



**Leading education
and social research**

Institute of Education
University of London

*ESRC Research Methods Festival, St Catherine's
College Oxford, 30th June to 3rd July*

Session 22: Systematic reviews (2)

Testing and building theories: mixed methods synthesis

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Methods**



Synthesis methods

For effects of interventions

- **Vote counting**
- **Statistical meta-analysis**

For qualitative research

- **Meta-ethnography** (e.g. Noblit and Hare, 1988)
- **Grounded formal theory** (e.g. Kearney, 1998)
- **Thematic synthesis** (e.g. Thomas and Harden, 2007)

For diverse study types

- **Bayesian synthesis** (e.g. Jones et al., 2002)
- **Meta-narrative synthesis** (e.g. Greenhalgh et al. 2005)
- **Realist synthesis** (e.g. Pawson, 2006)
- **Critical interpretive synthesis** (e.g. Dixon-Woods et al., 2006)
- **Mixed methods systematic reviews** (e.g. Harden and Thomas, 2005)

Mixed methods systematic reviews

Working definition

- **Combining the findings of ‘qualitative’ and ‘quantitative’ studies within a single systematic review, in order to address the same, overlapping or complementary review questions**

Mixed methods systematic reviews

- **Key principles:**
 - Transparency
 - Involve users
 - Avoiding bias
 - Awareness and acknowledgement of error (in primary studies and review process)
- **Methods of review adapted depending on study type under review**
 - e.g. Different methods of critical appraisal for trials and for qualitative research
 - e.g. Principles of qualitative data analysis are used to synthesis qualitative studies
- **Complementary view of qualitative and quantitative research**
 - Combining strengths of each

Mixed methods systematic reviews

- **Three senses in which reviews are mixed methods**
 - 1. The types of studies included and hence the type of findings to be synthesised (i.e. 'qualitative/ textual and quantitative/numerical')**
 - 2. The types of synthesis method used (e.g. statistical meta-analysis and qualitative synthesis)**
 - 3. The mode of analysis: theory testing AND theory building**

A mixed methods review

Children and healthy eating: a systematic review of barriers and facilitators*

***Thomas J, Sutcliffe K, Harden A, Oakley A, Oliver S, Rees R, Brunton G, Kavanagh J (2003) *Children and Healthy Eating: A systematic review of barriers and facilitators*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London (The full report of this review is available at the EPPI-Centre website <http://eppi.ioe.ac.uk/EPPIWeb/home.aspx>)**

Review questions

What is known about the barriers to, and facilitators of, healthy eating amongst children?

Do interventions promote healthy eating amongst children?

What are children's perspectives on healthy eating?

What are the implications of the above for intervention development?

REVIEW PROCESS

Searching, screening and mapping

**Focus narrowed to
'fruit & veg'**

Synthesis 1: Trials (n=33)

1. Quality assessment
2. Data extraction
3. Statistical meta-analysis

**Synthesis 2: Qualitative studies
(n=8)**

1. Quality assessment
2. Data extraction
3. Thematic synthesis

**Synthesis 3: Trials and
Qualitative studies**

Methods for synthesis 1: 'Quantitative' (Trials)

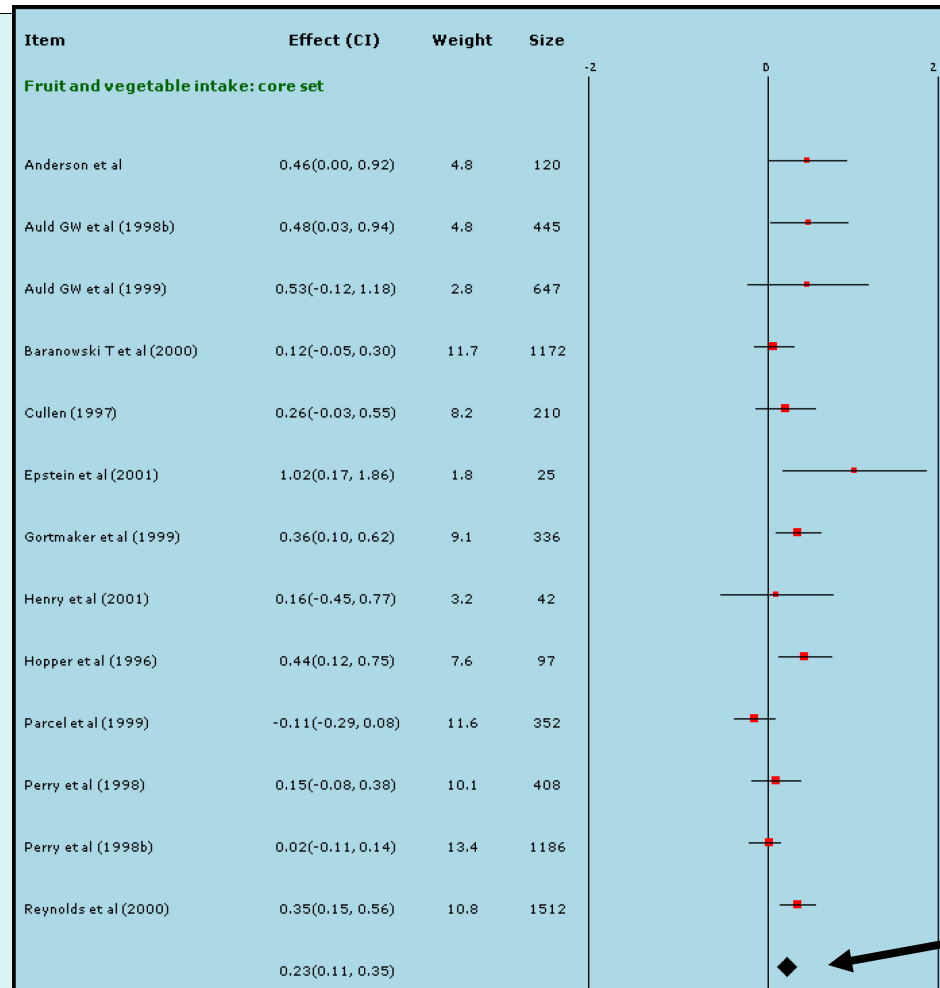
Effect sizes from trials pooled using:

- **Statistical meta-analysis**
- **Six different outcomes**

Heterogeneity across studies explored via:

- **Sub-group analysis**
- **Qualitative analysis of textual data from trials**

Findings for synthesis 1: 'Quantitative' (Trials)



Synthesis 2: thematic synthesis

Stage 1 and 2: Coding text and developing descriptive themes

Stage 3: Generating analytical themes

Stage 1 and stage 2

Data were author descriptions of study findings

Line-by-line coding applied to data

- **36 initial *descriptive codes* (e.g. *bad foods = nice; good foods = awful*)**

Looked for similarities and differences among *descriptive codes* in order to group them

- **13 *descriptive themes* (e.g. 'Perceptions of health benefits')**

Line-by-line coding in EPPI-Reviewer

EPPI-Reviewer 3.0

Inductive coding: code

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Coding text for item: *Dixey R; Sahota P; Atwal S; Turner A; (2001) Children talking about healthy eating: Data from focus groups with 300 9-11-year-olds* ([click here to change item and/or text](#))

as a legitimate use of their money and thought parents should buy this.

*Children did not identify friends as an influence on their healthy eating

'Children were well aware of the pressures on them (to be healthy) and of the contradictions in their own behaviour, and knew that they did not always act on what they knew to be healthy: 'When they (the Apples project) come round, you think right, I'm going to get healthy now, but when you get home, you get something out of the fridge or something' (Boys, Year 6); 'At home I just nip into the biscuit tin.' (Boys, year 5)' p.74 - e.g. temptation 'All the things that are bad for you are nice, and all the things that are good for you are awful' (Boys, year 6) p.74 Problems with school dinners - 'But once you go down for the school dinners it's a different story, because you've got all your fattening foods' (Boys, Year 6) p.74 Some children reported throwing away foods they knew had been put in because they were 'good for you' and only ate the crisps and chocolate. Influence of advertising - reported keenness to emulate footballer Alan Shearer by eating at MacDonalds 'My brother says we have to go to there because Alan Shearer has been there.' (Girls, year 5) 'People think 'I want to be like Alan Shearer so I better go to MacDonalds.' (Boys, year 6) Children said that adverts made them 'feel hungry' and were particularly

Text to code:

 [Create new code](#)

Understandings of healthy eating

Influences on foods chosen

Provided foods

Chosen foods

Food preferences

Perceptions of health benefits

bad food = nice, good food = awful

Roles and responsibilities

Knowledge - behaviour gap

Non-influencing factors

Code selected text

Remove this code from selected text

Show text coded with this code

Delete this code

Add sub-code here

Reports

Properties...

You are logged in as: James Thomas

Review: Children and Healthy Eating: A systematic review of barriers and facilitators

Database: EPIC

```

graph TD
    A[Chosen food, Influences on choosing food,] --> B[Advertising]
    A --> C[Influenced by advertising]
    B --> D[Self+others- diffs reasons for no fa, Not influenced by advertising,]
    C --> E[Not influenced by friends]
    C --> F[Exercising choice, bad food = nice, good food = awful, Roles and responsibilities, Parents,]
    D --> G[Unable to exercise choice, Parents,]
    D --> H[Exercising choice, bad food = nice, good food = awful, Roles and responsibilities, Parents,]
    E --> F
    F --> A
    F --> I[Chosen food, Influences on choosing food,]
    I --> J[Knowledge - not determining behaviour]
    J --> K[Access to unhealthy food]
    K --> L[Temptation]
    L --> M[Access to unhealthy food]
    M --> N[bad food = nice, good food = awful, Exercising choice, Perceptions of health benefits]
    N --> O[Self+others- diffs reasons for no fa]
    O --> P[Influenced by advertising]
    P --> Q[Advertising]
  
```

All Nodes Displayed

Axial coding

EPPI-Reviewer 3.0

Inductive coding: code

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Dixey et al (2001)

Characters: 463 to 978

Children were aware of the relationship between diet and health, in particular for health consequences in the future (main health consequence of not eating healthily was identified as heart disease, although a minority mentioned cancer), although some children did recognise the importance of healthy eating so that they could do things now ('move and run about'). Fat also featured heavily in children's accounts of heart disease (e.g. 'too many crisps means too much fat which blocks the arteries of the heart').

Characters: 982 to 1079

Children identified social as well as health concerns as important reasons for not being too fat

Baxter et al (2000)

Characters: -1 to 180

James
This study addresses the more specific questions of what are children's perceptions of fruit and vegetables. The children's likes and dislikes with regard to vegetables may r />

Characters: 195 to 417

Text to code:

[Create new code](#)

⊕ Understandings of healthy eating

⊖ Influences on foods chosen

⊖ Chosen foods

└ Roles and responsibilities

└ Food preferences

└ Knowledge - behaviour gap

└ Health benefits

└ Non-influ

⊖ Provided food

└ Another ne

Code selected text

Remove this code from selected text

Show text coded with this code

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Add sub-code here

Reports

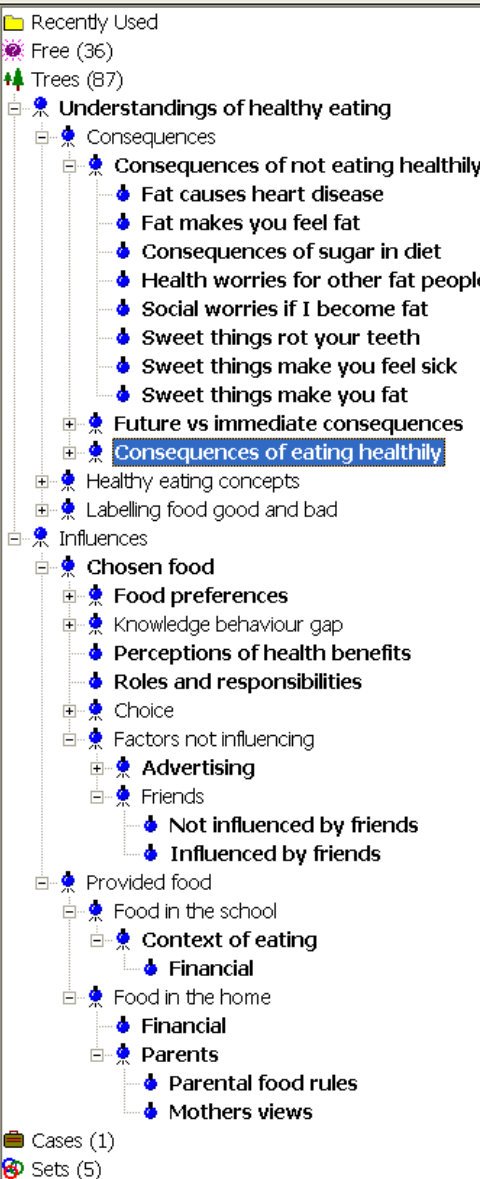
Code within this code

Properties...

You are logged in as: James Thomas

Review: Children and Healthy Eating: A systematic review of barriers and facilitators

Nodes



Nodes in /Understandings of healthy eating/Consequences/Consequences of eating healthily

Title	No.	Passages	Created	Modified
Little mention of positive effects	1	0	09/05/...	09/05/...
You keep energy inside	2	2	09/05/...	09/05/...
Provides vitamins	3	2	09/05/...	09/05/...
Keeps blood and bones strong	4	2	09/05/...	09/05/...
To avoid disease and dying	5	1	09/05/...	09/05/...
So you go to the toilet reguarly	6	1	09/05/...	09/05/...
Good for skin hair teeth and eyes	8	1	09/05/...	09/05/...

**Structuring the
descriptive codes into
descriptive themes**

Documents coded: 3 Children: 7

(no description)

**Understandings
of healthy eating**

**Healthy eating concepts
(understanding)**

'Good' and 'bad' foods

Health consequences

**Influences on
foods eaten**

Chosen foods

Food preferences

Health benefits

Knowledge behaviour gap

Roles and responsibilities

Non-influencing factors

Final list of descriptive themes

**Food in the
school**

Limited choices

Eating to socialize

Contradictions

**Provided
foods**

**Food in
the home**

Food rules

Breaking rules

Stage 3: generating analytical themes

The descriptive themes stayed very ‘close’ to the content of the primary studies, but...

Our synthesis of descriptive themes, did not answer our review question directly

Barriers and facilitators framework:

- What do children think stops them from eating healthily?**
- What do children think helps them to eat healthily?**
- What ideas do children have for what could or should be done to promote their healthy eating?**

‘Recommendations for interventions’

Analytical themes emerged through a cyclical process which involved interrogating the descriptive themes to answer these questions

Stage 3: Analytical themes

1) Children don't see it as their role to be interested in health.

2) Children do not see future health consequences as personally relevant or credible.

3) Fruit, vegetables and confectionary have very different meanings for children.

4) Children actively seek ways to exercise their own choices with regard to foods.

5) Children value eating as a social occasion.

6) Children recognise contradiction between what is promoted and what is provided.

Children consider taste, not health, to be a key influence on their food choice

Food labelled as healthy may lead children to reject them ('I don't like it so it must be healthy')

Buying healthy foods not seen as a legitimate use of their pocket money

Implications for interventions

- 1) Children don't see it as their role to be interested in health.
- 2) Children do not see future health consequences as personally relevant or credible.
- 3) Fruit, vegetables and confectionary have very different meanings for children.
- 4) Children actively seek ways to exercise their own choices with regard to foods.
- 5) Children value eating as a social occasion.
- 6) Children recognise contradiction between what is promoted and what is provided.

Brand fruit and vegetables as 'tasty' rather than 'healthy'.

Reduce health emphasis of messages



Do not promote fruit and vegetables in the same way within the same intervention.

Create situations for children to have ownership over their food choices.



Ensure messages promoting fruit and vegetables are supported by appropriate access to fruit and vegetables

Synthesis 3: Across studies

Matrix used to juxtapose synthesis 1 alongside synthesis 2

Comparative analysis:

- **Which interventions match children's views and experiences?**
- **Have some perspectives been ignored?**
- **Do those interventions which match children's perspectives show bigger effect sizes?**

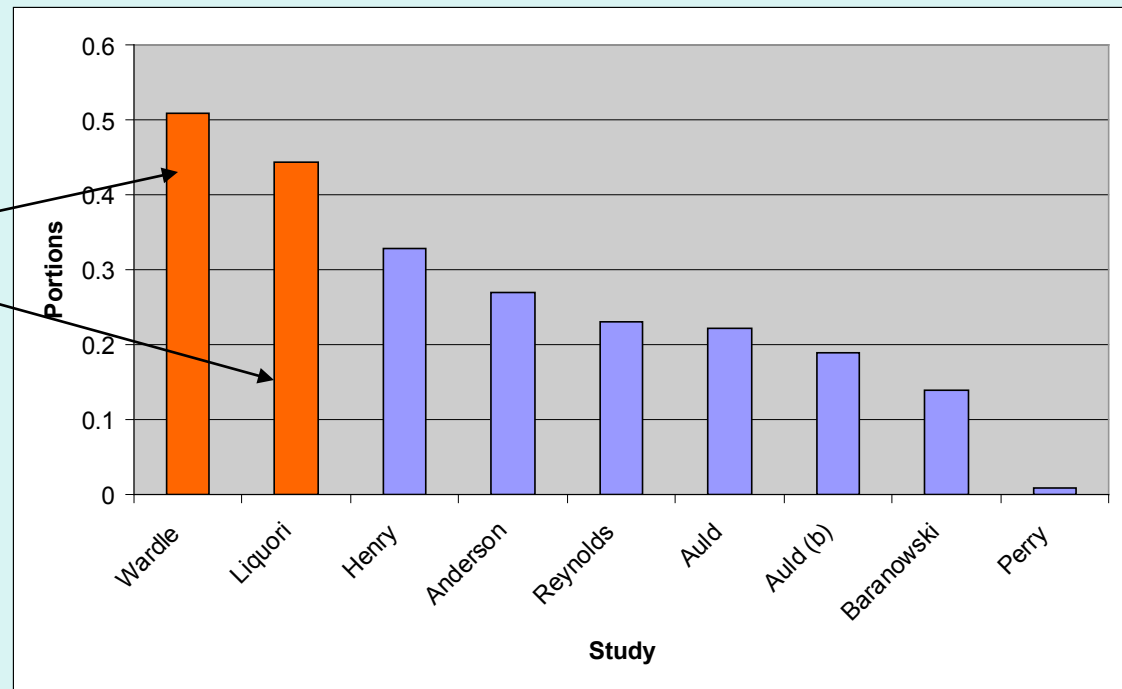
Synthesis 3: Across studies

Children's views	Trials	
Recommendation for interventions	Good quality	Other
Do not promote fruit and vegetables in the same way	0	0
Brand fruit and vegetables as an 'exciting' or child-relevant product, as well as a 'tasty' one	5	5
Reduce health emphasis in messages to promote fruit and vegetables particularly those which concern future health	5	6

Synthesis 3: Across studies

Increase (standardised portions per day) in vegetable intake across trials

Little or no emphasis on health messages



‘Mixed method’ systematic reviews

Preserves the integrity of the findings of the different types of studies

Integrates ‘quantitative’ estimates of benefit and harm with ‘qualitative’ understanding from people’s lives

Facilitates a critical analysis of intervention studies from the point of view of those targeted by interventions

Other examples

Children and physical activity

Young people and mental health

Young people, pregnancy and social exclusion

HIV health promotion and men who have sex with men (MSM) Young people and physical activity

Young people and healthy eating

Young people, pregnancy and social exclusion

All available on the EPPI-Centre website:

<http://eppi.ioe.ac.uk/EPPIWeb/home.aspx>

**The methods described here are published in the *British Medical Journal*
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Thank you!
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