REVIEW OF RESEARCH ON THE EFFECTS OF FOOD PROMOTION TO CHILDREN

Final Report
(APPENDICES)

Prepared for the Food Standards Agency

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APPENDICES

Appendix 1: Sample of Review Protocol

Appendix 2: Master List of Search Terms

Appendix 3: Search Strategies for Electronic Databases

Appendix 4: References Obtained through Personal Contact

Appendix 5: Outcomes of Reference Chasing Exercise

Appendix 6: References Found In-House

Appendix 7: List of Late-Arriving Articles

Appendix 8: Justifications for Exclusions

Appendix 9: Data Extraction Forms for Systematic Review 1

Appendix 10: Data Extraction Forms for Systematic Review 2

Appendix 11: List of Advisory Panel Members

Appendix 1

Sample of Review Protocol

Sample of Review Protocol

A Systematic Review of the Effects of Promotion on Children's Food Behaviour

INTRODUCTION

Background to the Research

The Food Standards Agency wishes to investigate whether current promotional activity by food producers, retailers and advertisers encourages the consumption by children of foods high in fat, sugar and salt, thereby undermining healthy eating advice and contributing to long-term health problems (eg. Sustain 2001). This review will examine evidence on the effect of promotional activity on children's food behaviour (by this we mean eating/drinking and purchasing) and will help inform future development of Food Standards Agency policy on the promotion of foods to and for children.

The Existing Literature

The literature on children's eating behaviour is extensive, and many studies have explored the role of socio-cultural influences in children's eating behaviour (eg. Birch 1980, Lewis & Hill 1998). One focal point for research of this kind has been on advertising as a source of influence on children's food choice. In response to the accumulating research on advertising and food choice, and in an attempt to synthesise the literature, a review of research was commissioned by the Ministry of Agriculture Fisheries and Food (Young et al 1996). Although advertising was identified as one potential source of influence, findings on the extent of this influence and its effect vis a vis other contributing factors were inconclusive.

Establishing the influence of promotional activity is always challenging; it is extremely difficult to 'prove' it has specific impacts on attitudes and behaviours, and to disentangle these from other socio-cultural and individual influences such as education, parental and peer influence, culture, religion, socio-economic status, the mass media and the wider political and legislative climate (Hastings & Aitken 1995). Meeting this challenge requires a profound understanding of how promotion works – that it is only part of the overall marketing effort; that there are limits to what it can and cannot realistically achieve; and that there are particular difficulties in measuring these effects. It also calls for a multi-disciplinary approach to the problem, drawing on nutrition, marketing, consumer behaviour, food policy, psychology, communications and econometric theory and research.

Structure of the Review

Contextual Reviews

Two narrative reviews of related literatures will be undertaken in order to provide context for the main review. The first review will investigate how, if at all, marketing (including promotion) influences behaviour. This will encompass a review of marketing theory and use of the 4Ps (product, price, place and promotion) in commercial marketing.

The second review will assess evidence of the effect of promotion on related behaviours including young people's smoking and drinking. Important lessons can be learned from the research on tobacco and alcohol promotion, and this literature should prove helpful in understanding the possible relationship between food promotion and children's food-related behaviour.

Structure of the Systematic Review

The main review, which will assess evidence of the effects of promotion on children's food behaviour, will consist of two separate systematic reviews. The reviews will use systematic and transparent methods to identify, select, appraise and analyse relevant studies.

The first systematic review will assess evidence of the extent and nature of food promotion to children in the UK. This will provide a better understanding of the nature of promotional strategies currently employed by the food industry, an indication of the typical content of such promotions, and a measure of the extent of food promotion to children. The second systematic review will then examine evidence of the effects of such promotions on children's food knowledge, attitudes and behaviour.

This review protocol sets out details of a single search methodology, designed to identify studies relevant to both systematic reviews. Details of this search methodology are now provided.

REVIEW QUESTIONS

Systematic Review 1: Review of the Extent and Nature of Food Promotion to Children

The aim of the first systematic review is to provide an assessment of the extent and nature of food promotion to children. To achieve this aim, the following research questions have been identified:

Promotional Channels
What promotional channels are being used to target children?
What is the relative spend in each of these promotional channels?
What are the time trend changes?

Promoted Products
What food items are being promoted to children?
What are the time trend changes?

Creative Strategies
What are the principal creative strategies used to target children?
To what extent are these different creative strategies being used?
What are the time trend changes?

Systematic Review 2: Review of the Effects of Food Promotion on Children's Food Knowledge, Attitudes and Behaviour

The aim of the second systematic review is to examine the effects of food promotion on children's food knowledge, attitudes and behaviour. To achieve this aim, the following research questions have been identified:

How do children respond to food promotion?

Is there a causal link between food promotion and children's food knowledge, attitudes and behaviour?

If food promotion is shown to have an effect on children's food knowledge, attitudes and behaviour, what is the extent of this influence relative to other factors?

In the studies which demonstrate an effect of food promotion on children's food knowledge, attitudes and behaviour, does this affect total category sales, brand switching or both?

Preliminary Literature Search

A preliminary search of the literature was undertaken prior to the review in order to provide information on the nature, quality and size of the evidence base. Searches for existing reviews and primary studies were undertaken on a small range of databases relevant to the topic.

This process served a number of useful purposes. First, as mentioned previously, it provided the reviewers with an early indication of the nature and size of the evidence base. Second, it provided the review team with training in managing the review process and tested for consistency between reviewers in these respects. Third, it highlighted any need to amend/revise the proposed search strategy, inclusion/exclusion criteria or review materials.

SEARCH STRATEGY

Details of the proposed search strategy are now provided in terms of (i) processes for identifying the relevant research, (ii) databases and other sources to be searched (iii) search terms to be used, and (iv) the study selection process (including inclusion criteria). It is important to note that identifying an appropriate and effective search strategy is a developmental process, and that the final approach will be based upon trial and error. The proposed strategy may therefore be subject to some refinement during the early stages of the process.

Identifying the Relevant Literature

The aim of the search is to generate as comprehensive a list as possible of studies that may be relevant to the review questions. Identified studies will therefore initially be subject to assessment on the basis of their relevance to the research questions. It is likely that many of the relevant studies for this review will be drawn from the marketing, psychology, nutrition and economics literatures.

Information Sources

- ***Electronic databases***

In an attempt to minimise the potential effects of database biases (eg. geographic, language, etc), a broad range of electronic databases will be systematically searched for studies appropriate to the review questions. A list of suitable databases is provided on the following page:

Electronic Databases	Brief Description
ABI/INFORM	Database of worldwide business information
Business & Industry	Broad-based international business information database
Emerald	Management, library and information services journals
ERIC	Database of educational research
IBSS	International bibliography of social science research
Ingenta Journals	Global research gateway
ISI Social Sciences Citation Index	Multidisciplinary database covering the journal literature of the social sciences
ISI Science Citation Index	Multidisciplinary database covering the journal literature of the sciences
OmniFile	Multidisciplinary full text database, with a strong focus on social science research
PsycINFO	Database of psychological abstracts
Sociological Abstracts	Articles, conference papers, books, dissertations

- ***Industry sources***

Key market intelligence sources will be consulted for access to relevant research reports and reviews. Report listing of these sources will be obtained and searched to identify publications relevant to the review questions. Only UK evidence will be considered for inclusion at this stage. A list of proposed sources is provided below:

Industry Sources	Brief Description
Key Note	Market Research Reports
Mintel	Market Research Reports
Reuters Business Insight	Consumer Goods Reports

- ***Reference lists***

The reference lists of primary research studies identified in database searches will be examined to identify any further studies for consideration.

Search Terms

The electronic databases will be systematically searched using combinations of the search terms listed in the table below. In order to identify both appropriate and potentially useful search terms, three electronic databases were initially consulted to gauge an understanding of the relevant terminology across a range of publications. Useful terms were added to a master list and a record was made of where the term was found (eg. as an official indexing term, as a free text term in a title, etc). The identified terms are provided in the table over page:

Food	Food packaging	Food products	Food advertising	Food advertisement	Food preferences
Child(ren)	Youth	Young people	Adolescents	Marketing	Marketing strategy
Marketing mixes	Market positioning	Advertisements	Advertising	Advertising campaigns	Advertising expenditures
Advertising media	Promotion	Print advertising	Radio advertising	Television advertising	Sales promotions
Brands	Brand names	Brand preferences	Consumer research	Consumer behaviour	Consumer surveys

Each of the identified databases will be systematically searched using the search terms in the table, in a variety of different combinations. Although every effort will be made to replicate the search strategy in each database, some changes may be made to account for variations in the quality of indexing in the various databases. A record of the specific search strategy applied, and search outcomes, will be made for each individual database.

METHODS FOR ASSESSMENT

Study Selection Process and Quality Assessment

First, relevance inclusion criteria will be applied to the references generated from searching in an attempt to ascertain if a full text copy of the article should be obtained. At this stage, titles and abstracts (where available) of identified studies will be assessed for relevance to either or both systematic reviews. Only primary studies and reviews, published beyond 1970 will be considered. In addition, where applicable, the definitions of key terms including children, food and promotion must correspond to agreed definitions set out by the review team in advance of the task. Unless studies can definitely be excluded at this stage, the titles and abstracts identified as being potentially relevant will be provisionally included for consideration on the basis of the whole text.

Once the full texts of all of the potentially relevant articles have been retrieved, final inclusion/exclusion decisions can be made, on the basis of relevance to the review questions, and methodological quality. In terms of quality, the reviewers will seek evidence of a rigorous methodology. This will include:

- evidence of robust sampling
- the use of a rigorous measurement tool
- evidence of attempts to retain objectivity
- potential replicability of research

When making second stage relevance and quality assessments, reviewers will only assess articles that are considered within their area of expertise. All articles will be independently assessed by more than one reviewer in order to test the reproducibility of decisions. Disagreements at each stage will be resolved by discussion between reviewers. Where disagreements persist, the opinion of a third reviewer will be sought. Throughout this process, a completed record of excluded studies will be maintained. This list will contain the full references of excluded research and will also provide reasons for the exclusion for future reference.

Data Extraction

At the data extraction stage, the reviewers will extract the required information for the review from the details provided in the selected articles. To facilitate this process, and to ensure that the required information is obtained from the identified studies, a data extraction form has been developed. This form will be used to document the information extracted from the research articles. The form has been designed and developed to encourage consistency among reviewers.

APPENDIX 2

Master List of Search Terms

Master List of Search Terms

1. Narrow Combination Terms / Phrases (Children + Food + Marketing term)

Children AND food AND marketing
Children AND food AND advertising
Children AND food AND promotion

2. Combination Terms / Phrases (Children or Food + Marketing term)

Children AND food
Children AND promotion
Children AND marketing
Children AND advertisements
Children AND advertising
Children AND advertising campaigns
Children AND advertising expenditures
Children AND advertising media
Children AND print advertising
Children AND radio advertising
Children AND television advertising
Children AND sales promotions
Children AND brands
Children AND brand names
Children AND brand preferences
Children AND consumer behaviour/behavior
Food AND marketing
Food AND promotion
Food AND advertisements
Food AND advertising
Food AND advertising campaigns
Food AND advertising expenditures
Food AND advertising media
Food AND print advertising
Food AND radio advertising
Food AND television advertising
Food AND sales promotions
Food AND brands
Food AND brand names
Food AND brand preferences
Food AND consumer behaviour/behavior
Food AND packaging
Food AND products

3. Individual Search Terms

Food
Food packaging
Food products
Food advertising
Food advertisement
Food preferences
Children
Youth
Young people
Adolescents
Marketing
Marketing strategy
Marketing mixes
Market positioning
Advertisements
Advertising
Advertising campaigns
Advertising expenditures
Advertising media
Promotion
Print advertising
Radio advertising
Television advertising
Sales promotions
Brands
Brand names
Brand preferences
Consumer research
Consumer behaviour/behavior
Consumer surveys

APPENDIX 3

Search Strategies for Electronic Databases

Search Strategies for Electronic Databases

ABI / INFORM 1999-Current Search Strategy (21.02.03 - 24.02.03)

1. **Children AND food in ANY**
2. **Children AND promotion in ANY**
3. **Children AND marketing in ANY**
4. **Children AND advertisement/s in ANY**
5. **Children AND advertising in ANY**
6. **Children AND advertising campaign/s in ANY**
7. **Children AND advertising expenditure/s in ANY**
8. **Children AND advertising media in ANY**
9. **Children AND print advertising in ANY**
10. **Children AND radio advertising in ANY**
11. **Children AND television advertising in ANY**
12. **Children AND sales promotion/s in ANY**
13. **Children AND brand/s in ANY**
14. **Children AND brand name/s in ANY**
15. **Children AND brand preference/s in ANY**
16. **Children AND consumer behavior/behaviour in ANY**
17. **Food AND marketing in ANY**
18. **Food AND promotion in ANY**
19. **Food AND advertisement/s in ANY**
20. **Food AND advertising in ANY**
21. **Food AND advertising campaign/s in ANY**
22. Food AND advertising expenditure/s in ANY
23. **Food AND advertising media in ANY**
24. Food AND print advertising in ANY
25. Food AND radio advertising in ANY
26. **Food AND television advertising in ANY**
27. **Food AND sales promotion/s in ANY**
28. **Food AND brand/s in ANY**
29. Food AND brand name/s in ANY
30. Food AND brand preference/s in ANY
31. **Food AND consumer behaviour/behavior in ANY**
32. **Food AND packaging in ANY**
33. **Food AND product/s in ANY**
34. **Children AND food AND marketing in ANY**
35. **Children AND food AND advertising in ANY**
36. **Children AND food AND promotion in ANY**

The searches highlighted in bold produced the reference lists that were actually subject to review.

ABI / INFORM 1986-1998 Search Strategy (26.02.03 - 05.03.03)

Combination Terms / Phrases

1. Children AND food in ANY
2. Children AND promotion in ANY
3. Children AND marketing in ANY
4. Children AND advertisement/s in ANY
5. Children AND advertising in ANY
6. Children AND advertising campaign/s in ANY
7. Children AND advertising expenditure/s in ANY
8. Children AND advertising media in ANY
9. Children AND print advertising in ANY
10. Children AND radio advertising in ANY
11. Children AND television advertising in ANY
12. Children AND sales promotion/s in ANY
13. Children AND brand/s in ANY
14. Children AND brand name/s in ANY
15. Children AND brand preference/s in ANY
16. Children AND consumer behavior/behaviour in ANY
17. Food AND marketing in ANY
18. Food AND promotion in ANY
19. Food AND advertisement/s in ANY
20. Food AND advertising in ANY
21. Food AND advertising campaign/s in ANY
22. Food AND advertising expenditure/s in ANY
23. Food AND advertising media in ANY
24. Food AND print advertising in ANY
25. Food AND radio advertising in ANY
26. Food AND television advertising in ANY
27. Food AND sales promotion/s in ANY
28. Food AND brand/s in ANY
29. Food AND brand name/s in ANY
30. Food AND brand preference/s in ANY
31. Food AND consumer behaviour/behavior in ANY
32. Food AND packaging in ANY
33. Food AND product/s in ANY
34. Children AND food AND marketing in ANY
35. Children AND food AND advertising in ANY
36. Children AND food AND promotion in ANY

Individual Terms / Phrases

1. Food in SUB
2. Food packaging in SUB
3. Food product/s in SUB
4. Food advertising in SUB
5. Food advertisement in SUB
6. Food preference/s in SUB
7. Children in SUB
8. Youth in SUB
9. Young people in SUB
10. Adolescents in SUB
11. Marketing in SUB
12. Marketing strategy/ies in SUB
13. Marketing mix/es in SUB
14. Market positioning in SUB
15. Advertisement/s in SUB
16. Advertising in SUB
17. Advertising campaign/s in SUB
18. Advertising expenditure/s in SUB
19. Advertising media in SUB
20. Promotion in SUB
21. Print advertising in SUB
22. Radio advertising in SUB
23. Television advertising in SUB
24. Sales promotions in SUB
25. Brands in SUB
26. Brand names in SUB
27. Brand preferences in SUB
28. Consumer research in SUB
29. Consumer behavior in SUB
30. Consumer surveys in SUB

The searches highlighted in bold produced the reference lists that were actually subject to review.

ABI / INFORM <1970-1985 Search Strategy (26.02.03 - 05.03.03)

Combination Terms / Phrases

1. Children AND food in ANY
2. Children AND promotion in ANY
3. Children AND marketing in ANY
4. Children AND advertisement/s in ANY
5. Children AND advertising in ANY
6. Children AND advertising campaign/s in ANY
7. Children AND advertising expenditure/s in ANY
8. Children AND advertising media in ANY
9. Children AND print advertising in ANY
10. Children AND radio advertising in ANY
11. Children AND television advertising in ANY
12. Children AND sales promotion/s in ANY
13. Children AND brand/s in ANY
14. Children AND brand name/s in ANY
15. Children AND brand preference/s in ANY
16. Children AND consumer behavior/behaviour in ANY
17. Food AND marketing in ANY
18. Food AND promotion in ANY
19. Food AND advertisement/s in ANY
20. Food AND advertising in ANY
21. Food AND advertising campaign/s in ANY
22. Food AND advertising expenditure/s in ANY
23. Food AND advertising media in ANY
24. Food AND print advertising in ANY
25. Food AND radio advertising in ANY
26. Food AND television advertising in ANY
27. Food AND sales promotion/s in ANY
28. Food AND brand/s in ANY
29. Food AND brand name/s in ANY
30. Food AND brand preference/s in ANY
31. Food AND consumer behaviour/behavior in ANY
32. Food AND packaging in ANY
33. Food AND product/s in ANY
34. Children AND food AND marketing in ANY
35. Children AND food AND advertising in ANY
36. Children AND food AND promotion in ANY

Individual Terms / Phrases

1. Food in SUB
2. Food packaging in SUB
3. Food product/s in SUB
4. Food advertising in SUB
5. Food advertisement in SUB
6. Food preference/s in SUB
7. Children in SUB
8. Youth in SUB
9. Young people in SUB
10. Adolescents in SUB
11. Marketing in SUB
12. Marketing strategy/ies in SUB
13. Marketing mix/es in SUB
14. Market positioning in SUB
15. Advertisement/s in SUB
16. Advertising in SUB
17. Advertising campaign/s in SUB
18. Advertising expenditure/s in SUB
19. Advertising media in SUB
20. Promotion in SUB
21. Print advertising in SUB
22. Radio advertising in SUB
23. Television advertising in SUB
24. Sales promotion/s in SUB
25. Brands in SUB
26. Brand names in SUB
27. Brand preference/s in SUB
28. Consumer research in SUB
29. Consumer behavior in SUB
30. Consumer surveys in SUB

The searches highlighted in bold produced the reference lists that were actually subject to review.

Business and Industry (13.02.03 - 21.02.03)

Individual Terms / Phrases

1. Food in TI
2. Food packaging in TI
3. Food products in TI
4. Food advertising in TI
5. Food advertisements in TI
6. Food preferences in TI
7. Children in TI
8. Youth in TI
9. Young people in TI
10. Adolescents in TI
11. Marketing in TI
12. Marketing strategy in TI
13. Marketing mixes in TI
14. Market positioning in TI
15. Advertisements in TI
16. Advertising in TI
17. Advertising campaigns in TI
18. Advertising expenditures in TI
19. Advertising media in TI
20. Promotion in TI
21. Print advertising in TI
22. Radio advertising in TI
23. Television advertising in TI
24. Sales promotions in TI
25. Brands in TI
26. Brand names in TI
27. Brand preferences in TI
28. Consumer research in TI
29. Consumer behavior in TI
30. Consumer surveys in TI

31. Food in ANY
32. Food packaging in ANY
33. Food products in ANY
34. Food advertising in ANY
35. Food advertisement in ANY
36. Food preference/s in ANY
37. Children in ANY
38. Youth in ANY
39. Young people in ANY
40. Adolescent/s in ANY
41. Marketing in ANY
42. Marketing strategy in ANY
43. Marketing mix/es in ANY
44. Market positioning in ANY
45. Advertisements in ANY
46. Advertising in ANY
47. Advertising campaign/s in ANY
48. Advertising expenditures in ANY
49. Advertising media in ANY
50. Promotion in ANY
51. Print advertising in ANY
52. Radio advertising in ANY
53. Television advertising in ANY
54. Sales promotion/s in ANY
55. Brand/s in ANY
56. Brand name/s in ANY
57. Brand preference/s in ANY
58. Consumer research in ANY
59. Consumer behavior/iour in ANY
60. Consumer survey/s in ANY

The searches highlighted in bold produced the reference lists that were actually subject to review.

THE COCHRANE LIBRARY – ELECTRONIC RESOURCE (23.05.03)

Combination Terms and Phrases

1. Children AND food AND marketing = 19
2. Children AND food AND advertising = 16
3. Children AND food AND promotion = 77

NB. No restrictions were made on the searches: all records from the years 1800-2003 were searched and the search terms could appear anywhere in the records' text. Four studies meeting IRC were identified (3 had already been identified previously through other search methods). All four of these studies were recorded in The Cochrane Central Register of Controlled Trials database which sources its material from the MEDLINE and EMBASE databases. (These two electronic databases were not searched independently as part of the systematic review.)

Emerald Search Strategy (17.01.03 - 12.02.03)

Combination Terms / Phrases

1. **Children AND food in KW**
2. **Children AND promotion in KW**
3. **Children AND marketing in KW**
4. Children AND advertisements in KW
5. **Children AND advertising in KW**
6. Children AND advertising campaigns in KW
7. Children AND advertising expenditures in KW
8. Children AND advertising media in KW
9. Children AND print advertising in KW
10. Children AND radio advertising in KW
11. Children AND television advertising in KW
12. Children AND sales promotio ns in KW
13. Children AND brands in KW
14. Children AND brand names in KW
15. Children AND brand preferences in KW
16. **Children AND consumer behaviour in KW**
17. **Food AND marketing in KW**
18. **Food AND promotion in KW**
19. Food AND advertisements in KW
20. **Food AND advertising in KW**
21. **Food AND advertising campaigns in KW**
22. Food AND advertising expenditures in KW
23. **Food AND advertising media in KW**
24. Food AND print advertising in KW
25. Food AND radio advertising in KW
26. **Food AND television advertising in KW**
27. Food AND sales promotions in KW
28. **Food AND brands in KW**
29. **Food AND brand names in KW**
30. Food AND brand preferences in KW
31. **Food AND consumer behaviour/behavior in KW**
32. **Food AND packaging in KW**
33. Food AND products in KW
34. **Children AND food AND marketing in KW**
35. **Children AND food AND marketing in KW**
36. Children AND food AND promotion in KW

Individual Terms / Phrases

1. **Food in KW**
2. **Children in KW**
3. Youth in KW
4. Young people in KW
5. Adolescents in KW
6. Marketing in KW
7. Marketing strategy in KW
8. Marketing mixes in KW
9. Market positioning in KW
10. Advertisements in KW
11. Advertising in KW
12. Advertising campaigns in KW
13. Advertising expenditures in KW
14. Advertising media in KW
15. **Promotion in KW**
16. Print advertising in KW
17. Radio advertising in KW
18. Television advertising in KW
19. Sales promotions in KW
20. Brands in KW
21. Brand names in KW
22. Brand preferences in KW
23. Consumer research in KW
24. Consumer behaviour in KW
25. Consumer surveys in KW

The searches highlighted in bold produced the reference lists that were actually subject to review.

ERIC Search Strategy (28.01.03 - 12.02.03)

Combined Terms / Phrases

1. Children AND food in KW
2. Children AND promotion in KW
3. **Children AND marketing in KW**
4. **Children AND advertisements in KW**
5. **Children AND advertising in KW**
6. **Children AND advertising AND campaigns in KW**
7. **Children AND advertising AND expenditures in KW**
8. **Children AND advertising AND media in KW**
9. **Children AND print AND advertising in KW**
10. **Children AND television AND advertising in KW**
11. Children AND sales AND promotions in KW
12. **Children AND brands in KW**
13. **Children AND brand AND names in KW**
14. Children AND brand AND preferences in KW
15. **Children AND Consumer AND behavior in KW**
16. **Food AND marketing in KW**
17. **Food AND promotion in KW**
18. **Food AND advertisements in KW**
19. **Food AND advertising campaigns in KW**
20. **Food AND advertising expenditures in KW**
21. **Food AND advertising media in KW**
22. **Food AND print advertising in KW**
23. **Food AND radio advertising in KW**
24. **Food AND television advertising in KW**
25. Food AND sales promotions in KW
26. **Food AND brands in KW**
27. **Food AND brand names in KW**
28. **Food AND brand preferences in KW**
29. **Food AND consumer behaviour/behavior in KW**
30. **Food AND packaging in KW**
31. **Food AND products in KW**
32. **Food AND preferences in KW**
33. **Children AND food AND marketing in KW**
34. **Children AND food AND advertising in KW**
35. **Children AND food AND promotion in KW**

Individual Terms / Phrases

1. Food in KW
2. Food packaging in KW
3. Food products in KW
4. **Food advertising in KW**
5. Food advertisement in KW
6. Food preferences in KW
7. Children in KW
8. Youth in KW
9. Young people in KW
10. Adolescents in KW
11. Marketing in KW
12. Marketing strategy in KW
13. Marketing mixes in KW
14. Market positioning in KW
15. Advertisements in KW
16. Advertising in KW
17. Advertising campaigns in KW
18. Advertising expenditures in KW
19. Advertising media in KW
20. Promotion in KW
21. Print advertising in KW
22. Radio advertising in KW
23. Television advertising in KW
24. Sales promotions in KW
25. Brands in KW
26. Brand names in KW
27. Brand preferences in KW
28. Consumer research in KW
29. Consumer behavior in KW
30. Consumer surveys in KW

The searches highlighted in bold produced the reference lists that were actually subject to review.

IBSS Search Strategy (13.02.03)

Combined Terms / Phrases

1. **Children AND food in TI, KW & ABST**
2. **Children AND promotion in TI, KW & ABST**
3. **Children AND marketing in TI, KW & ABST**
4. **Children AND advertisement/s in TI, KW & ABST**
5. **Children AND advertising in TI, KW & ABST**
6. Children AND advertising campaigns in TI, KW & ABST
7. Children AND advertising expenditures in TI, KW & ABST
8. Children AND advertising media in TI, KW & ABST
9. Children AND print advertising in TI, KW & ABST
10. Children AND radio advertising in TI, KW & ABST
11. **Children AND television advertising in TI, KW & ABST**
12. Children AND sales promotion/s in TI, KW & ABST
13. **Children AND brand/s in TI, KW & ABST**
14. Children AND brand name/s in TI, KW & ABST
15. Children AND brand preference/s in TI, KW & ABST
16. **Children AND consumer behavior/behaviour in TI, KW & ABST**
17. **Food AND marketing in TI, KW & ABST**
18. **Food AND promotion in TI, KW & ABST**
19. **Food AND advertisement/s in TI, KW & ABST**
20. **Food AND advertising in TI, KW & ABST**
21. Food AND advertising campaign/s in TI, KW & ABST
22. **Food AND advertising expenditure/s in TI, KW & ABST**
23. Food AND advertising media in TI, KW & ABST
24. Food AND print advertising in TI, KW & ABST
25. Food AND radio advertising in TI, KW & ABST
26. **Food AND television advertising in TI, KW & ABST**
27. Food AND sales promotion/s in TI, KW & ABST
28. **Food AND brand/s in TI, KW & ABST**
29. **Food AND brand name/s in TI, KW & ABST**
30. Food AND brand preferences in TI, KW & ABST
31. **Food AND consumer behaviour/behavior in TI, KW & ABST**
32. **Food AND packaging in TI, KW & ABST**
33. Food AND product/s in TI, KW & ABST
34. **Children AND food AND marketing in TI, KW & ABST**
35. **Children AND food AND advertising in TI, KW & ABST**
36. Children AND food AND promotion in TI, KW & ABST

Individual Terms / Phrases

1. Food in TI, KW & ABST
2. Food packaging in TI, KW & ABST
3. Food product/s in TI, KW & ABST
4. **Food advertising in TI, KW & ABST**
5. Food advertisement/s in TI, KW & ABST
6. Food preference/s in TI, KW & ABST
7. Children in TI, KW & ABST
8. Youth in TI, KW & ABST
9. Young people in TI, KW & ABST
10. Adolescent/s in TI, KW & ABST
11. Marketing in TI, KW & ABST
12. Marketing strategy in TI, KW & ABST
13. Marketing mix/es in TI, KW & ABST
14. Market positioning in TI, KW & ABST
15. Advertisement/s in TI, KW & ABST
16. Advertising in TI, KW & ABST
17. Advertising campaign/s in TI, KW & ABST
18. Advertising expenditure/s in TI, KW & ABST
19. Advertising media in TI, KW & ABST
20. Promotion in TI, KW & ABST
21. Print advertising in TI, KW & ABST
22. Radio advertising in TI, KW & ABST
23. Television advertising in TI, KW & ABST
24. Sales promotion/s in TI, KW & ABST
25. Brands in TI, KW & ABST
26. Brand name/s in TI, KW & ABST
27. Brand preference/s in TI, KW & ABST
28. Consumer research in TI, KW & ABST
29. Consumer behavior OR consumer behaviour in TI, KW & ABST
30. Consumer survey/s in TI, KW & ABST

The searches highlighted in bold produced the reference lists that were actually subject to review.

Ingenta Journals - Online Database Search Strategy (07.02.03 - 12.02.03)

Combination Terms / Phrases

1. Children AND food in TI, KW & ABST
2. **Children AND promotion in TI, KW & ABST**
3. **Children AND marketing in TI, KW & ABST**
4. **Children AND advertisements in TI, KW & ABST**
5. **Children AND advertising in TI, KW & ABST**
6. Children AND advertising campaigns in TI, KW & ABST
7. Children AND advertising expenditures in TI, KW & ABST
8. Children AND advertising media in TI, KW & ABST
9. **Children AND print advertising in TI, KW & ABST**
10. Children AND radio advertising in TI, KW & ABST
11. **Children AND television advertising in TI, KW & ABST**
12. Children AND sales promotions in TI, KW & ABST
13. **Children AND brands in TI, KW & ABST**
14. **Children AND brand names in TI, KW & ABST**
15. Children AND brand preferences in TI, KW & ABST
16. **Children AND consumer behavior/behaviour in TI, KW & ABST**
17. **Food AND marketing in TI, KW & ABST**
18. **Food AND promotion in TI, KW & ABST**
19. **Food AND advertisements in TI, KW & ABST**
20. **Food AND advertising in TI, KW & ABST**
21. **Food AND advertising campaigns in TI, KW & ABST**
22. Food AND advertising expenditures in TI, KW & ABST
23. Food AND advertising media in TI, KW & ABST
24. Food AND print advertising in TI, KW & ABST
25. **Food AND radio advertising in TI, KW & ABST**
26. **Food AND television advertising in TI, KW & ABST**
27. **Food AND sales promotions in TI, KW & ABST**
28. **Food AND brands in TI, KW & ABST**
29. **Food AND brand names in TI, KW & ABST**
30. Food AND brand preferences in TI, KW & ABST
31. **Food AND consumer behaviour/behavior in TI, KW & ABST**
32. **Food AND packaging in TI, KW & ABST**
33. Food AND products in TI, KW & ABST
34. **Children AND food AND marketing in TI, KW & ABST**
35. **Children AND food AND advertising in TI, KW & ABST**
36. **Children AND food AND promotion in TI, KW & ABST**

Individual Terms / Phrases

1. Food in TI, KW & ABST
2. Food packaging in TI, KW & ABST
3. Food products in TI, KW & ABST
4. **Food advertising in TI, KW & ABST**
5. Food advertisement in TI, KW & ABST
6. Food preferences in TI, KW & ABST
7. Children in TI, KW & ABST
8. Youth in TI, KW & ABST
9. Young people in TI, KW & ABST
10. Adolescents in TI, KW & ABST
11. Marketing in TI, KW & ABST
12. Marketing strategy in TI, KW & ABST
13. Marketing mixes in TI, KW & ABST
14. Market positioning in TI, KW & ABST
15. Advertisements in TI, KW & ABST
16. Advertising in TI, KW & ABST
17. Advertising campaigns in TI, KW & ABST
18. Advertising expenditures in TI, KW & ABST
19. Advertising media in TI, KW & ABST
20. Promotion in TI, KW & ABST
21. Print advertising in TI, KW & ABST
22. Radio advertising in TI, KW & ABST
23. Television advertising in TI, KW & ABST
24. Sales promotions in TI, KW & ABST
25. Brands in TI, KW & ABST
26. Brand names in TI, KW & ABST
27. Brand preferences in TI, KW & ABST
28. Consumer research in TI, KW & ABST
29. Consumer behavior OR consumer behaviour in TI, KW & ABST
30. Consumer surveys in TI, KW & ABST

The searches highlighted in bold produced the reference lists that were actually subject to review.

Ingenta Journals - Fax/Ariel Database Search Strategy (07.02.03 - 12.02.03)

Combined Terms / Phrases

1. **Children AND food in TI, KW & ABST**
2. **Children AND promotion in TI, KW & ABST**
3. **Children AND marketing in TI, KW & ABST**
4. **Children AND advertisements in TI, KW & ABST**
5. **Children AND advertising in TI, KW & ABST**
6. Children AND advertising campaigns in TI, KW & ABST
7. Children AND advertising expenditures in TI, KW & ABST
8. Children AND advertising media in TI, KW & ABST
9. **Children AND print advertising in TI, KW & ABST**
10. Children AND radio advertising in TI, KW & ABST
11. **Children AND television advertising in TI, KW & ABST**
12. Children AND sales promotions in TI, KW & ABST
13. **Children AND brands in TI, KW & ABST**
14. **Children AND brand names in TI, KW & ABST**
15. Children AND brand preferences in TI, KW & ABST
16. **Children AND consumer behavior/behaviour in TI, KW & ABST**
17. **Food AND marketing in TI, KW & ABST**
18. **Food AND promotion in TI, KW & ABST**
19. **Food AND advertisements in TI, KW & ABST**
20. **Food AND advertising in TI, KW & ABST**
21. **Food AND advertising campaigns in TI, KW & ABST**
22. Food AND advertising expenditures in TI, KW & ABST
23. Food AND advertising media in TI, KW & ABST
24. Food AND print advertising in TI, KW & ABST
25. **Food AND radio advertising in TI, KW & ABST**
26. **Food AND television advertising in TI, KW & ABST**
27. Food AND sales promotions in TI, KW & ABST
28. **Food AND brands in TI, KW & ABST**
29. **Food AND brand names in TI, KW & ABST**
30. Food AND brand preferences in TI, KW & ABST
31. **Food AND consumer behaviour/behavior in TI, KW & ABST**
32. **Food AND packaging in TI, KW & ABST**
33. Food AND products in TI, KW & ABST
34. **Children AND food AND marketing in TI, KW & ABST**
35. **Children AND food AND advertising in TI, KW & ABST**
36. **Children AND food AND promotion in TI, KW & ABST**

Individual Terms / Phrases

1. **Food in TI, KW & ABST**
2. Food packaging in TI, KW & ABST
3. Food products in TI, KW & ABST
4. **Food advertising in TI, KW & ABST**
5. Food advertisement in TI, KW & ABST
6. Food preferences in TI, KW & ABST
7. Children in TI, KW & ABST
8. Youth in TI, KW & ABST
9. Young people in TI, KW & ABST
10. Adolescents in TI, KW & ABST
11. Marketing in TI, KW & ABST
12. Marketing strategy in TI, KW & ABST
13. Marketing mixes in TI, KW & ABST
14. Market positioning in TI, KW & ABST
15. Advertisements in TI, KW & ABST
16. Advertising in TI, KW & ABST
17. Advertising campaigns in TI, KW & ABST
18. Advertising expenditures in TI, KW & ABST
19. Advertising media in TI, KW & ABST
20. Promotion in TI, KW & ABST
21. Print advertising in TI, KW & ABST
22. Radio advertising in TI, KW & ABST
23. Television advertising in TI, KW & ABST
24. Sales promotions in TI, KW & ABST
25. Brands in TI, KW & ABST
26. Brand names in TI, KW & ABST
27. Brand preferences in TI, KW & ABST
28. Consumer research in TI, KW & ABST
29. Consumer behavior OR consumer behaviour in TI, KW & ABST
30. Consumer surveys in TI, KW & ABST

The searches highlighted in bold produced the reference lists that were actually subject to review.

ISS Social Sciences Citation Index Search Strategy (17.02.03 - 18.02.03)

Combination Terms / Phrases

1. Children AND food in TOP
2. **Children AND promotion in TOP**
3. **Children AND marketing in TOP**
4. **Children AND advertisements in TOP**
5. **Children AND advertising in TOP**
6. **Children AND advertising campaigns in TOP**
7. **Children AND advertising expenditures in TOP**
8. Children AND advertising media in TOP
9. **Children AND sales promotions in TOP**
10. **Children AND print advertising in TOP**
11. **Children AND radio advertising in TOP**
12. **Children AND television advertising in TOP**
13. **Children AND brands in TOP**
14. **Children AND brand names in TOP**
15. **Children AND brand preferences in TOP**
16. **Children AND consumer behavior in TOP**
17. **Food AND marketing in TOP**
18. **Food AND promotion in TOP**
19. **Food AND advertisements in TOP**
20. **Food AND advertising in TOP**
21. **Food AND advertising campaigns in TOP**
22. Food AND advertising expenditures in TOP
23. Food AND advertising media in TOP
24. **Food AND print advertising in TOP**
25. Food AND radio advertising in TOP
26. **Food AND television advertising in TOP**
27. **Food AND sales promotions in TOP**
28. **Food AND brands in TOP**
29. **Food AND brand names in TOP**
30. **Food AND brand preferences in TOP**
31. **Food AND consumer behavior in TOP**
32. **Food AND packaging in TOP**
33. **Food AND products in TOP**
34. **Children AND food AND marketing in TOP**
35. **Children AND food AND advertising in TOP**
36. **Children AND food AND promotion in TOP**

Individual Terms / Phrases

1. Food in TOP
2. Food packaging in TOP
3. Food products in TOP
4. **Food advertising in TOP**
5. Food advertisement in TOP
6. Food preferences in TOP
7. Children in TOP
8. Youth in TOP
9. Young people in TOP
10. Adolescents in TOP
11. Marketing in TOP
12. Marketing strategy in TOP
13. Marketing mixes in TOP
14. Market positioning in TOP
15. Advertisements in TOP
16. Advertising in TOP
17. Advertising campaigns in TOP
18. Advertising expenditures in TOP
19. Advertising media in TOP
20. Promotion in TOP
21. Print advertising in TOP
22. Radio advertising in TOP
23. Television advertising in TOP
24. Sales promotions in TOP
25. Brands in TOP
26. Brand names in TOP
27. Brand preferences in TOP
28. Consumer research in TOP
29. Consumer behavior in TOP
30. Consumer surveys in TOP

The searches highlighted in bold produced the reference lists that were actually subject to review.

ISI Science Citation Index Search Strategy (18.02.03 - 19.02.03)

Combination Terms / Phrases

1. Children AND food in TOP
2. **Children AND promotion in TOP**
3. **Children AND marketing in TOP**
4. **Children AND advertisements in TOP**
5. **Children AND advertising in TOP**
6. **Children AND advertising campaigns in TOP**
7. **Children AND advertising expenditures in TOP**
8. Children AND advertising media in TOP
9. **Children AND print advertising in TOP**
10. **Children AND radio advertising in TOP**
11. **Children AND television advertising in TOP**
12. **Children AND sales promotions in TOP**
13. **Children AND brands in TOP**
14. **Children AND brand names in TOP**
15. **Children AND brand preferences in TOP**
16. **Children AND consumer behavior in TOP**
17. **Food AND marketing in TOP**
18. **Food AND promotion in TOP**
19. **Food AND advertisements in TOP**
20. **Food AND advertising in TOP**
21. **Food AND advertising campaigns in TOP**
22. **Food AND advertising expenditures in TOP**
23. **Food AND advertising media in TOP**
24. Food AND sales promotions in TOP
25. **Food AND print advertising in TOP**
26. **Food AND radio advertising in TOP**
27. **Food AND television advertising in TOP**
28. **Food AND brands in TOP**
29. **Food AND brand names in TOP**
30. Food AND brand preferences in TOP
31. **Food AND consumer behavior in TOP**
32. Food AND packaging in TOP
33. Food AND products in TOP
34. **Children AND food AND marketing in TOP**
35. **Children AND food AND promotion in TOP**
36. **Children AND food AND promotion in TOP**

Individual Terms / Phrases

1. Food in TOP
2. Food packaging in TOP
3. Food products in TOP
4. **Food advertising in TOP**
5. Food advertisement in TOP
6. Food preferences in TOP
7. Children in TOP
8. Youth in TOP
9. Young people in TOP
10. Adolescents in TOP
11. Marketing in TOP
12. Marketing strategy in TOP
13. Marketing mixes in TOP
14. Market positioning in TOP
15. Advertisements in TOP
16. Advertising in TOP
17. Advertising campaigns in TOP
18. Advertising expenditures in TOP
19. Advertising media in TOP
20. Promotion in TOP
21. Print advertising in TOP
22. Radio advertising in TOP
23. Television advertising in TOP
24. Sales promotions in TOP
25. Brands in TOP
26. Brand names in TOP
27. Brand preferences in TOP
28. Consumer research in TOP
29. Consumer behavior in TOP
30. Consumer surveys in TOP

The searches highlighted in bold produced the reference lists that were actually subject to review.

OmniFile Search Strategy (27.02.03 - 28.02.03)

Combination Terms / Phrases

1. Children AND food in SUB
2. Children AND promotion in SUB
3. Children AND marketing in SUB
4. Children AND advertisement/s in SUB
5. Children AND advertising in SUB
6. Children AND advertising campaigns in SUB
7. Children AND advertising expenditure in SUB
8. Children AND advertising media in SUB
9. Children AND print advertising in SUB
10. Children AND radio advertising in SUB
11. Children AND television advertising in SUB
12. Children AND sales promotion in SUB
13. Children AND brand in SUB
14. Children AND brand name/s in SUB
15. Children AND brand preference/s in SUB
16. Children AND consumer behavior/behaviour in SUB
17. Food AND marketing in SUB
18. Food AND promotion in SUB
19. Food AND advertisement/s in SUB
20. Food AND advertising in SUB
21. Food AND advertising campaigns in SUB
22. Food AND advertising expenditure in SUB
23. Food AND advertising media in SUB
24. Food AND print advertising in SUB
25. Food AND radio advertising in SUB
26. Food AND television advertising in SUB
27. Food AND sales promotion in SUB
28. Food AND brand in SUB
29. Food AND brand name/s in SUB
30. Food AND brand preference/s in SUB
31. Food AND consumer behaviour/behavior in SUB
32. Food AND packaging in SUB
33. Food AND product/s in SUB
34. Children AND food AND marketing in SUB
35. Children AND food AND advertising in SUB
36. Children AND food AND promotion in SUB

Individual Terms / Phrases

1. Food in SUB
2. Food packaging in SUB
3. Food packages and packaging in SUB
4. Food products in SUB
5. Food advertising in SUB
6. Food advertisement in SUB
7. Food preferences in SUB
8. Children in SUB
9. Youth in SUB
10. Young people in SUB
11. Adolescents in SUB
12. Marketing in SUB
13. Marketing strategy in SUB
14. Marketing mixes in SUB
15. Market positioning in SUB
16. Advertisements in SUB
17. Advertising in SUB
18. Advertising/appeal to children in SUB
19. Advertising/appeal to youth in SUB
20. Advertising statistics in SUB
21. Marketing budgets in SUB
22. Marketing communications in SUB
23. Advertising campaigns in SUB
24. Advertising expenditures in SUB
25. Advertising media in SUB
26. Promotion in SUB
27. Print advertising in SUB
28. Radio advertising in SUB
29. Television advertising in SUB
30. Sales promotions in SUB
31. Brands in SUB
32. Brand names in SUB
33. Brand names AND Children in SUB
34. Brand preferences in SUB
35. Consumer research in SUB
36. Consumer behavior in SUB
37. Consumer surveys in SUB
38. Food/marketing in SUB
39. Food/packaging in SUB
40. Food consumption in SUB
41. Food consumption/statistics in SUB
42. Children/nutrition in SUB
43. Children's market in SUB
44. Youth market in SUB
45. Advertising in magazines/appeal to youth in SUB

The searches highlighted in bold produced the reference lists that were actually subject to review.

PsycINFO Search Strategy (13.02.03 - 14.02.03)

Combination Terms and Phrases

1. **Children AND food in SUB**
2. **Children AND advertisements in SUB**
3. **Children AND advertising in SUB**
4. **Children AND advertising campaigns in SUB**
5. **Food AND advertising in SUB**

Individual Terms / Phrases

1. Food in SUB
2. Food packaging in SUB
3. Food products in SUB
4. Food advertising in SUB
5. Food advertisements in SUB
6. Children in SUB
7. Youth in SUB
8. Young people in SUB
9. Adolescents in SUB
10. Marketing in SUB
11. Marketing strategy in SUB
12. Marketing mixes in SUB
13. Market positioning in SUB
14. Advertisements in SUB
15. Advertising in SUB
16. Advertising campaigns in SUB
17. Advertising expenditures in SUB
18. Advertising media in SUB
19. Promotion in SUB
20. Print advertising in SUB
21. Radio advertising in SUB
22. Television advertising in SUB
23. Sales promotions in SUB
24. Brands in SUB
25. Brand names in SUB
26. Brand preferences in SUB
27. Consumer research in SUB
28. Consumer behavior in SUB
29. Consumer surveys in SUB

Official Database Indexing Terms

1. Food-behavior in SUB
2. Food-behaviour in SUB
3. Food-buying in SUB
4. Food-chocolate-influences in SUB
5. Food-choice in SUB
6. Food-consumption in SUB
7. Food-packaging in SUB
8. Food-preference in SUB
9. Food-preferences in SUB
10. Food-product in SUB
11. Food-purchases in SUB
12. Children- in SUB
13. Children-adolescents in SUB
14. Children-parent in SUB
15. Children-parental in SUB
16. Marketing- in SUB
17. Marketing-and in SUB
18. Marketing-consumption-behavioural in SUB
19. Marketing-mix in SUB
20. Marketing-research in SUB
21. Advertising- in SUB
22. Advertising-consumption in SUB
23. Advertising-effective in SUB
24. Advertising-effectiveness in SUB
25. Advertisement in SUB
26. Advertisements in SUB
27. Advert ized in SUB
28. Advertizements in SUB
29. Advertizing in SUB
30. Adverts in SUB
31. Promotion- in SUB
32. Promotional in SUB
33. Youth- in SUB

The searches highlighted in bold produced the reference lists that were actually subject to review.

REGARD - ESRC's Grey Literature Database

Combination Terms and Phrases

1. **Children AND food = 13**
2. **Children AND advertising = 4**
3. **Children AND marketing = 3**
4. **Food AND advertising = 4**

The searches highlighted in bold produced the reference lists that were actually subject to review.

Sociological Abstracts Search Strategy (11.02.03 - 12.02.03)

Combined Terms / Phrases

1. Children AND food in KW
2. Children AND promotion in KW
3. Children AND marketing in KW
4. Children AND advertisements in KW
5. Children AND advertising in KW
6. Children AND advertising campaigns in KW
7. Children AND advertising expenditures in KW
8. Children AND advertising media in KW
9. Children AND print advertising in KW
10. Children AND radio advertising in KW
11. Children AND television advertising in KW
12. Children AND sales promotions in KW
13. Children AND brands in KW
14. Children AND brand names in KW
15. Children AND brand preferences in KW
16. Children AND consumer behavior in KW
17. Food AND marketing in KW
18. Food AND promotion in KW
19. Food AND advertisements in KW
20. Food AND advertising in KW
21. Food AND advertising campaigns in KW
22. Food AND advertising expenditures in KW
23. Food AND advertising media in KW
24. Food AND print advertising in KW
25. Food AND radio advertising in KW
26. Food AND television advertising in KW
27. Food AND sales promotions in KW
28. Food AND brands in KW
29. Food AND brand names in KW
30. Food AND brand preferences in KW
31. Food AND consumer behavior in KW
32. Food AND packaging in KW
33. Food AND products in KW
34. Children AND food AND marketing in KW
35. Children AND food AND advertising in KW
36. Children AND food AND promotion in KW

Individual Terms / Phrases

1. Food in KW
2. Food packaging in KW
3. Food products in KW
4. Food advertising in KW
5. Food preferences in KW
6. Children in KW
7. Youth in KW
8. Young people in KW
9. Adolescents in KW
10. Marketing in KW
11. Marketing strategy in KW
12. Marketing mixes in KW
13. Market positioning in KW
14. Advertisements in KW
15. Advertising in KW
16. Advertising campaigns in KW
17. Advertising expenditures in KW
18. Advertising media in KW
19. Promotion in KW
20. Print advertising in KW
21. Radio advertising in KW
22. Television advertising in KW
23. Sales promotions in KW
24. Brands in KW
25. Brand names in KW
26. Brand preferences in KW
27. Consumer research in KW
28. Consumer behavior in KW
29. Consumer surveys in KW

The searches highlighted in bold produced the reference lists that were actually subject to review.

APPENDIX 4

References Obtained through Personal Contact

References Obtained through Personal Contact

1. Hammond K, Wyllie A, Casswell S (1997a). *Content analysis of television food advertisements.* Auckland: Alcohol and Public Health Research Unit.

2. Hammond K, Wyllie A, Casswell S (1997b). *The extent and nature of televised food advertising in New Zealand.* Auckland: Alcohol and Public Health Research Unit.

3. Hammond K, Wyllie A, Casswell S (1997c). *Responses of young people to television food advertisements.* Auckland: Alcohol and Public Health Research Unit.

4. Hawkes C (2002). Marketing Activities of Global Soft Drink and Fast Food Companies in Emerging Markets: A Review. In *Globalisation, Diets and Noncommunicable Diseases.* Published by the World Health Organization.

5. Maskill C, Jones S, Wyllie A, Casswell S (1996). *Influences on the eating patterns and food choice of New Zealand Pakeha adolescents: An overview.* Auckland: Alcohol and Public Health Research Unit.

APPENDIX 5

Outcomes of Reference Chasing Exercise

Outcomes of Reference Chasing Exercise

A sample of articles from approximately 15% percent of the included studies for both Systematic Reviews 1 and 2 was gathered. Recently published studies were chosen in preference to older ones as they cover a longer time-span of research.

The studies were: Alexander et al 1998, Borzekowski & Robinson 2001, Chestnutt & Ashraf 2002, Condry et al 1988, Coon et al 2001, Dickinson 2000, French et al 2001, Goldberg 1990, Hammond et al 1999, Hill & Radimer 1997, Hitchings & Moynihan 1998, Kotz & Story 1994, Lewis & Hill 1998, Norton et al 2000, Rajecki et al 1994, Wilson et al 1990. As the reference lists from an article could yield further studies relevant to either review, the samples have been combined.

The reference list for each article was searched for titles relevant to the systematic reviews. The introduction and discussion sections of articles were also searched as they could contain more information if the citation's title was ambiguous.

If a reference was considered relevant, a check was made to see if it had been previously identified and retrieved Figure 1 lists the resulting references plus an indication of whether the study passes the initial relevance criteria. In many cases, this was difficult to ascertain as the publications were not available locally or online.

Overall, the reference chasing exercise confirmed that the review's search methods were successful in identifying the relevant literature in this area. The reference chasing exercise identified only one article that would have passed the initial relevance criteria for the review (although other titles listed below could be pursued to determine full relevancy).

Figure 1: Results of referencing chasing

Original Reference (source)	Possible New Study	Notes
Borzekowski & Robinson 2001	Borzekowski DLG (in press). Watching what they eat: a content analysis of televised food references reaching preschool children. *Journal of Health Communication*.	Has not yet been published in *Journal of Health Communication.*
Borzekowski & Robinson 2001	Ward S, Levinson D, Wackman D (1972). Children's attention to television advertising. In Rubenstein EA, Comstock GA, Murray JP (eds), *Television in day-to-day life: patterns of use*. Washington, DC: Government Printing Office. Television and Social Behavior, Volume 4.	Passes initial relevance criteria for this review. (Does not have an abstract but food advertisements are included in study).
Coon et al 2001	Signorielli N, Lears M (1992). Television and children's conceptions of nutrition: unhealthy messages. *Health Communication*, **4**: 245-257.	Too early to appear in the Ingenta electronic database as it has volumes from 2000 onwards only. Abstract is not available online or locally to check if the initial relevance criteria are met. Possibly a relevant study.

Figure 1 continued…

Original Reference (source)	Possible New Study	Notes
Coon et al 2001	Signorielli N, Staples J (1997). Television and children's conceptions of nutrition. *Health Communication*, **9**: 289-301.	Too early to appear in the Ingenta electronic database as it has volumes from 2000 onwards only. Abstract is not available online or locally to check if the initial relevance criteria are met. Possibly a relevant study.
Coon et al 2001	Warnke MR, Albrecht JA (1994). Media portrayal of foods during Saturday morning television programming and in children's magazines. *Journal of Consumer Studies and Home Economics*, **18**(1): 85-95.	Too early to appear in the Ingenta electronic database as it has volumes from 2000 onwards only. Abstract is not available online or locally to check if the initial relevance criteria are met. Possibly a relevant study.
French et al 2001	Jeffrey RW, French SA (1998). Epidemic obesity in the United States: are fast foods and television viewing contributing? *American Journal of Public Health*, **88**: 277-280.	*Children not mentioned in abstract (studies men and women) therefore does not pass initial relevance criteria for this review.*
Goldberg 1990	Atkin CK (1981). Effects of television advertising on children. In Palmer EL, Dorr A (eds). *Children and the faces of television: teaching, violence, selling*. New York, NY: Academic Press Inc.	Abstract not available online or locally to check if meets initial relevance criteria. Possibly a relevant study.
Goldberg 1990	Henderson CM, Kopp R, Isler L, Ward S (1980). *Influence on children's product requests and mother's answers: a multivariate analysis of diary data*. Report No. 80-106. Cambridge, MA: Marketing Science Institute.	*Food not mentioned in abstract therefore does not pass initial relevance criteria for this review.*
Hammond et al 1999	Sylvester FP, Achterberg C (1995). Children's television and nutrition: Friends or foes? *Nutrition Today*, **30**(1): 6-16.	Abstract not available online (available volumes start at 2002) to check if it meets the initial relevance criteria. Possibly a relevant study.
Hammond et al 1999 + Hill & Radimer 1997	McClean H, Knowles S (1992). Television advertising of foods to children in New Zealand. *Journal of the New Zealand Dietetic Association*, 11-13.	Abstract not available online (available volumes start at 2001) to check if it meets the initial relevancy criteria. Possibly a relevant study.
Hammond et al 1999	Burke J, Agardy S, Fricker M, Biles J (1982). *Children, television and food*. Melbourne: Australian Broadcasting Tribunal Research Branch.	Publication not indexed in the databases but possibly a relevant study.
Hitchings & Moynihan 1998	Woodward DR, Cumming FJ, Ball PJ, Williams HM, Hornsby H, Boon JA (1997). Does television affect teenagers' food choices? *Journal of Human Nutrition & Dietetics*, **10**: 229-235.	*Marketing or promotion of food not mentioned in abstract; focus of study is on physical inactivity. Does not pass initial relevance criteria for this review.*
Kotz & Story 1994 + others	Story M, Faulkner P (1990). The prime time diet: A content analysis of eating behavior and food messages on television program content and commercials. *American Journal of Public Health*, **80**: 738-740.	*Children not mentioned in abstract (studies men and women) therefore does not pass initial relevance criteria for this review.*

APPENDIX 6

References Found In-House

References Found In-House

1. Adler RP (1979). Research and Children's Television Advertising Policy In HS Dordick (ed), *Proceedings of the Sixth Annual Telecommunications Policy Research Conference*, Lexington MA: Lexington Books.

2. Byrd-Bredbenner C, Grasso D (1999b). Prime-time health: an analysis of health content in television commercials broadcast during programs viewed heavily by children. *International Electronic Journal of Health Education*, **2**(4): 159-169.

3. Diehl JM, Daum I (1985). *Adolescents' responses to television food commercials: Effects of age, sex and type of product advertised. Measurement and determinants of food habits and food preferences.* In Diehl JM, Leitzmann C (eds), *Measurement and determinants of food habits and food preferences.* Report of an EC Workshop, Giessen, West Germany 1-4 May 1985. EuroNut Report No. 7. Wageningen: Stichting Nederlands Instituut voor de Voeding. ISBN 907084012X.

4. Goldberg ME, Gorn GJ, Gibson W (1978a). The effects of TV messages for high and low nutritional foods on children's snack and breakfast food choices. *Advances in Consumer Research*, **5**: 540-545.

5. Jerome NW, Frese, DJ (1979). What are the relative contributions of family and television to a child's food preference? In Dordick HS (ed), *Proceedings of the Sixth Annual Telecommunications Policy Research Conference*, Lexington MA: Lexington Books.

APPENDIX 7

List of Late Arriving Articles

List of Late Arriving Articles

Systematic Review 1

1. Busby LJ (1975). Sex Role Research on the Mass Media. *Journal of Communication*, **25**(4): 107-131.

2. Heinzerling B, Chandler T (1992). A review of advertisements in children's magazines. *Journal of Consumer Education*, **10**: 32-37.

3. Jacobson MF, Maxwell B (1994). *What are we feeding our kids? What parents must know about their children's unhealthful diets.* Workman Publishing. ISBN-1-56305-101-X.

4. Lozada (Jr) EP (2000). Globalised Childhood: Kentucky Fried Chicken in Beijing. Chapter 5 in Jing, Jun (ed), *Feeding China's Little Emperors: Food, Children and Social Change*. Stanford, CA: Stanford University Press, 114-134. ISBN: 0804731349.

5. Ostbye T, Pomerleau J, White M, Coolich M, McWhinney J (1993). Food and nutrition in Canadian prime-time television commercials. *Canadian Journal of Public Health*, **84**(6): 370-374.

6. Sobieraj S (1996). *Beauty and the Beast: Toy Commercials and the Social Construction of Gender*. American Sociological Association (ASA).

Systematic Review 2

1. Atkin CK (1975). *The Effects of Television Advertising on Children. Report No. 1: First Year Experimental Evidence. Final Report*. Washington DC: Office of Child Development (DHEW).

2. Atkin CK (1975). *The Effects of Television Advertising on Children. Survey of Children's and Mothers' Responses to Television Commercials, Final Report*. East Lansing MI: USDEW, Michigan State University.

3. Battisti FM (1994). *Food consumption in youth subcultures.* International Sociological Association (ISA).

4. Birch L, Fisher J, Grimm-Thomas K (1999). Children and food. Chapter 7 in Siegal M, Petersen CC (eds), *Children's Understanding of Biology and Health.* New York, US: Cambridge University Press.

5. Burr P, Burr RM (1977). Product recognition and premium appeal. *Journal of Communication*, **27**(1): 115-117.

6. Dawson, Brend, et al (1985). Television commercials as a symbolic representation of reward in the delay of gratification paradigm. *Cognitive-Therapy-and-Research*, **9**: 2.

7. Donkin AJM (1992). *The effects of television advertising on children's food preferences and the nutritional implications.* PhD Nutrition Thesis, Nottingham University.

8. Donohue TR, Meyer TP, Henke LL (1978). Black and white children: Perceptions of TV commercials. *Journal of Marketing*, **42**(4): 34.

9. Fisher J (1975). *The effects of videotaped TV food commercials on the eating behavior of obese and normal weight children.* Full Thesis, State University of NY.

10. Fox RF (1998). Got-to-Be, Got-to-Be, Dom-in-o's!: the semantics of student responses to TV commercials. Chapter 21 in Kodish SP, Holston RP (eds), *Developing Sanity in Human Affairs*. Contributions to the study of mass media and communications, No 54. Westport, CT: Greenwood Press. Pp 268-276.

11. Jing J (2000). Food, nutrition and cultural authority in a Gansu village. Chapter 6 in Jing, Jun (Ed), *Feeding China's Little Emperors: Food, Children and Social Change*. Stanford, CA: Stanford University Press, 135-159. ISBN: 0804731349.

12. McEwan J (1993). *A Study of the Influence of Advertising on the Dietary Choice of Children.* London: Campden Food and Drink Research Association. *Requested from Inter-Library Loans but returned instead***:** Emond BM (1994). *A Study of the Influence of Advertising on Dietary Choices of Children - A Literature Review 1992/1993.* Campden Food and Drink Research Association. MAFF report.

13. Miller JH Jr, Busch P (1979). Host selling vs. premium TV commercials: An experimentation evaluation of their influence on children. *Journal of Marketing Research*, **16**(3): 323.

14. Neelankavil JP, O Brien JV, Tashijan R (1985). Techniques to obtain Market-Related information from Very Young Children. Journal of Advertising Research, **25**(3): 41.

15. Raab CA (1985). *Parental mediation of preschool children's responses to television food advertising*. PhD Thesis, Virginia Polytechnic Institute and State University.

16. Robinson TN (1999). Reducing children's Television Viewing to Prevent Obesity: A Randomised Controlled Trial. *Journal of the American Medical Association*, **282**(16): 1561.

17. Silver J (1983). Does advertising influence snacking? *Review of Business*, **5**(1): 24-29.

18. Yuhua G (2000). Food and Family relations: the generation gap at the table. Chapter 4 in Jing, Jun (Ed), *Feeding China's Little Emperors: Food, Children and Social Change*. Stanford, CA: Stanford University Press, 94-113. ISBN: 0804731349.

APPENDIX 8

Justifications for Exclusions

Justifications for Exclusions

Exclusions from Systematic Review 1

1. Articles that fail criteria for reviews (n=4)

	Full Reference	Source Code	Reason for Exclusion
1	Goldstein JH (1992). *Television Advertising and Children: A Review of Research.* Report prepared for Toy Manufacturers of Europe and the British Toy and Hobby Association.	Grey Sources	Doesn't meet criteria for reviews – no unique data or original comparisons
2	Meringnoff LK (1980). The effects of children's television food advertising. In: Adler RP, Lesser G, Meringoff LK, Robertson T, Rossiter J, Ward S (eds), *The effects of television advertising on children: review and recommendations*. Lexington MA: DC Heath.	Reference Chasing	Doesn't meet criteria for reviews – no unique data or original comparisons
3	Sharma V (1995). On children's mass media communication. *Psycho Lingua*, **25**(1-2): 85-96.	Electronic Database	Doesn't meet criteria for reviews – no unique data or original comparisons
4	Sheikh A, Prasad VK, Rao TR (1974). Children's TV commercials: a review of research. *Journal of Communication*, **24**: 126-136.	Reference Chasing	Doesn't meet criteria for reviews – no unique data or original comparisons

2. Articles that do not sufficiently address the extent and/or nature of food promotion (n=17)

	Full Reference	Source Code	Reason for Exclusion
1	Biltereyst D (1997). European public service television and the cultural-educational logic: A comparative analysis of children's and youth programming. *Asian Journal of Communication*, **7**(2): 86-104.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
2	Blackwell J, Yawkey TD (1975). An investigation of television programming and advertising for young children. *Journal of Instructional Psychology*, **2**(1): 28-32.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
3	Browne B (1998). Gender stereotypes in advertising on children's television in the 1990s: A cross-national analysis. *Journal of Advertising*, **27**(1): 83-96.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children

	Full Reference	Source Code	Reason for Exclusion
4	Bush AJ, Hair JF Jr, Bush RP (1983). A content analysis of animation in television advertising. *Journal of Advertising*, **12**(4): 20.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
5	Feldstein JH, Feldstein S (1982). Sex differences on televised toy commercials. *Sex Roles*, **8**(6): 581-587.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
6	Foulds R (2001). *Promotion of Foods to Children: Report on Qualitative Research.* London: Food Standards Agency/ COI Communications.	Grey Sources	Excluded on relevance criteria - does not report the extent and nature of food promotion
7	Furnham A, Abramsky S, Gunter B (1997). A cross-cultural content analysis of children's television advertisements. *Sex Roles*, **37**(1/2): 91-99.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
8	Kolbe RH (1990). Gender roles in children's television advertising: a longitudinal content analysis. *Current Issues and Research in Advertising*, **13**(1/2): 197-206.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
9	Leslie M (1992). Representation of blacks in Brazil on prime-time commercial television. *The Howard Journal of Communications*, **4**(1&2): 1-9.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
10	Levine J, Gussow JD (1999). Nutritional professionals' knowledge of and attitudes toward the food industry's education and marketing programs in elementary schools. *Journal of the American Dietetic Association*, **99**(8): 973-976.	Electronic Database	Excluded on relevance criteria - does not report the extent and nature of food promotion
11	Loughlin M, Desmond RJ (1981). Social interaction in advertising directed to children. *Journal of Broadcasting*, **25**(3): 303-308.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
12	Ruble DN, Balaban T, Cooper J (1981). Gender constancy and the effects of sex-typed televised toy commercials. *Child Development*, **52**: 667-673.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children

	Full Reference	Source Code	Reason for Exclusion
13	Schwartz LA, Markham WT (1985). Sex stereotyping in children's toy advertisements. *Sex Roles*, **12**(1/2): 157-170.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
14	Smith LJ (1994). A content analysis of gender differences in children's advertising. *Journal of Broadcasting and Electronic Media*, **38**(3): 323-337.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
15	Sobieraj S (1998). Taking control: Toy commercials and the social construction of patriarchy. Chapter in Bowker LH (ed), *Masculinities and Violence*. Thousand Oaks, CA: Sage, 15-28.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
16	Stout DA Jr, Mouritsen RH (1988). Prosocial behavior in advertising aimed at children: A content analysis. *The Southern Speech Communication Journal*, **53**: 159-174.	Electronic Database	Excluded on relevance criteria - does not sufficiently separate food from other items promoted to children
17	Young B, Hetherington M (1996). The literature on advertising and children's food choice. *Nutrition and Food Science*, **96**(5).	Electronic Database	Excluded on relevance criteria - does not report the extent and nature of food promotion

3. Articles excluded on the basis of methodological quality (n=6)

	Full Reference	Source Code	Reason for Exclusion
1	Greenberg BS, Brand JE (1993). Cultural diversity on Saturday morning television. In Berry GL (ed), *Children and Television: Images in a Changing Sociocultural World*. Thousand Oaks California US: Sage Publications Inc, 132-142.	Electronic Database	Excluded on quality criteria - insufficient methodological detail
2	Most MM, Windhauser JW (2002). Nutritional appeals lacking during the past 25 years in television food advertisements aimed toward children. *FASEB Journal*, **16**(4): A653.	Electronic Database	Excluded on quality criteria - insufficient methodological detail
3	Richards JI, Wartella EA, Morton C, Thompson L (1998). The growing commercialization of schools: Issues and practices. *Annals of the American Academy of Political and Social Science*, **557**: 148-163.	Electronic Database	Excluded on quality criteria - insufficient methodological detail
4	Strasburger VC (1995). Nutrition. Chapter 5 in Strasburger VC (ed), *Adolescents and the Media: Medical and Psychological Impact. Developmental Clinical Psychology and Psychiatry, Vol 33.* Thousand Oaks, CA: Sage Publications Inc.	Electronic Database	Excluded on quality criteria - insufficient methodological detail
5	Windhauser JW, Windhauser MM (1993). Scarcity of heart-healthy foods in television advertisements aimed at children. *FASEB Journal*, **7**(3): A75.	Electronic Database	Excluded on quality criteria - insufficient methodological detail
6	Windhauser MM, Windhauser JW (1994). What children saw in 16 years - a nutrient analysis of foods in television advertisements. *FASEB Journal*, **8**(4): A431.	Electronic Database	Excluded on quality criteria - insufficient methodological detail

Exclusions from Systematic Review 2

1. Articles that fail criteria for reviews (n=27)

	Full Reference	Source Code	Reason for Exclusion
1	Adler RP (1979). Research and Children's Television Advertising Policy In HS Dordick ed, *Proceedings of the Sixth Annual Telecommunications Policy Research Conference*, Lexington MA: Lexington Books.	Reference Chasing	Excluded on quality criteria - non-systematic review
2	Adler RP, Friedlander B, Lesser G, Meringoff L, Robertson TS, Rossiter JR, Ward D, Faber R, Pillemer D (1977). *Research on the effects of television advertising on children: a review of the literature and recommendations for future research*. Washington DC: US Government Printing Office.	Electronic Database	Excluded on quality criteria - non-systematic review
3	Baxter IA, Schroder MJA (1997). Vegetable consumption among Scottish children: A review of the determinants and proposed strategies to overcome low consumption. *British Food Journal*, **99**(10): 380-387.	Electronic Database	Excluded on quality criteria - non-systematic review
4	Campbell K, Crawford D (2001). Family food environments as determinants of preschool-aged children's eating behaviours: Implications for obesity prevention policy. A review. *Australian Journal of Nutrition and Dietetics*, **58**(1): 19-25.	Electronic Database	Excluded on quality criteria - non-systematic review
5	Consumers International (1996). *A Spoonful of Sugar - Television food advertising aimed at children: An international comparative study*. London: Consumer International Programme for Developed Economies.	Grey Sources	Excluded on quality criteria - non-systematic review
6	Crockett SJ, Sims LS (1995). Environmental Influences on Children's Eating. *Journal of Nutrition Education*, **27**(5)235-249.	Reference Chasing	Excluded on quality criteria - non systematic review
7	Dawson B, Jeffrey DB (1983). *Integrating Children's Television Food Advertising Research with the Delay of Gratification and Resistance to Temptation Research*. Washington DC: National Institute of Child Health and Human Development (NIH), Bethesda, MD; National Science Foundation.	Electronic Database	Excluded on quality criteria - non-systematic review
8	French SA, Story M, Jeffery RW (2001). Environmental influences on eating and physical activity. *Annual Review of Public Health*, **22**: 309-335.	Electronic Database	Excluded on quality criteria - non-systematic review
9	Goldstein JH (1992). Television Advertising and Children: A Review of Research. Report prepared for Toy Manufacturers of Europe and the British Toy and Hobby Association.	Grey Sources	Excluded on quality criteria - non-systematic review

	Full Reference	Source Code	Reason for Exclusion
10	Gorn GJ, Goldberg ME (1987). Television and children's food habits: A big brother/sister approach. In Manley-Casimir ME, Luke C (eds), *Children and Television: A Challenge for Education*, pp34-48. New York, NY, England: Praeger Publishers.	Electronic Database	Excluded on quality criteria - non-systematic review
11	Hill AJ (2002). Developmental Issues in attitudes to food and diet' Proceedings of the Nutrition Society, **61**: 259-266.	Electronic Database	Excluded on quality criteria - non-systematic review
12	Horgen KB, Choate M, Brownell KD (2001). Television Food Advertising. Targeting children in a toxic environment. Chapter 22 in Singer DG, Singer JL (eds), *Handbook of Children and the Media*. Thousand Oaks, CA: Sage Publications Inc. ISBN-0-7619-1954-6.	Electronic Database	Excluded on quality criteria - non-systematic review
13	Jeffrey DB et al (1980). The impact of television advertising on children's eating behavior: An integrative review. *Catalog of Selected Documents in Psychology*, **10**(MS2011): 11.	Electronic Database	Excluded on quality criteria - non-systematic review
14	Kennedy C (2000). Examining television as an influence on children's health behaviours. *Journal of Pediatric Nursing*, 15(5):272-81.	Grey Sources	Excluded on quality criteria - non-systematic review
15	Meringoff LK (1980). The effects of children's television food advertising. In Adler RP, Lesser G, Meringoff LK, Robertson T, Rossiter J, Ward S (eds), *The effects of television advertising on children: review and recommendations*. Lexington MA: DC Heath.	Reference Chasing	Excluded on quality criteria - non-systematic review
16	Owen S, Schickler P, Davies J (1997a). Food choice: How to assess attitudes of pre-adolescent children. *British Food Journal*, **99**(4): 148-153.	Reference Chasing	Excluded on quality criteria - non-systematic review
17	Owen S, Schickler P, Davies J (1997b). Food choice: How to assess attitude of pre-adolescent children. *Nutrition and Food Science*, **97**(1): 5-11.	Electronic Database	Excluded on quality criteria - non-systematic review
18	Ray JW, Klesges RC (1993). Influences on the eating behaviour of children. *Annals of the New York Academy of Science*, **699**: 57-69.	Reference Chasing	Excluded on quality criteria - non-systematic review
19	Robinson TN (2001). Television Viewing and Childhood Obesity. Pediatric Clinics of North America, **48**(4): 1017-1025.	Electronic Database	Excluded on quality criteria - non-systematic review
20	Scammon DL, Christopher CL (1981). Nutrition education with children via television: A review. *Journal of Advertising*, **10**(2): 26.	Electronic Database	Excluded on quality criteria - non-systematic review

	Full Reference	Source Code	Reason for Exclusion
21	Sheikh A, Prasad VK, Rao TR (1974). Children's TV commercials: a review of research. *Journal of Communication*, **24**: 126-136.	Reference Chasing	Excluded on quality criteria - non-systematic review
22	Story M, Neumark-Sztainer D, French D (2002). Individual and environmental influences on adolescent eating behaviours. *Journal of the American Dietetic Association*, **102**(3): S40.	Electronic Database	Excluded on quality criteria - non-systematic review
23	Strasburger VC (1995). Nutrition. Chapter 5 in Strasburger VC (Ed) *Adolescents and the Media: Medical and Psychological Impact. Developmental Clinical Psychology and Psychiatry, Vol 33*. Thousand Oaks, CA: Sage Publications Inc.	Electronic Database	Excluded on quality criteria - non-systematic review
24	Williams JD, Achterberg C, Sylverster GP (1993). Target marketing of food products to ethnic minority youth. *Annals of the New York Academy of Sciences*, **699**: 107-114.	Electronic Database	Excluded on quality criteria - non-systematic review
25	Young B, Hetherington M (1996). The literature on advertising and children's food choice. *Nutrition and Food Science*, **96**(5).	Electronic Database	Excluded on quality criteria - non-systematic review
26	Young B, Webley, P, Hetherington, M, Zeedyk, S (1996). *The Role of Advertising in Children's Food Choice*. London: Ministry of Agriculture, Foods and Fisheries.	Electronic Database	Excluded on quality criteria - non-systematic review
27	Young BM (1990). Effects of Advertising: The Experimental Evidence. Chapter 4 in Television Advertising and Children. Oxford: Clarendon Press: 98.	Grey Sources	Excluded on quality criteria - non-systematic review

2. Articles taking an irrelevant measure of effect (n=16)

	Full Reference	Source Code	Reason for Exclusion
1	Butter EJ, Popovich PM, Stackhouse RH and Garner RK (1981). Discrimination of television programs and commercials by preschool children. *Journal of Advertising Research*, **21**(2): 53-56.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
2	Caution G (1984). The effects of TV advertisements on Black children. *Psychiatric Forum*, **12**(2): 72-81.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
3	Dickinson R (2000). Food and eating on television: Impacts and influences. *Nutrition and Food Science*, **30**(1): 2.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
4	Dickinson R, Leader S (1996). The role of television in the food choices of 11-18 year olds. *Nutrition & Food Science*, **5**(Sep/Oct): 9-14.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect

	Full Reference	Source Code	Reason for Exclusion
5	Diehl JM, Daum I (1985). *Adolescents' responses to television food commercials: Effects of age, sex and type of product advertised. Measurement and determinants of food habits and food preferences.* In Diehl JM, Leitzmann C (eds), *Measurement and determinants of food habits and food preferences.* Report of an EC Workshop, Giessen, West Germany 1-4 May 1985. EuroNut Report No. 7. Wageningen: Stichting Nederlands Instituut voor de Voeding. ISBN 907084012X.	Reference Chasing	Excluded on relevance criteria - irrelevant measure of effect
6	Hendon DW, McGann AF, Hendon BL (1978). Children's age, intelligence and sex as variables mediating reactions to TV commercials: Content complexity implications for advertisers. *Journal of Advertising*, **7**(3): 4-12.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
7	Jacoby J, Kyner DB (1973). Brand loyalty vs. repeat purchasing behavior. *Journal of Marketing Research*, **10**(1): 1-9.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
8	Jeffrey DB, Lemnitzer NB, Hickey JS, Hess MJ, McLellarn W, Stroud JM (1980). The development of a behavioral eating test and its relationship to a self-report food attitude scale in young children. *Behavioral Assessment*, **2**: 87-98.	Reference Chasing	Excluded on relevance criteria - irrelevant measure of effect
9	Jerome NW, Frese, DJ (1979). What are the relative contributions of family and television to a child's food preference? In Dordick HS (ed), *Proceedings of the Sixth Annual Telecommunications Policy Research Conference*, Lexington MA: Lexington Books.	Reference Chasing	Excluded on relevance criteria - no measure of food promotion
10	Joshi P, Mofidi S, Sichere SH (2002). Interpretation of commercial food ingredient labels be parents of food allergic children. *Journal of Allergy and Clinical Immunology*, **109**(6): 1019-1021.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
11	Kortzinger I, Neal RJ, Tilston CH (1994). Children's snack food consumption patterns in Germany and England (1994). *British Food Journal*, **96**(9): 10-15.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
12	Macklin MC (1990). The influence of model age on children's reactions to advertising stimuli. *Psychology and Marketing*, **7**(4): 295-310.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect
13	Paget KF, Kritt D, Bergemann L (1984). Understanding strategic interactions in television commercials: A developmental study. *Journal of Applied Developmental Psychology*, **5**(2): 145-161.	Electronic Database	Excluded on relevance criteria - irrelevant measure of effect

	Full Reference	Source Code	Reason for Exclusion
14	NOP Solutions (1999). Pester Power: *A Report on the Attitudes of Spain and Sweden. Research by NOP Solutions for the Children's Programme.* London, Children's Programme for the Food Advertising Unit.	2:GREY	Excluded on relevance criteria - irrelevant measure of effect
15	Pollard J, Kirk SFL, Cade JE (2002). Factors affecting food choice in relation to fruit and vegetable intake: a review of. *Nutrition Research Review*, **15**(2): 373-387.	Electronic Database	Exclude on relevance criteria - irrelevant measure of effect
16	Stutts MA, Vance D, Hudleson S (1981). Program-commercial separators in children's television: Do they help a child tell the difference between Bugs Bunny and the Quik Rabbit? *Journal of Advertising*, **10**(2): 16.	Electronic Database	Exclude on relevance criteria - irrelevant measure of effect

3. Articles taking an irrelevant measure of food promotion (n=6)

	Full Reference	Source Code	Reason for Exclusion
1	Engell D, Bordi P, Borja M, Lambert C, Rolls B (1998). Effects of information about fat content on food preferences in pre-adolescent children. *Appetite*, **30**(3): 269-282.	Electronic Database	Excluded on relevance criteria - not commercial food promotion
2	Feshbach ND, Dillman AS, Jordan TS (1979). Children and television advertising: Some research and some perspectives. *Journal of Clinical Child Psychology*, **8**(1): 26-30.	Electronic Database	Excluded on relevance criteria - not commercial food promotion
3	Neale RJ, Langase K (1998). School meals: Teenagers attitudes to nutritional labelling and intended effects on food choice. *British Food Journal*, **100**: 320-325.	Electronic Database	Excluded on relevance criteria - not commercial food promotion
4	Schucker RE, Stokes RC, Stewart ML, Henderson D (1983). The impact of the Saccharin warning label on sales of diet soft drinks in supermarkets. *Journal of Public Policy and Marketing*, **2**: 46.	Electronic Database	Excluded on relevance criteria - not commercial food promotion
5	Wagner JL, Winett RA, Walbert-Rankin J (1992). Influences of supermarket intervention on the food choices of parents and their children. *Journal of Nutrition Education*, **24**(6): 306.	Electronic Database	Excluded on relevance criteria - not commercial food promotion
6	Wardle J, Huon G (2000). An experimental investigation of the influence of health information on children's taste preferences. *Health Education Research*, **15**(1): 39-44.	Electronic Database	Excluded on relevance criteria - not commercial food promotion

4. Articles excluded on the basis of methodological quality (n=18)

	Full Reference	Source Code	Reason for Exclusion
1	Baxter PJ (1991). How children use media and influence purchases. *Journal of Advertising Research*, **31**(6): RC2.	Electronic Database	Excluded on basic quality criteria
2	Clancy-Hepburn K et al (1974). Children's behavior responses to TV food advertisements. *Journal of Nutrition Education*, **6**(3): 93-96.	Electronic Database	Excluded on basic quality criteria
3	Fisher J (1975). The effects of videotaped TV food commercials on the eating behavior of obese and normal weight children. *Dissertation Abstracts International*, **36**(3-B): 1505-1506.	Electronic Database	Excluded on basic quality criteria
4	Foulds R (2001) *Promotion of Foods to Children: Report on Qualitative Research.* London: Food Standards Agency/ COI Communications.	2:GREY	Excluded on basic quality criteria
5	Fox DT (1981). Children's television commercials and their nutrition knowledge and eating habits. *Dissertation Abstracts International*, **42**(6-B): 2576.	Electronic Database	Excluded on basic quality criteria
6	Gelperowic R, Beharrell B (1994). Healthy food products for children: Packaging and mothers' purchase decisions. *British Food Journal*, **96**(11): 4-8.	Electronic Database	Excluded on basic quality criteria
7	Grossbart SL, Crosby LA (1984). Understanding the bases of parental concern and reaction to children's food advertising. *Journal of Marketing*, **48**(3): 79-92.	Electronic Database	Excluded on basic quality criteria
8	Groves A (2002). Children's food: Market forces and industry response. *Nutrition Bulletin*, **27**(3): 187-190.	Electronic Database	Excluded on basic quality criteria
9	Hammond K, Wyllie A, Casswell S (1997c). *Responses of young people to television food advertisements*. Auckland: Alcohol & Public Health Research Unit.	Personal Contact	Excluded on basic quality criteria
10	Hill H, Tilley J (2002). Packaging of children's breakfast cereal: Manufacturers versus children. *British Food Journal*, **104**(9): 766-777.	Electronic Database	Excluded on basic quality criteria
11	Misra P (1990). Indian children - An emerging consumer segment. *Journal of the Market Research Society*, **32**(2): 217.	Electronic Database	Excluded on basic quality criteria
12	Morton H (1995). Television food advertising and children's food choice. *Appetite*, **24**(2): 194.	Electronic Database	Excluded on basic quality criteria
13	National Food Alliance (1994). *Parents' Attitudes Towards Children's Food Advertising: the results of a Mori Survey*. London: NFA.	Grey Sources	Excluded on basic quality criteria

	Full Reference	Source Code	Reason for Exclusion
14	Neumark-Sztainer D, Story M, Perry C, Casey MA (1999). Factors Influencing food choices of adolescents: Findings from focus-group discussions with adolescents. Journal of the American Dietetic Association, **99**(8): 929-937.	Electronic Database	Excluded on basic quality criteria
15	Raab CA (1985). Parental mediation of preschool children's responses to television food advertising. *Dissertation Abstracts International*, **45**(8-B): 2504.	Electronic Database	Excluded on basic quality criteria
16	Rust L (1993). Observations: How to reach children in stores - Marketing tactics grounded in observational research. *Journal of Advertising Research*, **33**(6): 67-72.	Electronic Database	Excluded on basic quality criteria
17	Stratton P (1994a). The myths about children's dietary choices: New research exposes the untruths about how dietary choices are made. *Admap*, Dec 1994 @ www.warc.com	Reference Chasing	Excluded on basic quality criteria
18	Stratton P (1994b). *Influences on Children's Diet.* Leeds: The Psychology Business.	Grey Sources	Excluded on basic quality criteria

APPENDIX 9

Data Extraction Forms for Systematic Review 1

Data Extraction Forms for Systematic Review 1

ALEXANDER ET AL 1998

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 3(1) and 3(3).
Promotional Channel	USA, television advertising. Archived shows.
Design	Content analysis of television advertising (not food specific).
Sample	75 advertisements yielded from 24 archived shows from the 1950s.
Method	Adverts were taken from historical archive (but analysed within scope of review) and were coded by four raters (with 0.75 – 1.0 reliability).
Measures	The study only took measures of the nature of advertising. Time trend comparisons were also made with data from more recent articles from the 1970s and 1990s.
Statistical analysis	The study reports mainly descriptive statistics although some inferential statistics were also used (Chi-square).
Results	Time trends analyses for the 50s, 70s, 90s are undertaken by citing, Barcus with Wolkin (1977) and Kunkel and Glantz (1992). The current analysis finds that adverts are longer: over one minute compared with around half that of later decades. Advertised product categories in children's programmes are reported as: toys 8.3%, cereals 23.3%, candy/snacks 21.7%, fast-food 0 and other products 46.7%. Categories in all programmes: toys 6.7%, cereals 20.0%, candy/snacks 17.3%, fast-food 0 and other products 56.0%. The study also attempts to look at promotional techniques and reports that across children's television from three decades, live action in advertising has fallen (the article states that the 50's were indisputably the decade of the adult white male spokesperson) from 70.0% to 58.0 and 55.9%. Meanwhile animation in advertising has increased only from 1.7% to 16.0% and 17.0%. The analysis also notes a rise in the use of disclaimers from 8.3% to 41.0% and 51.1%. The study concludes that by 1959, the evolution into the "big four" product types in children's advertising had not evolved. The 1950s are described as an important period for the introduction of brand building as this period marked the origin of *Kellogg's* Tony the Tiger character and the 'Snap! Crackle! And Pop!' slogan. A lower scoring study of the extent of food promotion to children and a medium scoring study of the nature of food promotion to children.
Published in	Journal of Advertising
Peer-reviewed	Yes
Author's discipline	Telecommunications
Funding source	Unknown

ATKIN 1975; ATKIN & HEALD (1977)

Relevant to Systematic Review 1 Questions 1(1), 1(2), 2(1), 3(1) and 3(2).

Promotional Channel USA, television advertising
3 major television

Design Longitudinal content analysis of television advertising (toy focused: pre-Christmas)

Sample Four hours of Children's Saturday morning television (8am – 12 noon) were monitored on the 11th November 1972 and 10th November 1973. 252 adverts and 218 adverts were yielded from these sessions for 1972 and 1973 respectively, therefore producing a total of 470 adverts for analysis.

Method The addressed exposure to advertising rather than advertising itself, and compares two years of pre-Christmas advertising samples. The subjective nature of measurements taken are acknowledged, and study used four coders (reliability statistics are provided).

Measures The study addresses both the extent and nature of food advertising, and undertakes an analysis of time trends (before and after changes in regulations).

Statistical analysis Only descriptive statistics are reported (vague).

Results The time trend analysis finds 13% fewer adverts in 1973 than in 1972.

The content analysis provides a breakdown of advertising by product for both 1972 and 1973:

- 1972 – toys comprised 50% of advertising, "especially sugared" cereals comprised (27%), and candies/drinks/sweets/snacks/deserts/fast-food comprised 21% of advertising. (Total for food advertising, 48%)
- 1973 – toys comprised 66% of advertising, "especially sugared" cereals comprised 17% of advertising, and candies/drinks/sweets/snacks/deserts/fast-food comprised 15% of advertising, (Total for food advertising, 32%)

The study shows that the reduction in adverts during the heavy toy selling season was accounted for by reducing food advertising.

Nevertheless, after toys, food was the top product advertised. Cereals (especially sugared cereals) were the most advertised food product, followed by candies, drinks, snacks sweets, deserts and fast-foods.

Creative strategies were also analysed by comparing the role models in each type of advert. It was noted that mothers tended to appear in food adverts, and that adults were only portrayed as heroes and villains in food adverts (toy adverts tended to feature children alone).

Theme appeals were also assessed showing that 98% of toy adverts took a serious appeal, and 92% of food adverts took a humorous appeal. Much of this is not adequately broken down by food or food product, and reporting is somewhat subjective eg. "food adverts almost exclusively based on the fun claim, while toy adverts frequently emphasised feelings of power and being grown up".

Only food adverts made use of animation and these were more likely to adopt a humorous (fun as opposed to serious) tone. 62% of food adverts included at (at least part) some animation, compared with only 1% of toy adverts. 94% of food adverts adopted a fun tone, compared with 43% of toy adverts.

The study also examines nutritional appeals and mentions sweetness (21%), nutritional claim (47%).

Only 2% of adverts used "tell mom to get this cereal" ie. explicit 'pester-power' strategies in 1972. Both food and toy commercials are said to rely on celebrity endorsement/testimonials or on more general customer satisfaction to a "limited extent". In contrast, 24% of food adverts used premiums.

A medium scoring study of both the extent and nature of food promotion to children.

Published in 1975 – Report No. 5 in the series "The Effects of Television Advertising on Children"

Peer-reviewed Report – not stated
Journal of Communication is currently peer reviewed

Author's discipline Mass communications campaigns

Funding source Prepared for Office of Child Development

BARCUS 1981

Relevant to Systematic Review 1 Questions 1(1), 1(2), 2(1) and 3(1).

Promotional Channel USA, television advertising
Major television networks and independent stations.

Design Review (includes 'new' data – not included elsewhere in this review).

Sample 'New' data consists of 33 hours of children's television (Saturday morning television and the children's hour) recorded during one week in June 1978. Taken from Barcus with McLaughlin (1978) *Food Advertising on children's television: An analysis of appeals and nutritional content.* Newtonville MA, ACT (not included elsewhere in this review).

Method Review (subjective).

Measures The review provides new data on the extent of advertising and undertakes a comparison of the extent and nature of adverts between stations that adhere to the NAB (National Association of Broadcasters) 1976 code and non-code channels (ie. between television sector).

Statistical analysis Only descriptive statistics are reported.

Results The review states that the average child is exposed to 15 adverts, five promos and two public service announcements hour.

The content analysis found more food advertised on NAB compliant channels compared with independents. The reported breakdowns by product are as follows:

- NAB: cereals 34%, candies/sweets 29%, eating places 15%, toys 12% and other food 1% (food total = 82%).
- Independents: Toys 49%, cereals 13%, candies/snacks 13%, eating places 9% and other food >0.5% (food total = 35%).
- Overall; cereals 24%, candies 21% and 12% for fast-food such as *McDonalds* and *Burger King* (food total still top at 60%, $n = 133$).

The review states that 70% of food stuff adverts are for highly sugared products, and that less than 1% are for healthy products such as "meats, bread, dairy products, fruits or vegetables".

Creative strategies are also examined and three types reported:

i) "Product presentation" Animation/live mix reported on 80% of cereal adverts (eg. Tony the Tiger) compared with an off stage announcer in toy advertising (usually adult white male). Only 4% of food adverts used live announcers and only 5% used testimonials. No explicit evidence of overtly urging pester power. Premium offers were reported in 25% of cereal adverts.

ii) "Attention getting devices" - More than half of all food adverts and 90% of cereal adverts employed fantasy techniques (eg. magical kingdoms inside the box).

iii) "Qualifiers, disclaimers and disclosures" – Since 1971, much more qualifiers were used. However, these can be misleading - inappropriate marketing – eg. cereals with added vitamins "part of a balanced breakfast" could be construed as a "necessary part" of a balanced breakfast.

The review reports little use of hard product information (eg. price, quality or ingredients): tend to be advertised more on taste or texture (added vitamins aside). In "many cases" content could only be discerned from product name (eg. Corn Flakes). However, sweet sugary nature often mentioned.

Four types of verbal appeals are also listed:

i) "Assertions" - eg. 'will save money" is "fun" or "convenient" Only about 30% (of all children's adverts) used this. Fun usually used and sometimes convenience.

ii) "Attributed Qualities" – eg. "tastes great" or "country fresh"
"Almost nine out of ten" food adverts used qualities - which the observer may not agree with (eg. taste in 80% and novelty in 10%).

iii) "Product Properties" – eg. size, shape, colour or texture.
70% of food adverts had some of this. The major property in food adverts was texture (eg. crunchy/chewy) which rose to 60% with cereal adverts.

iv) "Product Composition" – eg. ingredients, what the product was made of. This was found in 90% of cereal adverts. About 40% of adverts had this in their product name alone, with others including vitamins, honey, sugars, flavours and chocolate.

The author claims that visual appeals were of hedonism (eg. adventure and fun) rather than education, work or relationships (only two of 133 food adverts took place in a work setting).

An lower scoring review of both the extent and nature of food promotion to children.

Published in In Palmer EL, and Dorr A (Eds), *Children and the Faces of Television: Teaching, Violence and Selling*, pp273-285. New York, NY: Academic Press.

Peer-reviewed Unknown

Author's discipline Public Communication

Funding source Conducted for Action for Children's Television.

BARCUS 1975a and 1995b; BARCUS & WOLKIN 1977

Relevant to Systematic Review 1 Questions1 (1), 1(2), 2(1), 2(2), 3(1) and 3(2) [1977 only].

Promotional Channel USA, television advertising
Three major and two independent television channels

Design Content analysis of television advertising that is repeated between different children's programming times, and during different seasons of the year. The study is partly longitudinal as it repeats measures with previous work by the author.

Sample The sample of adverts for the content analysis of commercial television at weekends was taken from television during April 1975, which yielded 403 adverts (137 versions of 119 items for 65 sellers (98% of all adverts of 30 seconds length).

The sample of adverts for the content analysis of commercial television after school was taken from television during May 1975, which yielded 487 adverts (1262 versions of 218 items, 80% of all adverts were of 30 seconds in length).

The sample of adverts used to assess seasonal variations in television advertising to children was taken from television during November 1975. The study compares the 1,200 minutes recorded in April with 960 minutes recorded in November, seen as run up to Christmas.

Method Details of the methods used are vague. Adverts were both recorded and monitored live, and assessed by two coders/raters.

[n.b. detailed figures and coding instructions given in appendix.]

Measures The extent and nature of advertised product categories is examined, and some breakdown of food promotion is provided. Comparisons are drawn between advertising from different times of the day (SMTV and the 'C' hour), seasonal variations are examined, and time trends (in Saturday morning television advertising only) are also addressed.

Statistical analysis Only descriptive statistics are reported

[n.b. detailed figures given in appendix.]

Results <u>Children's commercial television on the weekends</u>
Content analysis of top advertised products showed that cereals and candies/sweets both comprised 24.8% of advertising, then toys at 18.1%. Other food groups advertised being eating places/meals (10.4%), snacks (4.0%) and other food (4.0%). Total of food advertising = 68.0%

The study states a ratio of 3: 1 for advertised cereals of the sugared variety (n = 76: 23) and identifies few adverts for milk/dairy products (1.5%), bread (0.5%) of fruit/juices (1.2%). No adverts were for fresh meat or vegetables.

A breakdown of animation strategies, mixed animations strategies and non-animation strategies by product category is provided (in percentages). Respectively, these are: Cereals- 18, 62, 20; Candies/sweets: 22, 29, 49; Eating places/meals: 0, 0, 100; Snacks: 25, 6, 69; other foods: 25, 6 and 69. The analysis showed that, with the notable exception of restaurants, food adverts often included at least some animation whereas toys did not. Toy adverts also tended to have an off-screen announcer format.

A breakdown of off-screen, on-screen, musical and drama formats by product category is provided (in percentages). Respectively, these are: Cereals - 3, 17, 29, 51; Candies/sweets- 21, 10, 32, 37; Eating places/meals- 10, 29, 52, 9; Snacks- 0, 38, 0, 62; other foods - 31, 12, 19 and 38. The analysis found that a dramatic skit was the most common method used in food adverts, with the exception again being restaurants where music (eg. *McDonalds* jingle) was more common.

A breakdown of the status of 'product display' in advertising in terms of "shown", "in use" and "name only" (remainder = unclassifiable others) was also provided by product category (in percentages). Respectively, these are as follows: cereals- 46, 50, 0; Candies/sweets- 18, 76, 6; Eating places/meals - 5, 50, 24; Snacks - 6, 94, 0; other foods - 44, 56 and 0. The analysis found that fast-food restaurants advertising was less reliant on showing the product, (ie. they tended to rely more on branding) and that cereal advertising tended to feature the box rather that the product in used.

The study also examines 'who speaks' for the product. 100% of toy adverts were reported as featuring 100% adults (with 75% of these being male).

A breakdown of the percentages of adults and children featuring in advertising by product category is also provided. Respectively, these are as follows: Cereals- 55, 19; Candies/sweets - 66, 6; Eating places/meals - 98, 2; Snacks - 6, 0; other foods: 44 and 50. No product advertising was majority female. Eating places again seems to be exception in its use of adults (like toys).

The study observed a small use of celebrity endorsement (7% of all adverts), the only food adverts using personalities reported as being cereals (17%) and candies (7%).

cont…

BARCUS 1975a and 1995b; BARCUS & WOLKIN 1977

Results continued…..

A breakdown of the percentages of audio, visual and both audio and visual disclaimers featuring in advertising by product category is also provided. Respectively, these are as follows: Cereals - 24, 15, 13; Candies/sweets - 12, 10, 10; Eating places/meals - 5, 10, 5; Snacks - 16, 0, 0; other foods - 16, 0 and 0. In comparison toys were 55, 14 and 0 respectively.

A breakdown of the percentages of premiums and contests featuring in advertising by product category is also provide. Respectively, these are as follows: Cereals - 47, 0; Candies/sweets - 10, 6; Eating places/meals: 21, 5; Snacks - 16, 0; other foods -16 and 0. In comparison toys were 0 and 0 respectively.

A breakdown of theme appeals in terms of appearance, amount, convenience, taste, texture, fun, health, status/superiority, action/adventure, comparative, uniqueness/newness and quality is provided by product category (in percentages). Respectively, these are as follows: Cereals - 3, 3, 0, 36, 12, 2, 34, 2, 7, 1, 0, 0; Candies/sweets - 3, 6, 5, 30, 19, 15, 4, 3, 0, 0, 15, 0; Eating places/meals - 2, 0, 0, 26, 22, 5, 0, 38, 0, 5, 2, 0; Snacks: 0, 0, 17, 46, 17, 0, 0, 0, 0, 20, 0, 0, 0; other foods - 0, 3, 12, 37, 18, 0, 21, 0, 0, 9, 0 and 0. In comparison toys were 19, 5, 9, 4, 0, 9, 0, 1, 44, 0, 1, 3 and 15 respectively. In this instance, food advertising tended to focus on taste (except for cereals advertising where nutrition was top). Those foods, eg. candy, which lacked this claim opted for fun or texture as secondary selling points. However, peer status, popularity or general superiority were important with fast-food outlets

A range of examples of misleading adverts given, but the study states that more research is required.

The study provides a more breakdown of nutritional adverts. The top advertised product is given as; sugared cereals (27.8%), candy bars (17.2%), eating places (14.6%), non-sugared cereals (8.8%), cakes & cookies (8.0%) and fruit drinks (7.3%).

The study refers to public service announcements as non-commercial announcements (n = 92) of which nine (9.8%) were for nutritional messages.

Children's commercial television after school

The content analysis provides a breakdown of advertising by product category: the top advertised products were toys (18.5%), then cereals (17.4%) and candies/sweets (14.9%), Other food groups being eating places/meals (11.3%), snacks (0.4%) and other food (1.8%). Total of food advertising = 46.0%. The ratio of sugared cereals to un-sugared cereals is again reported as 3: 1 (n = 65: 20)

In terms of creative strategies the study looks again at 'who speaks' for the product 100% of toy adverts featured adults (92% male). The percentages of adults to children featuring in food adverts for different products are also provided. Respectively, these are reported as: Cereals - 37, 14; Candies/sweets - 66, 14; Eating places/meals - 95, 0; Snacks/other foods - 91 and 9. Again no product was majority female (although cereals featured the most females at only 17%).

This time, the study looks at who appears in the advert and reports a different pattern, in which toy adverts featured the most children. The percentages of adults to children featuring in toy adverts for different products are also provided. Respectively, these are: Cereals: 13, 55; Candies/sweets - 32, 24; Eating places/meals - 38, 50; Snacks - 60, 0; other foods - 44 and 56. In comparison toys were 12 and 88, respectively. Again no product was majority female (other foods most at 44%).

The analysis suggests that for fast-food advertising, adults announce, but children appear.

The study also breaks down products by estimated audience of children viewing programmes, into 0-29, 30-49, 50-69 and 70+%s. Respectfully, these figures for food products are: Cereals - 5, 14, 38, 43; Candies/sweets - 9, 26, 40, 25; Eating places/meals - 11, 14, 29, 46; Snacks/other foods - 18, 46, 9 and 27. Toys were 3, 4, 37 and 56 respectfully. This shows that foods were targeted at children's programmes, beaten only by toys. In comparison the percentages of household products (33, 39, 11, 17) and personal care (26, 42, 21, 11) were more evenly spread and slanted in the opposite direction.

Again only a small use of celebrity endorsement is observed (5% of all adverts), foods using personalities being cereals 4%, candies 0%, eating places 4% and snacks/other foods 27% (again only cereal using endorsement 1%). No food adverts were reported as using tie-ins.

A breakdown of the use of audio, visual and both audio and visual disclaimers for different products is also provided (in percentages). Respectfully, these are: Cereals - 0, 16, 16; Candies/sweets- 1, 0, 0: Eating places/meals - 22, 11, 6; Snacks/other foods - 0, 0 and 0. In comparison toys were 51, 1 and 1, respectively.

A breakdown of the use of premiums in food advertising across different food product categories is also provided: cereals 33%, candies/sweets 1% – eating places/meals 31% snacks/other foods 9%. No food contests. In comparison toys 0% premiums, but 1% contests

In terms of price information, only advertising for eating places used this 18.2% (toys were 2.2%).

Advertising for eating places were the least likely to provide product information (especially when compared to advertising for household products and personal care.

cont…

BARCUS 1975a and 1995b; BARCUS & WOLKIN 1977

Results continued…..

The study also looks at misleading advertising and provides percentages broken down by nutrition, and by "sweetness", if product is a snack, if product is a meal, taste (other than "sweetness) and if product is natural/artificial. The respective percentages for the advertising of different food products are as follows: Cereals - 41, 22, 0, 94, 74, 4; Candies/sweets - 11, 0, 14, 8, 49, 3; Snacks/other foods: 18, 0, 9, 9, 36 and 9.

The study also provides a more detailed breakdown of nutritional adverts. The tops advertised products are given as; sugared cereals (29.0%), candy bars (22.8%), eating places (11.2%), non-sugared cereals (8.9%), cakes & cookies (7.2%) carbonated beverages (5.4%) and fruit drinks (4.0%). The report states that 61% of all advertised foods are sugared.

A breakdown of theme appeals in food advertising in terms of appearance, amount, convenience, taste, texture, fun, health, status/superiority, action/adventure, comparative, uniqueness/newness and quality is also provided by product category. The respective percentages are: cereals - 7, 3, 0, 36, 10, 1, 34, 1, 8, 0, 0, 0; Candies/sweets - 7, 16, 2, 35, 11, 10, 7, 3, 0, 1, 6, 0; Eating places/meals - 0, 11, 20, 14, 9, 3, 0, 9, 0, 0, 4, 2; Snacks: 0, 0, 50, 50, 0, 0, 0, 0, 0, 0, 0, 0; other foods - 8, 0, 8, 25, 0, 8, 17, 0, 0, 0, 8 and 12. In comparison toys were 17, 13, 6, 2, 2, 16, 0, 15, 23, 0, 5 and 1 respectively. Again cereals advertising was the biggest user of nutrition appeals.

Only 52 public service announcements (non commercial advertisements) were identified, and only one of these was for a nutritional cause.

Comparisons between food advertising to children at weekends and food advertising after school showed that the advertising was similar (although more non-child adverts were shown after school). 4% nutritional adverts were shown at weekends, and 2% after school.

<u>Seasonal variations in television advertising to children</u>
Advertising time was found to rise from 12.8% to 15.0%, and public service announcements fell from 3.1% to 0.9%. The content analysis shows a rise in toy advertising from 17.3% to 47.5%. Food products are shown to fall: cereals 23.5% to 19.7%, candies/sweets 27.2% to 19.7%, snacks 5.2% to 0.3%, eating places 6.2% to 5.3% and other foods 3.6% to 1.8%.

The examination of only food advertising revealed little change with 142 of 200 adverts in April and 100 of 133 at Christmas time being for highly sugared products.

Specifically, top advertised products were sugared cereals 29.5% to 33.1%, candy bars 22.5% to 22.6%, eating places 8.5% to 11.3% cakes/cookies 8.0% to 12.0%, fruit drinks 7.0% to 1.5% and un-sugared cereals 6.0% to 9.0%.

A breakdown of changes in the use audio, visual and both audio visual disclaimers in food advertising across different product categories is also provided. In percentages, the respective figures observe a rise in cereal advertisings: 26 to 50, 18 to 45 and 18 to 34 (in line with toys – 49 to 53, 0 to 18 and 0 to 13).

A medium scoring study of both the extent and nature of food promotion to children.

Published in Published as report for Action for Children's Television

Peer-reviewed Unknown

Author's discipline Public Communication

Funding source Conducted for Action for Children's Television.

BARCUS 1971a and 1971b

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), and 3(1).
Promotional Channel	USA, television advertising 3 major stations and one local station.
Design	Content analysis of television advertising.
Sample	The study monitored four channels of Saturday morning television. A total of 1225 minutes or 18 ¾ hours were observed, of which 15.5% was advert time, comprising 311 adverts, that is 132 different commercials for 99 products for 57 companies.
Method	Three observers, non-reliability (note the early date of the study)
Measures	The study addressed the extent and nature of adverts by product category, including some food product breakdown.
Statistical analysis	Descriptive statistics are reported [Detailed figures are given in the appendix.]
Results	The content analysis provides a breakdown by product category - toys (22%), candies/sweets (20%), cereals (24%) and other foods snacks (22%). In terms of creative strategies, all toy adverts were non-animated, although 66% of food adverts were animated or mixed. 92% of toy adverts showed the product in use, while only 72% of food adverts showed the product in use. Food adverts usually followed a dramatic skit (59%) while toy adverts off-stage voice (73%). Cereal adverts were more likely to make nutritional claims, and 19 out of 36 adverts mentioned sweetness appeal. Only four in 21 adverts for sweets/candies/soft drinks (and five in 32 adverts for other foods & snacks) made nutritional claims with a baseball player making an energy claim endorsement for a product. 17 out of 21 adverts for sweets/candies/soft drinks showed the child consuming the product. Disclaimers were rarer with foods adverts (verbal, $n = 8$, six for cereals, compared with 10 for toys and visual, $n = 3$, for all cereal adverts, compared with five for toys). Also mentions some inappropriate marketing, though this is not food focused A lower scoring study of both the extent and nature of food promotion to children.
Published in	1971 – Article presented at the meeting of the Federal Trade Commission, Hearings on Modern Advertising Practices, November 10, 1971.
Peer-reviewed	Unknown
Author's discipline	Public Communication
Funding source	Conducted for Action for Children's Television.

BUIJZEN & VALKENBURG 2002

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 3(1).
Promotional Channel	Dutch television advertising Two public and three commercial channels
Design	Content analysis of television advertising (not food focused).
Sample	216 hours of recorded television from Saturday mornings (SMTV) and weekday evenings (the 'C' hour) yielded approximately 2,500 adverts. Excluding repetitions, public-service announcements and non-commercial advertising left 601 unique advertisements for analysis.
Method	2 coders were trained over a 2-month period, and advertising appeals were categorised using a coding system. A sample of adverts were coded and analysed in order to determine levels of inter-rater reliability.
Measures	The study examines both the extent and nature of advertising and makes comparisons between children, teenagers and adults.
Statistical analysis	Only descriptive statistics are reported.
Results	The content analysis found that the top five products in children's adverts were toys & games adverts (58.3%), followed by candies and snacks (12.2%), music & video (12.2%), non-alcoholic drinks (5.8%) and foods (5.0%). In comparison, soft drinks were in the top five teenage products advertised (11.9%) and foods in the top five general audience products advertised (6.5%). The creating strategies of the advertisements were assessed using an appeal coding system: Appeals featured to the following extent in advertising to children: play (57.6%), action-adventure (38.8%), fun (30.2%), courage (7.2%), affection for animals (12.2%), collecting (6.5%), nurturing (8.6%), creativity (6.5%)affection for children (9.4%), competition (8.6%) family ties (5.0%) and capability (2.2%). Appeals featured to the following extent in advertising to teenagers: being modern (18.3%), being 'cool' (18.3%), fun (20.6%), seizing opportunities (20.6%), sexuality (13.5%), individuality (9.5%), personal freedom (11.1%), having the best (23.0%), belonging to a group (9.5%) energy (5.6%) and enjoyment (6.3%). The Appeals featured to the following extent in advertising to the general audience: convenience (17.9%), financial security (11.0%), health (11.6%), sexuality (10.7%), love (6.5%), individual (5.7%), physical attractiveness (14.6%), personal freedom (7.4%), affection for children (7.7%), family ties (7.7%), having natural organic food & clothing (3.9%), self-esteem (3.3%), enjoyment (8.0%) and career (2.4%). The top five appeals used in the advertising of candy & snacks were pleasant taste (88.6%), humour (85.7%), newness (31.4%), fun (17.1%) and action-adventure (14.3%). The top five appeals for the advertising of non-alcoholic drinks were humour (83.7%), pleasant taste (34.9%), energy (34.9%), newness (20.9%) and fun/quality (18.9%). The top five appeals for adverts for foods were humour (82.5%), taste (82.5%), quality (27.5%), newness (22.5%) and health (22.5%). The study concludes it is through adverts for toys or candy that children are "confronted with specific child-related appeals, such as play, fun, action-adventure and humour". A medium scoring study of both the extent and nature of food promotion to children.
Published in	Communications: The European journal of Communications Research
Peer-reviewed	Yes
Authors' discipline	Communications (Children and the Media)
Funding source	Unknown

BYRD-BREDBENNER 2002

Relevant to	Systematic Review 1 Questions1 (1) , 2(1), 3(1) and 3(3).
Promotional Channel	USA, television advertising 5 broadcast networks – major television channels (ABC, CBS, NBC) plus Fox and WB.
Design	Review article (includes 'new' data: data which is not included elsewhere in this systematic review). Content analysis of television advertising. Longitudinal (makes comparisons with own data and other data)
Sample	Recordings were made in both 1993 and 1999 which yielded 11.5 and 9.5 hours respectively of Saturday morning television.
Method	The coding used in the study attempted to be compatible with previous studies, and was pilot-tested by four trained nutrition researchers. Two health education researchers discussed coding until a unanimous decision was reached. Comparisons are made with (i) Barcus (1971) and (ii) Barcus and Wolkin (1977).
Measures	The article addressed both the extent and nature of advertising and includes time trend analysis.
Statistical analysis	Only descriptive statistics are reported.
Results	This article is the most up-to-date in a series of content analyses from the author. The total of food adverts was 70% in 1971, 69% in 1993 and 78% in 1999 (n.b no 1975 Barcus and Wolkin data). Product trends are also provided across the four data points (1971, 1975, 1993 and 1999) (n.b. figures are in %): • Fast-food restaurants' advertising has increased from 8, 11, 23 to 28%. • Fats and sweets advertisings has fluctuated from 49, 41, 36 to 53%. • Advertising for breads and cereals has fluctuated from 37, 45, 40 to16%. The data for sweetened cereal advertising is different (27, 33, 24, 14%): in other words advertising for cereals are decreasing, but sweetened cereals much less so. • Advertising for dairy products has fluctuated from 3, 2, 1 to 3%. • Advertising for frozen dinners has decreased to nothing (2, 0, 0 to 0%), as has advertising for vegetables (1, 0, 0 to 0%). • Advertising for fruit has remained at 0% throughout as has advertising for high protein foods. In terms of creative strategies, the review addresses inappropriate marketing – and also looks at the characters who eat in adverts. In 1993, the proportion of thin/average-sized characters was 81%. In 1999 this had risen to 96%. Premiums and prizes were found to be (35% in 1993, 29% in 1999) similar to 1970s levels (Barcus & Wolkin 1977) however these had switched from breakfast cereals to fast-food advertising (61% and 79%). The review also states that in 1993 only 48% of advertising focused on the prize, whereas in 1999 this had risen to 87%. A lower scoring review of both the extent and nature of food promotion to children.
Published in	Family and Consumer Sciences Research Journal
Peer-reviewed	Ye
Author's discipline	Nutrition
Funding source	Unknown

BYRD-BREDBENNER & GRASSO 1999a, 1999b, 2000a, 2000b and 2000c

Relevant to Systematic Review 1 Questions1(1), 1(3) [2000a only], 2(1), 2(2) [2000s only], 3(1), 3(2) [1999a only], and 3(3) [2000c only]

Promotional Channel USA, television advertising
Five networks stations, three major stations plus FOX and WB.

Design Content analysis of prime-time television advertising (which the authors cite that 2 to 11 year olds watch five times more than Saturday morning television) Note: much of this work focused on health messages rather than food advertising (eg. in PSA or adverts for medicines).

Sample 17.5 hours of prime-time television was recorded over two weeks in mid-October 1998, which yielded 700 adverts (a quarter of all viewing time and a mean of 40 adverts per hour, average length 22.1 seconds).

Of these 700, 467 were adverts for goods and services, 10 were PSA and 223 were promotions for television shows. There were 108 food and drink adverts and a further 79 non-food adverts with NRI (nutrition-related information). Of the 108 adverts, 33% which contained NRI (Nutrition-related information). The study examined NRI in all adverts and PSAs, not just food adverts.

Method The authors used a coding instrument created from reviewing previous studies. Rater-reliability statistics for two raters/authors are provided (0.93 – 0.92).

Measures The study addresses the following:

- the nature and extent of food advertising
- the nature and extent of food related public service announcements
- the nature and extent of Health Related Content (HRC)
- the nature and extent of nutrition-related information (NRI)

It also makes comparisons with recommended diet (Food Pyramid) and examines time trends by making comparisons with 1992 data, their 1998 data with Cuozzo (unpublished masters thesis - 1971), Kurman (unpublished doctoral thesis -1977) and Story and Faulkner (1990)

Statistical analysis Mainly descriptive statistics are reported although some inferential statistics are reported when describing time trends

Results Recommended Diet
The USDA Food Pyramid is not fats, oils & sweets 41%, milk, cheese and yoghurt 8%, meat, poultry, fish, dry beans & eggs group 0%, vegetable group 6%, fruit group 6% and bread, cereal, rice & pasta group 41%.

The study simply states that "fruits, vegetables (except French fries) and dairy products were rarely advertised" and "Protein rich foods and grain products were well represented in prime-time advertising mainly because of frequent advertisements for fast-food sandwiches". A brief mention is made of foods in the fats and sweets group in the USDA food guide pyramid being advertised frequently. References to 'low nutrient density foods' coupled with foods in the 'foods high in the fats, sweets and alcohol' (n = 755) exceeded the references to both high and moderate nutrient density foods combined (n = 667).

The study concludes that the prime-time diet "can be described as calorie-laden, fatty, salty, sweet and low in fibre".

Public service announcements
The analysis of public service announcements was found to replicate previous and other research as non were observed for diet. The study observes a mixed message as 89% of actors consuming foods in food adverts were slim and healthy yet 54% of food consumed was rated low nutrient density. Only one public service announcement (PSA) with NRI was recorded. In this a child gives an anti-drug message whilst eating French fries.

In comparing time trends with 1992, the study observes a rise from 19 to 24% of television time. It also reports a rise in adverts with health information 246 to 298 (or 14 to 17/hour) (n.b no mention of significance). Content analysis of both 1992 and 1998, reported 105 adverts (28%) and 108 adverts (23%) for food of which 100% had health information. This is the largest category in each. In both years only five health orientated public service announcements were recorded. In 1992 all five were about drugs and AIDS, and in 1998 one was about domestic violence, the rest about drugs. The study also monitored non-adverts, non-public service announcements, and non-programme promotions, and states that 30% of non-programme time is for these, with over 25% of these promotions containing health information.

The proportion of advert time is reported as similar between 1992 and the current study, at 79 (156 minutes) and 77% (199 minutes) respectively. This was made up of 337 adverts and 467 adverts of which 204 (54%) and 231 (49%) had health info. The study also claims that the amount of misleading information in food advertising declined from 75% to just over 50%.

cont….

BYRD-BREDBENNER & GRASSO 1999a, 1999b, 2000a, 2000b and 2000c

Results continued …	In comparing data from 1971, 1977 and 1990 with the current study, it is reported that the percentage of food adverts is decreasing (from 31 to 35, to 20 to 15% respectively), but set against rise in total adverts (11 to 40 per hour), the amount of exposure remains the same. Changes over time in products advertised are significant ($p < 0.001$); dominated by food categories "restaurants", "low-nutrient beverages", "protein rich foods" and "cereals". The study observes the main trend towards restaurants (fast-food, hamburgers, fried-chicken and pizza) from "virtually non- The study also looks are creative strategies and states that almost half of food and drink adverts made misleading or inaccurate claims. A total of 42 of the 108 food adverts made at least one nutritional claim, compared with 85 with taste claims (and 97 for any consumer-related claim) In 40 adverts (2%) only a restaurant name was given, not food product, providing evidence of brand building The study concludes that the prime-time diet is similar to the unhealthy diet in the American population, ie. high in sugar, sodium and fat but low in fruits, vegetables and whole grains. A lower scoring study of both the extent and nature of food promotion to children.
Published in	1999 – American Journal of Health Studies 1999 – The International Electronic Journal of Health Education 2000 – Journal of Nutrition Education 2000 – Journal of School Health 2000 – Nutrition and Food Science (journal)
Peer-reviewed	1999 – Yes 1999 – Yes 2000 – Yes 2000 – Yes 2000 – Reviewed by only the editor in most cases
Authors' discipline	Nutrition
Funding source	Unknown

CHESTNUTT & ASHRAF 2002

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 2(2).
Promotional Channel	UK, television advertising.
Design	Content analysis of television advertising (dental rather than diet focused).
Sample	237 hours of children's television (both Saturday morning television and the children's hour) and 42 hours of prime-time television (7-10pm) yielded 2,345 and 891 adverts respectively.
Method	Adverts were 'judged' in terms of products that were detrimental to oral health (defined as confectionary, sugar enriched cereals, sugared dairy products, soft drinks – sugared, diet and low sugar).
Measures	This study addressed the extent of food advertising (in term of sugar) and makes comparisons with prime-time advertising.
Statistical analysis	Both descriptive and inferential statistics are reported (although somewhat vague).
Results	The content analysis found significantly more food advertising during children programming (62.5%) than on prime-time television (18.4%). Moreover, of advertising time devoted to food adverts during children's programming 73.4% were for products deemed detrimental to oral health, compared with only 18.6% similarly categorised during prime-time. The content analysis also provides a breakdown in terms of products detrimental to oral health that are reported and notes that the top food stuffs include; confectionary (46.6%), sugared cereals (24.1%), sugared-dairy products (16.0%), soft-drinks – sugared (10.9%), diet (1.3%) and low-sugar (1.2%). The study also points out that the two Saturday and Sunday morning children's television shows broadcast in the UK are sponsored by a confectionary and a sugared dairy product (tie-ins). A medium scoring study of the extent of food promotion to children.
Published in	Community Dental Health (journal)
Peer-reviewed	Yes
Authors' discipline	Dental Health
Funding source	Unknown

CHOATE 1972

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 2(2).
Promotional Channel	USA, television advertising Network television programming.
Design	Content analysis of television advertising.
Sample	28 hours of children's Saturday morning television were recorded during the week that ended on 11th April 1971.
Method	Not stated
Measures	The study addressed the extent of food advertising.
Statistical analysis	Limited descriptive statistics are reported.
Results	The content analysis reports that more than half of recorded adverts are for food products (with 30% for toys). It also notes that 10% of adverts for vitamins maintain, that they are "sold to children in case you don't eat right". A breakdown of advertising by food product category is provided reporting the following: breakfast cereals (n = 92), candy, cookie and soft drinks (n = 51), snacks (n = 22), 'drive-in' (ie. fast-food) restaurants (n = 20), main meals (n = 9), pastries/puddings (n = 8) continental baking (n = 6) and soup (n = 2). A lower scoring study of the extent of food promotion to children.
Published in	The Nation (journal)
Peer-reviewed	Unknown
Author's discipline	Consultant on children and the media
Funding source	Unknown

CONDRY ET AL 1988

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), and 2(2).
Promotional Channel	USA, television advertising 3 major television networks (ABC, NBC, CBS).
Design	Longitudinal content analysis of television advertising (not particularly food focused).
Sample	A total of 86.5 hours were recorded from children's television (weekdays children's hour and Saturday morning television) during March, June, September and December in 1983, 1985, and 1987.
Method	The study used a random selection procedure of recording times. Two coders had a reported 90% inter-rater reliability, although only one raters set of scores were included in the analysis.
Measures	The study addresses the extent of food advertising, and looks at seasonal variations and time trends.
Statistical analysis	Both descriptive statistics and inferential statistics (chi-square analyses) are reported.
Results	Three content analyses produced longitudinal trends (n.b this is better than 'before' or 'after', but random selection may negate this). Food products always the top advertised product during every year (65.4% for 1983, 48.4% for 1985 and 51.3% for 1987), though advertising is reported to have declined due to increase of toy and other adverts. A breakdown of advertising for different food product categories is provided for the years 1983, 1985 and 1987 respectively: cereals 31.8%, 20.5% and 22.8%, candy/snacks/sodas 19.6%, 14.5% and 17.2%, restaurants 12.5%, 8.8% and 7.9% and other food/beverage 1.5%, 4.6% and 3.4%. Decline is most evident when compared with data from Barcus (1971): total food advertising 82% (cereals 34%, candy/snacks 32%, restaurants 15% and other food/beverages 1%). Seasonal variation finds that toys are the most advertised product in December (46.6%) (approximately twice as much as the other months: 23.2% to 26.4%), with corresponding drops in food (cereals, 16.2% compared with 20.7% and 27.9% and candy/snacks, 7.7% compared with 20.5% and 24.2%). PSAs also declined (though many due to a decline in general audience). PSAs for children and teens actually increased, but mainly due to anti-drugs adverts (majority of 25 PSA in 1987, by which time nutritional PSAs had disappeared). A medium scoring study of the extent of food promotion to children.
Published in	Journal of Broadcasting and Electronic Media
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Condry - Professor of Human Development and Family Studies *[particular interests in social cognition, motivation and television influence*]
Funding source	Cornell University Agricultural Experiment Station

CONSUMERS INTERNATIONAL 1996

Relevant to Systematic Review 1 Questions 1(1), 1(2), 1(3), 2(1), 2(2), 3(1) and 3(2).

Promotional Channel International (including UK.), television advertising.
16 television channels across 13 countries, including two satellite television channels.

Design Content analysis of television advertising.
Other parts of the report address the effects of food advertising and regulations on advertising.

Sample The study monitors television advertising across 13 countries (11 European countries, the USA and Australia) during "children's programming". Each country aimed to provide 20 hours of programming for analysis although this varied between 43 hours 21 minutes (Belgium - two language channels) and 5 hours 20 minutes (Finland).

Method The selection of "dedicated children's programming" or "channels popular with child audiences" seems to vary greatly by country. Advertisements were assessed and coded (although procedures for this are not adequately described) then data was described on a per 20 hours basis.

Measures The report took many measures of the extent of food advertising.

Statistical analysis Descriptive statistics are reported.

Results The content analysis of television advertising by product category found that, in all bar two channels surveyed (on Australian channel and one, of two, Swedish channels) food was the most advertised product.

Of 13 countries, the UK had the most adverts in Europe during "children's programming (17 hours from 20 hours 10 minutes recording)", but this was behind the USA (24 hours) and Australia (29 hours). In the UK this translated to 10 food adverts per hour (59% of all adverts), again behind only the USA with 11 adverts per hour (45% of all adverts) and Australia with 13 adverts per hour (39% of all adverts).

The UK came second to the USA, among six developed countries, in terms of number of adverts per 20 hours in 1996 (330 and 484 adverts respectively). The figure for France was similar (330 adverts), the others being Germany (279 adverts), Netherlands (91 adverts) and Sweden (37 adverts). In terms of proportion of food adverts, the UK was second to the Netherlands (59% and 84% respectively) ahead of France (49%), the USA (45%), Germany (41%) and Sweden (30%). That so many adverts are for other products is said to indicate that adult viewers may be the target audience during these advertisement breaks.

The UK and USA (1996) had highest numbers of food adverts broadcast during children's programming (n = 195 and n = 215 respectively) compared with France (n = 166) Germany (n = 115) Netherlands (n = 77) and Sweden (n = 11). The most advertised food category on UK children's television was confectionary (n = 55), which was also the most commonly advertised category in Netherlands and France. Next was breakfast cereals (n = 32), which where the most commonly advertised in Germany and the USA. Other categories of food product advertised on UK television were ready prepared foods (n = 30), restaurants (n = 23), sauces & savoury products (n = 18), meat & meat products (n = 14), hot beverages (n = 8) and all others (n = 15).

The top advertised food products in the UK were confectionary (55%), breakfast cereal (31%), restaurants (18%), dairy products (17%), savoury snacks (15%), ready prepared foods (8%), fish & fish products (7%), hot beverages (7%), soft drinks (6%), cakes and biscuits (6%) and others (11%).

Across all countries confectionary, breakfast cereals and restaurants (virtually all fast-foods) accounted for more than half of all adverts. Confectionary alone accounted for one fifth. This varied by country, with confectionary being advertised in the UK approximately four times as much as in Germany and 35 times as much as in Sweden. Confectionary also had the greatest variety of manufacturers, though *Nestlé*, *Cadburys* and *Mars* were frequent.

Most (81%) of breakfast cereal adverts were for products high in sugar or sodium (67%). The majority of cereals were manufactured by either *Nestlé* or *Kellogg's*.

The third most advertised product was restaurants, such as *McDonalds*. These adverts tended to promote the 'experience' or multi-item meals (burgers and fries) rather than specific products and used brand building. Again, these are products high in salt, fat and sugar, but low in fibre.

In contrast there were few adverts for fruit and vegetables. In the UK the only advert recorded in this category was for frozen peas. Adverts for fish & fish products tended to be for battered fish fingers or battered foods.

In this study only the UK carried out nutritional analysis (Sweden attempted this, but had too few food adverts, Greece could find too little information on food packets). This involved examining high fat content (> 30% energy) high sugar content (> 20% energy) and high sodium content (> 2.36g/10MJ = >6g salt). The analysis found that 62% of adverts were for products high in fat, 50% for products high in sugar and 61% for products high in sodium. In total, 95% of adverts were for products high in either fat, sugar or sodium or for products high in combinations of these.

The report also describes some creative strategies and reports on some **sponsorship (tie-ins)** in the UK (other countries do not have sponsorship or are not allowed, other have more sponsorship, especially Australia). This was for Potomus Park (Hipo Yogofrais, yoghurt) and for the chart show (Twix, confectionary).

A medium scoring study of the extent of food promotion to children and a lower scoring study of the nature of food promotion to children.

CONSUMERS INTERNATIONAL 1996

Published in	Report produced by Consumers International's Programme for Developed Economies
Peer-reviewed	Unknown
Author's discipline	Senior Policy Officer for the National Consumer Council [*previously co-director of the Food Commission*]
Funding source	Consumers International carried out the study with the aid of the EU, UNICEF, Health Education Authority (UK), Swedish Consumer Agency and Network Foundation (UK).

CONSUMERS INTERNATIONAL 1999

Relevant to	Systematic Review 1 Questions 1(1), 2(1), and 3(1).
Promotional Channel	International , television advertising Various channels including specialised children's channels
Design	Content analysis of television advertising
Sample	Content analysis of 80 hours of television in Slovenia, Slovakia, Poland and Hungary.
Method	Consumer organisations in the four Central European countries undertook to monitor television advertising to children over approximately 40 hours over two time periods. Channels were selected on the basis that they had the highest viewing figures and/or broadcast the most children's programmes. In addition, they collected information about national advertising regulations and the systems of advertising control.
Measures	The study examines the extent and nature of food promotion in Central Europe
Statistical analysis	Descriptive statistics and qualitative data are reported.
Results	The content analysis found that food was the most commonly advertised product (except during the run up to Christmas and on the Cartoon Network where toy adverts were more common. As with other research this Central European study found that confectionary the most common product, together with sweetened breakfast cereals, savoury snacks and soft-drinks comprised over three quarters of all food adverts. In terms of creative strategies, the study finds some evidence of sponsoring, including chocolate (Poland, Slovenia and Slovakia) and savoury snacks (Poland). Some misleading adverts are noted, including 'extra milk' in chocolate (Poland, Slovenia and Slovakia) and chocolate giving energy (Slovenia). Sugar-free gum is also noted as being portrayed as an encouragement to eat sweetened foods. Inappropriate marketing is also discussed: adverts observed included chocolate being kept in a medicine cabinet (Slovenia), a reference to being addicted to savoury snacks (Slovenia) peer group exclusion (all countries). This latter advert involved three boys and a girl eating ice-cream, a fourth boy approaches and gives her sugar free gum to overcome the 'wicked acids', leaving the other boys feeling excluded. Other inappropriate marketing observed included cartoon character used to promote yoghurt (Slovenia) and widespread use of free gifts (eg. Kinder and *McDonalds*), competitions or children's clubs (eg. Lego). An example of product placement is also provided in terms of a chocolate brand seen on a television programme where St Nicolas gives out presents from a basket on St Nicolas Day (Slovenia). Though not part of the report, in-school marketing, direct mail, magazine and internet advertising, were also noted. For example, confectionary company representatives handing out free sample and free gifts, with the companies logo and a competition where children had to collect chocolate wrappers (Slovakia). A medium scoring study of both the extent and nature of food promotion to children.
Published in	Published as a Consumers International Report
Peer-reviewed	Unknown
Author's discipline	Antal, S. – lead author and researcher – discipline unknown
Funding source	European Commission - Consumer Institutions Consumer Policy Programme (1998-2000) CICPP2, a project designed to assist consumer organisations in Central and Eastern Europe.

CONSUMERS UNION 1995

Relevant to	Systematic Review 1 Questions 1(1) and 3(1).
Promotional Channel	USA, in-school marketing
Design	Exploratory study of in-school marketing techniques.
Sample	The study includes the analysis of posters, teaching packs video, software, and CD-ROMS. Of 111 teaching guides: 77 learning kits, 29 sponsored contests five reading incentive programmes.
Method	Collects 200 examples of in school marketing materials (acknowledges that this is only the 'tip of ice berg').
Measures	Nature of Sponsored Educational Material (SEM), in-school contests, in-school (eg. television) media and conventional advertising.
Statistical analysis	None
Results	All but one of 21 nutritional materials were reported as being sponsored by food companies (eg. *Kellogg's* 'Build on Good Nutrition' – 'Get going with breakfast', *Mars*' '100% Smart Energy'). *McDonald's* programme avoids mentioning (its) fast-food: even in its 'what's on your plate', 'balancing your act' and 'healthy growing up', nutrition aids (video, posters, teaching guide, booklets, student certificate, stationary etc.) although the logo is used or McDonalds is mentioned in the credits. The study reports that this allows biased promotions which reflect inappropriate marketing on a large scale. A lower scoring study of both the extent and nature of food promotion to children.
Published in	Report prepared for ZILLIONS: For kids FROM Consumer reports, published by Consumers Union Educational Services
Peer-reviewed	Yes – lists seven advisors to the report
Author's discipline	Consumers Union is an independent, non-profit testing and information organization serving consumers
Funding source	Conducted for ZILLIONS: For Kids

COTUGNA 1988

Relevant to	Systematic Review 1 Question 1(1) and 2(1).
Promotional Channel	USA, television advertising 3 majors television networks (ABC, CBS and NBC).
Design	Content analysis of television advertising.
Sample	12 hours of Saturday morning television were recorded on a single day (January 24, 1987),. This yielded 225 adverts for analysis.
Method	The advertisements were reported as being "subjectively categorized" by the author.
Measures	The study addresses the extent of food advertising and also establishes time trends by drawing comparisons with other research.
Statistical analysis	Both descriptive statistics and inferential statistics are reported (n.b. based on a very small sample).
Results	The content analysis revealed that 71% of the 225 recorded adverts were for food, and 80% of these were judges as having low nutritional value. The stuffy provides a breakdown of food advertising by product category: Breakfasts Cereals 31%, cookies/candy/gum/pop-corn/snacks 34%, beverages 7%, waffles/pastries 4%, canned pasta 5%, canned deserts/frozen dinners/drive-ins/peanut butter/oranges 13%, others including prepared meat and fish products/diary product/oils/catsup 6%. The study compares this data from 1987 with data from Brown (1976) (not elsewhere included in this review) and Gussow (1972). The analysis finds little change in nutritional content (previously, 76 and 84% respectively). Cereal advertising was down at 31% (previously 38.5% and 41% respectively), but offset by an increase in the ratio of sugared to non-sugared cereals (5:1 to 12.5: 1). A lower scoring study of the extent of food promotion to children.
Published in	Journal of Nutrition Education
Peer-reviewed	Currently peer reviewed
Author's discipline	Nutrition and Dietetics
Funding source	Unknown

CWS LTD 2000; DIBB & GORDON 2001

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 2(2).
Promotional Channel	UK, television advertising (Commercial network television channels).
Design	Content analysis of television advertising, expert commentary (not relevant to the current review questions) and a consumer study (not relevant to the current review questions).
Sample	272 food and soft drinks adverts were recorded from broadcasting over a period of 37 hours 35 minutes in March 2000 in the UK. The recordings comprised CITV (8 hours 45 minutes), Saturday morning television (6 hours 30 minutes), the Big Breakfast on weekday morning television (10 hours) and late evening post-watershed television aimed at adults (12 hours 20 minutes) One 'expert' provided commentary and the consumer study comprised 1,216 adults (including 523 parents) and 293 children under eleven years of age (undertaken in March 2000).
Method	The content analysis replicates the methods used in the 1995 National Food Alliance study also included in this review (Dibb & Castell 1995). Detailed appendices are contained in Dibb and Gordon (2001). The 'expert' provided commentary and the consumer study used interview methods (not further described).
Measures	The content analysis addressed the extent of food advertising, made comparisons with adult television and also made comparisons with the recommended diet (ie. the National Food Guide and Coronary Prevention Group banding scheme) The commentary addressed psychological effects and the consumer study examined children and parent's attitudes.
Statistical analysis	Only descriptive statistics are reported in the content analysis. No statistics are provided for the commentary and again only descriptive statistics are reported for the consumer study.
Results	The content analysis reported more food (product) advertising on television during children's viewing time, both in terms of the number of adverts and the percentage of adverts as compared with the adult post-watershed. It was found that children are exposed to more food adverts than adults, with only 21% of post-watershed adverts being for food products compared to 48% of adverts on Saturday morning television and 58% of adverts during the children's hour. Of the adverts featured during children's viewing times, 95 – 99% were for products high in either fat (30 – 40%), sugar (63 - 74%) or salt (27 – 49%). Corresponding figures after the 9pm watershed were 88%, 25%, 25% and 49% respectively. The National Food Guide recommended diet defines five products and how much should be consumed of each. These are Bread, other Cereals & Potatoes (34%), Fruit & Vegetables (33%), Milk & Dairy products (15%), Meat, Fish & alternatives (12%) and Fatty & Sugary Foods (7%). Taking the three samples of children's viewing times, exposures to adverts for these categories of food were Bread, other Cereals & Potatoes (16%), Fruit & Vegetables (0%), Milk & Dairy (10%), Meat, Fish & alternatives (4%) and Fatty & Sugary Foods (70%). The findings are very similar, with adverts for high sugar and fat products, if anything, having become more concentrated during children's viewing hours. Dr Aric Sigman provided expert commentary on the creative strategies employed in food advertising and identified four emotional needs of children exploited by advertisers: • the need for nurture and protection • the need for stimulation • the need for role models • the need for per group acceptance. The consumer study reported that 73% of children ask their parents to buy after seeing sweets and crisps advertised, and that 71% have bought something for a free gift or token. If children are told 'no', a variety of pester power strategies are used with only 19% of children reporting giving up and doing nothing. 77% of adults participating in the study wanted to see a ban on the advertising of high sugar or fat products to children. On a four point rating scale, 68% felt a free toy or gift was 'very persuasive', as did 65% with association with a character. In comparison only 12% felt that claims about how healthy the product is was 'very persuasive' with 40% rating this as 'not at all persuasive'. Combing scores of 'very' and 'quite persuasive' produced majority responses for associations with cool, fashionable people (62%) and in-store display (68%). A medium scoring study of the extent of food promotion to children and a lower scoring study of the nature of food promotion to children.
Published in	2000 - Report produced by the Co-op 2001 – Report produced by Sustain: The Alliance for Better Food & Farming
Peer-reviewed	2000 – Unknown 2001 – Unknown
Author's discipline	Dibb - Senior Policy Officer for the National Consumer Council [*previously co-director of the Food Commission*]
Funding source	Commissioned by the Co-operative Group.

DIBB 1993

Relevant to Systematic Review 1 Questions 1(1), 1(2), 2(1), 2(2) and 3(1).

Promotional Channel UK, television advertising (seen as the dominant medium)

Design Reviews previous data (cites 'new' data not included elsewhere in this review), undertakes an audit of advertising spend, undertakes an audit of advertising spend, undertakes a content analysis of television advertising and presents case studies.

Sample ' New' content analysis data is provided from recordings of two samples of one week of children's hour television advertising. The recordings undertaken by the Food Commission in 1990 and 1992, yielded 92 and 190 adverts respectively. Advertising spend data for 1992 (by product category) from *Register-MEAL* figures is also presented.

Method Review

Measures The review examines both the extent (in terns of advertising spend) and nature of food promotion to children, and also undertakes an analysis of time trends in food promotion to children.

Statistical analysis Only descriptive statistics are reported.

Results In terms of advertising spend, the review reports that in 1992 food and soft drinks were advertised on television more than any other product sector (£523 million). Figures for only above-the-line advertising spend by food product category are also provided: cereals (£83.9 million) chocolate confectionary, excluding sugar confectionary (£72.7 million), soft drinks (£55.7 million) coffee (£32.0 million), tea (£31.6 million), potato crisps and snacks (£22.6 million), ice-cream and lollies (£19.4 million), margarine & low fat spread (£18.8 million), cheese (£16.9 million), fresh & frozen meat & poultry (£16.9 million), frozen ready meals (£16.0 million), yoghurt (£15.4 million), milk & milk products (£14.7 million), stocks & stock cubes (£13.8 million), cooking sauces (£13.2 million), frozen vegetables (£10.7 million) and butter (£8.5 million).

Excluding tea and coffee, the products with the highest spend are reported to include brands heavily advertised to children. In contrast, advertising spend for fresh fruit & vegetables was reported as only £4.5 million in 1991.

He review also mentions "below-the-line" marketing and gives examples of other promotional channels including; comics (little used except for one off promotions), in-school promotion, computer games, sponsorship, packaging and free gifts (toys and collectables).

The review also includes case study analyses of complaints about inappropriate marketing:

- *Milky Way* – "you can eat between meals without ruining your appetite"
- *Mars* - "A Mars a day helps you work rest and play"
- *Kellogg's* – reports on a misleading claim that a bowl of corn flakes with semi-skimmed milk had less fat than a slice of brown toast with low-fat spread.
- *Farley's bed Timers* – suggestion that a sugared drink had put a baby to sleep.
- *Lucozade* – celebrity endorsement by Daley Thompson

The review also cites data from other content analyses of food promotion. Eg. The Food Commission (1990) 'Sweet *The Food Magazine*, 9(1). Reports on a content analysis that found that 53% of 92 adverts (from four hours of Saturday morning television were for food or soft drinks): eight times higher than any other category or an average of 10 per hour. The review states that 78% were for pre-sweetened cereals, sweets, crisps, fast-foods, soft drinks and other products high in sugars, fats or both. In contrast, states only 10% could be described as encouraging a healthy diet.

The review also cites the follow-up study: The Food Commission (1992) 'A diet of junk food adverts – part 2'. *The Food Magazine*, 18(2). A content analysis of 190 adverts recorded from children's television during one week in May 1992. The analysis found that 47% of adverts were for food or soft drinks. The following breakdown is provided by food product category: sweetened cereals (32%), confectionary (16%), fast-food (10%), bagged snacks (6%), soft drinks (6%), butter (6%), milk (6%), ice cream (4%) and others (14%).

The review also cites findings from Young B (1987) *Sugar, children and television advertising*. Health Education Authority Report No 15. This content analysis of 1750 adverts shown after-school during 1983/84 reported that 33% of adverts were for food, and that 34% of these were for sugared products. The current review concludes that the frequency of adverts for such products is increasing in comparison to the above.

Findings from Castell A (1988) The rattle of stick in a swill bin. Post graduate Diploma in Health Education (not elsewhere included in this review) are also reported. This content analysis found that 62% of all food and drink adverts on TV-AM were for sugar-containing foods and that 48% were highly sugared. Of these adverts, 80% were for soft drinks, sweetened cereals, confectionary and ice cream.

cont.…

DIBB 1993

Results continued …..	Findings from Donkin A (1992) The effects of television advertising on children's food preferences and the nutritional implications. PhD thesis Nottingham University (not elsewhere included in this review) are also reported. This study compares all adverts on UK commercial television broadcast in first six months of 1991 with child audience ratings. The study reports that such adverts are "slanted towards snack/convenience foods" that are often high in added sugar (50 - 55%), high fat products (45 - 50%) or both (25 – 30%). Adverts for fresh fruit and vegetables were almost "non-existent" (apart from an advert for grapefruit). Donkin's (unpublished) audience figures from the ***British Audience Research Bureau*** figures (BARB) for January 1st to July 1st 1991 compares the percentage of total food advertising time with the percentage of total child audience. For the Top 10 food product categories advertised during this time the respective percentages are: chocolate (15.11% : 12.94%), breakfast cereals (13.6% : 16.07%) frozen food (9% : 8.01%), prepared food (7.15% : 8.34%), carbonated drinks (6% : 6.24%), crisps & savoury snacks (4.66% : 4.39%) margarine & low fat spread (4.2% : 3.14%), biscuits & crisp-breads (3.92% : 3.97%) and restaurants & fast-food chains (3.41% : 5%). A medium scoring review of the extent of food promotion to children, and a lower scoring review of the nature of food promotion to children.
Published in	Report produced by the National Food Alliance (NFA)
Peer-reviewed	Produced in consultation with the National Food Alliance Working Party on Advertising
Author's discipline	Senior Policy Officer for the National Consumer Council [*previously co-director of the Food Commission*]
Funding source	For National Food Alliance (NFA) now Sustain

DIBB & CASTELL 1995

Relevant to	Systematic Review 1 Questions 1(1), 1(2) and 2(1).
Promotional Channel	UK, television advertising (broadcast).
Design	Content analysis of television advertising.
Sample	Two content analyses were undertaken in the UK during the weeks 11-17 June 1994 and 1-6 May 1995. Both weeks involved 35 hours and 20 minutes of viewing. Observations were made during ITV's children's hour (8 hours 20 minutes), Saturday morning television (7 hours), the Big Breakfast (10 hours) and late evening post-9.30-watershed aimed at adults (10 hours).
Method	Tapes viewed and all advertisement categorised by type of product (for food advertisements type of food product), and a nutritional assessment of the advertised food product.
Measures	The study took measures of the extent of food advertising, and also made comparisons between children's and adult television viewing (post-watershed) and comparisons with the recommended diet (National Food Guide).
Statistical analysis	Only descriptive statistics are reported.
Results	Food adverts constituted seven out of 10 adverts on Children's ITV (C hour), five out of 10 for both Saturday morning television (SMTV) and the Big Breakfast (weekday mornings), and only two out of 10 after the watershed. This is the inverse of the proportion of adults who watch at each time. In terms of nutritional assessment, adverts for food products high in fat, sugar or salt reached 100% broadcast during children's viewing times in 1994 and 98% in 1995. Advertising for such products during adult viewing time was 96 and 86% respectively. The national food guide recommended diet defines five products and how much should be consumed of each. These are Bread, other Cereals & Potatoes (34%), Fruit & Vegetables (33%), Milk & Dairy products (15%), Meat, Fish & alternatives (12%) and Fatty & Sugary Foods (7%). The advertised diet of advertisements for Bread, other Cereals & Potatoes ranged between 16 and 40% across the different viewing times. However, two-thirds of these were for breakfast cereals (mainly pre-sweetened) and only 8% were for bread. Only two adverts of 549 were for fruit. Between 0 and 5% of adverts were in the category of milk and dairy products although none were for low fat versions. Between 0 and 20% of adverts fell into the Meat, Fish and alternatives categories. However, none were for fish or low fat products. Advertising for fat and sugary products predominated, varying between 44 and 76% of all adverts observed (ie. six to 10 times more than recommended consumption of such products). The study concluded that the foods we should eat least are the most advertised, while the foods we should eat most are the least advertised. A medium scoring study of the extent of food promotion to children.
Published in	Report produced by the National food Alliance (NFA)
Peer-reviewed	Unknown
Author's discipline	Dibb - Senior Policy Officer for the National Consumer Council [*previously co-director of the Food Commission*]
Funding source	National Food Alliance (NFA) now Sustain.

DICKINSON R 1997 and 2000

Relevant to	Systematic Review 1 Questions 1(1) and 2 (1).
Promotional Channel	UK, television advertising and programming Non-commercial broadcast channels ie. BBC also included.
Design	Study 1 (Dickinson 1997): Content analysis of television advertising and programming (compares food references in television adverts with those in television shows). Study 2 (Dickinson 2000): Includes survey of young people in schools and interview with family (not relevant to this review).
Sample	Study 1 (Dickinson 1997): Two weeks UK television, 527 hours of output, 872 programmes of which 577 had references to food, yielding a total of 4997 food references. Including 1049 of food consumption, with 1785 characters eating. Looked at both 1,186 food adverts and also 1,049 portrayals of food consumption broadcast within the 872 programmes recorded (both commercial and non-commercial television). Taken from SMTV, C hour, prime-time and post-watershed. Of 2625 verbal references to food 52.4% were in programmes (not adverts), however this includes BBC, with approximately one third of food refs. Study 2 (Dickinson 2000): 223 children themselves (in schools, with a sub-sample of 50 involved in group discussions) and 12 families with 11-18 year olds.
Method	Study 1 (Dickinson 1997): Uses rating instruments (with "team" of 2). Study 2 (Dickinson 2000): Surveys, focus groups and home interviews.
Measures	Study 1 (Dickinson 1997): The study compares the extent and nature of adverts with the extent and nature of programmes Study 2 (Dickinson 2000): The study explores how young people interpret television (both advertising and programmes)
Statistical analysis	Study 1 (Dickinson 1997): Descriptive statistics are reported Study 2 (Dickinson 2000): Both descriptive statistics and qualitative data are reported.
Results	Study 1 (Dickinson 1997): Study reports on a content analysis of 1186 food adverts by the National Food Guide's five categories: Bread/cereal/potatoes (26.9%), fruit/vegetables (1.6%), dairy (9.4%), meat/fish/alternatives (15.4%) and fatty/sugary foods (46.8%). The study also reports on a content analysis of programmes (excludes 12.3% unclassifiable): Bread/cereal/potatoes (18.2%), fruit/vegetables (32.8%), dairy (9.6%), meat/fish/alternatives (16.0%) and fatty/sugary foods (24.3%). The study found that the high-fat sugared diet commonly found in other studies was present in the advertised diet, but not in the television programmes. The programme diet mirrored the recommended diet (by National Food Guide) regardless of whether these were fiction or non-fiction non-adverts. Study 2 (Dickinson 2000): This study states that young people were particularly adept at recalling the voice-overs in food adverts "almost verbatim." A medium scoring study of both the extent and nature of food promotion to children.
Published in	1997 – Report produced for Ministry of Agriculture Fisheries and Food (MAFF) now the Food Standards Agency (Food Standards Agency) 2000 – Nutrition and Food Science (journal)
Peer-reviewed	1997 - Unknown 2000 - Reviewed by only the editor in most cases
Author's discipline	Mass communications
Funding source	Original report conducted for Ministry of Agriculture and Fisheries

DOOLITTLE & PEPPER 1975

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 3(1)
Promotional Channel	USA, television advertising (3 major networks)
Design	Content analysis of television advertising (not food specific)
Sample	A recording of Saturday morning television on a single day (09/02/74) yielded 162 adverts. This comprised 63 discrete adverts running from one to eight times.
Method	The study used a coding instrument validated by pre-testing on a portion of the total sample of adverts. Both authors undertook coding which was assessed for reliability using two undergraduate students (reliability was reported at 94%).
Measures	The study takes measures of both the extent and nature of adverts.
Statistical analysis	Only descriptive statistics are reported.
Results	The content analysis of food adverts reported the following proportions: cereals (40%), sweets & gum (18%), snacks & soft-drinks (12%), meal food (7%) and other food (7%). The remaining adverts were for toys (7%) and other non-food products (8%). An analysis of the created strategies utilised in the advertising found that free gifts (toys) were promoted in 20% of adverts (all for cereals). Ambiance in the advertising, categorised as 'light' predominates, with only adverts for snacks and toys below 90%. In terms of the format of advertising, cereal adverts, 71% of cereal adverts, 12% of sweet adverts, 39% of adverts for snacks 0% of adverts for meals, 0% of other food adverts, and 0% of other product advertising had a mixed animation format. 7% of cereal adverts, 44% of sweet adverts, 50% of snack adverts, 50% of adverts for meals, 60% of adverts for other foods, 0% of toy adverts, and)% of other product adverts had an animation only format. Characters featured in the adverts were male dominated (84 -94%) and 75% of adverts used an announcer (this was not broken down by food product). A lower scoring study of both the extent and nature of food promotion to children.
Published in	Journal of Broadcasting
Peer-reviewed	Now published as Journal of Broadcasting & Electronic Media which is currently peer reviewed
Authors' discipline	Doctoral student at University of Wisconsin – discipline not stated
Funding source	Unknown

GAMBLE & COTUGNA 1999

Relevant to	Systematic Review 1 Questions 1(1), 2(1) and 2(2).
Promotional Channel	USA, television advertising 2 majors television channels ABC and CBS plus Fox and Nickelodeon. Excludes NBC as it was judged to have ceased SMTV children's programming.
Design	Content analysis of television advertising
Sample	16 hours of Saturday morning television were recorded during mid-January 1996 yielding 353 adverts, 222 (62.8%) of which were for food products. (Also included 33 public service announcements).
Method	Data from the recordings were "evaluated by the authors."
Measures	The study measures the extent of food advertising, and makes comparisons with the recommended diet (food pyramid) and time trend comparisons with other studies.
Statistical analysis	Only descriptive statistics are reported.
Results	The content analysis of food advertising showed that of the public service announcements, eight were nutrition related. Of the food adverts, 56.3% were for products in the 'bread, cereal, rice and pasta group' (and, if this, most were in the least healthy sugared cereals product category), 27% were for fast-food restaurants, 11% were for fats, oils and sugars according to recommended diet food pyramid definitions. The study provides a detailed list of products. The top advertised food product was high-sugar cereal (34.5%). 23.8% of food adverts were for kids meals (eg. *McDonalds*), and the typical advertised kids meal consisted "cheeseburger, French fries, soda and toy". The study also compared the food advertising trends from this 1996 sample with four other data sweeps: Gussow (1972), Brown (in 1976 – not included elsewhere in this review), Cotugna (1987) and Kotz and Story (1994). The comparison finds little nutritional change. No adverts were for fruit and vegetables. The study finds a ratio of 19.5: 1 sugared to non-sugared breakfast cereals (those reported in other comparisons studies range from 5:1 to 12.5: 1). A lower scoring study of the extent of food promotion to children.
Published in	American Journal of Health Behaviour
Peer-reviewed	Yes
Authors' discipline	Nutrition and Dietetics
Funding source	Unknown

GUSSOW 1972 and 1973

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), 2(2) [1972 only], and 3(1).
Promotional Channel	USA, television advertising Three majors television channels
Design	Content analysis of television advertising.
Sample	29 hours of Saturday morning SMTV were recorded on the last week of January 1972. 388 advertisements were observed, of which 82% were for ingestible items (including vitamin pills).
Method	8 students, a dietician, and a nutritionist viewed the adverts which were analysed by the author.
Measures	The study addressed both the extent and nature of advertising.
Statistical analysis	Only descriptive statistics are reported.
Results	Of the 319 food adverts: 38.5% were for breakfast cereals (particularly *Kellogg's*), 17% were for "cookies, candy, gum, popcorn and other snacks", 15% were for vitamins, 8% were for beverages & beverage mixes, 7.5% were for frozen waffles & pop-tarts, 5% were for canned pasta, with the remaining 9% comprising adverts for canned-deserts, frozen dinners, drive-ins, peanut butter and oranges (*Sunkist*, termed as the "one positive note"). In terms of inappropriate marketing, the study comments on adverts for vitamins that are advertised with the slogan, "to keep you growing right even if you don't eat right" – calling these "offensive" (especially the advert for chocolate covered vitamins). The study also states that television programmes are themselves counter-nutritional. For example, *Sesame Street*'s cookie monster as described as an in programme celebrity. The analysis observed no adverts for milk products (except hot cocoa mix),and no adverts for eggs, meat, cheese, vegetables and fruit. The study comments that a company (*Libby*) who sell fruit, meat and vegetables, had advertising for a set of three "fun" frozen meals containing a strangely imbalanced mix of high-carbohydrate foods, that in the words on the box "youngsters prefer". The dinner comes complete with a packet of "chocolaty super stuff" to add to your milk the whole "seasoned and proportioned for the younger tummy" whatever that means – and another example (*Kraft*) who sell milk, cheese, yoghurt and ice-cream, yet who's only advertised product is candy. A lower scoring study of the extent and nature of food promotion to children.
Published in	1972 - Journal of Nutrition Education 1973 – Clinical Pediatrics (journal)
Peer-reviewed	1972 – Currently peer reviewed 1973 – Currently peer reviewed
Author's discipline	Nutrition
Funding source	Not stated

HAMMOND ET AL 1997a

Relevant to	Systematic Review 1 Questions 1(1), 2(1), 3(1) and 3(2).
Promotional Channel	New Zealand, television advertising (Three national commercial television channels)
Design	Content analysis of television advertising (of individual adverts)
Sample	A total of 88 food adverts recorded during May, 1995 from the children's hours (4-6pm) and prime-time television (7-8pm).
Method	Qualitative assessment was undertaken as 13 adverts were analysed using panel of five 'experts. The remaining 75 adverts were analysed by one author.
Measures	The study addresses the nature of food advertising.
Statistical analysis	A qualitative analysis of the data is undertaken.
Results	A content analysis of the food advertising provided the following breakdown by food product category: snacks (*n* = 36), fast-food (15), cereals (11), dairy (8), past/rice (4), fruit/veg (6), drinks (3) others (5). The study also analysed theme appeals in food advertising and provide the following breakdown: acceptance (5%), achievement (2%), cool (3%), convenient (2%), desire (4%), energy (4%), family (6%), fresh/quality (4%), fun (12%), health (6%), nationalism (2%), natural (2%), power (3%), sex (4%), television (3%), solution (5%), sophistication (4%), special offers (3%), sport (2%), taste (17%), value (4%) and others (4%). The study also provided a breakdown of theme appeals by product category: snacks (taste 18%, fun 18%), fast-food (taste, 19%), cereals (health, 24%), dairy (taste 25%), past/rice (convenient, 21%) fruit/veg (taste 14%, natural 14%), drinks (energy/sport 22%) Note: some of these very small (eg. nationalism or sport 2% is five adverts). The study suggests that the themes appealing to young people are those that feature in advertising for low nutritional food products. The study concludes that food advertising is not consistent with nutritional guidelines recommendations. A lower scoring study of both the extent and nature of food promotion to children.
Published in	Report Produced by the Alcohol and Public Health Research Unit, University of Auckland
Peer-reviewed	Unknown
Authors' discipline	Research Unit specialising in alcohol, drug, nutrition, health promotion and evaluation fields.
Funding source	Funded by Health Research Council of New Zealand

HAMMOND ET AL 1997b and 1999

Relevant to Systematic Review 1 Question 1(1).

Promotional Channel New Zealand, television advertising
(3 television channels)

Design Content analysis of television advertising (people meter study)

Sample 15 hours of recorded children's hour (4-5pm) and prime time television (7-8pm) during weekdays yielded 276 adverts.

In addition, from a total of 440 households, 100 with 9-17 year-olds were metered over a period of three months.

Method The adverts recorded were compared with other studies and also with the 'people meter' (which measures what is actually watched). This latter technique was used as method to calculate levels of exposure to each advert.

Measures The study took measures of the extent of food advertising, exposure rates to television advertising and made cross-national comparisons.

Statistical analysis Only descriptive statistics are reported.

Results The content analysis provided a breakdown by food categories: confectionary/snacks 30%, fast-food 17%, soft-drinks 17%, breakfast cereals 17%, dairy 8%, pasta/bread 4%, fruit/veg 3%, retail food services 3% others 1%. Advertising for sweet snacks, fast-food services & restaurants, drinks and breakfast cereals comprised 84% of all food adverts.

People-meter study: The people-meter data shows how much of the 100 households with 17-19 year olds are reached by food adverts and how often they are viewed. These were multiplied together to provide an annual exposure rate. When metering is accounted for cereals become less salient. At the top is confectionary (68 adverts per 20 hours), with restaurants (52), drinks (27) breakfast cereals (24) and dairy products (12). (No adverts were for cakes & biscuits or fruit & vegetables).

When exposure rates were calculated from the above, sweet snacks were at the top with 1,121 advertising exposures plus 133 hours of promotions, from a total of 1,254 exposures, the highest product was chocolate ($t = 512$). Equivalents for other categories were drinks (18.5%), fast-food & restaurants (15%), breakfast cereals (14%), dairy products (4%) and nuts/pulses/beans (4%). Taken together with all others (15.5%) the total was 4,298 exposures (3,803 adverts and 495 promotions).

Comparisons were made with a 13 country study by Dibb (1996), and also Morton (1990) whose food categories where used in this study. In this comparison the UK had 54 adverts per 20 hours for confectionary (2nd to Greece amongst the 13 counties), 32 hours of breakfast cereals (equal 3rd) and 23 for restaurants (4th). No UK adverts per 20 hours were for cakes & biscuits, fruit & vegetables and dairy products. New Zealand were 3rd for food, top for confectionary, and 2nd fast-food.

A medium scoring study of the extent of food promotion to children.

Published in 1997 – Report produced by the Alcohol and Public Health Research Unit, University of Auckland
1999 - Australian and New Zealand Journal of Public Health

Peer-reviewed 1997 – Unknown
1999 – Yes

Authors' discipline Research Unit specialising in alcohol, drug, nutrition, health promotion and evaluation fields

Funding source Health research Council of New Zealand

HAWKES 2002

Relevant to	Systematic Review 1 Questions 1(1), 1(3), 2(2), 3(1), and 3(2).
Promotional Channel	USA and various developing countries, various promotional channels Also looks at branding (of fast-foods and soft drinks only).
Design	Exploratory review
Sample	Examines the literature centring on four products - *Coke*, *Pepsi*, *McDonalds* and Yum! (*KFC* and *Pizza Hut*).
Method	Review is based on company news releases, industry journals, press articles and ("to a lesser extent") academic literature, obtained via English language databases, library materials and websites.
Measures	The review addressed promotional spend and examined the nature of promotions in new (global) markets.
Statistical analysis	None are reported.
Results	In terms of extent, the review reports that the main food brands are all in top 100 global advertising spenders and this is increasing especially, outside the USA. Promotional spend in the USA remained relatively stable between 1994 and 2000 in the USA ($2, 353 to $2,347 million), but has greatly increased elsewhere ($1,172 to $2,211 million). The review also examines the promotional channels being used to promote foods and this includes television ("magic moment experience" rather than food appeal), adverts in press or on signage, television programming and movie tie-ins, the internet, point-of-sale, in-service marketing (including schools) and (sports from Olympic to local) sponsorship. The creative strategies described include 'glocal', novelty driven, premiums (free collectible-toys), children's meals (happy meals), children's mascots, birthday parties, kids web-sites (free internet access at point-of-sale), kids clubs with rewards for loyalty (ie. brand building). The review make reference to a *McDonalds* Snoopy promotion in South East Asia, where a toy doll dressed in a different cultural costume every day for 28 days was given away with the purchase of an Extra Value Meal. This caused controversy when a paediatrician stated that if a child ate an extra value meal for 28 days it would gain a kilogram in weight. The promotion was also run in china, where six meals had to be purchased before a toy was given away. Television adverts are based on the following themes: family values, friendship, local tradition, rebel/romance for teens and fun and excitement for children. (eg. cartoons). A medium scoring review of both the extent and nature of food promotion to children.
Published in	Published in a report produced for the World Health Organization (WHO) entitled 'Globalisation, Diets and
Peer-reviewed	Unknown
Author's discipline	Food Policy Consultant
Funding source	World Health Organization (WHO)

HILL & RADIMER 1997

Relevant to	Systematic Review 1 Questions 1(1), 2(1) and 3(1).
Promotional Channel	Australia, television advertising Three broadcast channels. One non-commercial channel and one channel with low ratings were excluded from the analyses.
Design	Content analysis of television advertising.
Sample	27 hours of television were recorded yielding 239 separate adverts for 275 food products.
Method	Children's programmes were selected using an Australian regulatory code and included weekday morning television aimed at under-10s. The study used Kotz and Story's (1994) coding system, with reliability between two coders.
Measures	The study examines the extent and nature of adverts and makes comparisons with the recommended Australian diet.
Statistical analysis	Only descriptive statistics are reported (N.B. this is one of the better descriptive articles).
Results	The study also look at public service announcements (PSAs) but of 29 PSAs, none were for food-related To examine the extent of food advertising, a breakdown of advertising time was provided by food group: 'Foods high in fat and/or sugar = 48.0% (chocolate the most advertised within this category @ 24.9%), Fast-foods = 28.5%, Cereal/Bread/Rice/Pasta = 9.1% (excludes 9.3% high in sugar, includes 4.8% low sugar breakfast cereals), Fruit (including canned) = 5.9%, Dairy products = 2.8%, Vegetables = 0.8%, Meat/Fish/Alternatives = 0%, others = 4.8%. To examine the nature of food advertising, an analysis of disclaimers looked at messages consistent with dietary recommendations and found: to eat more bread and cereals = 11.7%, to eat foods containing iron = 11.7%, to eat a variety of nutritious foods = 2.9%, to decrease total fat intake = 1.7%, to decrease total sugar intake = 1.7%, to increase food and vegetable intake = 0.8%, to increase fibre intake = 0.8%, to limit salt intake = 0.8%, to maintain a healthy body weight = 0% and to eat foods containing calcium = 0%. In total only 17% of adverts had at least one such message. An analysis of theme appeals revealed the following percentages of food advertisements with implicit and explicit consumer-related/promotional messages (implicit messages in brackets): gifts 20.1% (-), taste 15.5% (33.9%), fun 14.2% (36.0%), cool 13.4% (9.2%), popularity 0 (4.6%), competition 2.9% (-). An analysis of nutritional appeals revealed the following percentages of food advertisements with explicit nutritional messages: vitamins = 13.8%, minerals = 11.7%, natural/pure/fresh = 11.3%, wholesome/goodness = 7.1%, healthy/nutritious = 4.2% (with 16.7% implied) and breakfast is important (2.9%). The study also looked at additional foods within the item being promoted. The top two were Fruit = 9.6% (mainly in cereal advertising) and Vegetables = 5.8% (advertised in pizza or a sandwich). The study was critical of the use of terms such as "natural" and "wholesome goodness", which tended to apply to chocolate products (27 of 38 and 14 of 17 respectively). The study concludes that only cereals are a healthily promoted food meeting recommended nutritional guidelines and targets. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Australian Journal of Nutrition and Dietetics
Peer-reviewed	Yes
Author's discipline	Research Dietician [*based at the Department of Social and preventative medicine, University of Queensland*]
Funding source	Supported by Queensland Department of Health

HORGEN ET AL 2001

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 1(3), 2(2) and 3(1).
Promotional Channel	US/International, television advertising (including US in-school marketing television).
Design	Review article (focused on fast-food advertising and trends in obesity)
Sample	Review based on the International literature.
Method	An international review article.
Measures	Review addressed the extent and nature of food promotions, and marketing spend.
Statistical analysis	None
Results	The review includes television advertising spend data and states that 24 of the top 100 campaigns of the 20th century were for food products. In 1997 $1.4 billion was spent on the promotion of food and food products in USA, with a further $1.2 billion on restaurants and drive-ins on network television, and $369 million on independent television. The category of soft-drinks/snacks/confectionary was reported to have the 4th biggest advertising spend at $144 million. Restaurants and drive-ins were the top advertised category on local television, with a reported $1.3 billion spent in 1997 (this is more than twice the next biggest category: auto dealers with $455 million). *McDonalds* moved from the 5th to the 2nd biggest US advertiser between 1900 and 1992, and by 1997 was believed to be the most prolific advertiser in Europe. The company are claimed to have stated that 40% of its adverts directly target children, and that the average child sees a *McDonalds* advert almost every second day. The review includes an analysis of **in-school** marketing, and states that eight million children see US in-school television *Channel 1*. This is a 10 minute news programme with two minutes of adverts which provides schools with televisions, VCRs and satellite dishes. The review cites figures that state that 69% (31/45) of adverts featured on *Channel 1* in a four week period were for food, including gum, soft-drinks, fast-food, candy and snacks. The review highlights the paucity of research in this area (eg. analyses of cafeterias with fast-food outlets or vending machines). A medium scoring review of both the extent and nature of food promotion to children.
Published in	Singer DG, Singer JL (eds). *Handbook of Children and the Media* . Thousand Oaks, CA: Sage Publications Inc.
Peer-reviewed	Unknown
Authors' discipline	Horgen - Yale Centre for Weight and Eating Disorders
Funding source	Unknown

JI & McNEAL 2001

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), 2(2), 3(1) and 3(2).
Promotional Channel	USA/China, television advertising Five Chinese channels (two national, two local, one cable) and four four US channels, which broadcast 90% US children's programmes (*ABC*, *FOX*, *Nickelodeon* and *WBkids*).
Design	Content analysis of television advertising (study compares children's advertising in the USA and China, and looks specifically at food because this category is so dominant in the latter.)
Sample	Adverts were recorded during four months over 18 month period, because Chinese adverts tend to run unchanged for six months. This yielded 431 adverts identified as being aimed at children: 299 in USA and 132 from China. Adverts were taken from both Saturday morning television and the children's hour.
Method	The study uses two raters (male/female and English/Chinese speaking). Reliability between raters was reported as exceeding 0.80.
Measures	The study addresses both the extent and nature of television advertising and makes international comparisons.
Statistical analysis	Both descriptive and inferential statistics (chi-square) are reported.
Results	The content analysis found that 81.8% of Chinese adverts were for food, compared with only 30.8% in USA, where toys (55.5%) were the top advertised product. The study reports that this is because of famine versus fun. In the USA, the adverts were more fun focused, in China more health focused. In the USA commercials were typically longer (25.5 versus 20.7 seconds). There was also statistically more adult voiceovers (announcers) in the USA (75.5 versus 62.9%) and also more speaking characters (37.1 versus 18.9%). Some food specific differences are reported as Chinese adverts were more likely to show the product in use (57.4% versus 71.8%, compared with 74.2 and 78.3% for all products). USA advertising featured less health appeals (7.0 versus 38.6%) and convenience appeals (2.0 and 6.1%), but more fun (43.5 versus 14.4%) and adventure (14.7 versus 3.0%) appeals than Chinese advertising. Chinese adverts had a greater popularity appeal (4.0 versus 12.1% - Confucian). However, Chinese products also more likely to give info on quality (2.7 and 25.8%) and texture (1.0 and 14.4%). US foods also more likely to sell on uniqueness (18.2 versus 34.0%, compared with 12.4 and 14.1% for all products). In 10/132 Chinese commercials the brands featured were all non-Chinese, with *KFC*, *McDonald's* and *Oreo* cookies common to both. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Journal of Advertising
Peer-reviewed	Yes
Authors' discipline	Marketing
Funding source	Unknown

KLEBBA ET AL 1994

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1) and 3(1).
Promotional Channel	USA, Television advertising Three major television channels (ABC, NBC & CBS) and two cable channels (Fox and Nickelodeon).
Design	Content analysis (not food specific)
Sample	Comprises one week in February 1992 of Saturday morning television (SMTV) and the Children's hour (6.00 am to 9.00 am weekdays; 7.00 to 11.00 am weekends). Researchers recorded 110 hours of programming and randomly selected 50 hours for analysis. 135 advertisements were recorded from these 50 hours of which 67% advertisements had at least one disclaimer. (Local and regional advertisements and public service and programme announcements were excluded from the analysis.)
Method	Programming was videotaped and the recordings viewed by two judges. Judges categorised each commercial by product category, form (audio, visual or both), language (adult versus less technical) and phrasing of the disclaimer. Agreement between judges ranged from 85% to 90%. Researchers repeated the methods of Stern and Haron (1984) in order to make time trend comparisons.
Measures	The study took various measures of the extent and nature of disclaimers in children's advertising (including incidence, form, position, language, product categories, phrasing, gender in terms of voiceovers, and clarity of disclaimers). It also looked at time trends in the use of disclaimers in children's advertising.
Statistical analysis	Both descriptive and inferential (chi-square) statistics were used.
Results	A content analysis of television advertising was undertaken by product category: cereals (31.1%), toys (48.4%), restaurants (6.6%), candy (0.8%), other foods (12.3%) other products (0.8%). A content analysis of disclaimers in advertising by product category was also undertaken: cereals (32.2%), toys (52.2%), restaurants (3.4%), candy (1.1%), other foods (10.0%) other products (1.1%). These figures were examined using Chi-square analysis, which demonstrated that, with the exception of breakfast cereals, food advertisements were significantly less likely to have disclaimers than non-food advertisements (ie. toys) aimed at children. Cereals were also significantly more likely ($X2 = 10.63$, $p< 0.03$) to use both audio and visual disclaimers (31%) than toys (14%) or others combined (9%). Time trend analyses were also performed with data from Stern & Haron (1984) which revealed that use of disclaimers in children's advertising has risen - cereals from 88.5% to 97.7%, toys from 58.1% to 87.0%, restaurants from 10.7% to 75.0%, candy from 0 to 9.1%, other foods from 0 to 30.1% and other products from 0 to 16.7%. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Proceedings of the 1994 Conference of the American Academy of Advertising
Peer-reviewed	Yes
Authors' discipline	Marketing
Funding source	Unknown

KOTZ & STORY 1994

Relevant to	Systematic Review 1 Questions 1(1) , 2(1), 2(2) and 3(1).
Promotional Channel	USA, television advertising *ABC, CBS, NBC, Fox* and *Nickelodeon*.
Design	Content analysis of television advertising.
Sample	52.5 hours of Saturday morning television were recoded from three mornings between October 1991 and February 1992. This yielded a total of 997 adverts, most of which (56.5%) were for food) and including 68 public service announcements (10 of which were nutrition related).
Method	The study used an adapted recording instrument, and a formula to calculate "intrarater reliability".
Measures	The study addressed both the extent and nature of food adverts, and makes comparisons with the recommended diet (Food Pyramid).
Statistical analysis	Only descriptive statistics are reported.
Results	The content analysis of 564 food adverts classified 46.3% as 'fats, oils & sweet food' group in the US recommended diet food pyramid. The product groups 'bread, cereal, rice & pasta' were represented in 37.5% of adverts, fast-food restaurants in 10.8% of adverts (*McDonalds*, *Burger King* and *Pizza Hut*), 'milk cheese & yogurt' in 4.5% of adverts, and 'meat, poultry, fish, dry beans, eggs & nuts' represented in 1.8% of adverts. There were no adverts for fruit or vegetables. By individual products, sugared cereals the most advertised product (23.0%), followed by candy (15.0%), cereal with sugar as the main ingredient (10.3% - recorded in 'fats oils and sugar food group', rather than the 'bread, cereal, rice and pasta' group), low sugared cereals (6.0% - less than 20% sugar by weight) and soft-drinks (5.6%). When examining creative strategies, authors rated whether each advert contained explicit or implicit messages (n.b. levels of viewer reliability on each measure are reported). This process rated 2.4% of food adverts as containing an explicit "healthful & nutritious" message. This is behind "taste" (36.2%), "free toy" (16.9%), "fun" (16.7%) and However, the author's rate 49.1% of adverts as containing implicit "healthful & nutritious" messages, the top implicit message. Most commonly resulting from "a complete/balanced/nutritious breakfast claim". Other implicit message ratings being "taste" (35.9%), "fun" (29.1%), "cool or hip" (10.3%) and "convenient" (7.3%). The study concludes the diet of the Saturday morning pyramid is the "antithesis" of the recommended diet. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Journal of the American Dietetic Association
Peer-reviewed	Yes
Authors' discipline	Kotz – Nutrition Story – Epidemiology and Public Health
Funding source	Part-funded by Maternal and Child Health Bureau

KUNKEL & GANTZ 1992

Relevant to Systematic Review 1 Questions 1(1), 1(2) , 2(1), 3(1) and 3(2).

Promotional Channel USA, television advertising
Three majors television channels, two local channels and two cable channels.

Design Content analysis of televisions advertising (not food focused).

Sample The study used a very large sample of adverts. 604 hours children's television were recorded from Saturday morning ..30-5pm) and weekday morning television (6.30-9am). This yielded 10,325 adverts.

Method The study used a validated coding system, 19 trained raters and reports reliability statistics of 88 to 98% (n.b. this is much more thorough than most other content analysis studies examined in this review).

Measures The study addressed both the extent and nature of adverts, and draws comparisons between three media: network broadcast television, local broadcast television and cable television.

Statistical analysis Both descriptive statistics and inferential statistics (*F* and chi-square) are reported.

Results The content analysis finds significant differences across television networks, by the number of adverts: more feature on network broadcast television and fewest observed on cable channels). Differences are also observed in terms of the diversity of products. The authors state that this may be due to lower costs or lack of regulation. The study cites an (unethical) phone-line advert.

The content analysis provides a breakdown by product category by all three media: For major television channels: toys (17.2%), cereals (31.2%), snacks and drinks (32.4%), fast-food (8.7%,) healthy food (4.6%), other (5.8%).

For local television channels: toys (42.1%), cereals (22.7%), snacks and drinks (15.6%), fast food (5.6%), healthy food (1.7%), other (12.4%).
For cable television channels: toys (24.7%), cereals (15.9%), snacks and drinks (15.8%), fast food (3.8%), healthy food (4.3%), other (35.5%).

Toys comprised 33.8% of adverts across all media, cereals and breakfast 22.4%, snacks and drinks 18.4%, fast food 5.7%, healthy food 2.8% and other 16.9%.

Same food products dominate, but especially in broadcast networks, toys more on independents, other products remarkably more on cable.

The study also reports on an analysis of theme appeals in advertising in terms of fun, flavour, performance, social context, power, appearance, personal gain, texture and other. These are broken down respectively in percentages by product category: toys 25.3, 1.6, 37.6, 3.6, 19.7, 4.9, 0.2, 0.1, 7.1 – cereals 15.4, 46.6, 2.6, 6.9, 0.6, 7.0, 1.8, 7.3, 11.9 – snacks & breakfast 26.1, 36.8, 4.4, 15.7, 0.5, 4.0, 1.7, 2.0, 9.0 – fast-food 71.9, 3.8, 2.3, 13.2, 0, 0, 1.9, 0.2 and 9.0 – healthy food 46.7, 15.7, 4.1, 6.1, 0.5, 4.6, 3.0, 0, 19.2 – other 27.5, 1.2, 23.7, 6.7, 3.7, 2.3, 17.9, 0.1, 16.9 – total 26.6, 18.8, 18.3, 7.7, 7.6, 4.6, 4.0, 2.1 and 10.4%.

The study also reports on the use of disclaimers in adverting. More than half of all advertisements featured disclaimers (*n* = 6,195). Percentage breakdowns in terms of the proportion of audio, video and both audio and visual disclaimers respectively are provided by product category: toys 33.4, 47.3, 19.6 – cereals 87.3, 4.6, 8.1 – snacks & drinks 17.7, 68.9, 13.4 – fast-foods 14.1, 58.7, 27.2 – healthy food 42.9, 57.1, 0 – other 16.2, 31.6, 52.2 – total 49.6, 32.1 and 18.3%.

A higher scoring study of both the extent and nature of food promotion to children.

Published in Journal of Communication

Peer-reviewed Yes

Authors' discipline Kunkel - Communication
Gantz - Telecommunications

Funding source Supported by grants from the Children's Advertising Review Unit of the National council of Better Business Bureaus and the Academic Senate of the University of California

KURIBAYASHI ET AL 2001

Relevant to	Systematic Review 1 Questions 1(1), 1(2) and 2(1).
Promotional Channel	USA, television advertising 4 network channels: *ABC, NBC, CBS* and *UPN.*
Design	Content analysis of television advertising.
Sample	Recordings of Saturday morning television (9-10am) and prime-time television (8-9pm) in mid-September 1997 yielded 145 and 136 adverts respectively.
Method	Food advertisements were analysed for nutritional content. Foods featured in the advertising were coded as 'unhealthy' by two raters if**:** a) more than 30% of the product's calories were from fat b) the product contained more than 360 mg sodium per serving c) the product contained more than 35 mg cholesterol per serving, d) more than 33% of the product's calories were from sugar or if more than 1/3 of the product's ingredients are sugar or sugar derivatives. The coding was completed with a reported 99% reliability.
Measures	The study examines the extent of food advertising, and makes comparisons between children's advertising and advertising featured in prime-time television.
Statistical analysis	Both descriptive statistics and inferential statistics (chi-square and *t* test analyses) are reported.
Results	27.0% of adverts during Saturday morning television, and 16.8% of adverts during prime-time television were for food products. Non-significant differences were reported in the number of adverts featured during children's programming and prime-time television. Adverts were more likely to feature food products on during Saturday morning television (27% compared with 16.8% of prime-time advertising). In terms of nutritional assessment: products high in fat featured in 50.0% of Saturday morning television and 65.2% of prime-time television; products high in sodium featured in 50.0% of Saturday morning television advertising and, 69.2% of prime-time television advertising; products high in cholesterol featured in 25% of Saturday morning television advertising and 17.4% of prime-time television advertising; products high in sugar featured in 50.0% of Saturday morning television advertising and 13.0% of prime-time television advertising. The total of adverts classified as featuring unhealthy products were 97.5% and 78.3% respectively. A t-test analysis found that products advertised during morning television were significantly more likely to be classified as unhealthy (overall) and high in cholesterol or sugar. A medium scoring study of the extent of food promotion to children.
Published in	Children's Health Care (journal)
Peer-reviewed	Unknown
Authors' discipline	Kuribayashi – Psychology Roberts and Johnson - Clinical child psychology
Funding source	Unknown

LEWIS & HILL 1998

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), 3(1) and 3(2).
Promotional Channel	UK, Television advertising Two regional versions of national broadcast channel (ITV), and *Nickelodeon* and the *Cartoon Network* (both subscriber only satellite channels)
Design	The study featured a content analysis of children's television advertising and a consumer study (not relevant to the current review questions).
Sample	For the content analysis, 91.33 hours of children's broadcasting were recoded during January and February 1996. Programming was recorded from Saturday morning television (SMTV between 7 and 11am) and the Children's hour (3.30-5.10pm). This yielded 828 adverts for analysis. The consumer study used a sample of 103 children (mean age: 9.75 years) from two junior schools in the UK.
Method	A coding instrument for advertisements was piloted for the content analysis and three raters reliability statistics used. For the consumer study, children were shown two cartoon videotapes, each had an advertisement break, one contained food advertising and the other did not. with 27.0 and 16.8% being for food. Children were instructed to rate, on nine-point scales, how they felt, before and after each tape (items on body satisfaction, self-esteem, mood and appetite were included). Body mass index (BMI) measurements were taken and the 10 fattest children were assigned to an over-weight group (they were above the 97th percentile by British age standardised norms). A comparison group of normal weight was calculated by taking the quartile closest to the median BMI.
Measures	The content analysis examined the extent and nature of adverts, made comparisons between terrestrial and satellite channels and analysed time trends by comparison with another study. The consumer study examined the effects of viewing food adverts on children of different weights.
Statistical analysis	Both descriptive and inferential statistics (*Z* scores) are reported in the content analysis. Both descriptive and inferential statistics are reported in the consumer study.
Results	The content analysis provides a breakdown of advertising by food product: cereal 30.1%, confectionary/savoury snacks 29.8%, other food 34.3% and fast-food 5.8%. Comparisons are made with Dibb and Castell (1995), finding a reduction in food advertising from 62.8% to 49.4%, but still remaining the top advertised product category. Top food stuffs (60%) being confectionary, cereals and savoury snacks. Some evidence of a trend from fast-food to convenience foods (sauces, ready-meals etc.) which tended to be broadcast at tea-time (maybe seasonal, more toys in this study). The study also compares satellite and terrestrial television, finding <u>more</u> breakfast cereals on satellite television. It is difficult to partial out effects of time, season and channel. In terms of creative strategies, food adverts were reported as being significantly more likely to be cartoons, to use humour, to feature a story and to be mood-altering/fun in nature, but less likely to make claims of value for money. Food adverts more than toys, had magical/fantasy theme, as did child orientated adverts, which differed greatly across all products in comparison to food adverts only. Authors suggest this difference was less with food adverts so as child and parent watching together would influence decision to purchase. <u>ii) Consumer study</u> Found that fat children felt healthier and had a lowered desire to eat sweets after watching the food adverts. A medium scoring study of both the extent and nature of food promotion to children.
Published in	International Journal of Obesity
Peer-reviewed	Yes
Authors' discipline	Based at Division of Psychiatry and Behavioural Sciences, School of Medicine, University of Leeds
Funding source	Unknown

LONGMAN 2000

Relevant to	Systematic Review 1 Questions 1(1), 1(3), 3(1), 3(2) and 3(3).
Promotional Channel	UK/International, various promotional channels (especially television and product innovation)
Design	Review (including an industry survey and an exploration of potential future trends)
Sample	The review uses a convenience sample, an industry Opinion Survey by *Datamonitor* and reports figures from *Consumers International* (1996).
Method	Speculative Qualitative Case Studies
Measures	Reports on new product innovation, future trends in marketing food products to children
Statistical analysis	The report contains no statistical analysis.
Results	The Industry Survey by Datamonitor identifies future trends in marketing to children (as more they experience more economic independence due to more money and family structure change). Targeting tools that are described as likely to decrease in use in the future are licensed characters and in/on pack promotions. Those reported as likely to increase in the future are healthy products and fun food. In terms of fun tools, the use of characters, in/on pack promos and collectible toys are likely to decline in use in the future, and .use of interaction, play with food, and competitions is likely to increase or remain the same. The following creative strategies are identified for use with the different groups: a) Children – Shapes, cartoons (novelty and pleasure), no health b) Adolescents – Cool style, some health c) Adults – Convenience, much health d) Family (biscuits) combining Bipartite relationships - child as: independent buyer, able to exert influence over other buyers for products for themselves or influence other buyer for products for the buyer, and as a future buyer. Case studies (in terms of appeals in promotions) are also described: • Kraft *Lunchables* – convenient for mum • Quaker *Dinosaur Eggs* – fun for kids health for mum • Yoplait Frubes – fun for kids, convenient and health Each of above undergoes a SWOT analysis, focusing on the interaction between health / convenience / pleasure Statistics on product launches are also provided by Datamonitor: Confectionary (38.2%), bakery/cereals 22.1%, dairy 10.6%, soft-drinks 9.1%, desserts 5.8%, meats 3.5%, snacks, 3.5%, ready meals 3.2%, canned food 2.1%, others 2.0%. A medium scoring review of the nature of food promotion to children.
Published in	Published by Datamonitor PLC for Reuters Business Insight as part of the Consumer Goods Reports range
Peer-reviewed	Unknown
Author's discipline	Consultant in Datamonitor's Consumer Goods Practice Area [*expert in area of food and drinks marketing strategy issues*]
Funding source	Reuters Business Insight

LONGMAN 2002

Relevant to Systematic Review 1 Question 1(1), 1(3), 3 (1) and 3(3).

Promotional Channel UK/International, Internet.

Design Exploratory review of food promotion via the internet (includes an analysis of children's food and drink product websites).

Sample Convenience sample and Industry Opinion Survey by *Datamonitor*.

Method Speculative
Qualitative
Case Studies

Measures Reports on the nature of Internet marketing to children and describes future trends in the marketing food products to children.

Statistical analysis The report contains no statistical analysis.

Results The report highlights the potential growth in on-line marketing, by examining various examples of children's food

Reports that UK youth (after US youth) spend more time online than youths in Germany, Sweden, Netherlands, France, Italy and Spain).

The report also describes some of the creative strategies being used by the food industry to market its products to young people over the internet. Apart from direct selling, strategies included the use of cartoon styles, music, quizzes, competitions, games, animations, educational content and links to other sites. These activities can be complemented by off-line advertising and promotion, to help to build a strong consumer-brand relationship, and the incorporation of parent/teacher-friendly material to ensure the child is not discouraged from accessing the web-site and links from other sites. In short, the site itself needs to be advertised and must also provide inducements so that it will be accessed in the first place.

As well as helping to build a strong consumer relationship with young people, internet advertising allows many more specific advantages of to the sellers. These include the addictive component of web-surfing, particularly games or other features which may foster repeat visits to the site. Sites having an educational content can lead exploit the use of the internet in schools (in-school marketing), and sites which encourage registration or participation in competitions can help firms collect consumer/market data to facilitate direct marketing (eg. a customer account).

The report presents some case studies of food and drinks promotions over the internet. Examples are shown of promotional web-sites for companies selling:

- United Biscuits *BN* - use of animation and brand imagery
- Eden Vale *Munch Bunch* – educational emphasis
- Nestlé *Nesquik* – use of games to encourage return visits
- Petits-Filous *Frubes* – use of animation, brand imagery and games
- Ferrero *Kinder Surprise* – parent friendly design
- *Tango* soft-drink – use of games, registration and soliciting for other products

A lower scoring review of the extent of food promotion to children and a medium scoring review of the nature of food promotion to children.

Published in Published by Datamonitor PLC for Reuters Business Insight as part of the Consumer Goods Reports range

Peer-reviewed Unknown

Author's discipline Consultant in Datamonitor's Consumer Goods Practice Area [*expert in area of food and drinks marketing strategy issues*]

Funding source Reuters Business Insight

MACKLIN & KOLBE 1984

Relevant to	Systematic Review 1 Questions 1(1), 1(2) and 2(1).
Promotional Channel	USA, television advertising Three major television channels.
Design	Content analysis of television advertising (of individual adverts). (Gender focused.)
Sample	A total of 144 adverts were obtained for analysis via three consecutive Saturday mornings (SMTV: 9am-12pm) on three major television networks (ABC, NBC, CBS) in 1982. Repetitions were excluded, yielding 64 unique commercials.
Method	The study used six judges (three male and three female), uses rater reliability statistics and excludes two measures for failing to reach a sufficient level of agreement. The study also makes comparisons with a range of other gender focussed studies.
Measures	The study looks at gender stereotypes in advertising (and only mentions food in this context once), and looks at trends in gender roles (not food time trends).
Statistical analysis	The study does report inferential statistics (ie. ANOVA), but provides only one descriptive mention of food adverts.
Results	Of the 64 adverts, more than two-thirds (69%) were for food. The sample differs from others which have only looked at toys, however the study still concludes that there are stereotyped sex roles in children's adverts. A lower scoring study of the extent of food promotion to children.
Published in	Journal of Advertising
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Both marketing
Funding source	Unknown

MESSNER ET AL 1999

Relevant to	Systematic Review 1 Questions 1(1), 2(1), and 3(1).
Promotional Channel	USA, television advertising Various channels – *ESPN, TNT, Fox Sports, TBS, ABC* and *NBC.*
Design	Content analysis of television advertising.
Sample	Advertising featured during sports programming during one week (May 23-29th, 1999) yielded 722 adverts for analysis.
Method	The research team and then one of two raters undertook a three stage coding process.
Measures	The study addresses both the extent and nature of advertising.
Statistical analysis	Only descriptive statistics are reported. A "qualitative textual analysis" was also undertaken.
Results	A content analysis of 722 adverts finds 11% are for snacks/fast-food (highest category was automobile adverts, 20.5%). The highest level of snacks/fast-foods advertising was found during wrestling (@ 21% - just behind automobiles) which was not regarded as a real sport by the authors, and this was the highest product category (14%) with extreme sports. An analysis of creative strategies revealed that some sponsorship (eg. "scores brought to you by…") and adverts or corporate banners were visible from the field of play or logos on equipment or opening shots [n.b this is not broken down by food category]. Some celebrity endorsement and tie-ins with branding (eg. baseball superstar hits into big Mac land – *McDonalds*) are also reported. A lower scoring study of both the extent and nature of food promotion to children.
Published in	Published as a report for Children Now
Peer-reviewed	Unknown
Authors' discipline	Messner - Department of Sociology, University of Southern California
Funding source	Commissioned by Children Now

MORTON 1984

Relevant to	Systematic Review 1 Questions 1(1), 1(2) and 2(1).
Promotional Channel	Australia, television advertising. 3 commercial television channels broadcast in Adelaide.
Design	Content analysis of television advertising.
Sample	120 food advertisements recorded between the hours of 4-6 pm everyday (4-5 pm being the children's hour and 5-6 pm being prime-time television) for five days (weekdays only) during one week in June 1984.
Method	Recorded advertisements were viewed and lists constructed of the number, type and duration of advertisements. These lists were not rated (although this probably was not necessary as the study does not measure the nature of advertisements).
Measures	The study took various measures of the extent of food advertising (eg. total duration in minutes and seconds, food advertisements as a percentage of all advertising, and food advertisements as a percentage of permitted advertising time during the children hour and prime-time). Comparisons were made across the three television channels and between the children's hour and the following hour (ie. prime-time television).
Statistical analysis	Only descriptive statistics are reported.
Results	30 hours of television yielded only 120 food advertisements (which averages four per hour and 2.5 per children's hour. These findings are less than have been reported elsewhere (eg. Stanton, 1982 = 6.4 per C hour). One channel (ADS-7) had no food advertisements during the children's hour, another (SAS-10) had six food advertisements and the third (NSW-9) had 32. Less difference between the frequencies of food advertisements was observed in the following hour (25, 26 and 31 food adverts respectively). Food advertisements were also analysed by food category. In total, only eight adverts were for breakfast cereals (all were for unsweetened cereals and none featured during the children's hour) compared with 44 adverts for confectionary, 18 adverts for pies/pasties, 10 adverts for fast food and 10 adverts for snacks, and only two adverts for soft drinks. Two adverts were for fresh fruit (apples), but these were then seen being baked into high-energy foods. The study concludes that although there is less food advertising to children in South Australia than elsewhere, it is still unhealthy. An lower scoring study of the extent of food promotion to children.
Published in	Journal of Food and Nutrition
Peer-reviewed	Unknown
Author's discipline	Nutrition and Social Health
Funding source	Unknown

Only 50 advertisements were for low-processed foods, and very few advertisements for such products were recorded during the children's hour.

However, the study notes that on one channel in the children's hour 93% of adverts were for food and that one programme that featured during the hour was sponsored by Kellogg's and McDonalds. Also observed, are differences in the promotion of food products across the different time slots. For example, the study reports that 32 cereal adverts that only featured during the children's hour used creative strategies such as "animation and special effects as well as 'bottom' humour designed to appeal to young children", whereas cereal products which made nutritional claims dominated in prime time. The study further states that some cereals made misleading claims concerning 'fibre', or claims of 'energy', 'natural cane sugar' and 'wholesome goodness'.

The research also noted only eight diet-related public-service announcements (fewer than 0.2 per hour).

A time-trend analysis was also undertaken by comparing data from similar studies from 1984 and 1986 (See Morton 1984). Although these trends reflect a drop in advertising in the children's hour (79.4 to 39.15 to 87.3), the number of food adverts is increasing (from 38 to 44 to 130) which actually means that the rate of food adverts per hour is also increasing (from 2.5 to 2.9 to 8.6).

A medium scoring study of the extent of food promotion to children.

Published in	Community Health Studies (journal)
Peer-reviewed	Unknown
Author's discipline	Nutrition and Social Health
Funding source	Unknown

MUEHLING & KOLBE 1998

Relevant to	Systematic Review 1 Questions 1(1), 2(1) and 3(1).
Promotional Channel	USA, television advertising. 3 major television networks (NBC, ABC and CBS).
Design	Content analysis of television advertising (not food specific).
Sample	Researchers recorded all programmes and adverts appearing between 8pm and 11pm (to represent the prime-time viewing group) from Monday through to Friday during one week in February 1990, and all programmes and adverts appearing between 7am and 11am for the first Saturday of every other month throughout 1990. This yielded 582 prime-time adverts and 552 children's adverts for analysis.
Method	The adverts were not coded by the authors but instead by two different pairs of trained raters who coded relevant information about each advert for each sample of adverts. Inter-rater reliability was fairly high (at more than 95%) and where any disagreements between judges did persist, the opinion of an 'independent' judge was sought.
Measures	The study took various measures of the extent of advertising and the nature of disclaimers.
Statistical analysis	Both descriptive and inferential statistics (*Z* score, *t* test, Chi-square) are reported.
Results	The content analysis of television advertising found that disclaimers in children's advertisements featured most often in toy adverts (38%), breakfasts (22%) and fast food restaurants (17%), compared with top prime-time disclaimers for food & snacks (22%), medicines (16%) and automobiles (15%). The study also reported that informational disclaimers (that explain what the product does do) were more likely to feature in adverts for toys (65 from 130), breakfasts (49 from 76), candy & gum (13 from 18), but that restrictive disclosures (that explain what the product doesn't do) were more likely to feature in adverts for fast-foods (61/59) (by these four categories – informational 65/130, 49/76, 13/18 and 30/59 – restrictive 39/130, 11/76, 0/18 and 61/59). No statistics provided as percentages as adverts may contain more than one type of disclaimer. From the data reported in this study, it is possible to extract content analysis data of children's advertising by product category: toys = 130, breakfasts = 76, fast-food restaurants = 59, snack food = 24, candy & gum = 18 and others = 38. Comparisons can be drawn with content analysis data of prime-time advertising by product category: food & snack = 88, medicines = 66, automobiles = 62, restaurants/retailers = 50, personal & beauty = 43 and others = 93. A medium scoring study of the extent of food promotion to children, and a higher scoring study of the nature of food promotion to children.
Published in	Journal of Advertising
Peer-reviewed	Yes
Authors' discipline	Both Marketing
Funding source	Unknown

OGLETREE ET AL 1990

Relevant to	Systematic Review 1 Questions 1(1), 2(1) and 3(1).
Promotional Channel	USA, television advertising. 3 major television networks (not stated).
Design	Content analysis of television advertising (primary focus of study is on gender portrayals and female attractiveness in television advertising).
Sample	Researchers recorded programming from nine Saturday mornings of children's televisions across three major television networks (three days per network) during September, October and November, 1988. This yielded 675 advertisements. Following the exclusions of public service announcements, advertisements for television programming and "advertisements that were clearly adult-oriented", 160 advertisements remained for analysis.
Method	The study used two independent raters (one male, one female) to "score" each advertisement. [For ratings of "appearance enhancement inter-rater reliability was 92.0%, for "sex of purchaser" inter-rater reliability was 93.8%].
Measures	The study took various measures of the extent of gender in advertisements (eg. number of male/female supporting characters, number of male/female main characters, gender of narrator, gender of intended customer, and "appearance enhancement of person, doll, or animal"). The study also categorises advertisements by product category. The study adopted a different angle as it looked at a lack of eating; food is not mentioned often, only advertisements with appearance enhancement qualities.
Statistical analysis	Both descriptive statistics (relevant to this review) and inferential statistics (not relevant to this review) are reported.
Results	The content analysis of advertisements by product category found that 60.6% of advertisements were for food products. In terms of the gender characteristics of these food advertisements, most of the adverts had male narrators, consumers or characters. Although only 22 advertisements were rated a "enhancing the appearance of a person, doll or animal", more female than male main and supporting characters were found in these advertisements. A lower scoring study of both the extent and nature of food promotion to children.
Published in	Sex Roles (journal)
Peer-reviewed	Yes
Authors' discipline	Ogletree - Psychology
Funding source	Unknown

RAJECKI ET AL 1994

Relevant to Systematic Review 1 Questions 1(1) and 3(1).

Promotional Channel USA, television advertising
Majors, cable and local channels

Design Content analysis of television advertising.

Sample 45 hours of major television networks, 30 hours of cable and 25 hours of local were recorded. The study looked only adverts for manufactured food meals, ("products that could be said to be a wholesome and nutritious part of one's diet"). This includes milk additives, cereals, frozen dinners, pasta, soup and toasted products, and excludes candies, cookies, snacks, chews and soft drinks. Also excluded were adverts for generic food stuffs.

This left 114 adverts for 46 products for analysis.

Method Transcription software was checked and rater reliability was used. Coding of advertisements was conducted on themes: each rated on three point scale, as major, minor or theme not present.

Measures The study addressed the nature of (meal) food adverts, and differs from the other studies identified in this review in the way that it looks at creative strategies, by story theme, rather than format or appeals.

Statistical analysis Descriptive and inferential statistics (including cluster analysis) are reported.

Results The adverts were categorised by meal-type: : Dry cereals (n = 88), toasted products (n = 7), canned pasta (n = 6), additives (n = 5), hot cereals (n = 5), frozen dinners (n = 2) and one soup advert. 96.5% of these made reference to breakfast or another meal time.

22 adverts did not contain stories, leaving a final sample of 92 adverts for story line analysis.

When examining creative strategies, the study identified seven story themes -
1. Achievement
2. Conflict
3. Dependence – significantly more live action characters
4. Enablement
5. Mood Alteration
6. Trickery
7. Violence – significantly more animated characters

These seven varied by creative strategy and produced six clusters of themes, with 64% of adverts clustered on some combination of violence, conflict and trickery.

The study also found four subtext themes –
1. Traditional
2. Practical
3. Emotional
4. Analytical.

All six story clusters were found to have a strong emphasis on emotional subtext, less on traditional and practical and lacked analytical themes.

The study provides an example of a high emotional/low analytical advert for *Kellogg's* where a boy subverts his parents by playing a violent video game as they comment on his sensible eating.

The study states that one new story line in an advert is generated for each hour of children's viewing.

It concludes that the negative themes of social strife, dishonesty and substance use are used in advertising of this kind.

A lower scoring study of the extent of food promotion to children and a higher scoring study of the nature of food promotion to children.

Published in Journal of Applied Social Psychology

Peer-reviewed Not stated on Journal website

Authors' discipline Rajecki - psychology

Funding source Unknown

REECE ET AL 1999

Relevant to	Systematic Review 1 Questions 1(1), 2(1), and 3(1).
Promotional Channel	USA, television advertising Broadcast and cable channels: *ABC*, *NBC*, *CBS*, *Fox*, *WB*, *UPN* and *Nickelodeon.*
Design	Content analysis of television advertising.
Sample	The study used audience figures to determine when children watch the most television and listings to identify children's programmes: essentially Saturday morning television and cable channels. Recordings were made during February and March 1997 (different channels were recorded each week in order to get more adverts and PSAs). This yielded 908 adverts, of which 416 were for food.
Method	A pilot test coding sheet was used. Judges were trained as raters and reliability statistics scores ranged from 0.74 to 0.98.
Measures	The study addresses both the extent and nature of advertising and makes time trend comparisons with previous content analysis studies.
Statistical analysis	Both descriptive statistic and some inferential statistics (Chi-square, *Z* scores) are reported.
Results	The content analysis provided a breakdown by food product category: : cereal 39.2%, fast-food restaurants 21.6%, candy/snacks 21.4%, beverages 4.8%, other breakfast 4.6%, other 4.3%, pasta 2.4% and PSAs 1.9%. An analysis of the nature of food advertising found few celebrities featured in advertising, but instead there were many cartoon characters. Cartoon images (or partial animation) was a feature of nearly half of the advertisements. Taste (n = 40) and fun (n = 37) were the main theme appeals used in food advertising. Time trend comparisons are made with Gussow (1972), Brown J (1977), Cotugna (1988) and Kotz and Story (1994). The study reports rising trends in the promotion of foods, however this is difficult to assess because of network changes. 45.8% of adverts were for food products, and this is significantly lower than previous studies. The study also reports a rise in advertising for fast food. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Macklin MC, Carlson L (eds) (1999). *Advertising to Children Concepts and Controversies*. Thousand Oaks, CA: Sage Publications Ltd.
Peer-reviewed	Unknown
Authors' discipline	Communication and the mass media [*special interest in children as consumers*]
Funding source	Unknown

SOLOMON ET AL 1982

Relevant to	Systematic Review 1 Questions 1(1), 1(2) and 2(1).
Promotional Channel	US, television advertising. Study 1: Three New York area television networks (CBS, NBC and ABC). Study 2: Two local New York Television stations.
Design	Content analysis of television advertising and interviews with 75 children (not food specific; pre-Christmas (toy) focussed and primarily interested in the portrayal of children in advertising).
Sample	Study 1: 37 adverts were recorded from three one-hour segments of children's television on three consecutive Saturday mornings in November 1978. Study 2: 130 adverts were recorded from six one-hour segments of weekday children's programming during September 1978 and November 1979.
Method	Study 1: Two raters tested the reliability of coding (reliability measured by total number of agreements over total number of disagreements: score: 0.87). Study 2: Only one rater was used to categorise commercials.
Measures	Both studies measured extent in terms of categorising the advertisements by product category. The study also categorised the behaviours of children in advertisements in order to analyse the portrayal of children in advertising. Comparisons were drawn across different television channels.
Statistical analysis	Only descriptive statistics are reported (from a small sample).
Results	Study 1: Of a total of 37 adverts, 63% were for toys, and 35% for food. Study 2: Of a total of 130 adverts in 1978 86% were toys and 6% were for food, and in 1979 71% of advertisements were for toys and 21% for food. The findings from these studies demonstrate that food is advertised less (and toys advertised more) outside the main television networks. An lower scoring study of the extent of food promotion to children.
Published in	Reported produced for US Department of Education
Peer-reviewed	Unknown
Authors' discipline	Lead author – unknown; Zoldessy J - School of Social Work, Hunter College; Rappaport-Taylor, B - New York City Board of Education
Funding source	US Department of Education

STERN & HARMON 1984

Relevant to	Systematic Review 1 Questions 1(1), 2(1), 2(2) and 3(1).
Promotional Channel	USA, television advertising. 3 major television networks (ABC, CBS and NBC).
Design	Content analysis of television advertising (primary focus on use of disclaimers in children's advertising).
Sample	Researchers recorded programming over six weeks in January and February, 1980 (two weeks of children's programming recording for each television network). This yielded 976 advertisements (including 162 public service announcements) from "programmes identified as "children's programmes" from "conversations with programme
Method	The study used one observer to categorise the advertisements according to predefined criteria. A sub-sample of 100 advertisements were examined and categorised by a second observer to assess reliability (with 100% reliability).
Measures	The study took various measures of the nature of disclaimers (eg. form, position, length and language and product categories using disclaimers). In also measured extent in terms of number of advertisements featuring disclaimers.
Statistical analysis	Only descriptive statistics are reported (note: not even full percentages are given).
Results	The study provides a breakdown of commercial advertisements by product category (the figures in brackets represent the percentage of advertisements featuring a disclaimer): Breakfast cereals n = 339 (88.5%), confectionary n = 114 (0%) toys n = 105 (58.1%), restaurants n = 50 (10.7%), health care n = 48 (0%), clothing n = 9 (0%), soft drinks n = 3 (0%) other foods n = 34 (0%) and other products n = 106 (0%). The study finds that breakfast cereals advertisements are most likely to have disclaimers of the "part of a nutritious breakfast kind". Apart from restaurants, disclaimers were absent from advertising for all other foods. An lower scoring study of the extent of food promotion to children and a medium scoring study of the nature of food promotion to children.
Published in	Journal of Advertising
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Both authors - marketing
Funding source	Unknown

TARAS ET AL 2000; TARAS & GAGE 1995

Relevant to	Systematic Review 1 Questions 1(1) and 2(1).
Promotional Channel	USA, television advertising Four local television stations, three affiliates of major television stations and one independent television station.
Design	Study 1 (Taras & Gage 1995): Content analysis of television advertising. Study 2 (Taras et al 2000): Cross-sectional survey with parents.
Sample	Study 1 (Taras & Gage 1995): Researchers recorded children's programming from both broadcast and cable television channels on weekday afternoons (between 3 and 6pm), and on Saturday mornings (between 7am and 12pm) over a five week period in January and February 1993. The 95 hours of recorded programming (60 hours of weekday afternoon television and 35 hours of Saturday morning television) yielded 845 advertisements (for food and beverages) for analysis. Study 2 (Taras et al 2000): 237 families were recruited from 63 San Diego preschools (serving low- to middle-income families, state-funded preschools and 'Head Start' Centres. 'Family' was defined as at least one adult and one four year old child, and any family with an adult or child with a medical condition that limited their dietary or physical activity behaviour was excluded from the sample.
Method	Study 1 (Taras & Gage 1995): One observer (medical student). An "independent review" of this was conducted. Foods the classified by a dietician using American Heart Association definitions (eg. high salt) Study 2 (Taras et al 2000): From the results of the questionnaire survey with parents, researchers compared parent's beliefs about children's viewing of advertisements with actual advertisements recorded during the earlier content analysis study.
Measures	Study 1 (Taras & Gage 1995): The study measured extent in terms of the number of food advertisements during children's programming, and the extent of nutritional content (eg. high fat) in food advertising during such programming. A time trend analysis of changes since regulations on advertising were introduced were facilitated by comparing data from current study with data from previous studies (produced by other authors). Study 2 (Taras et al 2000): The study examined the relationship between the extent of advertised foods and the extent of children's requests for advertised products and parents self-reports of the purchasing of such products.
Statistical analysis	Study 1 (Taras & Gage 1995): Only descriptive statistics are reported. Study 2 (Taras et al 2000): Both descriptive statistics (relevant to this review) and inferential statistics (not relevant to this review) are reported.
Results	Study 1 (Taras & Gage 1995): A content analysis of advertisements from the 60 hours of weekday programming and 35 hours Saturday morning television by product category is reported (note: six hours of this programming was excluded from analysis as it was not considered child-oriented eg. news and sports). During these times there were 21.3 advertisements per hour (mean 28.6 seconds). Of these 47.8% were for food products, with 91% for foods high in fat sugar or salt. Only 2.5 minutes (approximately 0.2% of all non-programming time) contain public service announcements with a nutritional message. The data was compared with earlier studies (Barcus & Wolkin 1977 and the three 1980s data sweep study: Condry, et al 1988) that were conducted prior to imposed regulations that limited advertising time to children. The time trend analysis found that the percentage of adverts for cereals and sweet snacks has decreased (the latter marginally), but that advertising for dairy products had increased. Therefore, the amount of advertisements for products high in fat, sugar and salt remained unchanged (eg. comparing data from the present study with the 1978 data, the percentage of adverts featuring products high in sugar was 69.9% and 68.0% respectively, those featuring products high in fat was 39.7% and 35.0% respectively, those featuring products high in salt was 20.4% and 17.0% respectively, and finally those featuring products low in salt was 8.9% and 11.0% respectively). The study concludes that during 1993 children watched more commercials of shorter duration, but that the message content of the advertising was largely unchanged. Study 2 (Taras et al 2000): This study provides a more detailed break down of advertising by food product category (17 food groups): High sugar cereals (n = 222), restaurants (n = 153), chocolate (n = 85), low-sugared cereal (n = 71), fruit juice (n = 68), candy (n = 40), dairy (n = 36), sugared milk (n = 34), cookies (n = 33), jelly (n = 24), soda (n = 23), cakes (n = 13), gum (n = 13), cheese (n = 6), other beverages (n = 6) and soup (n = 1). The study also compares this with parental beliefs about the effects that such advertising has on children's requests for food products (and parent's compliance with such requests). The study reports strong correlations between the extent of food advertising and parental beliefs, concluding that certain classes of food are requested by children and purchased by parents in the same relative frequency as they are advertised. A medium scoring study of the extent of food promotion to children.
Published in	1995 – Archives of Pediatrics and Adolescent Medicine (journal) 2000 – International Journal of Advertising
Peer-reviewed	1995 – Yes 2000 – Yes
Authors' discipline	Taras - Paediatrics
Funding source	Taras et al (2000) uses a survey of children funded by National Institute of Health, Heart, Lung and Blood (not the section yielding the data relevant to this review, which is described as an "independent study").

WILSON ET AL 1999

Relevant to	Systematic Review 1 Questions 1(1) and 2(1).
Promotional Channel	New Zealand, television advertising. 2 free-to-air channels.
Design	Content analysis of television advertising.
Sample	42 hours of children's programmes (Saturday morning television: 8 – 11am and the children's hour 3.30-6.30pm) yielded 269 food adverts (29% of total adverts).
Method	Uses a single observer (lead author). The study also calculated the health effects on a child, using the *Diet One* software, based on various assumptions, from the advertised food items data collected.
Measures	The study addresses the extent of food advertising and makes comparisons with the recommended diet (New Zealand).
Statistical analysis	Descriptive statistics are reported and diet constituents are calculated using a specialised software package.
Results	42 hours of children's programmes, yielded 269 food adverts (29% of total adverts) of which 63% were for products high in fat and/or sugar. The next most frequently advertised products were fast-food items at 14%. A total of 76% of food adverts were for food not eaten as part of a meal. There were no adverts for low-cost healthy foods or traditional healthy Maori foods. The study concludes that, even allowing for other food intake, a child who consumed the advertised diet would have too much (based on Recommend Daily Intakes, RDI) fat and other energy foods (sucrose, fructose, and glucose) and too little of a range of minerals and vitamins. The study also raises the implications for the food security of poor people and ethnic groups. A lower scoring study of the extent of food promotion to children.
Published in	Australian and New Zealand Journal of Public Health
Peer-reviewed	Yes
Authors' discipline	Wilson – Public health Physician
Funding source	Unknown

WINICK ET AL 1973

Relevant to	Systematic Review 1 Questions 1(1), 1(2) , 2(1), 2(2), 3(1) and 3(2).
Promotional Channel	USA, television advertising
Design	Content analysis of television advertising.
Sample	The sample comprised 236 children's adverts.
Method	The 236 children's adverts (plus another 28 excluded from analysis as not deemed for children) were obtained by asking for such adverts from 66 agencies, excluding toys. The coders used very detailed rating scales with a reliability of 90%, and compared the adverts with their exposure on Saturday morning television.
Measures	The study addresses the extent of food advertising, exposure to food advertising, and the nature of food advertising.
Statistical analysis	Descriptive and inferential statistics are reported, including factor analysis.
Results	A content analysis of the adverts obtained provides the following breakdown by product category: cereals 19.9%, candy 15.7% drinks 15.7%, food for meals 8.5%, restaurants 6.8%, cookies 6.4%, cakes 5.9%, puddings 5.5%, vitamins, 4.7%, snacks 4.7%, non-edibles 6.4%. A content analysis undertaken by observing 92 of the 236 adverts identified on weekday television (between 7am and 2pm) across four weekends between September/October 1971 provides the following breakdown of advertising by product category: cereals 26.1%, candy 18.5% drinks 13.0%, food for meals 9.8%, restaurants 8.7%, cookies 8.7%, cakes 2.2%, puddings 3.3%, vitamins, 5.4%, snacks 3.3%, non-edibles 1.1%. These observation weighted by exposure: cereals 26.6%, candy 12.7% drinks 17.1%, food for meals 7.0%, restaurants 2.9%, cookies 7.2%, cakes 4.4%, puddings 5.5%, vitamins, 13.2%, snacks 2.8%, others 0.7%. In terms of creative strategies, the study addressed 143 dimensions collapsed into seven indices: 1. Product Information - ie. disclosure/disclaimer This scored 2nd highest overall, most often for candy and the main candy appeal. 2. Fantasy – animation, puppets etc. This scored 3rd highest overall, most often for restaurant = fast-food experience. 3. Personalities – use of real celebrities or cartoon characters Scored lowest overall, again most often in restaurants = no need to mention ingredients. 4. Sales Techniques – eg. fun jingles, testimonials, pester-power This was in the middle overall, yet again highest for restaurants. 5. Self Social Status – enablement, popularity Scored 3rd lowest overall, highest for vitamins (snacks amongst foods). 6. Nutrition/health – good eating claims Scored 2nd lowest, again highest for vitamins (though cereals by far the most of food). Note: was zero for candy, cookies (taste) and restaurants (eating experience). 7. Realistic Social Perspective – eg. family settings Scored highest overall and in all categories except candy. The factors analysis identified 36 factors, the first was animated/cartoon/fantasy, and the second health/nutrition. A medium scoring study of both the extent and nature of food promotion to children.
Published in	Published as a book: *Children's Television Commercials – A Content Analysis*. New York: Praeger Publishers.
Peer-reviewed	Unknown
Authors' discipline	Winick- Psychology
Funding source	Two authors academic, other two authors on National Association of Broadcasters (NAB) code authority

YOUNG 1987 and 1990

Relevant to	Systematic Review 1 Questions 1(1), 1(2), 2(1), 2(2) and 3(1).
Promotional Channel	UK, television advertising (commercial broadcast)
Design	Content analysis of television advertising
Sample	Saturday morning television and the Children's hour were recorded over 47 days in 1983 and 1984 yielding 1750 adverts.
Method	Subjective – cases that were difficult to define were discussed with a colleague.
Measures	The study examines the extent and nature of food advertising, and makes comparisons with research undertaken in the USA (Barcus work on sugared food).
Statistical analysis	Descriptive, qualitative and inferential statistics, including (vague) factor analysis are reported.
Results	The content analysis yielded 1750 adverts of which 573 (33%) were for food. Of these, the study notes that 'only' 33% were sugared (n.b. products were defined as sugared if over 10%). The author notes that this is much less than figures from the USA at this time which range from 59 to 76% sugared foods. The pre-Christmas effect is also acknowledged, with toys featuring in over 10% of adverts. 58 sugared product commercials aimed at children were analysed, (108 discarded if 'obviously adult' - no reference to children or no child centred techniques used). Difficult cases only agreed with one colleague. The following percentages describe the relative extent of different creative strategies in the adverts examined: Animation 64%, consumption 53%, family 29%, puppets, 9%, day-life setting 40% (fantasy 41%), normal action 62% (31% magic), humour 57%, sugar 9%. The following percentages describe the relative extent of different creative appeals in the adverts examined: Hyperbole 26%, adventure [not stated], fast-pace 12%, romantic-domestic 9%, romantic-past 16%, rhyme 41%, metaphor 29%, pun 24% and 21% use of a well know character. A factor analysis was also conducted, although statistics are not reported, and the analysis was undertaken on only 58 adverts, producing three vague factors: 1. Fast-paced child centred with extrinsic disclosures/disclaimers. 2. Extrinsic disclosures/disclaimers and rhyme 3. Humour A higher scoring study of the extent, and a medium scoring study of the nature of food promotion to children.
Published in	1987 – Published as a Report to the Health Education Authority 1990 – Published in Young B (1990). *Television Advertising and Children.* Oxford, Clarendon Press.
Peer-reviewed	Unknown
Author's discipline	Psychology
Funding source	For the Health Education Authority (HEA)

YOUNG ET AL 1996

Relevant to	Systematic Review 1 Questions 1(1).
Promotional Channel	UK/International, television advertising
Design	Review
Sample	International academic literature (mostly experimental studies)
Method	The literature database search that was used to obtain abstract is described (and includes PsycLit and BIDS). If the abstract indicated that the article was from study with an experimental design the original article was obtained.
Measures	The review covers literature on the extent and nature of food promotion, and the literature on its effects.
Statistical analysis	None
Results	This is the best review identified in the current systematic review. The included studies are examined in detail, which included making assessments of their methodologies (such as sample sizes, and representativeness) and the findings. The review highlights the absence of standardised procedures, such as data collection, coding, rating and analysis, which make comparisons and trends difficult to assess. It also looks for gaps in the research, such as the excess of studies conducted in the 1970s focussing on sugar rather than other food constituents. A medium scoring review of both the extent and nature of food promotion to children.
Published in	Report produced for the Ministry of Agriculture, Fisheries and Food (MAFF)
Peer-reviewed	Unknown
Author's discipline	Psychology
Funding source	Ministry of Agriculture, Fisheries & Food (MAFF)

APPENDIX 10

Data Extraction Forms for Systematic Review 2

Data Extraction Forms for Systematic Review 2

ATKIN 1975a & 1978

Relevant to	Systematic Review 2 Question 1.
Design	Observational study of parent-child interaction in a 'natural' situation (supermarket shopping).
Sample	516 family 'dyads' (mother plus child or father plus child). The study population was defined as family units including a child between three and 12 who were considering a cereal purchase, and was drawn from 20 supermarkets in inner city areas and suburban areas in Michigan. Observer ratings suggested that 53% of the families were 'middle class', 41% 'working class' and 6% 'lower class', based on "dress, store and demeanour". Sixty-nine percent of the sample were white, 26% black, and 5% other ethnic groups.
Method	Five researchers conducted the observations over two summers (1973 and 1974). The observers, positioned themselves, dressed as typical assistants, near the cereals section in the supermarket and gave the impression of conducting a cereals stock check. Each observer noted a verbatim description of the sequence of parent-child interactions, including both verbal statements and behaviour, and the perceived mood of the child if conflict occurred. For multiple child families, analyses were conducted for the child which fell within the age range or who first became involved in a cereal decision.
Measures	Observation data were coded by two independent coders. Only data pertaining to the cereal decision in the primary dyad (one parent plus one child) were coded. The coder determined which party initiated the cereal selection, and the tone: for children, did they Request or Demand, and for parents, did they Invite the child to choose or Direct their choice. The action taken by the other party was then coded (eg. agree, decline, refuse, suggest alternative). Reasons stated by the children for wanting a cereal were coded (eg. for the free gift, nutritional reasons). Data were presented in quantitative form.
Statistical analysis	No statistical analyses are described.
Results	In two-thirds (66%) of situations, the child initiated the interaction by demanding (46%) or requesting (20%) a cereal. Just under a tenth (9%) of children explicitly identified the free gift as the main reason for wanting a cereal, and observers indicated that up to a quarter of children appeared to make their decision at least partly on the basis of the free gift. Children mentioned nutritional considerations as the main reason in only 1% of interactions.
Published in	1975 – No. 7 in a series of reports "The Effects of Television Advertising on Children"
Peer-reviewed	1975 – Unknown 1978 – Journal is currently peer reviewed
Author's discipline	Mass communication campaigns
Funding source	Office of Child Development, Dept of Health, Education & Welfare

ATKIN 1975b

Relevant to Systematic Review 2 Question 1 and Question 2

Design Cross-sectional survey.

Sample 775 4th-7th grade students in Michigan of both sexes but with a bias towards girls (54%).

Method An omnibus survey covering a wide range of advertising response related questions was administered to respondents in school. For younger respondents, questions were read out loud by an adult, while older respondents self-completed the questionnaire. 506 of the respondents also completed a six-page supplement specifically on food advertising.

Measures A range of advertising response measures were taken. Those relevant to the review were the following:

- opportunity for advertising exposure was measured using a composite index of reported viewing of a range of different television programmes, including Saturday morning programmes.
- attention to commercials was measured by asking respondents how much attention they paid to different product commercials, including confectionery and cereal adverts
- exposure to specific adverts was assessed by combining the exposure and attention measures, including confectionery and cereal adverts.
- reported consumption of heavily advertised cereals, confectionery and food in general
- reported consumption of lightly advertised cereals, confectionery and food in general
- nutritional beliefs about which breakfast foods are good or not good for you
- self-reported arguing with parents if they deny the child a particular brand of cereal
- self-reported incidence of dental cavities.
- family rules on snacking.

Statistical analysis Correlation coefficients were calculated to describe the linear relationship between the advertising exposure measures and the various knowledge, attitudinal and behavioural measures. Fourth order partial correlations were conducted to control for the effects of grade, gender, socio-economic status and school performance.

Advertising exposure scores were dichotomised near the median to classify respondents into heavy and light exposure groups.

Results Two indices, cereal advertising exposure index and candy exposure index, were created by multiplying Saturday morning television viewing by self-reported frequency of viewing specific adverts for the two types of products.

Cereal advertising exposure correlated with reported consumption of eight heavily advertised cereal brands (+ .41). The correlation remained strong when grade, sex, socio economic status and school performance were controlled for (+ .37). There was also a correlation, albeit weaker, between cereal advertising exposure and consumption of five lightly advertised brands (+ .27), and a strong correlation between consumption of heavily and lightly advertised brands (+ .58). In families with no reported rules restricting snacking, the partial correlation between consumption of cereals and cereal advertising exposure was + .49. There was a moderate correlation between exposure to cereal commercials and child anger after a cereal request denial (+ .20).

Cereal advertising exposure was moderately correlated with frequency of requesting cereal purchases (+ .32). Twelve percent of respondents with 'light' cereal advertising exposure asked their mothers to buy cereals a lot compared with 27% of respondents with 'heavy' cereal advertising exposure (no significance values are quoted).

There was no correlation between cereal advertising exposure and beliefs about the nutritional value of sugar, and only a very slight correlation between cereal advertising exposure and number of tooth cavities (+ .09).

Multi-variate analysis, using path analysis procedures, of the relationships between key variables and requesting that parents buy cereals found a relationship between cereal advertising exposure and more frequent asking for cereals (+ .27). Cereal advertising exposure was linked to cereal consumption both directly (+ .30) and indirectly, through requests (+ .27) which were then correlated with consumption (+ .26). The two exogenous demographic variables in the model, grade and socio-economic status, were not significantly related to cereal eating.

Confectionery advertising exposure was correlated with consumption of three heavily advertised confectionery products (+ .29); this dropped slightly to + .25 when controlling for school grade, school performance, sex and socio-economic status. Correlations between confectionery advertising exposure and consumption of lightly advertised confectionery products were equally strong, suggesting that respondents who viewed more confectionery adverts on Saturday morning television tended to eat all kinds of confectionery more frequently than lighter viewers. A modest correlation (+ .10) was found between exposure and quantity of confectionery eaten per week. No relationship was found between confectionery advertising exposure and beliefs about the nutritional value of sugar or with number of dental cavities in the past year.

cont.…

ATKIN 1975b

Results continued ….	A total advertising exposure index was created from measures of prime-time, teen-oriented and Saturday morning viewing (this measure did not include reported amount of attention paid to advertising). This was correlated with more general measures of food consumption, including asking parents to visit fast food restaurants. A correlation of + .30 (dropping to + .28 when controlling for grade, sex, socio-economic status and school performance) was found between the total advertising exposure index and consumption of five frequently advertised foods (crisps, soda, hamburgers, chocolate drinks and cookies). Identical correlations were found for consumption of less advertised foods (pretzels, hot dogs, ice cream, cake). The relationship between advertising exposure and consumption was stronger for girls than boys (+ .33 vs. + .20) and for children with parental snacking restrictions than for those without (+ .31 vs. + .24). Exposure was modestly correlated with frequency of asking to visit fast food restaurants (+ .17). Overall, the study indicated that children who reported watching more Saturday morning television more often asked for cereals, expressed anger when requests were denied, and ate cereals. More than twice as many 'heavy viewers' of Saturday morning television as 'light viewers' reported making cereal purchase requests 'a lot' of the time. Exposure has a direct effect on amount of consumption as well as an indirect effect mediated by requesting cereal products. The strength of the direct effect may explain why purchase requests to parents were not found to be a stronger mediating variable. Authors' conclusions: Children most exposed to television tend to consume more foods, both advertised and nonadvertised, than children less exposed to television. "Since it is unlikely that heavy eaters of purely advertised foods are motivated to watch more television than other people, it seems justified to conclude that this minor relationship is evidence of a flow of causality from viewing to eating rather than the reverse sequence". But " a conservative reading of the data suggests that the effect is not strong".
Published in	No. 6 in a series of reports "The Effects of Television Advertising on Children"
Peer-reviewed	Unknown
Author's discipline	Mass communication campaigns
Funding source	Office of Child Development, Dept of Health, Education & Welfare

BARRY & HANSEN 1973

Relevant to	Systematic Review 2 Question 1.
Design	Non-randomised non-controlled experiment
Sample	60 2nd grade pupils from two Dallas schools. Pupils were from two classes of 30 pupils each. One class was all white and one was all black.
Sampling procedure	No other information is provided.
The intervention/ stimulus	Each advert was for a different Kellogg's cereal. One featured a Native American Indian, while the other featured three children (two white, one black) having a picnic with 'Tony the Tiger'.
Method	Each class was shown two 60-second cereal adverts, twice each, during school hours. Immediately after watching the two adverts, each pupil completed a 12-item questionnaire.
Measures	The study investigated two hypotheses: racial differences do not affect children's advertising recall, and racial differences do not affect children's advertising preferences. Eight items assessed children's recall, three assessed preferences (preferred advert, preferred child character, preferred cereal), and one asked whether children 'told their
Statistical analysis	None described.
Results	There were no significant recall differences between racial groups on six of the eight items. On the other two items, which assessed brand recall, black children had significantly poorer recall than white children. The three preference items displayed significant racial differences. For all three items, black children expressed a strong preference for one advert, cereal or character over another, whereas white children did not have decided preferences ($p<0.01$).
Published in	Journal of Advertising Research
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Mass communication campaigns
Funding source	Unknown

BOLTON 1983

Relevant to Systematic Review 2 Questions 1, 2, 3.

Design Cross-sectional survey investigating the effect of television advertising on children's diets while controlling for other potential dietary influences.

Sample Data were obtained for 262 children aged 2 to 11 from two-parent families with a television set. The families were predominantly white and of higher socioeconomic status, and children were distributed evenly across age and sex categories.

The children were part of a large household survey conducted in Ohio in 1977. No information is provided on how the household survey was generated other than that households were "contacted through community organisations in

Method Data for the 262 children were derived from a household survey conducted in Ohio in 1977. Each member of each participating household supplied the following information: demographic data, a 16-day television diary, a 7-day food diary. And attitudinal measures. By comparing the television diary data with television station broadcasting data, it was possible to ascertain the specific food commercials broadcast during the time each individual recorded watching television. By comparing the food diary with "food nutrition data" (not explained), each individual's intake of 16 nutrients was identified. Vitamin and mineral supplements were excluded and people on "special diets" were removed from the study.

It is not clear whether television viewing and food data were obtained from children directly or from adults answering on their behalf.

Measures Food commercial exposure and nutrient intake was measured for both parents and children.

Food commercial exposure was measured in terms of average food commercial minutes viewed per week over the study period.

Nutrient and calorific intake were measured as the percentage of the recommended daily allowance (average % RDA) for an individual of that age and sex which was consumed over the study period. Average % RDAs were measured for calories, protein, minerals and vitamins.

Nutrient Efficiency and **Nutrient Balance** scores were calculated. The Nutrient Efficiency index reflected the proportionality of nutrient requirements satisfied to energy (calorific) requirements satisfied, and was calculated by dividing the average % RDA intake over all nutrients by the average % RDA calorific intake. A value of less than one implies the consumption of foods with excessive calories in relation to nutrients, while a value greater than one implies the consumption of foods with excessive nutrient values in relation to calories.

Nutrient Balance was measured as the variance across the "nutritional distribution", adjusted by a scaling factor, and reflected the extent to which a respondent deviated from the average % RDA with respect to individual nutrients. A balanced diet requires that all nutrients should be at the same level.

Snacking frequency was measured as the number of snacks over the seven day period up to a maximum of three per day.

In addition to the above measures, **parental supervision** measures were obtained for parental control over television viewing and children's food consumption. Parents indicated how decisions were normally made in the family (on a 5-point scale where 1=child decides all the time and 5= parent decides all the time) regarding: the amount of television watched by children, the television programmes watched by children, the snack foods eaten by children, and what children ate for breakfast.

Missed meals was measured as the number of meals missed in the 7-day period, out of a total of 21.

Statistical analysis A structural equation model was designed to measure the effects of television advertising, parental influences and other factors on children's diets. The model had two components, a structural submodel which described the theoretical relationship between constructs, and a measurement submodel which operationalised the constructs in terms of multiple indicators.

cont.…

BOLTON 1983

Statistical analysis continued ….

The structural submodel was a "five-equation recursive system":

The first equation hypothesised that children's food commercial exposure increases with parental food commercial exposure and decreases with parental supervision of television viewing. Children's food commercial exposure was hypothesised to affect their diet firstly by increasing snacking, and secondly by directly increasing calorific intake. Further, this intake would be proportionately larger than any increase in nutrient intake, because heavily advertised foods contribute proportionally more towards calorific than nutrient requirements. Food commercial exposure should also decrease nutrient efficiency (because a more efficient diet has more nutrients in proportion to calories than a less efficient diet), although the effects on nutrient balance would be unclear. The rationale for the impact on diet was based on the theoretical assumption that exposure to food commercials could influence children's diet in two ways. Firstly, consumption of heavily advertised product classes could increase, while the amounts of product classes currently in the children's diets would not proportionally decrease or be otherwise altered. Increased product class consumption would be expected to produce an increase in nutrient and calorific intake, with the calorific intake increase being proportionally greater than the nutrient intake increase. Secondly, heavily advertised product classes could be substituted for some of the products currently in the child's diets. In this instance, it would be expected that the advertised product would contribute more to calorific intake and less to nutrient intake than the product it replaced – ie. calorific intake would increase and nutrient intake would decrease. If both types of change occurred, there would be expected to be an increase in calorific intake but the effect on nutrient intake would be uncertain.

The second equation hypothesised that frequency of snacking would increase with children's food commercial exposure, and with parents' snacking, decrease with parental supervision of diet, and increase with child's missed meals. The equation also hypothesised a partial effect of age on snacking, although in an unspecified direction.

Equation three hypothesised that the child's calorific intake would increase with parents' calorific intake and decrease with parental supervision of diet, while equation four hypothesised that child's nutrient efficiency would increase with parents' nutrient efficiency and increase with parental supervision of diet. These hypotheses reflected the assumption that the parents' objective was nutrient efficiency when an alteration in diet was considered. Equation three also hypothesised that child's calorific intake would increase with snacking and decrease with missed meals, while equation four hypothesised that child nutrient efficiency would decrease with both snacking and missed meals. Age was hypothesised to affect both calorific intake and nutrient efficiency, but in an unspecified direction.

Equation five hypothesised that child nutrient balance would increase with parents' nutrient balance, increase with parental supervision of diet, and decrease with snacking. In this equation, missed meals should not influence nutrient balance, nor should age effects be expected.

The structural submodel and the measures were combined to form a structural equation model. Maximum likelihood estimates of the parameters were obtained using LISREL. Estimated structural coefficients were calculated.

Results

The structural coefficient estimates indicated that the most important direct influence on children's behaviour was parental behaviour. Child descriptors (age, missed meals, snacking, food commercial exposure) were consistently of secondary importance. The direct effects of parental supervision were mixed, and smaller in magnitude than the effects of child descriptors.

In equation 1, children's food commercial exposure increased significantly with parental food commercial food exposure and decreased with parental supervision of television viewing. However, parental supervision explained only 3% of variance in children's food commercial exposure, while parental exposure explained 22% of variance. In equation 2, parental snacking frequency explained 29% of variance in children's snacking frequency. However, parental diet supervision did not have the significant negative effect on snacking which was hypothesised. Age had only a small impact on snacking, explaining only 4% of variance in snacking (with older age being associated with less snacking). Missed meals were not significantly related to snacking frequency. Children's food commercial exposure had a significant effect on snacking frequency, although small (explaining only 2% of the variance). The impact of parents' snacking frequency was 15 times larger than the impact of advertising.

In equations three and four, an increase in parental calorific intake significantly increased children's calorific intake (explaining 9% of variance), and an increase in parents' nutrient efficiency significantly increased children's nutrient efficiency (explaining 8% of variance). The direct effects of parental behaviour were smaller in these two equations than in equations one and two because of the indirect effects of parental behaviour through children's food commercial exposure and snacking frequency. Parents' diet supervision did not significantly affect children's calorific intake or nutrient efficiency. Snacking significantly increased children's calorific intake, explaining 5% of its variance, and significantly decreased their nutrient efficiency (explaining 6% of variance). Missed meals caused a decrease in calorific intake, although snacking had a more detrimental effect than missed meals. In these two equations, snacking and missed meals together had as great an effect as parental example, suggesting the importance of dietary habits in determining children's nutritional well-being.

Age-related effect were generally greater than parental behaviour, children's snacking or children's missed meals, explaining 12% of the variance in children's calorific intake and 8% of the variance in children's nutrient efficiency. Older children consumed proportionally less calories than nutrients, causing nutrient efficiency to rise.

cont.…

BOLTON 1983

Results continued ….

Children's food commercial exposure did not have a significant direct effect on children's calorific intake, but did significantly decrease children's nutrient efficiency, although explaining only 2% of the variance. Food commercial exposure also had significant indirect effects on children's calorific intake and nutrient efficiency, increasing the former and decreasing the latter. This indirect effect worked through the effects of food commercial exposure on children's snacking frequency, which in turn increases their calorific intake and decreases their nutrient efficiency. Again, these effect sizes are small (around 1% of the variance). The combined direct and indirect effect of food commercial exposure on children's calorific intake and nutrient efficiency was at most half the size of the direct impact of other predictor variables.

In equation 5, parental nutrient balance explained approximately 9% of the variance in children's nutrient balance, whereas parental diet supervision did not have a significant effect. In this equation, neither children's food commercial exposure nor children's snacking had any significant effects.

Overall, the analyses suggested that children's exposure to television food advertising influenced their diet in three separate ways. Firstly, it significantly increased the number of snacks consumed. According to the structural equation model, an increase in food advertising exposure by an additional 25 minutes per week (12 hours total viewing per week) would have caused a child to consume one additional snack per week. Secondly, this additional snack would have increased the child's calorific intake by approximately 1.4 % and decreased the child's nutrient efficiency by a similar amount, assuming that children typically snack on low nutrient, high calorie foods. Thirdly, children's exposure to television food advertising significantly decreased their nutrient efficiency directly, in addition to the indirect effect through increased snacking frequency. According to the model, an increase in food advertising exposure by an additional 25 minutes per week would have decreased the child's nutrient efficiency by about 6%. Because in this equation calorific intake was not affected, this implies that the child consumes low nutrient, high calorie foods in place of foods with equivalent calories but higher levels of nutrients. This was consistent with the notion that children's snack preferences are influenced by the low nutrient, high calorie foods advertised on television.

The influence of parental behaviour was greater than that of television advertising exposure. However, parental behaviour was also, according to this model, an important influence on children's television food advertising exposure.

Published in Current Issues and Research in Advertising (Journal)

Peer-reviewed Yes

Author's discipline Marketing

Funding source Unknown

BORZEKOWSKI & ROBINSON 2001

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment.

Sample 46 children aged 2-6 from Head Start programme in California.
The study population was preschool children (aged 2-6, mean age 4) attending a Head Start programme in northern California. The majority (85%) of the families enrolled in the programme had an annual household income of less than $15,000. All children participating in the programme (n=120) were eligible for inclusion in the study. Parental consent was obtained for 50 children, and 46 participated in the study. Interviews were conducted with the parents of 39 of the children to assess the family media use habits.

Participating children are described as "similar to nonparticipating children (other children in the Head Start programme) in gender, age, ethnicity and highest educational level of parent or guardian".

Allocation to conditions Children were randomly assigned to two conditions: (i) viewing a videotape of children's programmes without commercials, and (ii) viewing a videotape of children's programmes with commercials. In condition one, children viewed two animated programmes of 13 minutes each, separated by a two and a half minute educational segment on sea creatures. In condition two, children viewed the two animated programmes with two embedded segments of commercials in the middle and the end of the tape. Both videotapes were of equal length. Researchers administering post-viewing assessments were blinded to subjects' experimental condition.

The intervention/ stimulus The commercials were for products frequently advertised on children's television: popular brands of juice, doughnuts, sandwich bread, remote control toy cars, breakfast cereal, snack cake, fast food chicken and candy. All commercials lasted 30 seconds except the juice commercial (10 seconds). The juice and sandwich bread commercials were shown twice to reflect that some commercials are repeated in a short viewing period. It was assumed by the researchers that two of the commercials (for doughnuts and for a candy bar) would not have been seen before by the children as they were taken from another broadcast market, and that the remaining commercials may or may not have been seen before by the children.

Method Two or three children at a time were led to viewing room at the Head Start centre and were asked to 'watch a television show and afterwards answer a few questions'. A researcher randomly selected either the commercials or no-commercials videotape, inserted it into the VCR, and then observed children's viewing of the tape from the back of the room. After viewing, each child was led to a separate area where a researcher conducted post-viewing assessments on an individual basis. After a few warm-up questions such as 'do you like to watch television?', children were shown matched pairs of colour photographs for nine different products. One of each pair featured the advertised item, while the other featured a product of similar type and packaging (eg. similar colour, shapes, content). The researcher asked questions such as 'would you like the [brand A] peanut butter or the [brand B] peanut butter?'. Children indicated their choice usually by pointing to whichever board they preferred.

Measures Preferences between pairs of food items. **Attitudes.**

Statistical analysis T- and Chi-square tests were used to compare the control (no commercials) and treatment (commercials) groups for significant differences in demographic characteristics and media use.

The Cochran Q statistic was used to test whether exposure to food commercials influenced food preferences. This tested the null hypothesis that there would be no difference between control and treatment groups in the selection of the advertised brand vs. the non-advertised brand.

Results There were no significant differences between children in the two experimental conditions in demographic or media use characteristics.

Children who viewed the commercials tape were more likely to select the advertised food in seven of the nine pairs of items. The remaining two items were the breakfast cereal, where children in both groups were equally likely to choose the advertised product, and the remote control toy, where children in the treatment group were not more likely to select the advertised product. The largest odds ratios were for the two food items advertised twice on the tape [biggest difference between exp and control eg. three times more likely]. There were no significant differences between boys and girls in the rate at which they selected advertised vs. non-advertised food items. There were also no significant differences in the proportion of responses for advertised items in relation to amount of media technology in the home (based on 'low' vs. 'high' amounts of televisions, VCRs and videogame players in the home).

Published in Journal of the American Dietetic Association

Peer-reviewed Yes

Authors' discipline Borzekowski – Research Fellow, Stanford Center for Research in Disease Prevention
Robinson – Assistant Professor, Stanford Center for Research in Disease Prevention

Funding source Unknown

CANTOR 1981

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment using a 2 x 2 independent-measure factorial design, designed to measure the relative persuasiveness of a humorous vs. non-humorous nutritional message and whether the effect of the nutritional message was modified by the presence or absence of an advert for sugared dessert.

Sample Thirty seven children aged 3 to 9 (25 boys and 12 girls). The study population was all children attending a community child care centre. [Note high level of sample attrition].

Allocation to conditions Children were randomly assigned to eight groups of four or five. Two groups were allocated to each of four experimental conditions:

1. Humorous version of nutritional PSA followed by an advert for sweet desserts
2. Humorous version of nutritional PSA followed by a toy advert
3. Serious version of nutritional PSA followed by an advert for sweet desserts
4. Serious version of nutritional PSA followed by a toy ad

Adults recording children's food behaviour choices were blinded to the children's experimental condition.

The intervention/ stimulus Each tape comprised 24 minutes of children's television programmes with one of the two versions of the nutritional PSA inserted half way through, followed by either the dessert advert or the toy advert. The nutritional PSAs were developed specifically for the study, and were designed to communicate the message that oranges are a healthy and delicious snack alternative to sweets. One featured a large, comical talking orange, while the other used a more serious delivery style. The dessert advert was for Hostess Cupcakes, and the toy advert was for Duncan yo-yos.

Method In their groups of four or five, children were escorted by a staff member from one room in the day care centre to another which was usually used for watching television. They were told that a woman had come to ask them some questions, but that she was busy interviewing a previous group, and that they could watch television while they were waiting for her. The staff member then turned on the television and waited at the back of the room while the children watched one of the four tapes. They were then taken in to see the interviewer, who asked them a series of questions unrelated to this study.

Measures Each individual child's daily choice of dessert at lunch for one week before the experiment and for one week after the study (the experiment was conducted on a Monday). For the period of the study, children were offered two choices of dessert, one of which was always a fruit and the other was always sweet (eg. cookies, brownies, cheesecake, gingerbread). Staff members recorded each child's choices for the period of the study. The staff members were blinded to children's experimental condition.

Dependent measure was choice of fruit or sweet dessert. **Behaviour.**

Statistical analysis Chi square analysis was conducted on choices of individual days. This proved to be "very insensitive due to the small sample size". No significant differences between conditions were found when individual days were analysed separately. Choices for one week were combined to increase the sensitivity of the measures. Because many children did not attend the centre every day, the ratio of number of choices of a particular type to number of opportunities to choose was computed; eg. 'proportion of sweets chosen' was computed as the number of times the child chose sweet desserts in a week divided by the number of times the child attended lunch that week. 'Proportion of fruit chosen' was similarly calculated. Children also had the option to choose neither fruit nor sweet dessert. Weekly proportions could therefore range from zero to 1.0, with zero indicating that the food type was never chosen and 1.0 that it was chosen at every opportunity. This measure meant that a child choosing fruit once on the one day he/she ate lunch in a week scored the same as a child choosing fruit five times over five days that he/she ate lunch.

Analyses of variance were performed on proportion of sweet desserts and proportion of fruit chosen for the week before the experiment and for the week after.

Results Mean scores for proportion of sweet dessert choices differed between the conditions during the pre-experiment period. Analysis of variance was therefore conducted, and indicated that none of the pre-experiment differences between conditions were significant. Analysis of variance on the data for the week of exposure yielded an interaction effect approaching significance ($F(1,33) = 3?.45$, $p<0.07$). None of the associated means differed significantly from one another in subsequent tests (Newman-Keuls method). In order to correct for individual differences prior to exposure to the manipulation, an analysis of covariance was performed, using the pre-exposure proportions as the covariate and the proportions after exposure as the criterion. This yielded no significant main effects, but an interaction effect of borderline significance ($F(1,32) = 3.68$, $p<0.06$).

Multiple t-tests (Tukey's) indicated that children exposed to the serious PSA plus the toy advert (ie. not exposed to the sweet dessert ad) made significantly fewer sweet dessert choices after the experiment compared with children exposed to the serious PSA plus the sweet dessert advert and children exposed to the humorous PSA and the toy advert ($p<0.05$). Data for proportion of fruit choices followed a similar pattern. Children exposed to the serious PSA plus the toy advert made significantly more fruit choices after the experiment compared with children exposed to the serious PSA plus the sweet dessert advert and children exposed to the humorous PSA and the toy advert.

The serious PSA appeared to have more impact on children's fruit choices than the humorous version when it was not followed by a sweet dessert advert, although the lack of a main effect suggested that the presence of the sweet advert did not in itself have an effect. However, the group exposed to the combination of serious PSA and toy advert made significantly fewer sweet dessert choices and significantly more fruit choices, post-experiment, than the group exposed to the serious PSA and confectionery advert.

CANTOR 1981

Published in	Journal of Broadcasting
Peer-reviewed	Yes
Author's discipline	Professor, Department of Communication Arts
Funding source	National Science Foundation (Grant APR&&-13902)

CARRUTH ET AL 1991

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	887 10th-12th grade students in four high schools "representative of the socioeconomic and racial composition of a large eastern Tennessee school system". 44% were male, 56% female, and 94% were white. The sample was evenly distributed across the three grades (32% 10th grade, 37% 11th grade, 31% 12th grade).
Sampling procedure	Questionnaires were distributed to the whole 10th-12th grade population in all four schools (a total of 2,537 pupils). Study investigators had no control over how school principals distributed the questionnaire within schools, and did not know how many questionnaires reached pupils. Survey completion was voluntary. 920 questionnaires were returned. Questionnaires were excluded where the respondent did not indicate ethnic group, leaving 887 usable questionnaires.
Method	Self-completion survey.
Measures	Communication with parents and peers about food selection and purchase was measured with two items: 'my parents and I talk about the food advertisements we see on television' and 'my friends and I talk about the food advertisements we see on television' (5-point scale, ranging from 'very often' to 'never'. Frequency of watching eight types of programme (news, sport, films, game shows, soaps, police/adventure, comedy and MTV), on a 5-point scale ('everyday' to 'never'). Self-reported frequency of snacking while watching television ('how often do you snack while watching television?'), and self-reported snacking in response to an advert ('does seeing a food commercial make you want to get something to eat?'), on a 5-point scale ('everyday' to 'never').
Statistical analysis	For the communication measures, significant mean differences for gender, race, grades and all interactions, using the general linear model and least squares analysis of variance, were calculated. Television viewing and snacking measures were analysed for gender, race and grade differences using least squares analysis of variance.
Results	Overall, about 9% of respondents reported 'very often' or 'often' talking about food adverts with their parents, and about 6% with their friends. 72% reported 'never' or 'rarely' discussing adverts with their parents and 75% with their friends. Eight percent reported that seeing a food advert made them want to get something to eat 'every day', 14% 'several times a week', 27% 'once or twice a week', 25% 'less than once a week', and 27% 'never'. Responses to an open-ended question about snacks were consumed in front of the television indicated that crisps (55%), fizzy drinks (21%), popcorn (21%), cookies (19%), sandwiches (18%) , fruit (15%) and sweets (14%) were most frequently reported. The study reports that snacking in front of the television in this study was not related to seeing a commercial, but no data are reported.
Published in	Journal of Adolescent Research
Peer-reviewed	Yes
Authors' discipline	Nutritionist (children & adolescents)
Funding source	Unknown

CARRUTH ET AL 2000

Relevant to	Systematic Review 2 Question 1.
Design	Longitudinal study of 5-year olds' food preferences.
Sample	34 children 5-year old children (14 males, 20 females) were randomly selected from the sample for a larger longitudinal study into children's dietary patterns and preferences. The 34 children were interviewed at 60 months and again nine months later. The children's families are described as of 'middle and upper socioeconomic stats'. [US study, researchers based in Tennessee]. Forty seven percent of the mothers were college graduates, and around a third were in employment.
Sampling procedure	Random selection from a larger study population. No information given in this article about the selection and recruitment of the larger study population.
Method	Two interviews were conducted with children in the home, at 60 months and 69 months. The 60-month interview was conducted within five days of the child's birthday. Mothers were given a consumer questionnaire to complete at The child interview comprised, firstly, a test of the child's cognitive stage of development, to assess whether they were in the 'preoperational' or 'concrete operational' stage. These concepts relate to children's ability to make comparisons between food products. At the preoperational stage, children do not understand that "knowledge and quantity are unrelated to the arrangement and physical appearance of objects2, and therefore tend to concentrate on one discrete aspect of a food stimulus, such as colour, rather than a combination of stimuli. At the concrete operational stage, children are able to respond simultaneously to several dimensions of a product, such as packaging colour, a free gift, or characters shown on the package. The cognitive assessment test presented children with water and play dough in different containers and shapes. Children who perceived the water and play dough to change in quantity were defined as preoperational, while children who perceived no changes in quantity were defined as concrete operational. The second part of the interview comprised a 'grocery store game' in which children were asked to choose one food from each of nine pairs of food items. Each pair consisted of two identical product types (instant oatmeal, iced cookies, crackers, liquid and powdered drinks, sweets, fruit flavoured and toasted oat cereals, and yoghurt) which differed in one or two attributes such as colour of packaging, characters depicted on the packaging, free gift, game depicted on the packaging, shape or the picture of the food. The foods were selected as ones which would be familiar to the children and were available in a variety of different retail outlets. The order in which the pairs of foods were presented to children was randomly varied across interviews. Children were allowed to handle the pairs of foods when making a choice but were not allowed to taste them or keep any products after interview. They were asked to give a reason for their choice from each pair. The mothers' consumer questionnaire included questions about shopping with their child, monitoring/restricting their child's consumption behaviour, views on advertising, and communication with children about food shopping.
Measures	The main reason given by each respondent for their choice from each pair of foods during each interview was recorded, and these were coded and sorted into categories.
Statistical analysis	Reliability of the mothers' responses was calculated using Cronbach's alpha.
Results	The most commonly given reasons for product preferences were, in descending order: liking/favourite, flavour/taste, characters or action figures, product type, colour, the foods depicted on the package, prior consumption, appearance, free gift, because parents buy it, and health reasons. Some reasons increased over time and some decreased, but no statistical analyses are reported. Responses to mothers' questionnaire are not relevant to the review.
Published in	Journal of Nutrition Education
Peer-reviewed	Yes
Authors' discipline	Nutritionist (children & adolescents)
Funding source	Unknown

CLARKE 1984

Relevant to	Systematic Review 2 Questions 1, 2.
Design	Randomised controlled experiment.
Sample	80 preschool children of both sexes with a mean age of 53 months. No other information is provided on the sample.
Allocation to conditions	Subjects were randomly allocated to one of eight conditions in a 2 x 2 x 2 factorial design, where the three factors were programme type (enjoyable or unenjoyable), viewing situation (food offered during viewing or not), and frequency of exposure (one exposure or four exposures to the ad). The programme type and viewing situation variables were designed to assess any impact of 'affect' on response. 1. Enjoyable programme, food offered, four exposures to food advert plus one toy advert. 2. Enjoyable programme, food offered, four exposures to toy advert plus one food advert. 3. Enjoyable programme, food not offered, four exposures to food advert plus one toy advert. 4. Enjoyable programme, food not offered, four exposures to toy advert plus one food advert. 5. Unenjoyable programme, food offered, four exposures to food advert plus one toy advert. 6. Unenjoyable programme, food offered, four exposures to toy advert plus one food advert. 7. Unenjoyable programme, food not offered, four exposures to food advert plus one toy advert. 8. Unenjoyable programme, food not offered, four exposures to toy advert plus one food advert.
The intervention/ stimulus	Each experimental tape comprised a 15-minute enjoyable (cartoon) or unenjoyable (cross-country race) programme interspersed with the five adverts as outlined above.
Method	Each child viewed the experimental tape individually in a viewing room. After viewing, nine questions were asked designed to test attitude/liking, brand and generic preferences in relation both to the toy product (a truck) and the food product (a lemon flavoured drink).
Measures	Brand preference was assessed by asking children to sample the advertised drink alongside same-flavoured drinks made by different companies, while product preference was assessed by asking children to sample the advertised flavour drink with different flavours by the same company. Degree of liking was measured by asking children if they liked or disliked the drink, and whether they 'sort of' or 'really' liked/dislike it. A pictorial facial expression scale was used to measure children's anticipated feelings if they could take away the fruit drink.
Statistical analysis	Statistical analysis was poorly described and difficult to assess and interpret. Authors refer to having conducted a 'Dunn test'.
Results	There were no significant differences found in any of the fruit drink measures between groups depending on programme type, advertising exposure, or whether or not food was offered during the viewing situation. Significant effects were found in relation to the toy truck questions, but these are not relevant to the review.
Published in	Journal of the Academy of Marketing Science
Peer-reviewed	Journal is currently peer reviewed
Author's discipline	Marketing
Funding source	Unknown

COON ET AL 2001

Relevant to Systematic Review 2 Question 1, 2, 3.

Design Cross-sectional survey designed to examine the relationship between presence of television during meals, children's food consumption patterns and other characteristics such as parents' nutritional knowledge, attitudes and norms.

Sample 91 parent-child pairs from Maryland, USA. All children were in 4th-6th grade (average age 10) and lived with at least one biological or adoptive parent. 35% of the sample were black.

Sampling procedure The majority of the sample (85%) was recruited through advertisements in local media, posters in shops and unsolicited mail, with the remainder recruited largely through word of mouth. The sample was described as "better educated than a randomly selected sample from the same area would have been".

Method Face-to-face interview with parents and children administered in the home.
Self-completion parents' questionnaire completed by parents after the main interview.
Three 24-hour dietary recall interviews conducted with children. The first was conducted in the home, with the second and third conducted by telephone.

Measures The television exposure measure was reported presence (by parents) of television during breakfast, after-school snacks and supper.

Parents' nutritional knowledge, attitudes and norms were measured using a 23-item scale assessing knowledge of fats and dietary links with disease, attitudes towards processed foods and friends switching to 'healthy eating patterns'. A 4-item scale measured parents' attachment to having meat at meals. The Cronbach's Alpha for the 23-item scale was .75, and .80 for the 4-item scale.

Children's 24-hour dietary recall interviews were conducted with the aid of a printed poster for estimating portion size. Data from the recall interviews were used to construct outcome variables at the level of nutrients and food groups. Scores were entered into the Minnesota Nutrient Data Base, described as a "standard programme for translating food consumption over three days into average daily consumption of nutrients". Food group variables were constructed for 15 different food groups, then eight of the 15 groups were further aggregated into three food groups reflecting major nutrient content: fruit, veg and juice (nutrient dense foods), meat, poultry and eggs (major protein sources), and pizza, salty snacks and soda (low nutrient commonly consumed foods). Average intake of each of the food groups was measured both as frequency per day and as the percentage of daily total energy deriving from that food group.

Statistical analysis Descriptive statistics for all the variables in the study and bivariate relationships among the television exposure and parental variables. Independent t-tests on the different food groups and nutrients were used to compare dietary intakes of children for whom the television was on for 2-3 meals per day with those of children for whom the television was on for one meal or less per day.

Multiple linear regression tested relationships between television during meals and consumption of food groups and nutrients. The model controlled for child's age, sex and race, mother's education and employment status, household composition and income, parents' nutritional knowledge attitudes and norms, and frequency of parents preparing quick suppers per week.

Pearson's 2-tailed tests of bivariate association were examined for television during meals and the food group and nutrient measures. Seven of the 15 food groups, all three combined food groups and four of the selected nutrients exhibited significant bivariate associations with television during meals ($p \leq 0.05$) and were used as dependent variables in multiple linear regression analyses.

Results Televisions were more likely to be on during meals in households with lower incomes ($p \leq 0.01$), single parents ($p \leq 0.05$) or less educated mothers ($p \leq 0.05$). Television presence during meals was inversely related to parents' nutritional knowledge, attitudes and norms ($p \leq 0.05$) and positively related to parents' attachment to meat ($p \leq 0.01$), and frequency of parents preparing quick suppers ($p \leq 0.01$). There was a relationship between the television being on during two or more meals per day and lower consumption by children of foods in the fruit and vegetable group (fruit, vegetables, juice and juice drinks) ($p \leq 0.01$). Consumption of foods in the meat group (red meat, processed meat, chicken, egg and fish) and foods in the pizza/salty snacks/soda group was significantly higher among children exposed to television during two or more meals per day ($p \leq 0.05$ and $p \leq 0.01$ respectively). Children in this group derived 6% more (compared with children exposed to less or no television during meals) of their daily total energy from all three meat groups combined ($p \leq 0.01$), 5% more from pizza, salty snacks and sodas ($p \leq 0.01$), and nearly 5% less from fruits, vegetables and juices combined ($p \leq 0.001$). They also consumed more caffeine than children with low television exposure ($p \leq 0.01$).

cont.…

COON ET AL 2001

Results continued….	Multiple linear regression examined the relationship between each of five dependent variables (children's consumption of five food groups: fruit; veg; red meat; pizza and snacks; soda) and the independent variable presence of television during meals, controlling for socioeconomic factors, parents' nutritional knowledge, attitudes and norms and parents' use of quick foods. There was a significant relationship between more exposure to television and higher consumption of red meat ($p \leq 0.01$), pizza and snacks ($p \leq 0.05$) and soda ($p \leq 0.05$), and lower consumption of veg ($p < 0.01$). Of the socioeconomic and demographic variables, only two were significant: family income was significantly inversely related only to fruit consumption ($p \leq 0.05$), and being black was negatively associated with soda consumption ($p \leq 0.05$). Multiple regression also showed television during meals to be independently and significantly associated with percentage total daily energy from the three combined food groups. Compared to children with lower exposure to television during meals, higher exposure children derived a lower percentage of total daily energy from fruit, veg and juice ($p \leq 0.001$) and a higher percentage from meat ($p \leq 0.05$) and from pizza, snacks and soda ($p \leq 0.001$). Of the socioeconomic and demographic variables, being black was significantly associated with higher percentage of total daily energy from fruit, veg and juice ($p \leq 0.01$) and from meat ($p \leq 0.01$), and lower percentage from pizza, snacks and soda ($p < 0.05$). The study did not report the proportion of variance in consumption explained by the regression equations and it was unclear whether the reported regression coefficients were standardised or unstandardised. This makes it potentially difficult to assess the strength of influence of television during meals relative to other influences. However, the regression analyses showed that, when the socio-economic and demographic factors were controlled for, television during meals had an independent and significant influence on frequency of consuming four foods (veg; red meat; pizza and snacks; and soda). Furthermore, with the exception of soda, none of the socioeconomic or demographic variables had a significant influence. This shows that, for those particular foods, television during meals had a stronger influence on consumption than the socioeconomic and demographic variables. Similarly, with the exception of race, television during meals had a stronger influence than the other socioeconomic and demographic variables on the percentage of total daily energy derived from the three combined food groups.
Published in	Pediatrics (journal)
Peer-reviewed	Yes
Authors' discipline	School of Nutrition, Science and Policy
Funding source	Tufts University School of Nutrition, Science and Policy and US Department of Agriculture, Agricultural Research Service

DAWSON ET AL 1988

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment investigating the influence of different types of food promotion on children's

Sample 80 white, middle class, public school, kindergarten (mean age 6.2) students residing in the north-western United States. Written parental consent was obtained for 94% of the children's parents.

Allocation to conditions Children were randomly assigned to one of eight conditions varying by type of commercial (4 types) and type of food (2 types). The four types of commercial were:

(i) 'low nutrition' food (M&Ms) commercials tape
(ii) 'pro-nutrition' food (white seedless grapes) commercials tape
(iii) toy (Crayola crayons) commercials tape
(iv) no commercials control: storybook.

After watching each tape, children were then exposed to one of two different types of stimulus food, 'low nutrition' or 'pro-nutrition', making eight experimental conditions in all.

The intervention/ stimulus Each tape comprised two different commercials for the same product. The commercials selected had been aired prior to 1979, which limited the likelihood of children's previous exposure to the commercials. The different types of commercials were described as being matched on factors such as action, pacing and visual change.

Method After watching each tape twice, individually, each subject was led to an adjacent room and asked to wait while the researcher completed some work next door. In the room was a bowl full of the stimulus food, which the researcher explained had been left for a party for some other children later in the day. The child was asked not to touch the food. The researcher then left the child in the room for 20 minutes, explaining that he would knock on the door when he returned (this was to create an illusion of privacy for the child). The researcher observed the child's behaviour through a one-way mirror using a 30-second observation interval. After the researcher returned, the child was taken back to the playroom where he or she completed a self-report 'temptation to transgress' questionnaire and was given the opportunity to eat a snack and play.

Measures 'Consummatory' and 'control' behaviours observed through the one-way mirror. 'Preconsummatory' [sic] behaviours were defined as looking at the food, touching the bowl, touching the food, picking up the food, pretending to eat the food, or eating the food. Control behaviours were defined as looking away, verbalising prohibition, making up games, talking to oneself, getting out of the chair, and 'fiddling' with other objects. 'Latency to transgress' was measured in number of seconds before transgression. Inter-observer agreement ranged from 77% to 95% as calculated by agreement for occurrences on 20% of total observations.

'Temptation to transgress' was measured by asking children to rate their desire to 'transgress' on a visual scale from one (no desire) to nine (high desire).

Statistical analysis Results were analysed by experimental condition, type of food and by sex, resulting in 16 cells (4 x 2 x 2). Three-way analysis of variance was conducted examining commercial type, food type and sex.

Results "All children (100%) engaged in some consummatory behaviours. Half (50%) engaged in behaviours such as touching the food, picking up the food, pretending to eat, or eating" (p.1356) [no further breakdown is provided]. Children in the 'low nutrition' food stimulus condition displayed more consummatory behaviours than children in the 'pro-nutrition' food stimulus condition (mean score 15.35 vs. mean score 10.50, $p<0.01$), regardless of the commercial shown. There was no significant difference in consummatory behaviours by children exposed to the different commercial types. Children exposed to the 'low nutrition' food commercial displayed 13.10 consummatory behaviours compared with children exposed to the 'pro-nutrition' commercial who displayed 13.45 consummatory behaviours.

Self-reported temptation to transgress displayed a trend, with greatest temptation being reported after viewing the 'low nutrition' commercial followed by the 'pro-nutrition' commercial, the toy commercial and the no commercial control. However, this was only significant at the 10% level ($p<0.09$). Girls reported significantly more temptation to transgress than boys (mean score 3.41 vs. mean score 2.08, $p<0.05$).

Published in Journal of Applied Social Psychology

Peer-reviewed Journal is currently peer reviewed

Authors' discipline Psychology

Funding source National Science Foundation (Grant No. ISP-8011449)
and
National Institute of Child Health and Human Development (grant no. 12073)

DEL TORO & GREENBERG 1989

Relevant to Systematic Review 2 Question 1.

Design Cross-sectional survey designed to investigate the relationship between television viewing, food preferences, consumption and purchasing behaviour.

Sample 225 9th-12th grade high school students from two schools (one public and one private) in a metropolitan area in Puerto Rico. One class from each grade level in each school was surveyed. The sample contained twice as many females as males so data were weighted to balance gender across the grade levels. The sample was described as 89% Puerto Rican, and similar to the national profile in terms of number of people living in each household.

Sampling procedure No other information is provided about the sample.

Method A self-completion questionnaire was administered to the sampled school classes.

Measures Self-report measures were taken of:

Television behaviour (how many hours of television watched on a school day and on Saturday and Sunday, and how many television commercials watched (a few, some, most of them). Frequency of television watching while eating meals (always, sometimes, never) was also measured.

Meals per day, missed meals per week, frequency of snacking and eating out.
How many servings per day consumed from four basic food groups: meat/fish, diary products, fruit and veg, bread and cereals.

Frequency of purchasing (often, sometimes, never) products after seeing them in adverts or of asking parents to buy them. What foods were bought with respondents' own money. These foods were categorised as 'good' (fruit, veg, ice cream), 'bad' (confectionery, chocolate, soft drinks) and 'fast food'.

Sixteen items measured opinions about adverts in four categories: usefulness of adverts, desire for foods (eg. 'television commercials often give me ideas about foods I would like to try'), and positive and negative attitudes towards adverts.

Statistical analysis Correlation coefficients

Results Girls were significantly more positive and less negative about food adverts than boys, and reported greater desire for foods seen in adverts ($p<0.05$ for all three factors). Girls and boys were equally likely to ask their parents to buy foods they had seen advertised (between 35% and 48%), and to buy advertised foods themselves. Younger respondents (9th-10th grade) were more likely to ask their parents to buy foods they had seen advertised than older children ($p<0.05$).

When reported television behaviours were correlated with reported nutrition behaviours, there was a consistent significant correlation between amount of snacking and amount of television watched at different times (during the week $r=0.21$, at weekends $r=0.17$, and during meals $r=0.19$, $p<0.05$).

Television viewing was consistently significantly related to holding the opinion that eating is good for you.

There was a significant correlation between using one's own allowance to buy foods and television viewing on weekdays ($r=0.14$), Sundays ($r=0.22$), and during the week ($r=0.25$). There was a relationship between watching television on Saturday morning on using one's own money to buy 'bad' foods such as chocolate confectionery, soft drinks and potato crisps ($r=0.25$, $p<0.05$).
Television exposure was <u>not</u> related to the number of meals eaten or skipped, frequency of eating out, intake from different food groups, opinions about what constitutes a healthy diet or making purchase requests from parents.

Published in Hispanic Journal of Behavioral Sciences

Peer-reviewed Journal is <u>currently</u> peer reviewed

Authors' discipline Communication

Funding source Unknown

DICKINSON 1997

Relevant to	Systematic Review 2 Question 1.
Design	Semi-structured interviews
Sample	12 UK households containing at least one child aged 11-18 and two adults.
Sampling procedure	Households were recruited through schools as part of a larger study.
Method	Semi-structured interviews using a thematic guide.
Measures	Various
Statistical analysis	N/a
Results	Limited findings reported on how households engage with food advertising. Young people were described as "particularly adept at recalling the voice-overs in food adverts almost verbatim".
Published in	MAFF report
Peer-reviewed	Unknown
Author's discipline	Mass Communication Research (media and health)
Funding source	Ministry of Agriculture, Fisheries & Food (MAFF)

DIETZ & GORTMAKER 1985

Relevant to Systematic Review 2 Questions 1, 2, 3.

Design Two cross-sectional surveys and one longitudinal survey designed to investigate the relationship between time spent watching television and prevalence of obesity.

Sample Three samples were included in the study:

1. 6,965 children aged 6-11 studied in cycle two of the US National Health Examination Survey between 1963 and 1965;
2. 6,671 children aged 12-17 studied in cycle three of the US National Health Examination Survey between 1966 and 1970;
3. 2,153 children studied in cycle three who had also previously been studied in cycle two.

The sample included in this study represented all children "of both races" for whom complete data were available. Further information about the sample design is not provided in the article but is available in a US DHSS report.

Method The Survey included a parental survey (in cycle 2) and a self-completion questionnaire for children in cycle 3. Triceps skinfolds measurements were taken by paediatricians, specially trained nurses, or technicians.

Measures Parental survey measures included family socioeconomic characteristics, family size and birth order, race and any conditions restricting physical activity.

Children's measures included hours per day spent watching television, listening to the radio, reading books or magazines, reading comic books, alone, with friends, or playing sports. Mean hours of television viewed daily was calculated from the midpoint of each time interval. Time spent in leisure activities excluding sports and television viewing was calculated.

Obesity was defined as a triceps skinfold measurement equal to or greater than the 85th percentile for children or adolescents of the same age and sex. Superobesity was defined as a measurement equal to or greater than the 95th percentile.

Statistical analysis Three types of analyses were conducted.

Cross-sectional analyses of the full cycle two and cycle three survey samples compared the prevalence of obesity and superobesity at different levels of reported television viewing. X^2 tests, simple regression coefficients, and associated *F* tests were used to indicate the strength and statistical significance of the associations.

Weighted multiple regression analyses were conducted incorporating multiple environmental, economic and family variables as controls. The significance of the adjusted coefficient estimates was examined using *F* tests. Obesity and superobesity at cycle two were controlled for in the analysis of the effects of television viewing on obesity and superobesity at cycle three. This procedure controlled for a range of potential confounding variables, including the possibility that prior obesity was a determinant both of current obesity and time spent watching television.

The longitudinal sample provided the opportunity to investigate the effects of a 3- to 4- year time lag between television viewing and subsequent obesity. Weighted stepwise regressions were used for these analyses.

Results Cross-sectional analysis of the cycle two sample (children aged 6-11) indicated a significant relationship between television watching and obesity: children who watched more television experienced significantly more obesity ($p<0.01$) and superobesity ($p<0.02$) than children who watched less television. There were no significant relationships between obesity and children's reported number of friends, ability to get on with friends, time spent with friends, time spent alone, listening to the radio, reading, or other leisure activities.

Cross-sectional analysis of the cycle three sample (children aged 12-17) also indicated a significant relationship between television watching and obesity: children who watched more television were significantly more obese ($p<0.0001$) or superobese ($p<0.0001$) than children who watched less television.

There was a dose-response relationship between obesity, superobesity and time spent watching television. Estimated regression coefficients indicated that the prevalence of obesity increased by 1.2 to 2.9% for each additional hour of television watched per day. Similarly, the prevalence of superobesity increased by 1.4 to 1.6% for each additional hour of television watched per day. When a range of control variables were entered into the analysis to control for their potential influence on obesity, superobesity and television viewing – including past history of obesity at cycle two and socio-economic characteristics of the family, the magnitude of the television-obesity relationship was not altered in the cross-sectional analyses. Controlling for past obesity and socioeconomic characteristics did reduce the influence of television viewing on obesity in the longitudinal analysis, but the relationship between television viewing and obesity and superobesity was still significant ($p<0.001$ and $p<0.05$ respectively).

A more stringent test of the relationship between television viewing and obesity was obtained by examining the association between television viewing in cycle two and obesity in cycle three (ie. 3-4 years later), in the longitudinal sample. When cycle two obesity and family socioeconomic characteristics were controlled for, coefficient estimates for cycle two television viewing and obesity and superobesity in cycle three were 0.008 ($p<0.07$) and 0.006 ($p<0.03$), ie. marginally significant.

DIETZ & GORTMAKER 1985

Published in	Pediatrics (journal)
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Dietz – Paediatric Gastroenterology and Nutrition Gortmaker – Behavioural Sciences
Funding source	Unknown

DONKIN ET AL 1992, 1993

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey
Sample	507 parents or guardians of children aged 7-11 in the Central television district of England.
Sampling procedure	No other information is provided on sampling.
Method	Self-completion questionnaire.
Measures	Household characteristics, child's eating patterns, purchase requests and other consumption/lifestyle behaviours such as amount of pocket money given to the child. The results imply that hours of television viewing were correlated with other key variables but no information is provided on how this variable was measured or analysed.
Statistical analysis	Some correlations are reported in the text, but no information is given about analysis procedures.
Results	Children's food purchase requests reported by parents were for a range of foods, the largest category being cereals (18%), followed by biscuits and cakes (11%), fruit and vegetables (11%), sweets and chocolates (10%), drinks (10%), and meat and meat products (9%). Eleven percent of requests were specifically for Kellogg's cereals. Forty five percent of the requested products had added sugar. A relationship between television watching and sugar consumption by children is described in the text, but it is not clear how this relationship was measured and analysed.
Published in	1992 – British Food Journal 1993 – Appetite (journal)
Peer-reviewed	1992 – yes 1993 – yes
Authors' discipline	Food Marketing Group, Applied Biochemistry and Food Science, University of Nottingham
Funding source	Unknown

DONOHUE 1975

Relevant to	Systematic Review 2 Question 1.
Design	Semi-structured interviews.
Sample	162 black elementary school children in 1st-3rd grade.
Sampling procedure	The sample was drawn from two schools in New Orleans. The schools were randomly selected, as were the pupils. The schools were in primarily black, low income neighbourhoods.
Method	Interviews were open-ended "so that children could structure answers in terms of their own conceptual frameworks". Responses are presented quantitatively.
Measures	Measures included: frequency of television watching, favourite programme, favourite television character, television advert, how children knew what to buy when food shopping with parents, and which was more important in selecting a breakfast cereal, the cereal itself or the free gift.
Statistical analysis	Chi-square analysis of frequency differences, and correlation analysis to determine the degree of relationship between behavioural categories.
Results	Favourite adverts were listed by product category. Food adverts were the most popular, comprising 18% of favourite adverts for the sample as a whole. Food adverts were listed as favourites by 9% of first grade pupils, 32% of second grade pupils, and 15% of third grade pupils. They were followed closely by programme trailers, toys and games adverts, and adverts for medicines/vitamins. A fifth could not recall a favourite advert, and 13% had no favourite. When asked what they specifically liked about adverts, humour was the most important feature (27%), followed by entertainment (18%), with smaller numbers giving 'cartoons', 'information' and 'action' as important features. The majority of children (90%) reported that they helped their parents to pick out items when shopping. When asked how they knew what to buy, interpersonal influence ('someone told me about it') was the most commonly given reason (34%), followed by having seen the product on television (29%), having seen it in the store (13%), needing it (3%), and other reasons (22%). When asked whether the cereal itself or the free gift was more important in selecting a cereal, both were equally important for boys, but for girls, the free gift was the main consideration (56% free gift, 44% cereal). 1st grade children appeared to put more emphasis on the free gift than on the cereal. However, none of the differences were significant.
Published in	Journal of Advertising Research
Peer-reviewed	Journal is currently peer reviewed
Author's discipline	Communications
Funding source	Unknown

FRENCH ET AL 2001

Relevant to Systematic Review 2 Questions 1, 2, 3.

Design Randomised controlled experiment investigating the effects of different pricing and promotion strategies on purchases of low fat snacks from vending machines in schools and workplaces.

Sample The sample comprised users of 55 vending machines at 24 sites (12 secondary schools and 12 workplaces) in Minneapolis-St Paul's, Minnesota. The sites represented a convenience sample of customers of a large vending machine company in the Midwestern United States, and were selected to be geographically and demographically diverse.

Allocation to conditions Twelve different experimental conditions were created comprising four different levels of pricing and three different levels of promotion, for low-fat snacks. Each experimental condition was implemented in each site for a four-week period over twelve months; the sequence of conditions was randomly assigned in each site to counter any period effects.

The intervention/ stimulus Low fat snacks were placed in two rows of each vending machine. Low fat snacks were defined as those with 3g or less fat per package, and included low-fat 'chips', sweets, pastry, snacks and cookies. Twelve different experimental conditions were created comprising four different levels of low fat snack pricing and three different levels of low fat snack promotion . The four pricing levels were: (i) Low fat and ordinary snacks same price; (ii) Low fat snacks 10% reduction in price; (iii) Low fat snacks 25% reduction in price; and (iv) Low fat snacks 50% reduction in price. The three promotion levels were: (i) No specific signage to draw attention to low fat snacks; (ii) labelling of low-fat snacks on the relevant rows; and (iii) labelling of rows plus signs on the vending machine encouraging low fat snack choice. The same price/no signage condition represented a control condition.

Each of the 12 experimental conditions was implemented both at a school site and a workplace site, making 24 different combinations in total (four pricing levels x three promotion levels x two types of setting). Each experimental condition was implemented in each site for a four-week period over twelve months; the sequence of conditions was randomly assigned in each site to counter any period effects. Weekly site visits were also paid to each site to check fidelity of implementation (eg. accurate placement of snacks and signs). This was consistently high across all sites over the 12 months.

Method Each vending machine was set up by research staff, who then returned to the machine four weeks later to configure the machine for the next experimental condition. Weekly site visits were also paid to each site to check fidelity of implementation (eg. accurate placement of snacks and signs). This was consistently high across all sites over the 12 months.

Sales data were recorded continuously throughout the intervention. Manual inventory counts were performed each time the machine was serviced, recording low fat and regular snack sales separately. These data were entered into a central database.

Measures Sales data for each machine were recorded continuously throughout the intervention, recording low fat and regular snack sales separately for each 4-weekly period. The unit of analysis was the site (sales per site, combining all machines at that site). Sales data represented the primary outcome, and were examined in three ways: the proportion of low fat snack items, the absolute number of low fat snack items, and net profits. The dependent variable was average sales per site per experimental period (averaged across all machines at a site where there was more than one machine).

Statistical analysis Three-way analysis of variance was conducted in which setting (school or workplace) was crossed with price level and promotional strategy. Machine sales formed exchangeable repeated measurements. Each machine involved 12 treatments and four weekly measures. The fixed variables were setting (2), price level (4) and promotional strategy (3). Random variables included the site (24 sites) and machines (1-5 per site).

"Two-way interactions of setting with promotion and price reduction were examined, and, with one exception, were found to be nonsignificant; therefore, they were dropped from the model. Means reported were derived from the main effects models and were adjusted for other model variables. The denominator degrees of freedom were 22, 44 and 66 for setting, promotion and price reduction, respectively. Main effects were considered statistically significant at $p<0.05$, and interactions were considered significant at $p<0.01$".

Total product volume was also examined to determine whether the intervention affected overall sales volume: ie. were any increases in low-fat snack sales the result of increases in the total number of products sold or of switching between snack choices?

Results Both the pricing strategies and the promotion strategies influenced sales of low fat snacks. Price reductions were significantly associated with percentage of low fat snack sales ($F_{3,66} = 156.89$, $p<0.001$). With no price reduction, 10.9% of total sales were for low-fat snacks. This increased by 9%, 39% and 93% with price reductions of 10%, 25% and 50% respectively ($p<0.05$). The number of low fat snacks sold (as opposed to the percentage) did not differ significantly between the control and the 10% price reduction condition. There were significant increases in the absolute number of low fat snack sales in the 25% and 50% price reduction conditions, compared with the other two conditions ($p<0.05$). In other words, the 10% price reduction increased the percentage of snack sales which were for low fat products without increasing the absolute number of low fat snacks sold or the total sales volume, suggesting that customers may have been substituting a low fat snack for a regular snack. However, with a 25% and 50% reduction, the absolute number of low fat snacks sold increased, as did the total sales volume (in the 50% reduction condition). This suggests that customers increased the number of snacks they bought from the machine, and may have actually increased their overall calorific intake.

cont…

FRENCH ET AL 2001

Results continued…	Promotion (labelling and signage) was significantly and independently associated with increased low fat snack sales ($F_{2,44} = 3.48$, $p<0.04$). The percentages of low-fat snacks sold in the no signage, labelling, and labelling plus signage conditions were 14.3%, 14.5% and 15.4% respectively. Only the labelling plus signage condition differed significantly from the no signage condition in post hoc means comparisons ($p<0.05$). The total number of low fat snacks sold did not differ significantly by promotion condition, suggesting that the promotions did not increase the total number of low fat snack sales, only the percentage of snacks sold which were low fat. There were no significant main effects for price or promotion, and no significant 2-way interactions, on machine profits, indicating that profits were not significantly affected by any of the experimental conditions. Overall sales volume was unrelated to promotion, but was related to price reduction, with a significant increase in sales volume in the 50% price reduction condition compared with the other three price conditions, which did not differ significantly from each other. There were no differences between adolescents and adults in price sensitivity Sales of low fat snacks increased significantly and proportionately with increasing price reductions, and promotional labels and signage also had a small, independent effect on low fat snack sales. These effects occurred in both adult (workplace) and adolescent (school) populations.
Published in	American Journal of Public Health
Peer-reviewed	Yes
Authors' discipline	Epidemiology
Funding source	National Institute of Health (grant no. ROI HL56577)

GALST 1980

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment to investigate the influence of different types of food promotion on children's daily snack selection.

Sample 65 children aged 3.5-6.75 attending a parochial nursery and primary school in a middle-class suburb of New Jersey. 36 boys and 29 girls.

Allocation to conditions Children were randomly assigned to one of five conditions:

(i) adverts for added sugar foods viewed with no adult comments.
(ii) adverts for added sugar foods viewed with adult comments.
(iii) adverts for no added sugar foods plus dietary PSAs, viewed with no adult comments.
(iv) adverts for no added sugar foods plus dietary PSAs, viewed with adult comments.
(v) control (no adverts).

The intervention/ stimulus Each experimental condition comprised two different short cartoons interspersed with three one-and-a-half minute blocks of commercials (four and a half minutes of commercials in total). The 'added sugar' condition commercials were for sugared breakfast cereals, candy, cookies, pop-tarts, caramel corn, fruit drinks and soda. The 'no added sugar' tape comprised commercials for apples, oranges and milk, and child-oriented pro-nutritional public service announcements (PSAs). Each advert was repeated approximately twice each week. An adult watched the commercials with each child. In the 'no adult comments' condition she remained silent, while in the 'with adult comments' condition she made predetermined comments. In the 'added sugar' condition the comments stressed the product's poor nutritional value, excess sugar content or potential to cause tooth decay, while in the 'no added sugar' condition the comments stressed the product's positive nutritional value or the merits of consuming certain types of foods (eg. fruit and veg). Children viewed the commercials daily for four weeks. Control group children did not watch any adverts.

Method During a 2-week baseline period children were brought to a snack table in their experimental groups and allowed to select a daily snack (one chewable food and one liquid). The table included all the advertised products to which they were to be exposed during the intervention, as well as other similar products (eg. other candies, different fruits). The television watching and snack selection were conducted by different researchers in different areas of the school. Control condition children simply selected a snack every day.

After the 4-week intervention period, an assessment of nutritional knowledge was made by asking children whether each of 37 different snacks was 'healthy' or contained 'too much sugar'. Children received one point for correctly identifying a product as either healthy or containing too much sugar. No baseline measure was taken of perceptions of the healthiness of the snacks.

Measures Weekly proportion of snacks chosen with added sugar content.
Perceptions of 'healthiness' of different foods.

Statistical analysis One-way analysis of variance on baseline snack choice proportions indicated that the groups differed in their choices prior to the intervention. Therefore analysis of co-variance for each of the four intervention weeks was performed using baseline proportions as the co-variate variable.

The average proportion of snacks with added sugar content selected during weeks three through to six was calculated for each condition, and Scheffé multiple-contrast tests were performed to locate the sources of the differences demonstrated by the significant main effect.

Results One-way analysis of variance on baseline snack choice proportions indicated that the groups differed in their choices prior to the intervention. Therefore analysis of co-variance for each of the four intervention weeks was performed using baseline proportions as the co-variate variable. The average proportion of snacks with added sugar content selected during weeks three through to six was calculated for each condition, and Scheffé multiple-contrast tests were performed to locate the sources of the differences demonstrated by the significant main effect.

Children in the control condition (no adverts) requested significantly *more* sugared snacks than children in three of the experimental conditions: adverts for added sugar foods viewed without adult comments; adverts for added sugar foods viewed with adult comments; and adverts for no added sugar foods plus dietary PSAs, viewed with adult comments. Children who were exposed to the adverts for no added sugar foods plus dietary PSAs viewed with adult comments, requested significantly *fewer* sugared snacks than children in three of the conditions: adverts for added sugar foods viewed without adult comments; adverts for added sugar foods viewed with adult comments; and adverts for no added sugar foods plus dietary PSAs, viewed without adult comments.

Children exposed to the sugar adverts with comments scored higher (ie. were more accurate in their perceptions of which snacks were 'healthy' and which contained 'too much sugar') than children exposed to the sugar adverts without comments ($F(1,23)=12.16$, $p<0.01$), children exposed to the non-sugar adverts with comments ($F(1,22)=3.50$, $p<0.07$), children exposed to the non-sugar adverts without comments ($F(1,23)=9.20$, $p=0.01$) and control children ($F(1,22)=19.41$, $p<0.001$). Pearson correlation coefficients indicated that there was no relationship between knowledge scores and proportion of sugar snacks selected.

Note that children selected their snacks in groups, so there may have been pressure to conform to the group norm.

GALST 1980

Published in	Child Development (journal)
Peer-reviewed	Journal is currently peer reviewed
Author's discipline	Psychology
Funding source	Unknown

GALST & WHITE 1976

Relevant to Systematic Review 2 Questions 1, 2.

Design Non-randomised experiment plus observational study

Sample 41 children of both genders aged 3-11 (mean age range 4-7) and their mothers. Children were recruited from two nursery schools in New York state. An 83% response rate was achieved. The sample was described as upper middle class.

Allocation to conditions Only one experimental stimulus was used.

The intervention/ stimulus The experimental stimulus comprised a tape of children's television programmes (a cartoon, an after-school sit com, and a prime time family comedy) with commercials included. The actual commercials are not described. The television and video equipment were set up so that the tape would run continuously but the respondent had to press a button every four seconds to keep the pictures and accompanying sound on the monitor.

Method The study comprised three parts. The first determined television programme and commercial 'reinforcement value' for each child. This was defined as the effort exerted by children to keep watching the programme and the commercials - ie. the total amount of time that the child maintained the programme and commercials on the monitor by pressing the button. The study was conducted in a room in each school. Each child was seated individually in front of the monitor and told that they could watch the tape for as long as they wished. The tape played to the end unless the child indicated that he or she did not wish to watch any more, at which point the child was escorted back to the classroom.

The second part of the study involved observation of mother-child interactions while shopping at a supermarket. The researcher followed the mother and child around the supermarket and recorded children's 'purchase influence attempts (PIA)' – attempts to influence mothers' purchases by asking, pointing, putting a product in the basket or grabbing it. Mothers were asked to go through each aisle of the store but were not told of the purpose of the study at this stage. Reliability for the PIA observation schedule was tested on eight children, and a mean reliability of .87 was obtained.

In the third part of the study, conducted a short period after the observation, mothers were administered a short questionnaire on children's television exposure in the home.

Measures Television reinforcement value was measured as the effort exerted by each child to keep watching the videotape. A measure was obtained for overall television reinforcement value and separate measures were also obtained for the effort exerted to watch the programme and to watch the commercials. A 'commercial reinforcement ratio' was calculated representing the seconds of commercial time maintained on the screen by the child in relation to the seconds of commercial time available to the child (ie. the total length of time the child watched) and to the programme time watched by and available to the child.

The observational study measured the total time the mother and child were in the supermarket, the number of PIAs, the items requested, where the PIA took place (in from of the item display or elsewhere), the type and method of PIA, and its success (whether or not the item was purchased by the mother).

Television exposure was measured by asking mothers to indicate which programmes their children watched on the Saturday and Sunday and two weekdays of a particular week. A programme was considered 'viewed' if the child watched 15 minutes or more of it. An aggregate measure of weekly viewing was obtained by multiplying the average of the two weekdays' score by five and adding the weekend score (ie. weekend viewing was not used in the analysis as a separate measure). Separate calculations were made for mean number of commercial and mean number of non-commercial television watched per week.

Statistical analysis Wilcoxon matched-pairs signed-ranks tests were used to compare the proportion of commercial time watched with the proportion of programme time watched. Spearman rank correlation coefficients were calculated for PIAs and age with commercial and overall television reinforcement value.

Results Children made an average of 15 PIAs during the supermarket trip, equivalent to one for every two minutes in the store. Nearly two thirds (64%) of the PIAs were independent (ie. not made in response to a question from the mother) verbal requests made in front of the item display on the shelf. The most heavily requested items were cereals and sugars and confectionery (8% of all requests each), followed by vegetables (6%), fruit (6%) and article and plastic goods (6%). 45% of PIAs were successful.

cont.…

GALST & WHITE 1976

Results continued…..

Spearman rank correlation coefficients found a significant positive relationship between overall television reinforcement value and number of PIAs made ($r=0.64$, $p<0.01$), and between the commercial reinforcement ratio and number of PIAs made ($r=0.52$, $p<0.01$) . In other words, the more effort a child exerted to keep the overall videotape playing, and the more effort they exerted to watch the commercials compared to the programme, the more PIAs they made per minute in the supermarket. Age was correlated positively with the commercial reinforcement ratio ($r=0.28$, $p<0.05$) and the overall television reinforcement value ($r=0.45$, $p<0.01$), although this may have been a study artefact, in that older children may have been more adept at pressing the response button than younger children. Age was also correlated positively with total number of PIAs ($r=0.44$, $p<0.01$) and number of independent PIAs ($r=0.37$, $p<0.01$), with older children making more attempts than younger children. The number of PIAs made correlated positively and significantly with total number of hours of commercial television watched per week ($r=0.31$, $p<0.05$), but not with total number of hours of non-commercial television watched. There was no significant correlation with age, suggesting that the relationship between commercial television exposure and PIAs was not a function of age.

Overall, the study suggested that the more effort a child put into watching television commercials, as compared with programmes, the greater the number of attempts to influence mothers' shopping purchases he or she made at the supermarket. The fact that only hours of commercial television watched per week (as opposed to hours of non-commercial television watched per week) also correlated significantly with number of purchase attempts lent further support to the relationship between commercials and purchase influence behaviour.

Published in Child Development (journal)

Peer-reviewed Journal is currently peer reviewed

Authors' discipline Unknown

Funding source Unknown

GOLDBERG ET AL 1978a STUDY 1
GOLDBERG ET AL 1978b STUDY 1

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment.

Sample 80 1st grade (5-6 year old) children in three 'upper middle class' schools in Northern California Bay Area. A randomly selected subset of children was drawn from all the first grade classes in the three schools (seven classes in total).

Allocation to conditions Subjects were randomly assigned to one of five experimental conditions:

1. adverts for branded sugared snacks and breakfast food products
2. adverts for branded sugared snacks and breakfast food products – double strength exposure
3. PSAs for fruit, vegetables and "more wholesome" breakfast food (eg. milk and eggs)
4. PSAs for fruit, vegetables and "more wholesome" breakfast food – double strength exposure
5. Control – no adverts.

The intervention/ stimulus All four experimental conditions comprised a 24-minute animated cartoon 'Yogi's Gang'. In conditions one and three, eight to nine adverts or PSAs were inserted into the cartoon, one or two at a time, at five points in the programme, giving a total of 4.5 minutes of adverts or PSAs in a half-hour tape. In conditions two and four, each advert or PSA was shown once during the first half of the programme and repeated once in the second half. The adverts and PSAs were inserted two or three at a time at six points in the programme, giving a total of nine minutes of adverts or PSAs in a half-hour tape, about twice the number permitting by advertising codes at the time. The double strength repetition conditions were designed to test the hypothesis that increased exposure to the advertised products might be more likely to generalise to nonadvertised products in the same category.

Method Children were randomly drawn from classes and taken to a room to watch the relevant tape, in groups of seven or eight. After the tape, they were involved in a 5-minute discussion of their favourite television programmes, and were then administered a questionnaire. Six large boards were shown sequentially to the children. Each contained six squares, on which an actual food product was mounted. Four of the boards contained snack foods, and two contained breakfast foods. On each board, three of the foods were selected, following consultation with nutritionists, to be "more wholesome", "lower in glucose and generally higher in nutrient value", and three to represent "less wholesome" foods with high glucose content and which were generally lower in nutrient value. Of the three high sugar products on each board, one or two were the same products which had featured on the advert tapes in conditions one and two, and one or two had not been featured on the advert tapes.

The children's questionnaire contained six sketches of the boards, with the foods shown in the same location on the page as on the board and the name written immediately below. The researcher identified each of the foods on the board and made sure that the children were able to recognise the correspondence between the board and questionnaire sketch. The researcher then asked the children to pretend that he/she was babysitting for the children while their parents were on holiday, and that he/she did not know what foods they liked, so the children were to choose three of the six foods on each board and mark these with an X on the questionnaire. In total, children selected three foods from each board, making a total of 18.

Following the food selection, the children completed the second part of the questionnaire, in which they were asked to indicate whether each of the foods mounted on the boards was 'good for you and healthy' or 'bad for you and not

Measures Mean numbers of more wholesome and sugared foods chosen by each group.
Perceptions of healthiness of foods.

Statistical analysis Mean numbers of sugared foods chosen by each group were compared. Two-way analysis of variance was conducted with two levels of exposure (4.5 and 9 minutes) and two types of message (sugared food adverts and PSAs) as the independent variables and number of sugared foods selected as the dependent variable.

Results Children exposed to sugared food adverts selected a significantly greater number of sugared foods than children exposed to PSAs (12.58 vs. 8.70, p value not given). Similarly, children exposed to sugared food adverts selected a greater number of sugared foods than children in the control group (12.58 vs. 10.20, $p < 0.05$). Children exposed to the PSAs selected fewer sugared foods than children in the control group, although this difference was not significant. There was a significant main effect on number of sugared foods selected for message type (ie. sugared food adverts vs. PSAs) ($F = 7.47$, df = 1,57, $p < 0.01$). The same pattern of results was obtained when snack foods and breakfast foods were analysed separately. There were no significant effects on number of sugared foods selected for level of exposure (4.5 minutes vs. 9 minutes) and no significant interaction.

To test the hypothesis that repeated exposure might increase the likelihood of preferences generalising from the advertised foods to unadvertised foods in the same category (eg. from one brand of sweets to another), the mean number of non-advertised sugared foods was compared with the number of advertised sugared foods in three different levels of exposure (9 minutes, 4.5 minutes, control). Children exposed to the 9 minutes of adverts selected more nonadvertised sugared foods than children exposed to the 4.5 minutes of adverts ($p<0.10$) and than children in the control group ($p< 0.05$).

There were no differences between any of the groups in the numbers of foods they identified as healthy and unhealthy.

		GOLDBERG ET AL 1978a STUDY 1 GOLDBERG ET AL 1978b STUDY 1
Published in	Advances in Consumer Research (ACR) (journal) Journal of Consumer Research (JCR)	
Peer-reviewed	ACR – journal is currently peer reviewed JCR – yes	
Authors' discipline	All marketing	
Funding source	Unknown	

GOLDBERG ET AL 1978a STUDY 2
GOLDBERG ET AL 1978b STUDY 2

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment.

Sample 122 1st grade (5-6 year old) children. Eighty took part in Study A, and 42 in Study B. The study population was all 1st grade children in three 'upper middle class' schools in Northern California Bay Area whose parents gave permission. A randomly selected subset of children was drawn from all the first grade classes in the three schools (seven classes in total).

Allocation to conditions Subjects (n=42) were randomly assigned to three experimental conditions (the same control group as in Study 1 was used):

1. Pro-nutritional television programme
2. Pro-nutritional television programme plus nutritional PSAs ('maximum pro-nutrition exposure')
3. Pro-nutritional television programme plus sugared food adverts ('reality')
4. Control – no programme or adverts.

The intervention/ stimulus All three experimental conditions involved a 24-minute episode ('Junk Food') of the children's Saturday morning television programme Fat Albert, starring Bill Cosby. The episode depicts Fat Albert and his friend Slim eating only junk food, leading to Slim having a toothache and having to visit the dentist, and becoming so weak that he is responsible for losing a football game. The episode suggests that eating "wholesome food" can help children avoid these negative outcomes. Condition one consisted of the episode alone. In Condition two, the same combination of nutritional PSAs as used in Condition three of Study A were inserted two or three at a times at six points in the programme. In Condition three, the same nine sugared snack and breakfast food adverts as used in Condition one in Study A were inserted one or two at a time at five points in the programme.

Method Children were randomly drawn from classes and taken to a room to watch the relevant tape, in groups of seven or eight. After the tape, they were involved in a 5-minute discussion of their favourite television programmes, and were then administered a questionnaire. Six large boards were shown sequentially to the children. Each contained six squares, on which an actual food product was mounted. Four of the boards contained snack foods, and two contained breakfast foods. On each board, three of the foods were selected, following consultation with nutritionists, to be "more wholesome", "lower in glucose and generally higher in nutrient value", and three to represent "less wholesome" foods with high glucose content and which were generally lower in nutrient value. Of the three high sugar products on each board, one or two were the same products which had featured on the advert tapes in conditions one and two, and one or two had not been featured on the advert tapes.

The children's questionnaire contained six sketches of the boards, with the foods shown in the same location on the page as on the board and the name written immediately below. The researcher identified each of the foods on the board and made sure that the children were able to recognise the correspondence between the board and questionnaire sketch. The researcher then asked the children to pretend that he/she was babysitting for the children while their parents were on holiday, and that he/she did not know what foods they liked, so the children were to choose three of the six foods on each board and mark these with an X on the questionnaire. In total, children selected three foods from each board, making a total of 18.

Following the food selection, the children completed the second part of the questionnaire, in which they were asked to indicate whether each of the foods mounted on the boards was 'good for you and healthy' or 'bad for you and not

Measures Mean numbers of more wholesome and sugared foods chosen by each group.
Perceptions of healthiness of foods.

Statistical analysis Analysis of variance. Post hoc Newman-Keuls analyses.

Results Children exposed to the Fat Albert programme in all three experimental conditions selected significantly fewer sugared snacks than children in the control group ($p < 0.05$). Children in Condition three (programme plus sugared food adverts) selected a greater number of sugared foods than children watching Fat Albert on its own or with nutritional PSAs, but the difference was not significant.

Children exposed to the Fat Albert programme on its own selected significantly fewer sugared foods than children exposed in Study 1 to 4.5 minutes of nutritional PSAs ($t = 2.91$, $df = 28$, $p < 0.01$) and to 9 minutes of nutritional PSAs ($t = 6.89$, $df=28$, $p < 0.001$).

There were no differences between any of the groups in the numbers of foods they identified as healthy and unhealthy.

Published in Advances in Consumer Research (ACR) (journal)
Journal of Consumer Research (JCR)

Peer-reviewed ACR – journal is currently peer reviewed
JCR – yes

Authors' discipline Marketing (lead authors)

Funding source Unknown

GOLDBERG 1990

Relevant to Systematic Review 2 Questions 1, 2.

Design Naturalistic quasi-experiment examining the degree to which children are affected by television advertising or its absence, by comparing the toy- and food-related behaviour of English-speaking children in Montreal, who were exposed to American television, and French-speaking children who watched less American television in favour of Quebec television, which banned children's advertising in 1980.

Sample 144 English children and 331 French children aged 9-12. The English-speaking sample was obtained from three sources: a school in an upper-middle income English-speaking suburb of Montreal, a day camp in a lower income English-speaking area of Montreal and a 'charity camp' for English-speaking children about one hour from Montreal. Seventy eight children were selected from the school (census area mean family income $40,395 in 1980), and 66 from the two camps (census areas mean family income $17,213 in 1980). The French-speaking sample was obtained from two sources: an upper-middle class camp about one hour from Montreal, and a school in a French-speaking working class area in Montreal. Both areas were equivalent in income and socio-economic characteristics to the English-speaking areas. One hundred and nineteen children were selected from the camp and 212 from the school.

The English- and French-speaking samples were similar in socio-economic characteristics and in amount of television watched (just over three hours per day).

The intervention/ stimulus The study examined the impact of American commercial television (three American commercial channels reached Quebec), on English-speaking children, who were exposed to a high level of American television, and on French-speaking children, who were exposed to a low level of American television. Broadcasting data indicated that both groups watched a similar amount of television (just over three hours per day); however, the English-speaking children watched more American television, and the French-speaking children watched more Quebec-based television, which had since 1980 eliminated commercials aimed at children throughout most of the television schedule.

Method A questionnaire was administered to the two sub-samples, in both English and French. As the questionnaire was administered at slightly different times (late June to children in schools, early July to children in camps), data were analysed to assess whether location and timing were factors in children's responses. T-tests revealed no significant differences in key dependent measures as a function of location or timing of the study.

Measures The independent variable, amount of viewing of American television, was measured by asking children to indicate frequency of viewing of all children's programmes available on American networks in Montreal over the two week period before the study. A 5-category scale was used (ranging from never to 'more than six times'), and responses were used to estimate the total number of American television programmes each child watched during the year.

The dependent variables were awareness of toy products recently advertised on Saturday morning American television networks, and household cereal purchase. This was measured by asking children whether each of a list of locally available children's cereals were in currently in their homes. The list of cereals was generated by noting the children's cereals available in four supermarkets (one in each of the study areas) at the time of the study. Children's cereals were defined as meeting one or more of the following criteria: i) adverts were shown for the cereal on Saturday morning children's television; ii) the packaging was clearly targeted to children by the use of cartoon characters; iii) promotions and premiums were targeted to children; and iv) the cereal had "an especially

Statistical analysis T-tests were used to check for differences between the English- and French-speaking children in hours of American television watched per day. French-speaking children watched significantly less American television per day than English-speaking children.

A 2x2 ANOVA with two levels of language (English- and French-speaking) and two levels of income (low, upper-middle) was conducted, with level of American television viewing as dependent measure. This indicated that there was a significant effect of income on amount of American television viewing as well as of language, and that there was a significant income by language interaction. Newman-Keuls post hoc analyses indicated that low income English-speaking children watched more American television than upper-middle income English-speaking children, and both English-speaking groups watched significantly more American television than French-speaking children. Within the French sample, the low income and upper middle income children watched the same amount of American television.

Two-way ANOVA was conducted with two levels of language and two-levels of income as independent variables and number of children's cereals purchases as the dependent measure.

Within-group correlational analyses were conducted for English- and French-speaking samples separately.

GOLDBERG 1990

Results

English-speaking children reported a significantly greater number of children's cereals in the home than did French-speaking children (F= 5.51, p<0.02, English mean = 2.42, French mean = 2.03). A significant effect for income was found, with low income children purchasing a greater number of children's cereals than upper-middle income children (F= 23.92, p<0.0001, low income mean = 2.56, upper middle income mean = 1.38). "Both of these main effects must be interpreted in light of a significant language by income interaction (F = 3.68, p=0.05)". Newman-Keuls analyses indicated that there was a significant difference between the two low income groups in number of children's cereals purchased, with the English-speaking group purchasing significantly more (mean = 3.59 vs. 1.44, Newman-Keuls p<0.05), but that there was no difference between the two upper-middle income groups (mean = 1.44 vs. 1.30, ns).

Correlation between level of American television viewing and children's cereals purchased was 0.35 for the English-speaking sample (p<0.0001) and 0.19 for the French-speaking sample (p<0.01). This suggested that within each language group, purchase of cereals increased with greater exposure to American television.

American television viewing scores for both English- and French-speaking children were divided into tree levels, with a third of each group in each level (low, medium and high). This independent variable was used in one-way ANOVAs, with number of children's cereals purchases as the dependent measure.

One-way ANOVA for English-speaking children revealed significant effects (children's cereals purchased F = 6.90, p <0.01). Newman-Keuls test revealed that children with the highest level of American television viewing had significantly more children's cereals in their homes (mean = 3.81) than did children with medium and low levels of American television viewing (2.23 and 1.23 respectively).. Similarly, one-way ANOVA for French-speaking children revealed significant effects for level of American television viewing on children's cereals purchased ((F = 5.24, p<0.01). Newman-Keuls test indicated that cereal purchase scores for children with highest levels of American television viewing were significantly higher (mean = 2.66) than cereal purchase scores for children with medium and low levels of American television viewing (mean = 1.89 and 1.49 respectively). The relationships within each group supported the explanation that the differential level of American television exposure, rather than cultural or income characteristics, was responsible for at least part of the difference between the two language groups in purchase of children's cereals.

It was hypothesised that if English-speaking and French-speaking children who watched the same amount of American television had similar scores for cereal purchase, other factors could be ruled out as independent influences, whereas if they had differing cereal purchase scores, other independent influences may have been operating on cereal purchase. The entire sample of children was therefore divided into low, medium and high levels of viewing of American television. At each level, a comparison for English- and French-speaking children was made for the cereal purchase variable. T-tests indicated that none of the comparisons were significant; this supported the hypothesis that French- and English-speaking children viewing the same amount of American children's television respond similarly to products advertised during those programmes. The investigators argued that the lack of differences lessened the likelihood that other language or cultural factors might explain the differences in cereal purchase.

To minimise the problem that television viewing was measured more sensitively (as a continuous variable) whereas language was a dichotomous variable, level of American television viewing was dichotomised at the midpoint. A dummy variable regression was performed, with American television viewing, language and income as independent variables and cereals purchased as the dependent variable. This indicated a significant main effect for level of American television viewed (F = 14.30, p<0.001), with children in the high level having purchased more children's cereals (mean = 2.67) than children in the low level (mean = 1.62). There was also a significant main effect for income (F = 19.78, p<0.0001), with low income children having purchased more children's cereals (mean = 2.42) than upper-middle income children (mean = 2.03). There was no significant effect for language, and no significant interactions, although the interaction of level of American television viewed by income approached significance (p<0.07). The difference in children's cereals purchased as a function of level of American television viewing was larger for the low income groups than for the high income groups.

Published in Journal of Marketing Research

Peer-reviewed Yes

Author's discipline Marketing

Funding source Quebec Office of Consumer Protection, Montreal, Quebec

GORN & FLORSHEIM 1985

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment to explore the impact of advertising for 'adult products' on girls' perceptions and future consumption intentions.

Sample 70 9-10 year old girls. Respondents were recruited from a Girl Guide organisation. No other information was provided on the sample.

Allocation to conditions Respondents were randomly allocated to two conditions:

1. Lipstick condition. Exposure to two different lipstick adverts for two different brands, each shown twice.
2. Diet drink condition. Exposure to two different diet drink adverts for two different brands, each shown twice.

Lipstick was selected "as a product the sample was not currently using but could see themselves using in the next few years". Diet drinks were selected "as a product the sample was neither using at present nor saw themselves using in the next few years". The decision to select the two products was made on the basis of exploratory research with a same age sample. It was hypothesised that the diet drinks adverts would have less impact than the lipstick adverts because the product was of less concern to the sample.

The intervention/ stimulus Each experimental tape comprised a 15-minute enjoyable (cartoon) or unenjoyable (cross-country race) programme interspersed with the five adverts as outlined above.

Method Each experimental tape comprised a 20-minute programme unrelated to food or cosmetics in which the adverts were inserted. A pretest questionnaire was administered before viewing. The 'lipstick' condition respondents completed the diet drink pretest questionnaire then viewed the lipstick tape, after which they completed a posttest questionnaire on lipsticks. The diet drink condition respondents completed the lipstick pretest questionnaire then viewed the diet drink tape, after which they completed a posttest questionnaire on diet drinks. This design was used to enable each group to act as the other's control.

Measures Four types of measure were taken for the diet drinks. Brand awareness was assessed by asking respondents which of a list of soft drinks companies made diet drinks, and advertising awareness was assessed by asking respondents to complete jingles in different diet drink commercials.

Product preferences were measured by asking respondents which product a new female teacher might like from a range of coffee, soft drink, diet drink or milk, and by asking respondents which they would prefer themselves from a range of Kool-Aid, soft drink, diet drink, or milk.

Brand preferences were measured by asking respondents to select between the advertised brand and an unadvertised brand if they were buying a diet drink for themselves and for the teacher.

Perceptions of age appropriate behaviour were measured by asking respondents whether consumption of diet drinks would make a girl of their age look 'silly' or 'grown-up', and whether a girl in high school should drink diet drinks

A similar set of questions was asked for the lipstick condition.

Statistical analysis

Results As hypothesised, stronger effects were found for the lipstick condition, in which exposure to the advertising affected brand and product preferences, and perceptions of age-appropriate behaviour. Exposure to the diet drink advertising was associated with increased brand awareness of diet drinks ($p<0.01$), and with increased ability to complete the jingles in the two diet drink adverts ($p<0.01$). Exposure to the diet drink advertising had no effect on respondents' personal product preferences or their preferences if selecting for a teacher, or on their brand preferences in either of these situations, or on perceptions of age-appropriate behaviour.

Overall, the study suggested that even where children are exposed to advertising for a product which may not be salient to them (as diet drinks were judged to be at the time the study was conducted), the advertising can increase their brand and advertising awareness and their perceptions of the link between the product and looking grown-up.

Published in Journal of Consumer Research

Peer-reviewed Yes

Authors' discipline Marketing (both authors)

Funding source Unknown

GORN & GOLDBERG 1980a

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment.

Sample 131 boys aged 8-10 in Quebec. The children were recruited through Canadian Cub Scout groups, and were described as middle class.

Allocation to conditions Subjects were randomly allocated to six conditions:

1. One commercial for a particular brand of ice cream.
2. Three repetitions of one commercial for the same brand of ice cream.
3. Three different commercials for the same brand of ice cream.
4. Five repetitions of one commercial for the same brand of ice cream.
5. Five different commercial for the same brand of ice cream.
6. Control – no commercials.

The experimental groups were not the same in size, ranging from 18 to 40.

The intervention/ stimulus Each tape comprised a half hour cartoon programme interspersed with the relevant number of commercials. The same brand of ice cream was used in all the conditions, and was a brand which had not yet been introduced into Quebec, so it was assumed that none of the children had heard of the particular brand.

Method Respondents viewed the relevant experimental tape in groups as part of one of their Cub Scout group activities. After viewing the tape, they were asked a series of questions which they answered in a written booklet.

Measures Measures were taken of generic product preference (preference for ice cream relative to other snack foods such as chocolate or gum), brand preference (preference for the advertised brand relative to other brands of ice cream), and advertising recall (recall of the number of adverts seen, the brand, and the number of flavours mentioned in the adverts).

Actual consumption behaviour was measured by giving children a tub of the advertised ice cream to eat while watching a subsequent 15-minute programme unrelated to the experimental material. At the end of the programme, the containers were weighed to assess how much each children had eaten. The children themselves were also weighed.

Statistical analysis Newman-Keuls tests were used to measure differences between the treatment groups representing different levels of exposure. One-way analysis of variance was conducted to examine the relationship between average number of commercials recalled as a function of number of exposures.

Results Children in each condition were reasonably accurate in recalling the number of adverts they had seen.

Correct recognition of the name of the ice cream increased in children who saw three repetitions of the advert compared with one advert only (76% vs. 48%, X^2 = 3.40, df+ 1, $p<0.10$) and in children who saw three different adverts compared with one advert only (95% vs. 48%, X^2 = 8.94, df+1, $p<0.10$). Increasing the number of exposures to five did not improve children's recall further. Correct recognition of the number of flavours mentioned in the advert was relatively high. 62% of children exposed to only one advert gave the correct answer, and there were no significant differences between the treatment groups.

Analysis of variance indicated that all experimental conditions had an effect on children's brand preference for the advertised brand over other brands ($F=2.59$, df = 5, 105; $p<0.05$). Newman-Keuls post hoc analysis indicated that those who viewed three different adverts had significantly greater preference for the advertised brand than did those who viewed only one advert ($p<0.01$). The preference scores for all other experimental groups fell within this range and were not significantly different from one another.

There were no significant differences between any of the groups with regard to first choice for a food snack (generic preference). However, children exposed to five different adverts were significantly more likely to select ice cream as their second choice (45% made this selection), compared with 10-15% in the other conditions ($p<0.05$).

Increased exposure to the adverts did not increase consumption of the ice cream, and there was a tendency for those seeing increased numbers of repetitions to eat fewer ounces of ice cream. This was not the case for those who viewed increased numbers of different commercials, where there was no discernible relationship between quantity of ice cream consumed and number of different adverts. Removing the influence of the child's weight and treating it as a covariate did not alter the results.

Published in Journal of Consumer Research

Peer-reviewed Yes

Authors' discipline Marketing

Funding source Canadian Social Science and Humanities Council (Grant 244-21)

GORN & GOLDBERG 1982, 1980b

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment.

Sample 288 children aged 5-8. The study population was children attending a summer camp in Quebec. The camp is described as 'low income', and housed children in 6-person cabins, with 12 cabins for five to six year olds and 12 cabins for seven to eight year olds. The study was conducted over two two-week sessions, during which two of the four experimental treatments were administered. For each two-week sessions, six cabins for each of the two age groups were randomly assigned to one treatment or another.

The summer camp workers assigned to each cabin did not know to which experimental condition the children in their cabin had been assigned, and were asked not to discuss anything related to the study with the children.

Allocation to conditions Subjects were randomly allocated to four conditions:

1. Commercials - sweets
2. Commercials - fruit
3. Dietary PSAs
4. Control - no adverts or messages

The intervention/ stimulus Each experimental tape comprised a half-hour cartoon taped from Saturday morning television (a different cartoon was shown each day). Four and a half minutes of commercials or PSAs were inserted into the first three experimental tapes; the control tape contained no adverts or PSAs. The sweets adverts were for products such as Hersheys, Mounds, Almond Joy, Kit Kat, Three Musketeers, Kool Aid, M&Ms, Lifesavers, and Crackerjacks. The fruit adverts were obtained from fruit grower associations, and were for oranges, orange juice, apples, grapes, peaches, pears, plums, bananas and raisins, and for yoghurts. The PSAs communicated messages about the value of eating less sugar and eating a balanced variety of foods each day.

Method The study was conducted in two recreation rooms at the camp, each containing a television. Each afternoon for two weeks, children went to one room or the other in their experimental groups, with about 18 children watching one television at a time. After watching the programmes, children then made their daily afternoon snack choices. The choices consisted of two drinks choices (orange juice or Kool Aid) and four food choices (two fruits and two sweets). Children came to the table individually, to minimise group influences, and were asked to select one drink and two food items. Choices were recorded by an assistant standing near the snack table. During the period of the study, the camp agreed to offer children no sweets or fruit other than those offered as part of the experiment. In addition, children had no access to television other than during the daily half hour of the experiment. The researchers overseeing the television viewing and snack distribution alternated each day to avoid developing a 'consistent mental set' towards the children.

On the final day of the camp session, children completed a simple questionnaire to assess attitudes and expectations regarding fruit and sweets (eg. '[name of researcher] wanted me to eat fruit/candy', 'the camp doctor wanted me to eat fruit/candy', 'the camp should buy fruit/candy for the new kids coming to camp next week'. Each question was answered using a 5-point scale where one pole equalled 'all sweets' and the other 'all fruits', with the mid/point 'half

Measures The dependent measures were:
Drinks choices, food choices. **Behaviour.**
Children's expectations of the researchers' and doctor's preferences. **Attitudes.**
Children's attitudes regarding what the camp should offer to new children. **Attitudes.**

Statistical analysis Two-way nonrepeated measures ANOVA (age x condition) was used to analyse each of the dependent measures.

Results There was a significant treatment effect on children's drinks choices ($F(3,280) = 4.18$, $p<0.01$). Children exposed to the fruit adverts selected the most orange juice and children exposed to the sweets adverts selected the least orange juice (45% vs. 25%, p,0.05). Children exposed to PSAs and to no messages or adverts fell between the two other groups (40% and 35% orange juice respectively) and were not significantly different from the children in the sweets adverts condition.

There was also a significant treatment effect on children's food choices ($F(3,280) = 5.32$ $p<0.001$). Children exposed to the sweets adverts picked significantly less fruit (25%) than children in the other three groups, which were not significantly different from one another (fruit adverts 36%, PSAs 35%, control 33%).

There were no significant differences between groups of children in their expectations of the researchers' and doctor's preferences, with expectations of the researcher's preferences tending to 'mostly fruit' and of the doctor's preferences tending to 'all fruit'. There were no significant differences between groups of older children in their views on what food and drinks the camp should provide for the new children. The overall tendency was in the direction of more sweets than candy, but this did not differ for the different conditions.

Published in Journal of Consumer Research (1982)
88th Annual Convention of the American Psychological Association (1980b)

Peer-reviewed 1982 – journal is currently peer reviewed
1980 – unknown

Authors' discipline Marketing

Funding source Unknown

GRACEY ET AL 1996

Relevant to	Systematic Review 2 Questions 1, 2, 3.
Design	Cross-sectional survey examining relationship between a range of psychological, behavioural and other variables, and nutritional knowledge and behaviours. The variable relevant to the review was reported television watching (not advertising exposure).
Sample	391 year 11 students (mean age 15.8) of both sexes from two public schools and one private school in Perth, Australia.
Sampling procedure	The two public schools were randomly selected from a list of higher and lower socioeconomic status schools (one of each status); no information is provided on how the private school was selected. All year 11 students (n=480) in mainstream classes in the three schools were eligible for participation in the study; 391 completed the survey. No information is provided on reasons for non-completion or the characteristics of non-responders.
Method	Questionnaires were distributed to students in class for completion under teacher supervision.
Measures	Stage of change for healthy eating (7 items), health beliefs and values (18 items each), self-efficacy (18 items), locus of control (5 items), perceived barriers to dietary change (16 items), nutritional knowledge (8 items), eating patterns (7 items), food intake (a 30-item food variety score plus other items), television watching, and demographic measures. The television watching variable was reported hours spent watching television on weekdays and at weekends.
Statistical analysis	Correlations, linear regression analysis
Results	The results relevant to the review concern the relationship between television watching and food knowledge, attitudes and behaviour. There were significantly lower levels of television watching during the week among private school students compared with public school students. Television watching during the week correlated negatively with nutrition knowledge scores ($r = -0.1170$, $p=0.028$). There were no significant correlations between television watching and body mass index, fat score or food variety score. Weekend television viewing was significantly correlated with Kinlay's fat score, although no details are reported. Linear regression analyses were conducted with Kinlay's fat score and the food variety score as dependent variables. In each model, independent variables comprised variables that showed significant univariate relationships with these variables. Weekend television viewing was one of the independent variables in the Kinlay's fat score model, but appears not to have been included in the model of food variety score. This suggests that weekend television viewing had a significant univariate relationship with Kinlay's fat score but not with the food variety score. However, no details are given of the strength or significance of the univariate relationships. The regression models controlled for gender, age and school and all independent variables appear to have been entered in one step. The linear regression with Kinlay's fat score as the dependent variable showed that, controlling for age, fat score was positively associated with being male ($p<0.001$), drinking alcohol ($p<0.05$) and weekend television viewing ($p=0.0513$) and was negatively associated with age ($p<0.05$), self-efficacy ($p<0.001$) and influence over food bought at home ($p<0.05$). Thus, a higher level of weekend television viewing was associated with a higher fat score, although this just approached significance. The regression model explained 22% of variation in the fat scores.
Published in	Health Education Research: Theory & Practice (journal)
Peer-reviewed	Yes
Authors' discipline	University Dept of Medicine, and Dept of Public Health
Funding source	Programme Grant from the Australian National Health and Medical Research Council

HESLOP & RYANS 1980

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment designed to examine the impact of free gifts on cereal preferences.

Sample 280 children aged 4-8 in London, Ontario and their mothers. Respondents were recruited through letters to parents via school boards, and the sample was intended to be 'broadly representative of the population of children in the city'. A 13% response rate was obtained. The sample had a slightly higher family income and education level than the overall city population.

The sample comprised equal numbers of four to six year olds (defined as being in the preoperational stage of cognitive development) and seven to eight year olds (defined as being in the concrete operational stage of cognitive development). It was hypothesised the preoperational children would be more responsive to promotion than older children.

Allocation to conditions Subjects were randomly allocated to four conditions:

1. Cereal advert which did not mention a free gift
2. Cereal advert which promoted a free gift
3. Cereal advert which contained only a short reference to the free gift
4. No cereal ad

Each of the three experimental conditions involved two versions, one exposure to the advert or three exposures to the advert. This gave a 3 x 2 x 2 factorial design, with three different adverts, two different levels of exposure, and two different age groups (4-6 years and 7-8 years) with a separate control group for each age group. In total, there were 14 cells with 20 subjects in each cell.

The intervention/ stimulus Each experimental tape comprised a 22-minute cartoon interspersed with three commercial breaks. Depending on the experimental condition, one of the experimental adverts or a PSA was inserted in each break.

Method Each child viewed the experimental tape individually in a viewing room, during which their attention level during the programme and adverts was recorded. After viewing the tape, mother and child were taken to a product selection area where they were invited to select one of three brands for each of five products on display as a reward for taking part in the study. Mother and child were left alone to make the selection, to allow naturalistic interaction between the two. Following the product selection, both mother and child were interviewed separately about their attitudes and preferences towards cereals, and about the child's general purchase influence behaviour, and socio-demographic information (mothers), and about their cognitive development and food shopping experience (children).

Measures Three measures of preference and choice behaviour were obtained:

- child's stated cereal preference during the child interview.
- mother's report on which cereal her child requested.
- the actual cereal selected.

Statistical analysis Analysis of variance using a fixed effects analysis of variance model. Analysis followed a procedure described by Winer (1971) for a factorial design with control groups.

Results Exposure to the experimental adverts had a significant impact on only one of the measures, the child's stated cereal preference ($p=0.06$) when the F ratio for the control group versus all other groups was examined. There was no significant difference between the control and experimental respondents on the other two measures of preference and behaviour. The degree of emphasis placed on the free gift in the advert (ie. whether all or only part of the advert featured the free gift) had no significant impact on any of the three measures.

The proportion of respondents selecting the advertised cereal over another cereal was always higher for the group exposed to three repetitions of the advert compared with those exposed to only one, but the difference was not significant.

When compared by age, older children were significantly more likely to take home the advertised cereal than younger children.

Overall, the study suggested that effects of the advertising and free gifts on behaviour were minimal, although there was an effect on child's preference.

Published in Journal of Consumer Research

Peer-reviewed Journal is currently peer reviewed

Authors' discipline Consumer Studies & Marketing

Funding source Unknown

HITCHINGS & MOYNIHAN 1998

Relevant to Systematic Review 2 Question 1.

Design Interviews with children plus children's self-completion food intake diary. Interviews with parents.

Sample 44 children aged 9 to 10 (mean age 10.2) of both sexes. The sample was drawn from state and private schools in Newcastle upon Tyne, of which eleven were approached and four agreed to participate in the study. A total of 169 children from the four consenting schools were approached, 44 of whom participated in the study and 41 of whom completed the study (overall response rate of 26%). Seventeen of the respondents were from private schools and 27 from state schools; 21 of the respondents were boys and 23 were girls, although boys and girls were not evenly distributed across the types of school.

Method Face-to-face interviews, examining children's recall of advertising, were conducted in school. Children were also asked to complete a 3-day food diary covering two week days and one weekend day. This involved writing down everything they ate or drank over the three days including the brand name. Interviews were used to clarify and enlarge on the diary information. The main food purchaser for the child was interviewed in the home.

Measures Advertising recall measures were obtained by asking children to recall verbally all the food adverts they had seen on television over the past two weeks. No prompting was given "in order to mimic to [sic] the situation when a child requests a food without first seeing the product as a visual memory aid". Where the child could not remember the actual product name, the advert was not included. If a child remembered more than one advert for a specific food they were credited only once with remembering the advertised food. Only adverts in the following categories were included in the analysis:

- breakfast cereals
- confectionery
- sweet puddings excluding fresh fruit
- savoury snacks excluding cheese
- soft drinks
- cakes and biscuits excluding fully coated chocolate biscuits
- chips

The proffered rationale for the exclusions was that the study focused on foods which were high in fat, sugar or both and which may be eaten as snack foods.
Food diary data were recorded in the same categories.

Parents/main food purchasers were interviewed about children's food requests in the last month and whether or not these foods had been purchased.

Statistical analysis Relationship between the total number of foods for which advertisements could be recalled and the number of these foods recorded in the food diaries was investigated using Spearman's rank correlation.

Results The mean number of adverts recalled in each category ranged from 0.36 for cakes and biscuits to 3.25 for breakfast cereals. Children also recalled an average of 2.14 confectionery adverts and 1.59 soft drink adverts. Spearman's rank correlation analysis indicated that the strongest relationships between adverts remembered and foods consumed were for soft drinks ($r=0.68$, $p<0.001$), crisps and savoury snacks ($r=0.61$, $p<0.001$), cakes ($r=0.57$, $p<0.001$) and sweets ($r=0.56$, $p<0.001$). All other relationships were also significant apart from the relationship for chips.

Comparing the 10 most frequently recalled food adverts by children and the 10 most frequently requested foods as reported by parents, four items appeared on both lists: Walkers crisps, Kellogg's Coco Pops, Micro chips, and Kellogg's Frosties. Parents reported granting 96% of children's food requests.

Published in Journal of Human Nutrition and Dietetics

Peer-reviewed Yes

Authors' discipline Dentistry

Funding source Unknown

JEFFREY ET AL 1982 STUDY 1

Relevant to	Systematic Review 2 Questions 1, 2.
Design	Exploratory randomised controlled experiment.
Sample	Forty seven 4-5 year olds. No further information is provided.
Allocation to conditions	Subjects were randomly assigned to three conditions: 1. 'Low nutrition' adverts 2. 'Pro nutrition' adverts 3. Control (non-food adverts)
The intervention/ stimulus	The experimental conditions involved exposure to a tape containing a 9-minute cartoon segment and three minutes of commercials. The commercials comprised three different 30-second adverts which were shown twice. On the 'low nutrition' tape, the adverts were for Pepsi, Fritos and Hershey Chocolate; the 'pro-nutrition' tape adverts were for grapes, milk and cheese', and the control tape contains adverts for three children's toys.
Method	A baseline measure of consumption was taken by allowing children to sample individually for eight minutes from a tray of 12 different foods and drinks. Six items were defined as 'pro-nutrition' (cheese, grapes, carrots, apples, orange juice, milk) and six as 'low nutrition' (Hershey Chocolate, Chips Ahoy, Fritos, Honey Combs, Kool-Aid, Pepsi). Each food and drink was presented in approximately equal sized amounts in transparent cups. The placement of the cups on the tray was randomly determined for each subject. Children were instructed to consume as much as they wanted. A week later, subjects watched the experimental tapes in groups. Immediately afterwards, they completed the eating test again. On both occasions children completed a food attitude test for each of the 12 foods and drinks, in which they indicated how much they liked each food or drink product, using a 6-item visual facial expression scale presented on a poster. They also appear to have been asked their recall of different products, though this is only apparent from the results, not from the methodology.
Measures	Amounts of each food and drink consumed at each testing were taking in grams and millimetres and then converted to calories. **Behaviour.** Attitudes to the foods (how much each was liked). **Attitudes**.
Statistical analysis	3 x 2 factorial ANOVA conducted on the total calorific score variables. T-tests.
Results	The analysis of variance with repeated measures (3 x 2 factorial ANOVA) found significant increases between baseline and post-test in total calories consumed from foods, ($F(2,44)=9.75$, $p<0.01$), total calories consumed from beverages, ($F(2,44)=8.12$, $p<0.01$) and total calories consumed from food and beverages ($F(2,44)=14.99$, $p<0.01$). However, as significant between groups and interaction effects were not found the study did not provide evidence of low nutrition adverts exerting an influence on the children's food consumption. Pre-post changes in the three calorific consumption scores were analysed separately for each of the treatment groups. Comparing baseline and post-test scores for each group separately, the group exposed to 'low nutrition' adverts increased their total calorific consumption for foods ($t(1,15) = 2.41$, $p<0.05$), drinks ($t(1,15) =2.67$, $p<0.05$) and foods and drinks combined ($t(1,15) = 3.38$, $p<0.01$). The group exposed to 'pro-nutrition' adverts increased their total calorific consumption only for drinks ($t(1,14) = 2.36$, $p<0.05$). The control group displayed no significant changes between baseline and post-test. Calorific consumption scores for the specifically advertised foods were also analysed separately. Subjects exposed to the 'low nutrition' adverts increased their consumption of two of the three advertised 'low nutrition' foods between baseline and post-test (Hersheys Chocolate $t(1,15) = 2.63$, $p<0.05$; Fritos $t(1,15) = 2.16$, $p<0.05$). Subjects exposed to the 'pro nutrition' and control adverts did not increase their consumption of these specific foods. These separate analyses of pre-post change within each treatment group were suggestive of a possible influence from 'low nutrition' adverts on the children's food consumption. However, in the absence of between groups and interaction effects from the ANOVA , no effect could be concluded.
Published in	Health Education Quarterly (journal)
Peer-reviewed	Yes
Authors' discipline	Psychology
Funding source	National Institute of Health, US Public Health Service (Grant HD 12073) and National Science Foundation (grant no. ISP-8011449)

JEFFREY ET AL 1982 STUDY 2, FOX 1981

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled pre- and post-test experiment.

Sample Forty eight 4-5 year olds and 48 9-10 year olds, with an equal number of boys and girls in each age group. No information is provided on the total study population from which the sample was drawn or how they were selected. The inclusion of an older sample was designed to test whether the impact of commercials is mediated by cognitive development. This view would be supported if older children were less susceptible to the commercials.

Allocation to conditions Subjects were randomly assigned to three conditions:

1. 'Low nutrition' adverts
2. 'Pro nutrition' adverts
3. Control (non-food adverts)

The intervention/ stimulus Each tape lasted around 13 minutes, and included a 7-minute and 50 second cartoon segment and five minutes of commercials. The commercials comprised two different adverts for Pepsi and Froot Loops ('low nutrition' tape), two adverts for carrots and milk ('pro nutrition' tape), and adverts for play equipment (control tape). Each advert was 30-seconds long and repeated at least twice on each tape.

Method The same food consumption, attitudes and recall tests were performed as in Jeffrey et al Study 1.

Measures Amounts of each food and drink consumed at each testing were measured in grams and millimetres and then converted to calories. **Behaviour.**
Attitudes to the foods (how much each was liked). **Attitudes**.

Statistical analysis Repeated measures analyses of covariance were performed on the total score variables to determine the effects of group, sex and age and to try to minimise the effects of differences in consumption between different sized children. Height and weight were used as covariates since they correlated strongly (0.59 to 0.68) with total calories consumed on the pretest and posttest).

Results There was a significant change x group x sex interaction on the total calories foods and beverages variable, $F(2,84) = 3.60$, $p = 0.032$. Newman-Keuls test on the adjusted means indicated that boys exposed to the low nutrition adverts were the only group to display a significant increase in consumption ($p<0.05$). Males in the low nutrition adverts groups did not differ from males in the other two groups at baseline, but consumed significantly more food on the post-test than males in the other two groups ($p<0.05$). The change x group x sex interaction on the low nutrition foods and beverages variable was not significant at the traditional 0.05 level ($F(2,84) = 2.75$, $p = 0.07$). Post hoc comparisons performed on the adjusted means revealed the same pattern of results found on the total calories food and beverage variable, with the low nutrition advert group for males eating more after exposure to the television adverts than any other group. In comparison with the other groups, males exposed to the low nutrition adverts consumed significantly more calories from all foods at post-test. They also consumed more calories from low nutrition foods than did other groups, but this did not reach statistical significance at the traditional $p<0.05$ level.

Change x group x sex x age interactions were not significant, suggesting that the two different age groups were not affected differentially by the adverts.

On the cognitive measures, nine year olds scored more highly than four year olds on definitions of a balanced diet and ability to identify healthy and unhealthy food, and on recall of the advertised products. They were also better able to define the difference between programmes and adverts, and were less likely than four year olds to believe that programmes and adverts always tell the truth.

Published in Jeffrey et al - Health Education Quarterly (journal)
Fox - PhD Thesis

Peer-reviewed Jeffrey et al - Yes
Fox - Unknown

Authors' discipline Psychology

Funding source National Institute of Health, US Public Health Service (Grant HD 12073)
and
National Science Foundation (grant no. ISP-8011449)

KAUFMAN & SANDMAN 1983

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled pre- and post-test experiment.

Sample 1,108 children aged 5-10 from public schools in three cities in the USA. Each class was randomly assigned to one of four treatments. A total of 1,179 children completed all parts of the study, but 71 were excluded from the analysis because of "invalid answer sheets", leaving a sample of 1,108. The sample was evenly distributed by gender and age.

Allocation to conditions Respondents were randomly allocated in classes to watch one of four experimental conditions:

1. Sugared food adverts
2. Sugared food adverts plus counter-adverts
3. Counter-adverts
4. Sugared food adverts plus disclaimers

The intervention/ stimulus Each tape consisted of a 15-minute cartoon plus four adverts. In condition 1, the adverts comprised two neutral adverts (for non-food products) plus adverts for sweets and Kool-Aid. In condition 2, the two neutral adverts were replaced by two counter-adverts specifically designed for the study. Both depicted children (one in a supermarket with her mother, one playing softball) choosing fruit instead of sweets and featured the strapline "don't eat so much sweet stuff". Condition three featured the counter-adverts only, plus the two neutral adverts. In condition four, the two neutral adverts and the two sugared food adverts were shown, the latter two both being followed by a 10-second disclaimer. This comprised an adult voice over a still photograph of the product warning that the product was high in sugar and "bad for your teeth, your health, bad for you".

Method Respondents completed a food preferences test three days before exposure to the experimental stimuli and again immediately after exposure. The food preferences test comprised a series of pairs of foods described verbally and depicted with a line drawing. Children were asked to circle their favourite from each pair. Forty two pairs were generating by pairing six highly sugared generic foods (eg. candy, cake, soda) with seven "nutritionally sounder generics" (eg. popcorn, oranges, spaghetti); all the items were mentioned at least once in the counter-adverts. Another 42 pairs were generated by pairing each of these items with a generic which had not been mentioned in the counter-adverts, such as marshmallows, bread, peanut butter. Three broader pairs were also used (eg. 'fruit' and 'sweet stuff'), bringing the total to 87. Forty three of these pairs were randomly assigned to the pre-test measurement and 44 to the post-test.

Measures Food preferences from the 87 pairs described above. 'Healthy Choice Scores' were obtained for each child by multiplying the number of less sugared preferences by 100/43 for the pre-test and 100/44 for the post-test. In both cases, zero represented consistent selection of the more sugared choice and 100 consistent selection of the less sugared choice.

Children were also asked to indicate whether they regularly watched Saturday morning television, and to provide information on age, sex and grade.

Statistical analysis Analysis of variance was conducted on pre-test 'healthy choice scores' by city and experimental condition. This revealed that the children in different conditions differed in preferences before exposure to the adverts. Analysis of covariance was used to adjust the data to take these initial differences into account.

Results 'Healthy Choice Scores' at post-test were subject to analysis of covariance by experimental condition, controlling for both city and pre-test scores. This measured the effect of the different experimental adverts on children's preferences when the confounding effects of city and pre-test preferences were statistically eliminated. Both city and pre-test scores significantly affected post-test 'healthy choice scores' (city $F=16.6$, pre-test 'healthy choice score' $F=808.7$; $p<0.01$). There was also a significant main effect on post-test 'healthy choice scores' ($F=24.0$, $p<0.01$) when these influences were statistically controlled for. The explained variance for the analysis was significant at $p<0.01$, suggesting that the relationship between treatment and post-test 'healthy choice score' was unlikely to be

Adjusting for pre-test preferences and differences between cities, children exposed to the sugared food adverts only made fewer 'healthy food choices' at post-test than respondents in other conditions (adjusted mean 49.76), and children exposed to the counter-adverts (whether accompanied by sugared food adverts or not) made the most 'healthy food choices' (counter-adverts alone 61.40, counter-adverts plus sugared food adverts 60.93); children exposed to the sugared food adverts with disclaimers fell between these groups (56.69). No control was made for possible age variation.

The investigators suggest that post-test scores may have been influenced in either of two directions by the research design. Children may have perceived the post-test task as altering their preferences in the direction of the adverts they had just seen, and the post-test scores may therefore have represented a willingness to alter their responses to match the adverts: ie. the differences between the groups may have been enlarged by a willingness to comply with the perceived purpose of the test. Alternatively, the task of completing the pre-test may have "initiated a strain toward consistency for some children", deterring them from changing their responses after seeing the adverts in order to maintain consistency. This may have diminished differences between groups.

KAUFMAN & SANDMAN 1983

Published in	34th Annual Meeting of the International Communication Association
Peer-reviewed	Unknown
Authors' discipline	Communication and journalism
Funding source	The Media Access Project ("a non-profit law firm devoted to assuring full and fair media attention to important

LAM 1978

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	44 children aged between 4 and 7 years, and their mothers. The sample included more girls than boys (28).
Sampling procedure	Respondents were recruited from day care centres and nursery schools in Texas and through individual contacts with the mothers.
Method	Children's questionnaire administered face-to-face in day care centres or nurseries. Mothers' self-completion questionnaire mailed to the home.
Measures	Various
Statistical analysis	None described.
Results	25% of children said that they 'always', and 59% that they sometimes, demanded cereal products that they saw advertised on television. Mothers' reports of children's demands fell within a similar range (18% always and 75% sometimes). Mothers described yielding to children's demands most of the time (9%), sometimes (55%), very seldom (25%) and never (11%). Boys reported that their favourite adverts were for toys (62%), food (13%) and cars (13%), while for girls the favourites were toys (39%), cereals (14%), food (12%) and dolls (12%). Food and cereal adverts did not feature in the list of least favourite adverts.
Published in	Master's Thesis
Peer-reviewed	N/a
Authors' discipline	Unknown
Funding source	Unknown

LEWIS & HILL 1998

Relevant to Systematic Review 2 Questions 1, 2.

Design Non-randomised experiment designed to examine the effect of food adverts on the self-perception of overweight children.

Sample 103 children (51 girls, 52 boys) aged 9-10 in Year 5 from two state schools in the north of England. The sample represented 90% of the school registers for the year group; the remainder were absent on one or more of the research days. The sample is described as majority white (82%) and from a low to middle class social background. No information is provided on how the two schools were selected.

Allocation to conditions Children in each class were non-randomly divided into two groups of 12-15. No other information is provided on the allocation procedure. Each group viewed both of two experimental tapes:

1. food adverts
2. non-food adverts

The intervention/ stimulus Each tape comprised a 15 minute children's cartoon with a segment of five adverts edited in halfway through. The food adverts were for breakfast cereal, three different types of confectionery, and sauce/savoury spread. The non-food adverts were for toiletries, a household cleaning product, retail and mail order, publishing and pet products. The adverts were selected from a large sample (91 hours) of UK adverts screened in children's viewing time, and were "matched (where possible) for duration, characters (adults/children), human/nonhuman), and major themes (for

Method Each group of children watched each tape, between three and seven days apart. The order of tapes was non-randomly varied. Before and after each viewing, children completed a short questionnaire rating current emotional state and self-perceptions (current state rating). At the end of the study, children's height and weight were measured, and they completed three other measurements/questionnaires assessing self-perceptions and eating behaviour.

Measures The current rating scale comprised 12 items representing four domains: body satisfaction (I feel thin, I feel fat, I feel healthy), self-esteem (I feel liked by my friends, good looking, clever), mood (I feel happy, sad, worried), and appetite (I feel like eating a lot, like eating sweets, hungry). Each was answered using a pictorial 9-point scale ranging from 'not at all' to 'very very'.

A Body Mass Index (kg/m^2) was calculated for each child. Children falling in the top 10%, with a mean BMI above the 97^{th} percentile by British age-standardised norms, were defined as the overweight group. Children falling in the quartile around the median were defined as the normal weight group.

Other measures included a pictorial scale assessing body shape preferences, the Self-Perception Profile for Children, and the Dutch Eating Behaviour Questionnaire. No other information is provided on these measures.

Statistical analysis Because respondents participated in both experimental conditions, a repeated measures design was used. Analysis of variance examined the effects of the tapes on self-perceptions. The between subjects factor was weight (overweight vs. normal weight), and the within subjects factors were advert type (food vs. non food) and time (pre vs. post exposure to adverts).

Results The group of overweight children had a significantly greater preference to be thinner than the 'normal weight' children ($p<0.001$) and were significantly less satisfied with their physical appearance ($p<0.01$).

Of the 'current state' ratings, only one, 'feeling fat', was significantly related to children's weight, with overweight children feeling significantly more fat than normal weight children ($p<0.001$).

Viewing the adverts had significant effects on mood, with children reporting feeling significantly less worried and less sad, and more liked by their friends, after exposure to the adverts ($p<0.05$ for all three measures). There were no significant main effects by advert type, although there were significant interactions on two rating scales 'feeling

There were three-way interactions between advert type, time and weight. Thus, overweight and normal weight children responded differently to the two advert types on their ratings of 'feeling healthy' (three-way interaction: $F(1,33) = 11.26$, $p<0.01$) and desire to eat sweets (three-way interaction: $F(1,33) = 5.80$, $p<0.05$). After viewing the food adverts, overweight children felt more healthy and felt less like eating sweets while comparison children felt less healthy and more like eating sweets. The opposite occurred after viewing the non-food adverts, with overweight children reporting that they felt less healthy and more like eating sweets, while normal weight children reported feeling more healthy and less desire to eat sweets.

Published in International Journal of Obesity

Peer-reviewed Yes

Authors' discipline Psychiatry & Behavioural Sciences, University of Leeds

Funding source Unknown

MASKILL ET AL 1996

Relevant to	Systematic Review 2 Question 1.
Design	Qualitative interviews with adolescents and carers. Survey of adolescents.
Sample	20 Pakeha (European) families with 13-16 year olds.
Sampling procedure	Convenience sample recruited through personal contacts, advertising and other respondents. The sample is described as reflecting the wide range of socio-economic circumstances, family types and locations within Auckland.
Method	Qualitative interviews.
Measures	Data was collected on young people's consumption choices and eating patterns (eg. what they ate during a typical week, what time they ate, who was with them when eating, how much money they spent on food). During the qualitative interviews the young people were probed to gauge their perceptions of food advertising's influence on their food purchasing and consumption, and their liking of food advertising.
Analysis	Transcriptions from the qualitative interviews were systematically transcribed using NUD•IST (a qualitative data computer programme). The text was searched for data relating to the topics under study, the research questions and selected food groups. Hard copies of the text relating to each were then obtained, which the researchers read to identify expressed views, common themes, differences and unexpected data. Interpretations of the data were not systematically verified although selected questions were analysed by more than one researcher and consistency was reported as high.
Results	Not many of the young people perceived television advertising to have a significant effect on their purchasing or consumption behaviour, however, it was perceived to have an effect on some teenagers' decisions to buy certain product categories (sweets, takeaways and crisps). Television advertising appeared to influence young people by raising their awareness of a particular food (often new foods or those on special offer). Several respondents also reported that television advertising had some influence on them wanting to eat more takeaways, sweets, breakfast cereals, bread, fruit and crisps. Common reasons for liking food advertising included that they were 'cool, humorous, far fetched, had catchy tunes, made you aware of the food and made you feel hungry.'
Published in	Unpublished
Peer-reviewed	Unknown
Authors' discipline	Alcohol & Public Health Research Unit
Funding source	New Zealand Health Research Council

NORTON ET AL 2000

Relevant to	Systematic Review 2 Questions 1, 2, 3.
Design	Survey
Sample	35 adolescents aged 9-18 (19 males, 16 females). All subjects were white and middle class. All respondents were one member of a pair of twins.
Sampling procedure	Respondents were drawn from a previous study of genetic influences on food preferences conducted among pairs of twins. All were recruited on a voluntary basis from school in Cincinnati. No other information is provided on the sampling.
Method	Respondents completed, on an individual basis, a food preference test in a food laboratory. Seventeen test foods were presented on plates, and respondents were instructed to taste one teaspoon of each then indicate their degree of liking on a 9-point scale. The foods comprised sugared cereal, cheese, corn, French fries, hamburger, whole fat, milk, snack cake, cola, apple, beans, broccoli, unsweetened cereal, cottage cheese, chicken, low fat milk, orange juice and spaghetti. Foods were presented in three different sequences to reduce tasting order bias. All testing took place two hours after the respondent had eaten a meal. A separate questionnaire assessed motivational influences on food preferences.
Measures	Food liking as assessed in the preference test. Seven motivational influences: 'health fullness', parents serving it, peers eating it, price, accessibility, taste and television advertising. Respondents were asked to rate how much of an influence they perceived each factor had on their preference for each of the test foods, on a 9-point scale.
Statistical analysis	Pearson correlation coefficients were computed for preference and motivational factor scores. Multiple regression analyses were conducted on scores for each motivational factor.
Results	Overall, the foods perceived by the researchers as more frequently eaten by young people were also the most preferred foods, with spaghetti, cola, sugared cereal, apples, snack cake, French fries, orange juice, chicken and hamburger all receiving ratings of 6.74 and above. Overall, taste was significantly correlated with preference for the highest number of foods (15 of the 17 foods). 'Healthfulness' was significantly related with preference for four of the foods, as was accessibility (although not with the same four foods). 'Peers eat it' was significantly correlated with preference for three of the foods. 'Parents serve it' was significantly correlated with preference for one of the foods (broccoli), as was advertising (chicken). Price was not significantly correlated with preference of any food. Stepwise regression of the seven motivational factors indicated that taste had the greatest impact of food preference, followed by advertising, peers eating, parents serving, accessibility and healthfulness. Price did not influence preference for any item. Taste was a significant influence on 16 food items, while advertising was a significant influence on three (apples, beans, low fat milk). 'Healthfulness' was an influence only on unsweetened cereals. Parents serving was an influence on cheese and whole fat milk, and peers eating was an influence on apples and chicken. Accessibility was an influence on unsweetened cereal and whole fat milk. No standardized regression coefficients were reported so it is not possible to assess, from this multivariate analysis, the strength of the independent influence of television advertising relative to other significant variables. However, the analysis does show that television advertising ($p<0.05$), taste ($p<0.01$) and 'peers eat it' ($p<0.05$) all significantly and independently influenced preferences for apples while the remaining motivational factors were controlled for. Similarly, television advertising ($p<0.05$) and taste ($p<0.01$) significantly and independently influenced preference for beans, and television advertising ($p<0.01$) and taste ($p<0.01$) significantly and independently influenced preference for low fat milk. These latter two regressions also controlled for the remaining motivational variables that were not found to be significant. While the regression coefficients are not available, to judge the relative influence of television adverts compared with other motivational factors, the strength of the Pearson correlation coefficients and the finding that taste influenced so many preferences together suggest that taste had a stronger influence than television advertising.
Published in	Ecology of Food and Nutrition (journal)
Peer-reviewed	Yes
Authors' discipline	All part of Nutrition Programme, College of Allied Health Sciences
Funding source	University Research Council, University of Cincinnati

PETERSON ET AL 1984

Results continued…..	Repeated measures ANOVA and analyses of covariance were performed on the consumption score for each individual food. No significant treatment-by-trials interactions were obtained on any of the analyses. There was a tendency for experimental group children to consume more of the 'pro-nutrition' foods at post-test than children in the control group, but the differences were not significant. Overall the pronutrition tape increased knowledge but did not change preferences or consumption.
Published in	(92nd Annual Meeting of the American Psychological Association) Developmental Psychology
Peer-reviewed	Yes
Authors' discipline	Psychology
Funding source	US Department of Health and Human Services (grant no. 12073) and National Science Foundation (grant no ISP-8011449)

RADKAR & MUNDLAY 2001

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	759 children and 788 adults from the state of Maharashtra, India, from both urban and rural areas. 60% of the children were aged between 10 and 14. Adult respondents were not necessarily parents of the children interviewed.
Sampling procedure	No other information is provided.
Method	Household questionnaire survey.
Measures	Hours spent watching television, advertising recall, brand recall, opinions of adverts, factors influencing buying decisions.
Statistical analysis	None described.
Results	When asked to list, unprompted, three recalled adverts, the adverts most frequently recalled by children were for noodles, biscuits, soft drinks and chocolates. Children showed higher levels of advertising recall than adults for all the four products except noodles. Parents reported 'child's demand' for the product was a substantial influence on buying decisions for several categories of food product.
Published in	Unpublished
Peer-reviewed	No
Authors' discipline	Unknown
Funding source	Unknown

REEVES & ATKIN 1979

Relevant to Systematic Review 2 Questions 1, 2.

Design Observational study of mother-child interactions while shopping followed up by interviews with the observed mothers and children.

Sample 100 mother-child pairs were observed and interviewed. Children ranged in age from 3 to 13, mean age 7.53, and were of both sexes (46% male, 54% female). The socio-economic status of the families was slightly above average.

Sampling procedure The sample was drawn from 15 supermarkets in three Michigan towns. Around half of the observations were carried out on Saturday afternoons, while the remainder were carried out between mid-afternoon and early evening on weekdays. This was to test for the immediate vs. delayed impact of exposure to Saturday morning television on children's behaviour when shopping. Where mothers were shopping with more than one child, the first child to initiate a purchase request or to respond to a mother's purchase initiative was selected as the observed respondent.

Method Observations were carried out by 15 students who positioned themselves near the cereals and confectionery in grocery stores. Observation schedules recorded initial comments about a purchase (eg. a child's demand or request for a particular product, or a mother's invitation or direction to make a selection), any reasons given for selections or refusals, any conflict over purchases, and actual product choices. After recording the purchase interaction, observers introduced themselves as researchers interested in television advertising, and asked if they could interview the child about their television viewing. They also asked the mother to complete a short self-completion questionnaire.

Measures Ad exposure was measured by asking children how much television they had watched on that Saturday morning (if interviewed on a Saturday), and about how much Saturday morning television they generally watched, by asking whether they watched each of ten popular Saturday morning programmes. Viewing indices for 'viewing prior to the trip' and 'viewing in general' were obtained. Frequency of watching six popular Saturday morning adverts was also measured by showing children stills from the adverts and asking whether they usually, sometimes or never watched them.

Reasons for food purchase requests were assessed by asking children why they had picked the particular cereal or confectionery product.

The mothers' questionnaire asked mothers about the perceived influence of cereal and confectionery adverts on their children, children's television viewing and the amount of attention they paid to advertising, frequency of parent-child discussion of food adverts, rules about eating sweets, and frequency of yielding to children's purchase requests for cereals and confectionery.

Statistical analysis Not described. Chi-square statistics appear to have been used to test for relationship between watching Saturday morning television and child initiating a request for a product, and t-tests to examine the relationship between frequency of watching Saturday morning television and likelihood of demanding or requesting a product.

Results Children initiated 58% of the cereal and confectionery purchase interactions. In 32% of the interactions the child demanded a particular product (as opposed to requesting it). Just under two fifths of interactions were initiated by the mother, either inviting the child to select a brand (18%), directing the child to select the brand chosen by the mother (16%), or choosing the brand without discussion with the child (4%).

Mothers agreed to 55% of children's requests and demands for cereal or confectionery products, refused 21% of requests and demands, diverted 11% with suggestions for an alternative product, and ignored the remainder. Where mothers invited children to select a brand, 70% of children did so, and the remainder did not make a selection. Where mothers directed that a brand be chosen, children nearly always agreed, with only two refusing the selection or trying to divert the mother to an alternative brand. Conflict over the choice of product occurred in 14% of interactions, with the approximate mean length of argument being 16 seconds. Ten per cent of interactions involved raised voices and 7% involved 'verbal aggression'.

Children requested a mean number of 1.6 products, while the actual number of products purchased was a mean of 1.5, indicating that the same number of products were purchased as were requested. Thirty eight percent of children gave a reasons for selecting a particular product. The most common reason was that the product 'tasted good' or 'I like it' (40% of expressed reasons). Other reasons, receiving only a small number of responses, included a sweet taste, nutritional value, television adverts, or free gifts.

Thirty eight percent of children had watched Saturday morning television before coming to the store. There was no relationship between whether children reported watching of television and probability of making a request or demand for a product. However, there was a significant relationship between amount of Saturday morning viewing and frequency of requests and demands, with children who had watched more Saturday morning television before the trip making more demands or requests for products than children who had watched less Saturday morning television ($t=1.69$, $df=36$, $p<0.05$). Other television exposure measures showed no significant relationship with frequency of requests or demands while shopping, although there was a tendency for children with higher television exposure to initiate requests and demands more frequently.

cont….

	REEVES & ATKIN 1979
Results continued…..	Mothers perceived that cereal and confectionery adverts had a strong (50%) or moderate (46%) impact on their children. Sixty four percent of mothers said that their children paid close attention to Saturday morning advertising and 30% that their children paid some attention. The majority (61%) of mothers described themselves as yielding to some of children's requests for cereals and confectionery, while 27% said they did not yield very often; 12% said they yielded 'most of the time'. Frequency of reported yielding to children's requests was significantly related to higher levels of children's Saturday morning television viewing as reported by mothers ($r=0.27$, $p<0.05$). Yielding to requests was significantly related to having more lenient rules about eating sweets. Mothers who perceived that advertising had a strong influence on their children were also significantly more likely to say that their children paid close attention to advertising ($r=0.45$, $p<0.05$).
Published in	62nd Annual Meeting of the Association for Education in Journalism
Peer-reviewed	Unknown
Authors' discipline	Reeves – communication Atkin – mass communication campaigns
Funding source	Unknown

RITCHEY & OLSON 1983

Relevant to Systematic Review 2 Questions 1, 2, 3

Design Cross-sectional survey designed to measure family factors which might moderate preferences for sweets in children.

Sample 122 pre-school children of both sexes, ranging in age from 36 to 64 months (mean age 52.2 months), and their parents.

Sampling procedure Parents and children were recruited from six day care centres or nursery schools, and included a 'mixture of lower to middle or upper middle class families'. The parent who had primary responsibility for preparing the pre-school child's food was asked to complete the questionnaire. No other information is provided on sampling procedure.

Method Parents' self-completion questionnaire.
Children's food preferences test. Children were shown pictures of 22 different foods and asked to indicate their degree of liking by pointing at one of three drawings of faces (smiling, frowning and neutral).

Measures The questionnaire took measures of:

- parents' attitudes towards children's sweet consumption
- parents' behaviour regarding giving of sweet foods
- child's consumption of sweet foods as reported by parents
- family characteristics including amount of television watching by the child, and parental education and employment status. The television watching measure is not described.
- children's food preferences

Test-retest reliability was measured for the parents' attitude and behaviour items by issuing a retest questionnaire to a sub-sample of 62 respondents, and for the children's food preferences test by conducting a repeat test with a random sub-sample of 60 children. The attitude and behaviour clusters had moderately high reliability (Cronbach's Alpha between 0.51 and 0.86). The test-retest reliability coefficient for the children's food preferences was 0.73.

Statistical analysis Foods were classified as sweet if they met one of three criteria: containing 10% or more proportion of sucrose, containing sucrose and adhesive or retentive to the teeth, or contributing calories in the form of sucrose but few essential nutrients.

Scores were calculated for each attitude and behaviour by adding together the points for all related items within a cluster then calculating an average for each cluster. Food preference was scored from 0-2, with a high score indicating liking. Child's frequency of consumption of sweet foods was scored from 0-7, with seven indicating frequent consumption.
Pearson's product moment correlation coefficient (Pearson's *r*) was used to examine the relationship between the composite attitude, behaviour, preference and consumption scores. Relationships between composite scores and family characteristics were examined using a t-test or analysis of variance. Multiple regression analysis explored the relationships among associated variables.

Results T-tests and analysis of variance revealed few consistent relationships between family characteristics and parental and child attitudes and behaviours. Amount of television watched was related to the greatest number of other variables (the data are not presented in the article), and was therefore entered into multiple regression analyses.

When the dependent variable was children's self-reported preference for sweet foods, none of the independent variables had a significant relationship with preferences. When children's frequency of consumption of sweet foods as reported by parents was the dependent variable, three independent variables had a significant relationship with consumption: parents' own frequency of consumption, amount of television watching, and parents' attitudes towards sweet foods. Together these variables accounted for 35% of the variance in children's frequency of consumption. Television watching made a significant contribution at the $p<0.01$ level independently of other variables in the model.
The analyses also examined whether the strength of the relationships between the variables changed depending on whether the pre-school child was the oldest in the family or not. Associations were found to be stronger when the pre-school child was the oldest in the family: parents' own frequency of consumption, amount of television watching, and parents' attitudes towards sweet foods together accounted for 54% of the variance in children's frequency of consumption when this child was the oldest, compared with only 12% when there were other older children in the family. Television watching made a significant contribution at the $p<0.01$ level, only for those children who were the oldest in the family, independently of other variables in the model.

Published in Ecology of Food and Nutrition

Peer-reviewed Yes

Authors' discipline Nutritional Sciences

Funding source Unknown

RIECKEN & YAVAS 1990

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	152 children aged 8-12 attending a 'university-operated school in a [US] midwestern city defined as a socioeconomic microcosm of the US. The sample was 46% male, 54% female, and 86% white.
Sampling procedure	The sample was drawn from the sample for a larger study. No other information is given about sample selection or recruitment.
Method	Older children (age 11-12) filled out a self-completion questionnaire, while for younger children the questions were read out by a teacher. As part of the questionnaire, children were shown three short films containing a mix of programmes and adverts. The adverts were for three brands of cereals, three brands of over-the-counter drugs, and two brands of toys.
Measures	Attitudes towards television advertising in general, television advertising for OTC drugs, for cereals and for toys were measured using a seven item scale (eg. 'Television commercials tell the truth') answered using a 4-point scale (agree very much/agree/disagree/disagree very much). Evaluations of the eight brands advertised on the films were measured using a single item for each brand with responses ranging on a 5-point scale from very good to very bad.
Statistical analysis	Friedman two-way analysis of variance was conducted to determine whether attitudes towards advertising in general and attitudes towards advertising in the three product categories were different. Wilcoxon signed rank test was conducted on each possible pair of adverts.
Results	Children's attitudes towards advertising in general and towards advertising in the three product categories differed, with children having more favourable attitudes towards toy adverts than about adverts in the other product categories or adverts in general. The relationship between attitudes towards advertising in the three product categories and evaluations of the eight brands was examined to assess whether children's evaluations of brands are influenced by their pre-existing attitudes towards adverts. An association was found for only one of the three cereal brands and one of the toy brands, suggesting little clear relationship between attitudes to advertising and brand evaluations.
Published in	International Journal of Advertising
Peer-reviewed	Yes
Authors' discipline	Both – management & marketing
Funding source	Unknown

ROSS ET AL 1980 & 1981

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment designed to investigate whether food promotion influenced children's ability to distinguish whether food products contain real fruit.

Sample 100 children (52 boys, 48 girls) from US school grades kindergarten to six. The sample was drawn from one rural elementary school in Kansas; all whose parents gave consent participated.

Allocation to conditions Described as random allocation to experimental and control conditions with a balanced number of children of each sex and grade level in each group.

The intervention/ stimulus The experimental group was exposed to six adverts, three for cereals and three for soft drinks. The adverts were shown in pairs, with the products in the first pair containing real fruit, the products in the second pair containing artificial fruit flavour but no fruit, and the products in the third pair containing no fruit or fruit flavour. The real fruit adverts contained verbal and visual references to fruit. The artificial fruit adverts made no literal claim that the product contained fruit. Non-fruit product adverts made no verbal or visual references to fruit. A control group was exposed to six irrelevant (toy) adverts. Children were exposed to the two sets of adverts in two different formats: firstly, embedded in a cartoon television programme (naturalistic exposure), and secondly, shown alone without the television programme (intensive exposure). The sequence of the adverts was varied to control for possible order effects.

Method Respondents completed a product knowledge test on three separate occasions: prior to seeing the adverts, after seeing the adverts in the 'naturalistic' exposure condition, and after seeing the adverts in the 'intensive' exposure condition. The product knowledge test involved showing respondents 12 foods in their original package and asking 'Did they use fruit to make [name of product]?' The 12 foods comprised the six advertised items and six non-advertised items. The non-advertised items were described as similar to the advertised items in terms of product type, fruit content, packaging, appeal and familiarity.

Viewing and testing sessions were conducted with groups of two to five children at a time, although all testing was carried out on an individual basis. Children's visual attention to the adverts was measured, and averaged 95% for a subsample of 64 respondents.

Measures Correct ratings of products by fruit content.

Statistical analysis Four analyses of variance and selected planned comparisons were performed: (i) experimental and control conditions were compared using product knowledge responses for the six advertised products as the dependent variable, comparing baseline and naturalistic exposure testing sessions; (ii) as (i) but comparing baseline and intensive exposure testing sessions; (iii) scores for the six advertised food products were compared with scores for the six unadvertised products, for the children in the experimental condition (ie. who had seen adverts for the six advertised products), comparing baseline and naturalistic exposure testing sessions; (iv) as (iii) but comparing baseline and intensive exposure testing sessions. *[explain the rationale for comparing advertised and unadvertised product scores]*.

Results At baseline, all respondents were less accurate in their rating of artificial fruit products than in their ratings of fruit and non-fruit products. Significant main effects were found for age ($F(1,88) = 13.22$, $p<0.001$) and for fruit content ($F(2,176)=91.09$, $p<0.001$). Older children's ratings of artificial fruit products were more accurate than younger children's ratings, but less accurate than their own ratings for fruit and non-fruit products.

It was hypothesised that exposure to the experimental adverts would *lower* children's accuracy ratings for the artificial fruit products but would improve or not affect their accuracy ratings for fruit and non-fruit products, ie. there would be a three way interaction of treatment x session x fruit content, and that age would enter the interaction if the adverts had differential effects on younger and older children. No significant effects on children's accuracy ratings were found following naturalistic exposure to the adverts (ie. adverts embedded in a television programme). However, planned comparisons computing interactions of treatment and session indicated that following intensive exposure to the adverts, accuracy ratings for artificial fruit products decreased in children exposed to the adverts compared with control group children ($F(1,87) = 5.97$, $p<0.05$). Accuracy ratings were significantly different between experimental and control group children following intensive exposure, indicating that experimental group children became less accurate and control group children more accurate ($F(1,87) = 6.64$, $p<0.05$).

It was also hypothesised that accuracy ratings by experimental group children for artificial fruit products would decrease more for those products which had appeared in the six adverts than for the six products which were not advertised (while accuracy ratings for fruit and non-fruit products which were advertised were expected to increase or remain the same in comparison with non-advertised products). A three-way interaction was predicted between session x fruit content x advertisement. No significant effects on accuracy ratings for artificial or non-fruit products comparing advertised and non-advertised products were found after naturalistic exposure to the adverts (ie. with television programmes). Planned comparisons computing interactions of treatment and session indicated that for real fruit products, children became slightly more accurate after seeing the adverts for the six advertised products, and slightly less accurate for the non-advertised products ($F(1,47)=6.26$, $p<0.05$). This suggested a positive effect of advertising on accuracy ratings about real fruit products, but the results were complicated by baseline scores for non-advertised real fruit products being higher than baseline scores for advertised fruit products. Following intensive exposure to the adverts, there was a significant interaction as predicted between session, fruit content and advertisement. There was a significant difference between accuracy ratings for advertised artificial fruit products following intensive exposure and accuracy ratings for non-advertised artificial fruit products ($F(1,47) = 9.26$, $p<0.01$). *cont.…*

ROSS ET AL 1980 & 1981

Results continued…..	Effects of repeated testing were also examined for different age groups. Older respondents became more 'sceptical' with repeat testing (ie. more likely to say that products did not contain fruit), while respondents in the middle age group became more likely to say that any product did contain fruit. There was no consistent pattern in response for the youngest respondents. The investigators concluded that the data indicate a consistent misjudgement by children of whether artificial fruit products contain fruit. This misjudgement occurred for all respondents, at all sessions (including baseline), and in relation to both advertised and non-advertised products. Viewing of adverts in an intensive situation (ie. with no accompanying television programmes) increased rather than decreased this tendency to misjudge. This tendency occurred when comparing: (a) the experimental group's ratings with their baseline ratings, (b) the experimental group's ratings for the advertised products with their ratings for the non-advertised products, or (c) the experimental group's ratings with the control group's ratings for the same products. This indicates a robust effect attributable to the adverts. Viewing the adverts in a naturalistic situation neither improved nor worsened children's tendency to misjudge the fruit content of artificial fruit products.
Published in	1980 - Biennial Meeting of the Southwestern Society for Research in Human Development 1981 - Journal of Applied Developmental Psychology
Peer-reviewed	1980 – unknown 1981 – journal is currently peer reviewed
Authors' discipline	Center for Research on the Influences of Television on Children (CRITC) of the Department of Human Development
Funding source	Spencer Foundation (*The Foundation is intended… to investigate ways in which education, broadly conceived, can be improved around the world.*)

STONEMAN & BRODY 1981

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment designed to measure the effect on children's food choices of exposure to commercials for salty snacks shown with and without the presence of same age peers modelling food choices which were either similar or dissimilar to those depicted in the adverts.

ie. the mediating impact on advertising effects of peers

Sample Eighty 4th grade children attending a rural elementary school. The sample contained equal numbers of black and white children, and nearly equal numbers of boys (39) and girls (41). Forty other children attending the school served as peer models during the experiment. No information is given on the total size of the study population, or of how the eighty research subjects and forty peer models were selected.

Allocation to conditions Equal numbers of black and white children were randomly assigned to each of four conditions (ie. 10 black children and 10 white children per condition):

1. adverts for salty snacks
2. adverts for salty snacks plus peers modelling similar food choices (ie. choosing salty snacks)
3. adverts for salty snacks plus peers modelling dissimilar food choices (ie. choosing a food other than a salty snack)
4. no adverts

The intervention/ stimulus The three experimental tapes lasted 4-minutes long and consisted of four child-oriented adverts for salty snacks separated by 6-second intervals in which the screen was blank. Eight different salty snacks were featured in the adverts (some adverts featured more than one product).

All subjects were also exposed to ten colour slides depicting a salty snack plus another "common food" [not defined]. On five of the slides, the salty snack was identical to one depicted in the television adverts, while on the other five the salty snack had not been advertised on the tape. The position of the salty snack was to the left of the other food in half of the slides, and to the right of it in the other half of the slides.

Children in Conditions two and three were also exposed to peer modelling. A same-age peer who had previously been trained to help with the study indicated their 'favourite foods' by indicating one of each pair of foods on the ten slides. In Condition two, the peer model pointed each time to the salty snack, and in Condition three the peer model pointed each time to the other food.

The control group, Condition four, stimulus was a 4-minute educational programme for children.

Method Condition 1.
Each subject was individually escorted to a room containing a television and asked to watch it for a while. After this, they were shown the ten slides depicting pairs of foods. Each slide was shown for about eight seconds each, and the child was asked to indicate his or her favourite of each pair by pointing. Children were then asked some general questions about television which were not relevant to the study. A recognition test was then administered to assess their retention of the information in the adverts. This consisted of the five slides depicting one of the advertised salty snacks plus another food. Children were asked to indicate which food they had seen on television a few minutes earlier.

Condition 2.
Half of the children in Condition two watched the tape followed by the peer modelling, and half were exposed to the peer modelling before watching the tape. The peer model was introduced with the words 'One of the things we want to do is find out about the kinds of foods children like. (Name of peer model) is going to show us the foods he/she likes'. At this point, the researcher brought the peer model into the room, who was then shown the ten slides depicting pairs of foods. He or she pointed in each case to the salty snack. The peer model was then escorted out of the room.

After exposure to either the tape followed by the peer modelling, or the peer modelling followed by the tape, the research subject was asked to indicate their own preferences from the same ten slides. Children were then asked some general questions about television which were not relevant to the study. Two recognition tests were then administered to assess their retention of the information in the adverts. The first consisted of the five slides depicting one of the advertised salty snacks plus another food. Children were asked to indicate which food they had seen on television a few minutes earlier. The second recognition test was designed to test recall of the peer model's selections, and also consisted of five slides depicting pairs of foods. The order of the two retention tests was varied for each subject by gender, race, and whether exposed first to the tape or to the peer modelling.

Condition 3.
The same procedure was followed as in Condition 2, except that the peer model in each case indicated the food which was not a salty snack.

Condition 4.
Subjects watched the tape (containing no food adverts) and then indicated their preferences from the pairs of foods depicted on the ten slides. No retention tests were administered to subjects in this condition.

STONEMAN & BRODY 1981

Measures Three dependent measures:

- number of times each subject selected salty snacks during the presentation of the ten slides
- number of televised food products remembered in the retention test
- number of peer-modelled preferences remembered in the retention test.

Statistical analysis 4 x 2 factorial analysis of variance.

Results 4 x 2 factorial analysis of variance indicated that there was a significant main effect for experimental condition on number of salty snacks selected. Newman-Keuls post hoc comparisons were utilised to define these significant effects further. Children in Condition one (adverts only) selected salty snacks more frequently than children in the control condition (mean scores 5.35 vs. 3.75, $p<0.01$). Children in Condition two (ad plus peer modelling similar food choices) selected salty snacks more frequently than children in the adverts only condition (mean scores 6.8 vs. 5.35, $p<0.01$). Children in Condition three (ad plus peer modelling dissimilar food choices) selected salty snacks less frequently than children in the adverts only condition (mean scores 3.8 vs. 5.35, $p<0.01$).

Analysis of variance also revealed a significant interaction between experimental condition and race of child. White children in Condition three (ad plus peer modelling dissimilar food choices) selected salty snacks more frequently than white children in the control condition (4.8 v. 3.1, $p<0.05$), whereas black children in Condition three selected salty snacks less frequently than black children in the control condition (2.7 v. 4.4, $p<0.05$).

Retention scores, both of advertised foods and of peer model's choices, were extremely high for all subjects.

Overall the study showed that the adverts alone influenced snack selection by increasing the frequency with which salty snacks were chosen. It also showed that the peer modelling influenced snack selection over and above the adverts, but the direction of this influence depended on whether or not the peer models made similar or dissimilar food choices. Furthermore, there was a significant interaction between experimental condition and race of child that showed white and black children reacting differently to peers modelling dissimilar food choices. Black children exposed to the adverts and peer dissimilar modelling chose salty snacks less frequently that black children in the control while white children exposed to the adverts and peer dissimilar modelling chose salty snacks more frequently than which children in the control.

Published in Developmental Psychology (journal)

Peer-reviewed Journal is currently peer reviewed

Authors' discipline Child & Family Development

Funding source Science & Education Administration of the US Dept of Agriculture (grant no. 5901-0410-8-0019-0 from Competitive Grants Office)

STONEMAN & BRODY 1982

Relevant to Systematic Review 2 Questions 1, 2.

Design Randomised controlled experiment investigating the impact of children's food adverts on mothers' food shopping behaviour and children's food purchase-related behaviour.

Sample 36 mothers and their pre-school children (aged 3-5) recruited from a child and family centre in Georgia. All the families were white and middle class.

Allocation to conditions The families were randomly assigned to two conditions:

1. children's food adverts
2. control (no food adverts)

The intervention/ stimulus The experimental condition comprised a 20-minute children's cartoon tape interspersed with adverts for two different candy bars, two different salty snacks, a chocolate drink mix, and a brand of 'grape jelly'. The control tape comprised the same 20-minute cartoon with no adverts.

Method Mothers and children watched the tapes in separate rooms. Children watched either the experimental or the control tape, depending on which condition they had been assigned to. Children's behaviour while watching the tapes was observed and recorded at ten second intervals. Mothers in both conditions watched the control tape. After watching the tapes, mothers were interviewed about their views on children's television programmes and about their children's viewing habits. Advertising was not mentioned during the interview. Following the television viewing and the interview, each mother-child pair was asked to do a week's shopping at a small grocery store. They were told that the purpose of this part of the study was to gather information about family shopping patterns. Mother and child behaviours were observed and recorded during the shopping trip by a researcher, posing as a shop assistant, who was "unaware of the purpose of the study". A second independent observer conducted reliability checks on 20% of the observed sessions. Interobserver reliability agreements were equal to or exceeded 0.80.

Measures Five mother and child behaviours were scored: a Purchase Influence Attempt by the child (such as asking, point, putting the item in the basket or grabbing it off the shelf). These were also coded by whether the item had featured in the adverts on the experimental tape; a Parental No by the mother; a Verbal Put Back where the mother tells the child to put the item back on the shelf; a Physical Put Back where the mother puts the item back on the shelf; or an alternative offer, where the mother offers an alternative which the child may purchase instead of the desired item.

Statistical analysis T-tests were performed on the number of hours of television viewed by children in the two groups to identify any significant differences between the groups.
A priori t-tests were conducted on the observed shopping behaviour data.

Results Children exposed to the experimental tape engaged in more Purchase Influence Attempts in general than children exposed to the control tape ($X = 43.20$ vs. $X = 28.36$, $p<0.01$), and engaged in more Purchase Influence Attempts for the specific products advertised on the experimental tape ($X = 4.4$ vs. $X = 1.9$, $p<0.025$). The frequencies of Parental No's, Verbal Put Backs and Physical Put Backs were summed to create a measure of parental power assertion. Mothers of children exposed to the experimental tape used power assertion responses more frequently than mothers of children exposed to the control tape ($X = 4.7$ vs. $X = 2.7$, $p<0.05$). They also made more alternative offers in response to children's purchase requests ($X = 2.1$ vs. $X = 2.1$ [sic], $p< 0.025$). No significant difference was found between experimental group and control group children in number of hours of television reportedly viewed per week, and the two groups of children did not differ in the amount of attention they paid to the experimental tape, which increases the likelihood of the observed differences in behaviour being attributable to the experimental tape.

Published in Journal of Applied Developmental Psychology

Peer-reviewed Journal is currently peer reviewed

Authors' discipline Child and Family Development

Funding source Science & Education Administration of the US Dept of Agriculture (grant no. 5901-0410-8-0019-0 from Competitive Grants Office)

TARAS ET AL 1989

Relevant to Systematic Review 2 Questions 1, 2.

Design Cross-sectional survey of mothers designed to investigate the relationship between children's television viewing habits, diet and physical activity.

Sample 66 mothers of children aged 3-8 in public 'preschools' and elementary schools. Fifty five percent of mothers had a child in the 3-5 age range. Forty five percent of the children were male. The majority (64%) of the sample were Hispanic, and 12% were in single parent households. In 53% of the families/households, at least one parent had completed a minimum of one year's education after high school.

Sampling procedure No further information is provided.

Method An interviewer-administered questionnaire was used, in either English or Spanish depending on interviewees' preference.

Measures Television behaviour measures:
Mothers were asked to recall the number of hours of television their children watched during and between meals on a typical weekday, Saturday and Sunday. A three-point scale (seldom, sometimes, always) was used to assess children's viewing of and participation in televised exercise programmes. A 5-point scale (almost never to almost always) was used to assess children's snacking behaviour while watching television.

Diet and physical activity measures:
Mothers were asked to list foods which they felt their children had asked them to buy in the past six months because of television's influence, including brand names if known, and to indicate which they had subsequently purchased. They were also asked to indicate which sports items and physical activity requests their children had made which they felt were influenced by television.

The food item requests were assessed by a dietician for content of fat, sugar and salt, and were scored as high or low in these nutrients. High salt items were defined as those which would be eliminated from the diet of people restricted to 3g of sodium per day. High fat items were defined as those recommended to be consumed in "limited portions" by the American Heart Association, and high sugar items were defined as those traditionally limited in diabetic and weight reduction diets.

The sports items and physical activity requests were scored by exercise physiologists for their aerobic potential, on a scale of 0-4.

Children's height and weight were measured at the start of the study, and body mass index was calculated for each child. The Willett Semi-Quantitative Food Frequency Questionnaire was completed by each mother on behalf of the child.

Statistical analysis Questionnaire reliability was tested by administering the questionnaire to each mother on two occasions 14 to 21 days apart. Test-retest reliability for the television behaviour measures was computed using Pearson correlation coefficients for continuous variables and Kendall's tau for categorical variables. Hours of television watched per week attained the highest reliability (r=0.80). Reliability of other items ranged from modest to low.

Data were analysed using SPSS-X. Correlations were examined between hours of television viewing and demographic variables, requests for foods and sports items, subsequent purchase of items, and participation in television-influenced physical activity.

Results The most frequently requested food items influenced by television were sugared cereals (65 requests), sugared fruit (15), fast foods (16), soft drinks (9) and non-sugared cereals (8). Of the sports items requested, bicycles were the most popular (12 requests), followed by skateboard (10), pogo balls (7) and balls (6). High sugar foods made up 66% of foods requested, followed by high fat items 36%, high salt items 19%, and low sugar/fat/salt items 7%. High fat items made up 58% of the items which mothers reported buying in response to requests, followed by high fat items 34%, high salt items 22%, and low sugar/fat/salt items 11%. The authors describe a "strong agreement" between the relative proportion of foods requested and purchased in the different nutritional categories (high sugar, high fat, high salt, and low) and the foods advertised on television, but no statistical significance is reported. There was a correlation between purchase of requested food items and purchase of requested sports items (r=0.44, p<0.001). There was no correlation between purchase of sports or food items with child's participation in a sport or other physical activity after a television-influenced request.

Significant positive correlations were found between hours of television viewing and number of food items requested as influenced by television (r=0.31, p=0.006), number of food items subsequently purchased (r=0.44, p=0.001) and caloric intake as measured by the Food Frequency questionnaire (r=0.34, p=0.001). Snacking while watching television was also significantly positively correlated with number of food items requested and purchased and with caloric intake. Watching television during a meal was significantly negatively correlated with caloric intake.

cont….

TARAS ET AL 1989

Results continued….	Correlations were also examined between food requests and purchases influenced by television and nutrient intake as assessed by the Food Frequency questionnaire. Total food requests and purchases were significantly correlated with saturated fat and sugar consumption (p=0.012 and p=0.001 respectively), but not with salt intake. Requests for and purchase of high fat foods were significantly correlated with saturated fat intake (p=0.012), sugar intake (p=0.001) and salt intake (p=0.004). Requests for and purchases of high sugar foods were significantly correlated only with sugar intake (p=0.03), while requests for and purchases of high salt foods were not correlated with salt intake. Relationships between hours watching television and requests and purchases of sports items and physical activities influenced by television were generally weaker. There was a significant negative association between hours watching television and sport items purchased (p=0.009).
Published in	Journal of Developmental and Behavioral Pediatrics
Peer-reviewed	Journal is currently peer reviewed
Authors' discipline	Child & Family Health Studies
Funding source	National Heart, Lung, and Blood Institute (NHLBI), Bethesda, MD (grant HL35109)

TARAS ET AL 2000

Relevant to	Systematic Review 2 Question 1
Design	Cross-sectional survey
Sample	237 US families
Sampling procedure	Families were recruited from 63 San Diego preschools (serving low- to middle- income families, state-funded preschools and 'Head Start' Centres. 'Family' defined as at least one adult and one four year old child. Families containing any adult or child with a medical condition that limited their dietary or physical activity behaviour were excluded from the sample.
Method	Interviewers administered a questionnaire to one parent in each family. Parents were asked to list foods (including brand names if known) that his/her child had requested in the preceding sic month period that they believed to be requested as a result of television advertising. They were also then asked to list which of the requested items they had actually purchased.
Measures	Parents self- reports of their children's purchase-requests believed (by the parent) to be a result of television advertising, and parents self-reported purchases as a result of such requests.
Statistical analysis	Pearson correlation coefficient to test (i) the correlation between scores of advertised product categories and scores of requested product categories, and (ii) the correlation between scores of advertised product categories and scores of products purchased.
Results	The correlation coefficients between (i) the scores of advertised product categories and scores of products requested, and (ii) the scores of advertised product categories and products purchased were significant at 0.91 ($p< 0.0001$; $t = 21.08$) and 0.94 ($p<0.0001$; $t=16.92$) respectively. To account for the predominance of two highly correlated categories (restaurants and sugared meals), an additional analysis was undertaken using only the other 15 product categories. The correlation coefficients were still significant at 0.61 ($p<0.015$) and 0.66 ($p<0.008$), respectively.
Published in	International Journal of Advertising
Peer-reviewed	Yes
Authors' discipline	Paediatrics
Funding source	Unknown

UNNIKRISHNAN & BAJPAL 1996

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey and qualitative interviews with focus groups.
Sample	730 children aged 5-15 in Delhi. The sample was design to represent roughly similar proportions of 'upper',
Method	The questionnaire appears to have been administered face-to-face, at homes and in schools.
Measures	Various qualitative and quantitative measures including access to television, the role of television in the home, viewing habits, attitudes to advertising.
Statistical analysis	No statistical analyses are described.
Results	Pepsi adverts were the favourite cold drink adverts among the sample as a whole, and among upper class and middle class children. Pepsi adverts were second favourite among lower class children, who tended to prefer adverts for cheaper Indian brands. Pepsi was also the most frequently consumed cold drink. Children's cold drinks preferences and consumption habits were also reported, and the authors claimed that preferences and consumption habits reflected advertising patterns, although no statistical analyses were conducted to investigate the relationships.
Published in	Unnikrishnan N, Bajpai S (eds), *The Impact of Television Advertising on Children*. New Delhi; Thousand Oak; London: Sage Publications.
Peer-reviewed	Unknown
Authors' discipline	Unnikrishnan – media & education Bajpal – media & journalism
Funding source	International Development Research Centre (IDRC)

WARD ET AL 1972

Relevant to	Systematic Review 2 Question 1.
Design	Structured interviews.
Sample	67 children aged 5-12. Children were selected from "a sample of Boston-area families which had been used in other research". "The tendency was toward the middle- to upper-middle class".
Sampling procedure	No other information is provided.
Method	In-home face-to-face interviews lasting an hour. Responses were transcribed by a researcher accompanying the interviewer.
Measures	A range of advertising awareness and recall measures.
Statistical analysis	
Results	Favourite advert. The largest category of favourite adverts was food adverts (33%), followed by toys (10%), programme announcements 9%), soft drinks (6%), cars (5%), and PSAs (3%). Seventeen percent of favourite adverts were for other products. One-fifth of children did not have a favourite or could not remember it. Food adverts were also the most disliked adverts: 15% of least favourite adverts were for food products. In over a third of cases, children could not remember their least favourite advert or did not have one. Other results do not relate to food advertising.
Published in	Rubinstein, EA, Comstock, GA and Murray, JP (Eds.), *Television and Social Behavior: Volume IV. Television in Day-to-Day Life; Patterns of Use.* Washington DC: US Government Printing Office.
Peer-reviewed	Unknown
Authors' discipline	Unknown
Funding source	Unknown (Technical report to the US Surgeon General)

WILLIAMS 1974

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	54 9-13 year olds. The sample was drawn from one private and one public school in San Francisco, described as "racially and economically mixed".
Sampling procedure	No further information is provided other than that participation was on a voluntary basis.
Method	Half the questionnaires were completed at home and half in school. No other information on method is provided.
Measures	Self-reported expenditure of own money.
Statistical analysis	None reported.
Results	All children reported spending "almost half" of their allowance each week on snacks, and 44% reported that they purchased snacks that they saw advertised on television.
Published in	Report
Peer-reviewed	Unknown
Author's discipline	Committee on Children's Television, San Francisco
Funding source	John & Mary R Markle Foundation, New York, NY

WIMAN & NEWMAN 1989

Relevant to Systematic Review 2 Questions 1, 2.

Design Cross-sectional survey designed to examine the relationship between self-reported exposure to television advertising and nutritional knowledge and understanding.

Sample 327 children in US elementary school grades 3-6 (ages 8-12). The sample represented the total student population in all classes in these grade levels at two New Jersey schools.

Method Data were collected using an interviewer-administered questionnaire in the classroom. The interviewer distributed and explained each section of the questionnaire one at a time, and helped pupils to complete the questionnaires where they had difficulties.

Measures Three main variables were measured: television commercial exposure, nutritional knowledge, and understanding of nutritional phraseology.

Television commercial exposure was measured using a proxy measure of television watching. Children were asked which television programmes they had watched during the past week for each day of the week and parts of the day (ie. morning, afternoon, evening). Hours of viewing were summed for three time periods of the week intended to reflect different levels of child-orientation in the commercials aired – Saturday morning (child-oriented advertising), weekday afternoon (mixture of child-oriented and nonchild-oriented advertising), and weekday evening (nonchild-oriented advertising). Nutritional knowledge was measured using a 13-item true-false test. Questions were taken from school textbooks designed for all the grade levels included in the study. Six of these items were used to determine a nutritional knowledge score for each respondent. Understanding of nutritional phraseology was measured using a 7-item test. Multiple choice questions were constructed to assess children's understanding of nutritional phrases and expressions used in food advertising and children's programmes (eg. 'If a commercial for Trix says "Trix tastes like fruit and looks like fruit too", this means: a. if you eat Trix you don't need to eat fruit, b. Trix is made of fruit, c. Trix has the colour and flavour that an apple or pear might have"). Factor analysis revealed that the items loaded on separate factors in the expected manner. Both sets of items achieved satisfactory reliability ratings (coefficient alphas of 0.56 for the knowledge scale and 0.69 for the phraseology scale).

Statistical analysis One-way analysis of variance. Partial correlation coefficient analysis.

Results One-way analysis of variance was conducted to investigate whether television viewing varied significantly by age. This revealed that there was no variation by age in afternoon viewing, but that younger age was significantly related to greater viewing of Saturday morning television ($p<0.000$), while older age was significantly related to greater viewing of weekday evening television. Age correlated significantly with nutritional knowledge and understanding of nutritional phraseology, with older children having higher scores on both measures.

Partial correlation coefficients were calculated for the relationship between television viewing and the two nutritional measures controlling for age. The amount of television viewed on Saturday mornings correlated negatively with nutritional knowledge ($r=-0.116$, $p<0.05$) and understanding of nutritional phraseology ($r=-0.113$, $p<0.05$) ie. greater exposure to child-oriented television was associated with less nutritional knowledge and understanding. There was no significant relationship between television viewing on weekday afternoons and either of the nutritional measures. Weekday evening (ie. non-child-oriented) viewing was positively correlated with nutritional knowledge ($r=0.114$, $P<0.05$), ie. the more television viewing the greater knowledge. There was no significant relationship between academic achievement (as measured by academic grade level) and amount of television viewing at any of the time periods examined. There was however a positive relationship between academic grade and nutritional knowledge ($r=0.304$, $p<0.001$) and understanding of nutritional phraseology ($r=0.297$, $p<0.001$).

Overall, when controlling for age, poorer nutritional knowledge and understanding were associated with greater viewing of television at times when advertising is more child-oriented. The possibility that poorer nutritional knowledge/understanding and greater television viewing could both have been associated with or caused by some other factor is not ruled out, as the results showed that there was a stronger relationship between academic grade and nutritional knowledge scores than between Saturday television viewing and nutritional knowledge. However, Saturday morning television viewing did not vary significantly by academic grade, suggesting that television viewing or some other variable accounted for some of the relationship with nutrition knowledge.

Published in Journal of the Academy of Marketing Science

Peer-reviewed Yes

Authors' discipline Assoc Prof of Marketing (both)

Funding source Unknown

WONG ET AL 1992

Relevant to Systematic Review 2 Questions 1, 2, 3

Design Cross-sectional survey designed to assess extent to which 'excessive television viewing' is a predictor for child's cholesterol, and its influence relative to family history of disease and high cholesterol levels.

Sample 1081 children aged 2 to 20 (mean age 7.4 $\pm$ 3.6 SD) in California. 87% of the sample were white.

Method A parents' questionnaire was administered during routine physical examinations, by paediatric doctors and nurses, performed on children over a two-year period.

Measures The questionnaire took measures of:

- family history of myocardial infarction and high blood cholesterol level
- child's exercise habits
- child's hours spent watching television and playing video games
- child's dietary habits
- parents' food preparation habits (eg. type of milk and fat used, use of lean meat, frequenting of fast food restaurants).

Cholesterol levels were measured using a single finger-stick blood sample. Height, weight and blood pressure were also measured.

Statistical analysis Chi-square and Student's t-test analyses were used to compare children with a total cholesterol level of 200 milligrams per decilitre or higher with those with levels less than 200 mg/dl. Variables examined included reported family history of myocardial infarction at less than 55 years of age, hypercholesterolemia (high cholesterol level), mean body mass index, blood pressure, hours of television/video watched daily (up to two hrs, two - four hrs, over 4 hrs), and frequency of dietary and exercise behaviours. Variables displaying at least a marginally significant relationship were entered into multiple logistic regression analyses.

Results Children with higher cholesterol levels were more likely to have a parent or grandparent with high cholesterol ($p=0.02$), to consume lean meat ($p=0.01$), to have fat trimmed from meat ($p=0.02$), to have food cooked in vegetable oil ($p=0.04$), and to watch two or more hours of television/video per day ($p=0.001$). The use of television watching as a predictor variable together with family history predictors identified 85% of the children with higher cholesterol levels. Only 66% of this group would have been identified without the use of television watching as a predictor.

Children who reported watching more than four hours of television daily were less likely to consume lean meat ($p=0.006$) or engage in physical activity ($p=0.02$).

Multiple logistic regression analyses with high cholesterol in children as the dependent variable found that family history of high cholesterol, higher levels of television viewing and lean meat consumption were each independently associated with increased risk of high cholesterol. Children watching 2-4 hrs of television daily were approximately twice as likely (relative risk 2.2, $p<0.01$), and those watching 4+ hours four times as likely (relative risk 4.8, $p<0.01$), to have a high cholesterol level than children watching less than two hrs daily. The relative risk for family history of high cholesterol was 1.6 ($p<0.05$), and for lean meat consumption 2.5 ($p<0.01$).

Published in Pediatrics (journal)

Peer-reviewed Yes

Authors' discipline Cardiology and paediatrics

Funding source Unknown

YAVAS & ABDUL-GADER 1993

Relevant to	Systematic Review 2 Question 1.
Design	Cross-sectional survey.
Sample	217 students in Saudi school grades five to eight. 56% of the sample were male and 44% female. The sample was unevenly distributed across the grade levels (38% 5th grade, 35% 6th grade, 27% 7th-8th grade).
Sampling procedure	The sample comprised the total school population for the specified grade levels in two schools (one boys and one girls) in Saudi Arabia. Permission was obtained from school principals.
Method	Questionnaires were administered for self-completion during school time. Teachers oversaw the administration, providing verbal instructions and reading out questions to allow for any difficulties with reading.
Measures	Frequency of watching television adverts, which are screened in 5-20 minute blocks on Saudi television; Prompted recall of adverts in14 different product categories. The categories were ranked according to percentage of mentions, with 1= most remembered and 14=least remembered. Advertising preferences. Respondents were asked their preferences across three types of advert (humorous, cartoons and educational) and four types of product (food, soft drinks, detergents, cars). Perceived influence of adverts. Respondents were asked whether they ever discussed adverts with their parents, asked their parents to buy an advertised product, and whether their parents usually agreed to the purchase. They were also asked about their ability to identify advertised brands in shops and whether they were influenced by adverts using celebrities.
Statistical analysis	Spearman's rank order correlation was used to determine extent of agreement in awareness rankings of product adverts by males and females.
Results	Two-fifths of respondents reported watching three or more commercial breaks per day (the highest response on the scale). There were no significant gender differences. The most frequently recalled adverts were for foods (ranked 1st), followed by soft drinks, toys and cars. Spearman's rank order correlation indicated moderate agreement in the rankings by males and females, with the order for males being food, soft drinks, cars and clothes, and for females food, soft drinks, toys and baby care products. The most preferred type of advertising was humorous adverts, liked by 72.3%, followed by cartoons (61.7%) and educational adverts (39.6%). The most popular types of advert by product category were food adverts (52.5%), followed by cars (47.9%), soft drinks (40%) and detergents (39.6%). There were significant gender differences, with 75% of females liking food adverts compared with 34.7% of males ($p<0.05$); females also liked soft drinks adverts more than males (50% vs. 32.2%, $p<0.05$). Around a third of respondents said that they 'always' and 46% 'sometimes' asked parents to buy items they had seen advertised, and that parents agreed 'always' (43.9%) and 'sometimes' (45.3%). A majority (69.3%) said that they could always identify advertised brands in the shops.
Published in	Marketing Intelligence and Planning (journal)
Peer-reviewed	Yes
Authors' discipline	Marketing
Funding source	Unknown

APPENDIX 11

List of Advisory Panel Members

List of Advisory Panel Members

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GLOSSARY OF TERMS

This glossary provides the reader with definitions of the key terms and concepts addressed in this review.

Analysis of Variance (ANOVA): A statistical technique used for assessing significance of difference between three or more means by using the ratio of within-group variance to between-group variance [Definition from Walsh 1990].

Bivariate Association: Correlation between two variables [Definition adapted from Hair et al 1998].

Causality/Causal Link/Causal Relationship: The relation of cause and effect; as a methodological approach, the idea that one event is the net product or result of other specifiable, knowable events or conditions [Definition from Chadwick et al 1984].

Chi-square Statistic (X^2): A statistic that is based on the differences between the observed and expected frequencies [Definition from Howitt & Cramer 2000].

Chi-square test: : A test of statistical significance that is commonly used for ordinal data [Definition from Chadwick et al 1984].

Cochran Q: Cochran's Q is identical to the Friedman test but is applicable when all responses are binary. It is an extension of the McNemar test to the k-sample situation. Cochran's Q tests the hypothesis that several related dichotomous variables have the same mean. The variables are measured on the same individual or on matched individuals [Definition from SPSS 11.5 for Windows, Topic Index].

Consumer Behaviour: The process by which people select, purchase and use products (or services) in order to satisfy their own needs and desires [Definition from Solomon et al 1999].

Content Analysis: The systematic, quantitative analysis of observations obtained from archival records and documents [Definition from Frankfort-Nachmias & Nachmias 1996].

Control Group/condition: The group in an experiment that is not exposed to the independent variable [Definition from Frankfort-Nachmias & Nachmias 1996].

Correlation Coefficient: A descriptive measure showing the direction and degree of the relationship between two variables [Definition from Hopkins et al 1996].

Correlation: A measure of the extent to which two variables are related, not necessarily causally [Definition from Elmes et al 1995].

Creative Strategy: The intended creative propositions and the means of expressing them in a particular advertisement or series of advertisements [Definition adapted from Hart & Stapleton 1987].

Cross-sectional Study: Measurement at a single point in time which obtains representation of elements or characteristics present in a unit or population at that time, but does not reflect the characteristics before or after the point or period of measurement [Definition from Chadwick et al 1984].

Degrees of Freedom (*df*): The number of values free to vary if the total number of values and their sum are fixed [Elmes et al 1995].

Dependent Variable: The outcome or criterion variable that is hypothesised to be related to changes in the independent variable [Definition from Hopkins et al 1996].

Descriptive Statistics: Statistical procedures used for describing and analysing data that enable the researcher to summarise and organise data in an effective and meaningful way. These procedures provide tools for describing collections of statistical observations and reducing information to an understandable form [Definition from Frankfort-Nachmias & Nachmias 1996].

Experimental Group/Condition: The group exposed to the independent variable in an experimental research design [Definition from Frankfort-Nachmias & Nachmias 1996].

Experimental Study: A research technique where one or more independent variables are manipulated by the researcher under controlled conditions to determine changes cause in the dependent variable [Definition from Chadwick et al 1984].

F-ratio (F): The ratio of the two independent variance estimates. It is the test statistics for ANOVA [Definition from Hopkins et al 1996].

Independent Variable: The explanatory variable, that is, the hypothesised or presumed cause of changes in the values of the dependent variable [Definition from Frankfort-Nachmias & Nachmias 1996].

Inferential Statistics: Allows the researcher to make decisions or inferences about characteristics of a population based on observations from a sample taken from the population [Definition from Frankfort-Nachmias & Nachmias 1996].

Level of Significance: Tells us how confident we can be that the findings observed from a sample are applicable to the population from which the sample was drawn [Chadwick et al 1984].

Longitudinal Study: Study of individuals or other units in which measurements of the same unit are repeated at various times over the course of the study [Definition from Chadwick et al 1984].

Marketing: A social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others [Definition from Kotler et al 1996].

Multiple Regression: A regression model with two or more independent variables [Definition from Hair et al 1998].

Narrative Review: A review that does not systematically identify or select primary data.

Natural Experiment: An experiment where the researcher obtains baseline levels on the independent and dependent variables and then waits for the independent variable to occur or change naturally [Definition from Chadwick et al 1984].

Observational Study: Research technique in which data is collected by researchers witnessing or recording the actual events which take place [Definition from Hart & Stapleton 1987].

Population: The entire set of relevant units of analysis [Definition from Frankfort-Nachmias & Nachmias 1996].

p-value: The probability of the observed data when the null hypothesis is true [Definition from Everitt 1996].

Qualitative Study/ Research: Research strategies that emphasise getting close to data, participation and experience as opposed to numeric counting of social behaviour [Definition from Chadwick et al 1984].

Quasi-experimental Study: An experiment in which the independent variable occurs naturally and is not under the direct control of the experimenter [Elmes et al 1995].

Random Allocation/Randomisation: A method of control that helps to offset the confounding effects of known as well as unforeseen factors by randomly assigning cases to the experimental and control groups [Definition from Frankfort-Nachmias & Nachmias 1996].

Regression Analysis: Used to test for the impact of an independent variable on the dependent variable while statistically controlling for the effects of other independent variables [Chadwick et al 1984].

Regression Coefficient: The numerical value of the parameter estimate directly associated with the independent variable [Definition from Hair et al 1998]. (*A standardised regression coefficient is derived from standardised data).*

Sample: Any subset of a population [Definition from Frankfort-Nachmias & Nachmias 1996].

Spearman's Rank Correlation Coefficient (rho): A measure of linear association for rank ordered data [Definition from Walsh 1990].

Statistical Significance: Means that the probability of the obtained statistic, if the null hypothesis were true, is less than alpha ($p < á.$), the stated level of significance. Therefore, the null hypothesis is rejected as untenable and the findings are said to be statistically significant [Definition from Hopkins et al 1996].

Stepwise Regression: Method of selecting variables for inclusion in the regression model that starts by selecting the best predictor of the dependent variable. Additional independent variables are selected in terms of the incremental explanatory power they can add to the regression model [Definition from Hair et al 1998].

Structural Equation Model: Multivariate technique combining aspects of multiple regression (examining dependence relationships) and factor analysis (representing unmeasured concepts- factors- with multiple variables) to estimate a series of interrelated dependence relationships simultaneously [Definition from Hair et al 1998].

Student t-test/ t-test: Significance test for assessing hypotheses about population means [Definition from Everitt 1996].

Survey: A research technique that ask questions of a sample of respondents with a questionnaire or interview [Definition from Chadwick et al 1984].

Systematic Review: A review of the evidence on a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant primary research [Definition from Khan et al 2001].

t-value (t): The test statistic that assesses the statistical significance between two groups on a single dependent variable [Definition from Hair et al 1998].

Validity: The degree to which a measuring instrument measures what it is supposed to measure [Definition from Frankfort-Nachmias & Nachmias 1996].

Variance: Measure of dispersion; the standard deviation squared [Elmes et al 1995].

Glossary References

Chadwick BA, Bahr HM, Albrecht SL (1984). *Social Science Research Methods.* Englewood Cliffs, NJ: Prentice-Hall.

Elmes DG, Kantowitz BH, Roediger III HL (1995). *Research Methods in Psychology*, 5th edition. St Paul, MN: West Publishing Company.

Everitt BS (1996). *Making Sense of Statistics in Psychology - A Second-Level Course.* New York: Oxford University Press Inc.

Frankfort-Nachmias C, Nachmias D (1996). *Research Methods in the Social Sciences*, 5th edition. New York: St Martin's Press.

Hair JF Jr, Anderson RE, Tatham RL, Black WC (1998). *Multivariate Data Analysis*, 5th edition. Upper Saddle River, NJ: Prentice Hall.

Hart NA, Stapleton J (1987). *Glossary of Marketing Terms*, 3rd edition. London: Heinemann Professional Publishing Ltd.

Hopkins KD, Hopkins BR, Glass GV (1996). *Basic Statistics for the Behavioral Sciences*, 3rd edition. Needham Heights, MA: Allyn & Bacon.

Howitt D, Cramer D (2000). *An Introduction to Statistics in Psychology*, 2nd edition. Essex: Pearson Education Limited.

Khan KS, Riet G, Glanville J, Sowden AJ, Kleijnen J (eds) (2001). *Undertaking Systematic Reviews of Research on Effectiveness. CRD's guidance for those carrying out or commissioning reviews.* York: NHS Centre for Reviews and Dissemination, University of York.

Kotler P, Armstrong G, Saunders J, Wong V (1996). *Principles of Marketing, The European Edition*. London: Prentice Hall.

Solomon MR, Bamossy G, Askegaard S (1999). *Consumer behaviour: a European perspective*. New York; London: Prentice Hall Europe.

SPSS 11.5 for Windows, Topic Index.

Walsh A (1990). *Statistics for the Social Sciences*. New York: Harper & Row Publishers Inc.