-related stimuli such as food advertising), and its specificity (i.e. whether or not the congruency between prior brand exposure in the priming stimuli and the brand information presented with the food choice affects decision-making).

**Discussion**

This paper systematically reviewed findings from recent studies investigating the impact of brand information, manipulated at the point of actual exposure to a food, on acute outcome measures of food preference, choice or intake. Overall, the results did not show conclusively whether or not brand information affects these key food-related decision making parameters in either adults or children, but they do suggest that the impact varies inconsistently within subgroups, including weight status, gender and a consumer’s psychological profile.

Of the ten studies identified as meeting the inclusion criteria for this review, eight studied the impact of brand information on consumer preference, liking or choice. Of these, the majority studied adult participants and found inconclusive results. Even two studies from the same researcher (Cavanagh & Forestell, 2013; Cavanagh et al., 2014) found a different pattern of effects, but they were methodologically different studies and therefore direct comparisons are difficult. However, it seems that regardless of whether experiments involved ratings of two identical items one immediately after the other (one branded, one not) or whether a blind-informed taste test approach was used, there is little equivocal evidence that brand information influences acute preference, liking or choice in adult consumers. In the two studies conducted with child participants, there is a similar lack of overall effect of brand information on measured outcomes.

Even fewer recent studies reported findings relating to the impact of brand information on actual food consumption, and there are stark differences in methodological approach that render direct comparisons particularly challenging (including that manipulating acute brand information was only part of the experimental manipulation used in a previous paper by the current author). Nonetheless, the overview of these studies presented in this review indicates that there is some evidence of an effect of brand information on *ad libitum* food intake. However, the effects are seemingly very specific to particular subgroups (notably restrained adult eaters and overweight or female children). As noted above, it is critical that studies take these individual differences into account in study design, but also that researchers report their data in a demarcated form across these factors in order that we can identify the true nature of the effects in these groups and whether or not they do generalise to the wider populations of consumers.

As well as identifying several factors that may moderate the effects of brand information on acute food decisions, this review highlighted the surprising lack of high quality experimental evidence in this field. Numerous methodological considerations that future researchers in this area should incorporate into study design planning were identified, in order to begin to address this issue. There is also a need for consistency in approach (design and measurement tools used) and outcome reporting so that a bank of accurately comparable evidence is generated to drive a greater understanding of these phenomena.

 The present review has some limitations. Included studies were limited to those published in English, however as the vast majority of food marketing studies are published in English (as shown by Cairns et al., (2009) this is unlikely to have had a major impact on the conclusions reached. This review was also limited to studies using experimental designs. Other approaches (such as observational and qualitative studies) are likely to have yielded additional useful insights and should be taken into consideration when assessing the wider body of research in this area. As for any systematic review, it is also possible that not all studies meeting the inclusion criteria were retrieved via the search strategy used and that the review thus does not reflect all the available literature on this topic. However, analysis of the reference lists and citations appearing in the initially included studies only identified one additional record suitable for inclusion so we can be reasonably satisfied that the strategy was sensitive and robust.

Nevertheless, this is the first study to systematically review evidence regarding the impact of experimentally manipulated food brand information on acute measures of preference, choice and intake in both adult and child consumers in the laboratory. Given that the current food environment, (characterised by extensive marketing of branded, unhealthy foods and the ubiquitous availability of such foods) has been implicated in the global obesity epidemic, there is a clear need for greater understanding of the impact of brand information on immediate food-related decisions and this field merits further high quality research.

**Conflict of Interest Statement**

The authors report no conflicts of interest.

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