



The Open University



**UNIVERSITY OF
STIRLING**

INSTITUTE FOR SOCIAL MARKETING

University of Stirling & The Open University
Stirling FK9 4LA Scotland

Telephone: +44 (0) 1786 467390
Facsimile: +44 (0) 1786 467745
Email: ism@stir.ac.uk

High Fat, Salt, Sugar Foods

Marketing, Purchase and Consumption:

Evidence for PAS 2500

ISM Institute *for* Social Marketing

A collaboration between the University of Stirling and The Open University

CONTENTS

	<u>Page No</u>
INTRODUCTION	1
Purpose of Reviews	1
Background Information on Evidence Pools	1
Comments on Evidence for a Chain of Causation	1
Methods	1
General Comments	1
EVIDENCE OF A CAUSAL LINK BETWEEN MARKETING AND PURCHASE OF HFSS FOODS	3
Overview	3
Product	3
Price	4
Place	4
Promotion	5
Consumer Purchase Responses to Marketing and Brand Elasticity	6
EVIDENCE OF A CAUSAL LINK BETWEEN PURCHASE AND CONSUMPTION OF HFSS FOODS	7
Increases in Purchase can Increase Short Term Consumption	7
Increases in Purchase can Increase Long Term Consumption	8
REFERENCES	9

INTRODUCTION

Purpose of Reviews

The Scottish Government requested the Institute for Social Marketing to prepare brief overviews of evidence on correlation and causation between:

- (1) Marketing and purchase of high, fat, salt sugar (HFSS) foods
- (2) Purchase and consumption of HFSS foods

Background Information on Evidence Pools

The evidence base on the effects of marketing on food behaviours for all age groups is growing (see 4, 9, 11, 12, 15, for example). The academic evidence base on food marketing and children's food behaviours and dietary health status is particularly extensive (1, 2, 7, 8, 13, 14, 16, 18 for example). There are also a number of studies demonstrating that children influence adult food purchase decisions for both products targeting children (1) and general household items (5).

The evidence on food marketing, purchase and consumption should be considered in the broader context of evidence on marketing practices and dietary health: The global food marketing environment is heavily dominated by the promotion of HFSS foods (1, 8, 12, 13, 14, 29). The marketing environment mirrors a population-level over-consumption of HFSS foods, a risk factor for non-communicable chronic degenerative disease (2, 3, 8, 37, 60). Updates of reviews indicate the marketing environment and epidemiological trends have in some cases improved marginally but in some instances no change is detectable (7, 17, 18).

The evidence pool is drawn primarily from North America, Europe and Australasia. The evidence on current status of marketing practice and on effect trends is remarkable in its consistency for all three regions of the world and indeed worldwide (17, 61, 62).

Comments on Evidence for a Chain of Causation

The complexity of the multiple and inter-related linkages between food marketing and consumer food behaviours means that individual pieces of evidence are inevitably limited in generalizability and/or validity. However, a substantial number of evidence reviews on specified factors in a hypothetical chain of causation have been published, many in the last five years. The evidence reviews which triangulate and synthesise data from multiple sources and research designs collectively provide robust overviews of current knowledge and knowledge gaps.

It should be noted, that there is also a pool of evidence indicating a positive causal link between marketing and consumption, which does not specifically capture the intermediary role of purchase. This research was outside the terms of reference for this project and this evidence is not presented here

Methods

A review of reviews search strategy was used to scope and collate the data. Conclusions from reviews, along with individual studies which provide illustrative insight were summarised and synthesised. Results were organised around the 4Ps (product, price, place and promotion) framework.

General Comments

Marketing is a term that is increasingly understood to describe a broad range of activities and management functions. For the purpose of this project, we have used the American Marketing Association's (AMA) definition to guide the scope of the evidence review:

'the activity, set of institutions, and processes for creating, communicating, delivering and exchanging offerings that have value for customers, clients, partners and society at large.'

The reviews aim to identify key research on the effects of all forms of marketing as suggested by the above definition. This includes direct marketing communications (e.g. paid for advertising; product attribute claims such as nutrition, sensory benefits; social media promotions), indirect marketing communications (e.g. sponsorship; branding), price incentives (e.g. direct price discounts; coupons, multipacks and BOGOF offers); packaging and point-of-sale promotions (e.g. shelf signage: impulse stands: in store location); distribution (e.g. visibility, accessibility and density of retail outlets, eating environment), product (e.g. pack size, pack variety, formulation designed to increase appeal).

Multiple evidence reviews that have examined the effects of one or more of 'marketing activity, institution or and process' almost universally conclude that there is a convergence evidence for a causal relationship between the marketing high fat, salt sugar foods and their purchase and consumption (see for example 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12). The reviews also find a convergence of evidence that HFSS food marketing adversely influences food knowledge, preferences and is associated with unfavourable diet and health outcomes (1, 7, 8).

EVIDENCE FOR A CAUSAL LINK BETWEEN MARKETING AND PURCHASE OF HFSS FOODS

Overview

The classic product, price, place and promotion marketing framework has been used to organise themes and selected examples taken from the evidence base on the effects of marketing on purchase. The 4Ps framework provides a familiar and logical structure despite the emergence of marketing innovations, such as social media marketing which perhaps fit less neatly into this classification system.

The summary aims to spotlight main themes and a mix of evidence sources that provide insight on how and why marketing can encourage frequent or high volume purchase of HFSS foods. A great deal of the evidence base focuses exclusively on marketing and consumer purchase of HFSS foods. Generic research on marketing that can motivate purchase in excess of need is also relevant however and has been included where appropriate.

Evidence that marketing can inflate brand-neutral category purchases is also briefly outlined.

Product

Consumer product evaluation and selection is a mix of routine, deliberative and impulse choices. Many purchases are made quickly and unconsciously. Triggers for impulsive purchase are often a mix of negative and positive stimuli, and driven by a combination of internal and external cues. Purchases of food and drinks that consumers perceive as 'vice' or 'unhealthy' foods are less likely to be the result of deliberative or routine choices than foods perceived as health neutral or health promoting; HFSS foods appeal to impulsive motivations more frequently than other food and drink products (54, 55).

Promotions that combine foods can distort perceptions. Combining foods perceived as healthy and unhealthy for example can trigger inaccurate perceptions amongst consumers of the overall nutritional contribution. Combinations are also associated with lower estimates of the total calorie value of the combined products than compared with estimates of the two components assessed separately (5, 50).

A number of studies have examined the effects of packaging on consumers' expectations of products (1, 51). Colours, characters, and design convey subtle messages about product attributes such as taste, healthfulness, sensory pleasure potential. A review of grocery store marketing noted affective and indirect point of purchase marketing generated positive product evaluation and purchases, even when consumers were given factual information that contradicted their initial interpretations of the in-store promotions (5).

Consumer perceptions of 'reductions in transaction burden' have been found to increase purchase motivation. Qualitative research for example, found consumers expressed strong preferences for increased purchase in response to supersized packaging. Cost savings partially accounted for this preference but less frequent replacement buying was also given as an incentive (35). Consumers report positive personal valuations of 'bundled variety'. For example, meal combinations are valued (in non-financial as well as financial terms) more highly than the sum of their personal evaluation of the same meal components when assessed individually. This results in purchase of more products and more calories (43, 50).

There is also good evidence that package and catering/restaurant serving sizes are significant cues for consumers' assessments of appropriate purchase (and subsequent consumption) volumes. Frequently consumers are observed to ignore satiation signals and instead aim to finish the packet or serving (42, 43, 45).

Price

A series of sales analysis studies and economic modelling experiments demonstrate quantity based sales discounts leads to household stockpiling of food products and categories (32).

A review of retail store marketing found retail price-based promotions such as discount coupons increased overall purchase as well as unplanned purchases. Price sensitivity varied across food categories was increased by socio-economic disadvantage, large family size, and more retail variety and accessibility (5).

A review of economic field surveys and laboratory experiments found price sensitivity across all food categories in grocery stores, cafeterias and restaurant settings and vending machine. Although reviewers noted greater sensitivity in experimental settings than real-world settings, they did conclude that perceived price discounting was a significant influencer of purchase decisions in all contexts (59).

A series of large scale economic analysis of population purchase behaviours have demonstrated a strong correlation between HFSS food and quick service restaurant choices of low income consumers. The research indicates that choices are driven by lower calorie unit costs of these foods (see 37 for example). Combined with evidence from various studies that low prices for food products per se are not perceived as indicator of lower quality, there is strong evidence that price promotions can act as a powerful purchase incentive (33, 34).

Place

Placement in stores, placement relative to other products and shelf signage can effect buying decisions through their influence on consumer perceptions of product attributes such as value for money or healthfulness (5, 6, 20). In real world surveys/natural experiments, store placement of products has also been demonstrated to stimulate emotionally driven impulse purchases, increasing sales by up to five hundred per cent (52, 53).

A New Zealand study found sponsorship by food and beverage brands was associated with the provision at the sports venue of vouchers for product purchase and catering rights at sports events, as well as increased visibility and performance halo effects for the brand (60). A large scale soft drinks digitally integrated marketing campaign tracked and reported that a third of subscribers recommended its rewards-based loyalty programme to 3-4 personal contacts and was responsible for 'positive effects on purchase behaviour and brand advocacy' (28). These third party endorsement case studies which include elements of place-based marketing, integrated with other marketing elements demonstrate the integration that is inherent to many marketing campaigns. Such campaigns typically mix elements such as direct advertising, financial purchase incentives, entertainment, and consumer to consumer promotional communications to encourage sales (15, 16, 28).

Research into the effects of integrated campaigns is challenging to conduct but published evidence on its effects is now beginning to emerge (26, 28, 30). Similarly, research is hardly able to keep pace with the speed of digital innovation and the new forms of increasingly sophisticated marketing methods it supports. Case study is the main form of evidence currently available on the nature, extent and effects of these emergent marketing innovations. This evidence to date indicates that the direction and magnitude of effects is at the very least the same and perhaps even greater than more traditional marketing methods and processes (23, 24, 26).

Promotion

Marketing communications appealing to affective or cognitive consumption goals stimulate purchase (2, 3).

Message framing and wording of marketing communications can influence awareness of food categories, as well as perceptions of attributes such as healthfulness, tastiness and sensory qualities. Presenting a product as 75% fat free stimulates purchases more than describing it as 25% fat for example (43). Demand can be boosted through multiple psychosocial mechanisms including assuaging guilt, health halo¹ inferences, and most importantly consumer's tendency to use heuristic cues to make choices (2).

Marketing has been observed to trigger neurochemical responses which enhance perceptions of enjoyment of foods (33): Exposure to TV advertising of foods classified as 'unhealthy' increased selection of these foods by children at summer camp (39). Experimental exposure to TV advertising for snacks increased adult and child snack consumption for unadvertised as well as advertised brands (40). Neurobiological explanations for impulsive buying of HFSS food also helps to explain why these behaviours are repeated despite post-purchase experiences of regret (54).

Affective appeals are reversible by cognitive processing – for example, in one study of dieters' preferences, the effects of marketing messages could be reversed by prompting respondents to read the ingredients list (41) – but as noted above, in real life many food buying decisions are not deliberative.

The Canadian dual French/English language mass media environment has been the basis for multiple natural experiments. One of the earliest found that even after accounting for cultural differences, the absence of TV advertising in French speaking households was associated with having lower volumes of breakfast cereals in the home than in English speaking households where US TV advertising to children was permitted (38).

Many consumers indicate that health is one of the criteria they consider in their purchase choices - commonly ranked after criteria such as taste, quality and value for money (3, 12). For some food categories claims of healthfulness or nutritional benefits can increase attractiveness of product. For example, 'low fat' and 'no trans fat' supermarket signage was found to increase popcorn sales (43). One of the most comprehensive reviews identified experimental and field evidence that calorie consumption is reduced if calorie information is provided. Away from home purchase and consumption choices were found to be particularly susceptible to this effect. The effects on grocery selection were more mixed (2).

¹ Health halo effect: A cognitive bias that leads people to overestimate the overall healthfulness of a food product based on one or more narrow attributes.

On the other hand, health-related promotional claims can reduce attractiveness of some products because consumers anticipate negative sensory effects (41).

Consumer Purchase Responses to Marketing and Brand Elasticity²

A series of econometrics studies demonstrate that branded product marketing promotions result in an increase in overall category sales. Price promotions which increase promoted brand sales are not accompanied by full compensatory drop in sales of competitor brands, resulting in an increase in total category sales during the promotion period. Furthermore, the total increase in category sales persists beyond the promotion period because consumers do not use up inventory stockpiled during the period of promotion. Overall increases in household purchase and consumption of 12-35% have been observed in response to price promotions, depending on food and its characteristics, such as perishability (32, 57).

A review of real-life grocery store promotions also concluded that the collective evidence on the effect of price promotions was an increase in total sales, not just brand switching (5).

² Brand elasticity: how sensitive the demand for a specific branded good is to competitor brand changes such as price discounts.

EVIDENCE FOR A CAUSAL LINK BETWEEN PURCHASE AND CONSUMPTION OF HFSS FOODS

Increases in Purchase can Increase Consumption

The effects of all you can eat buffets and the contributory influences of variety and convenience on consumption have been documented. Purchase appears to act as a stronger motivator to consume than countervailing controls such as cognitive awareness of over consumption and satiation cues (31, 34).

Consumers value the lower non-financial cognitive demand of combined product offers. For example, after controlling for price differentials, it has been demonstrated that consumers choose and consume more items from a combination menu selection than when making selections from the same menu options where each item must be selected individually (50). Variety can subsequently increase total intake because it undermines sensory-specific satiety. For example, availability of three yoghurt flavours was reported to result in 23% more yoghurt consumption than when only one flavour was available (44).

A series of experimental and real world studies by Wansink have found that energy intake increases when the volume and convenience of food and beverage inventory in the home and workplace is increased (2). Increased inventory of ready to eat foods leads to increased frequency and volume of consumption and increased availability of foods that require some preparation results in increased consumption of quantity only (ibid.). Studies on how availability influences consumption indicate that salience which stimulates neurobiological consumption responses is the most influential factor. Household perceptions of low replacement demands also contribute to the motivation to consume excess inventory. Further studies confirm these endogenous mechanisms overwhelm other internal feedback mechanisms such as satiation signals and cognitive controls. In two high quality studies, salience and low replacement demands were found to increase consumption rates by 46% in workplace settings and 92% in home settings (36, 49). Rolls observes that consumption rates in response to greater availability can take up to eleven days to adjust and are not sufficient to compensate for previous short run overconsumption and thus lead to a net over consumption of calories (45). Conversely reducing serving sizes of snack foods leads to reductions in long term energy intake. Again behaviour is found to adjust slowly, but does stabilise in time (46).

Promotional supersizing, discounts for bulk purchase and multi-buys can increase food consumption. Package size has been observed to be a stronger predictor of consumption volume than serving size guidance (42, 46). Qualitative research indicates that consumers are aware of this anomaly but favour this heuristic cue to the alternative of cognitive processing of information or conscious resistance to sensory appeals (35). Sizes of food label relative to package size, and the wording/terminology used on labels have also been found to influence consumers' perceptions of portion size as well as their homeostatic ability to adapt consumption and/or respond to satiety cues (ibid.)

Wansink observed that stockpiling in response to marketing promotions leads to long term increased consumption, whereas the effects of planned stockpiling (for example in preparation for hosting a party) are minimal and short term. These differences are attributed to differences in perceptions regarding replacement burden (36).

Increases in Purchase can Increase Long Term Consumption

Long term tracking of sales data on two product categories (yoghurt and ketchup) found that the increased purchase in response to promotions led to sustained increases in consumption as consumers adapted their buying behaviour and switched brand preference in response to price promotions (57). Econometric studies have reported increased overall purchase as a result of regular price promotions and demonstrated that consumers learn to anticipate periodic promotions. Pre-emptive and bulk buying when discounts are available along with brand switching results in permanent increased consumption, particularly for less perishable foods and beverage categories (32).

Stockpiling of non-edible products such as detergents does not increase consumption providing further evidence that the effects are mediated through neurobiological responses to the visibility and ready access to plentiful inventory, and therefore no immediate need to replenish (2, 32, 49, 57).

Such default behaviours in an environment where higher volume purchasing is promoted have been suggested as an explanation for the limited impact of United States Department of Agriculture (USDA) mandatory serving size information on consumption volumes (42).

There is evidence that increased accessibility and variety of food and drink purchase options associated with increased store provision can encourage consumption. For example a grocery store mapping study which found proximity to superstores correlated with higher Body Mass Index suggested that the effects may be due to increased consumption in response to increased retail purchase variety and more opportunity to bulk purchase (6). A US mapping study of quick service and full service restaurants found a ten per cent increase in the number of full and quick service restaurants in a given area was associated with a 1.4 percentage increase in the risk of obesity (48).

REFERENCES

1. Cairns G, Angus K, Hastings G (2009). *The Extent, Nature and Effects of food promotion to children: A review of the evidence to Dec 2008*. Geneva: WHO.
2. Chandon P, Wansink B (2010). Is food marketing making us fat? A multidisciplinary review *Foundations and Trends in Marketing*, **5**(3): 113-196.
3. Chandon P, Wansink B (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, **70**(10): 571-593.
4. Diaz Ramirez et al (2011). Effect of food television advertising on the preference and food consumption: Systematic Review, *Nutr Hosp*, **26**(6): 1250-1255.
5. Glanz K, Bader MD, Iyer S (2012). Retail grocery store marketing strategies and obesity: an integrative review. *American Journal of Preventive Medicine*, **42**(5): 503-512.
6. Gustafson A, Hankins S, Jilcott S (2012). Measures of the consumer food store environment: A systematic review of the evidence 2000-2011. *Journal of Community Health*, **37**(4): 897-911.
7. IOM March 2013 update report: *Challenges and Opportunities for Change in Food Marketing to Children and Youth*.
8. IOM original 2006 report: *Food marketing to children and youth: threat or opportunity?*
9. Mills SD, Tanner LM, Adams J (2013). Systematic literature review of the effects of food and drink advertising on food and drink-related behaviour, attitudes and beliefs in adult populations. *Obesity Reviews*, **14**(4): 303-314.
10. Osei-Assibey G, Dick S, Macdiarmid J, Semple S, Reilly JJ, Ellaway A, Cowie H, McNeill G (2012). The influence of the food environment on overweight and obesity in young children: A systematic review. *BMJ Open*, **2**(6).
11. Rossi, CE, Albernaz, DO, Guedes de Vasconcelos, FD, Altenburg de Assis, MS, Di Pietro, PF (2010). Television influence on food intake and obesity in children and adolescents: A systematic review. [Influência da televisão no consume alimentar e na obesidade em crianças e adolescentes: uma revisão sistemática]. *Revista de Nutrição [Brazilian Journal of Nutrition]*, **23**(4): 607-620.
12. Williams JD, Crockett D, Harrison RL, Thomas KD (2012). The role of food culture and marketing activity in health disparities. *Preventive Medicine*, **55**(5): 382-386.
13. FTC Dec 2012 update report: *A review of food marketing to children*.
14. FTC 2008 report and Appendices: *Marketing food to children and adolescents*.
15. Hoy et al (2012). The evolution of self-regulation in food advertising: an analysis of CARU cases from 2000–2010, *Int Journal of Advertising*, **31**(2).
16. Robert Wood Foundation Review (2013). *Food and Beverage Marketing to Children and Adolescents: Limited Progress by 2012, Recommendations for the Future*.

17. Cairns G (2013). Evolutions in food marketing, quantifying the impact, and policy implications, *Appetite*, **62**: 194–197.
18. Cairns G et al (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. *Appetite*, **62**: 209-215.
19. Boyland, Halford (2013). Television advertising and branding. Effects on eating behaviour and food preferences in children. *Appetite*, **62**: 236-241.
20. Holmes et al (2013). Effect of different children’s menu labeling designs on family purchases. *Appetite*, **62**: 198-292.
21. Robinson TN et al (2007). Effects of fast food branding on young children's taste preferences. *Archives of Pediatrics & Adolescent Medicine*, **161**(8): 792-797.
22. Bolton RN (1983). Modeling the impact of television food advertising on children’s diets. In Leigh JH, Martin Jr CR (eds), *Current Issues and Research in Advertising*. Ann Arbor, MI, Division of Research, Graduate School of Business Administration, University of Michigan, 173–199.
23. Hughes K (ed) (2012). *Marketing in the Digital Age. Market Assessment 2012*. 4th Edition. Richmond Upon Thames: Key Note. ISBN 978-1-84729-872-0.
24. Tutt L (ed) (2013). *Internet Advertising. Market Update 2013*. 8th Edition. Richmond Upon Thames: Key Note. ISBN 978-1-84729-980-2.
25. Hawkes C (2009). Sales promotions and food consumption. *Nutrition Reviews*, **67**(6): 333-342.
26. Clarke B, Svanaes S (2012). *Digital marketing and advertising to children: A literature review*. Conducted on behalf of AEF. Brussels: Advertising Education Forum.
27. Ohri-Vachaspati P, Powell LM, Rimkus LM, Isgor Z, Barker D and Chaloupka FJ (2012). *Child-Directed Marketing Within and Around Fast-Food Restaurants—A BTG Research Brief*. Chicago, IL: Bridging the Gap Program, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago.
28. Montgomery K, Chester J (2011). *Digital Food Marketing to Children and Adolescents: Problematic Practices and Policy Interventions*, National Policy and Legal Analysis Network.
29. Monbiot G (2013). Hey advertisers, leave our defenceless kids alone. *The Guardian*, 15th April.
30. Carter MA, Edwards R, Signal L, Hoek J (2012). Availability and marketing of food and beverages to children through sports settings: A systematic review. *Public Health Nutr*, **15**(8): 1373-1379.
31. Just D, Wansink B (2011). The flat-rate pricing paradox: Conflicting effects of all-you-can-eat buffet pricing. *Rev Econ Stat*, **93**: 193-200.
32. Neslin S, Van Heerde H (2009). Promotion Dynamics. *FnTMKG*, **3**: 177-268.
33. Plassman H, O’Doherty J, Shiv B, Rangel A (2008). Marketing actions can modulate neural representations of experienced pleasantness. *Proc of Nat Acad Sci*, **105**(3): 1050-1054.

34. Kirchler E, Fischer F, Holz E (2010). Price and its relation to objective and subjective product quality: Evidence from the Austrian market. *J Con Policy*, **33**(3): 275-286.
35. Vermeer W, Steenhuis I, Seidell J (2010). Portion size: A qualitative study of consumer attitudes towards point of purchase interventions aimed at portion size. *H Ed Res*, **25**(1): 109-120.
36. Chandon P, Wansink B (2002). When are stockpiled products consumed faster? A convince-salience framework of post-purchase consumption incidence and quantity. *J Mark Res*, **39**(3): 321-335.
37. Drewnoski A (2007). The real contribution of added sugars and fats to obesity. *Epid Rev*, **29**(1): 160-171.
38. Goldberg M (1990). Quasi-experiment assessing the effectiveness of TV advertising directed to children. *J Mark Res*, **27**(4): 445-454.
39. Gorn G, Goldberg M (1982). Behavioural evidence of the effects of televised food advertising directed to children. *J Cons Res*, **9**(2): 200-205.
40. Harris J, Bargh J, Brownell K (2009). Priming effects of television food advertising on eating behaviour. *Health Psychology*, **28**(4): 404-413.
41. Irmak C, Vallen B, Robinson S (2011). The impact of product name on dieters' and nondieters' food evaluations and consumption. *J Con Res*, **38**: 390-405.
42. Geier A, Rozin P, Doros G (2006). Unit bias: A new heuristic that helps explain the effect of portion size on food intake. *Psychol Sci*, **17**(6): 521-525.
43. Kiesel K, Villas-Boas S (2011). Can information costs affect consumer choice? Nutrition labels in a supermarket environment. *Int J Industrial Organisation* (cited in Chandon & Wansink 2010).
44. Rolls B, Rowe E, Rolls E, Kingston A, Megson A, Gunary R (1981). Variety in a meal enhances food intake in man. *Physiol and Behav*, **26**(2): 215-221.
45. Rolls B, Roe L, Meengs J (2007). The effects of large portion sizes on energy intake is sustained for 11 days. *Obesity*.
46. Stroeble N, Ogden L, Hill J (2009). Do calorie controlled portion sizes of snacks reduce energy intake? *Appetite*, **52**(3): 285-289.
47. Aydindoglu N, Krishna A (2011). Guiltless gluttony: The asymetrid effect of size labels on size perceptions and consumption. *J Con Res*, **37**: 1095-1112.
48. Chou S, Rashad I, Grossman M (2004). An economic analysis of adult obesity: Results from the behavioural risk factor surveillance system. *J Health Econ*, **23**(3): 565-587.
49. Painter J, Wansink B, Hieggelke J (2002). How visibility and convenience influence candy consumption. *Appetite*, **38**(3): 237-238.
50. Sharpe K, Staelin R (2010). Consumption effects of bundling: consumption perceptions, firm actions and public policy implications. *J Public Policy and Marketing*, **29**(2): 170-188.

51. Hawkes C (2010). Food packaging: the medium is the message. *Public Health Nut*, **13**(2): 297-299.
52. Curhan R C (1974). The effects of merchandising and temporary promotional activities on the sales of fresh fruit and vegetables in supermarkets. *J Marketing Res*, **11**: 286-294.
53. Sorensen H (2009). *Inside the mind of the shopper*. Upper Saddle River NJ: Pearson Education.
54. Thomas M, Desai K, Seenivasan S (2011). How credit card payments increase unhealthy food choices: Visceral regulation of vices. *J Con Res*, **38**: 126-139.
55. Cohen D, Babey S (2012). Candy at the cash register: A risk factor for obesity and chronic disease. *New England J Med*, **367**(15): 1381-1383.
56. French S, Stables (2003). Environmental interventions to promote vegetables and fruit consumption among youth in school settings. *Prev Med*, **37**: 593-610.
57. Ailawadi K, Neslin S (1998). The effect of promotion on consumption: Buying more and consuming it faster. *J Marketing Res*, August: 390-398.
58. Wansink B (1996). Can package size accelerate usage volume? *J Marketing*, **60** (3): 1-14.
59. Epstein L, Jankowiak N, Nederkoorn C, Raynor H, French S, Finkelstein (2012). Experimental research on the relation between food price changes and food purchasing patterns: A targeted review. *Am J Clin Nut*, **95**: 789-809.
60. WHO (2003). *Diet, nutrition and the prevention of communicable diseases*. Report of the joint WHO/FAO expert consultation. WHO Technical Report Series No. 916.
61. Popkin B, *The World Is Fat--The Fads, Trends, Policies, and Products That Are Fattening the Human Race*. New York: Avery-Penguin Group; 2008.
62. Hawkes C, Lobstein T (2011) Regulating the commercial promotion of food to children: a survey of actions worldwide. *Int J Ped Ob* **6** (2): 83-94