



**EPPI Centre**  
Evidence for  
Policy & Practice



**UCL**

# Integrating the findings of a QES with the findings of a systematic review of effectiveness

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## Webinar overview

- What are mixed methods reviews?
- Why integrate diverse evidence types?
- How to integrate?
  - How to assimilate?
  - How to compare?
  - How to connect?
- Which approach to use?



## What are mixed methods systematic reviews (MMSR)?

- Hong et al. (2017) MMSR = *“reviews combining qualitative and quantitative evidence”*
- Hong et al. (2020) Case study of EPPI-Centre reviews
  - *“This study suggests broadening the conceptualization of mixed methods reviews to take into account a variety of sources and types of evidence.”*
  - *“reviews should be considered mixed when they included more than one kind of **research question** (e.g. effectiveness & views / experiences / implementation) or more than one **type of evidence** (in-depth interviews & fixed-response survey data)”*
- **Iceberg:** Regardless of whether looking at a single Q with diverse evidence or multiple Qs – MMSR aims to *look at issue from different angles*



## What do we mean by diverse types of evidence?

- Not just ‘words vs numbers’
- Evidence gathered using research traditions with very different purposes
  - Qualitative research aims to ‘generate theoretical concepts’
  - Quantitative research aims to ‘test’ or ‘measure’ theoretical concepts
- Research traditions underpinned by very different philosophies
  - Quantitative research = realist = ‘entities exist independently of being perceived’
  - Qualitative research = idealist / interpretivist = ‘the empirical necessarily exists always in the form of human pictures and conceptions of it’ (Blumer 1969)
- Bringing together research underpinned by diverse philosophies enables us to see the same issue from VERY ‘different angles’



## Why integrate diverse evidence types in MMSR?

- Drivers include: a) to understand if outcomes important to patients are measured in trials b) to better understand **‘complex’ interventions**
- Quantitative syntheses = evidence on magnitude of intervention effects (or prevalence of behaviours).
- Qualitative evidence syntheses (**QES**) = theories and explanations for why / how interventions work (behaviours occur etc.).
- **Integration** allows reviewers to explore e.g. reasons for variation in intervention outcomes / behaviours
- Vital knowledge for **implementation** of review findings



## How to integrate?

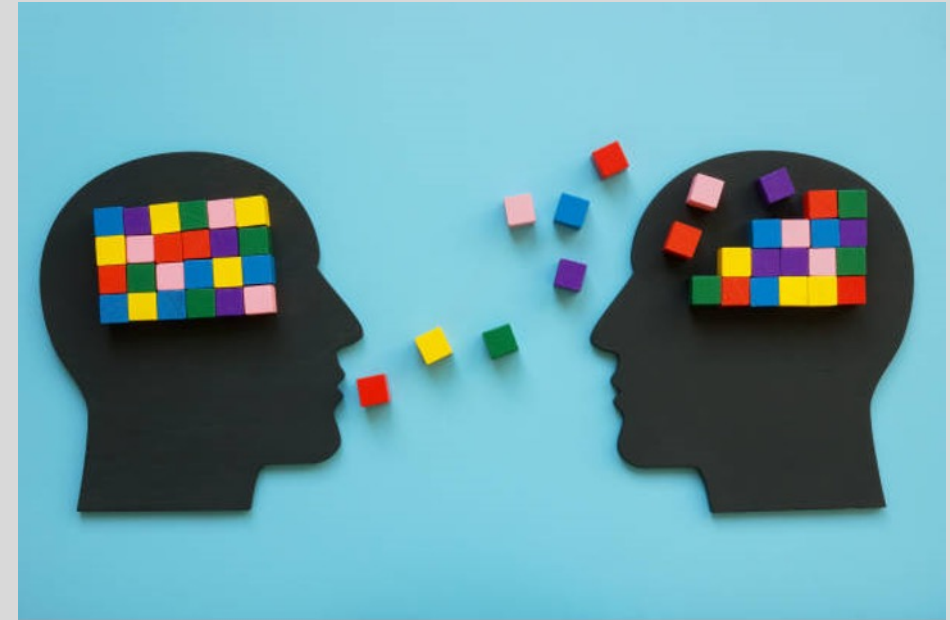
- 3 broad approaches seen in literature:



Assimilation



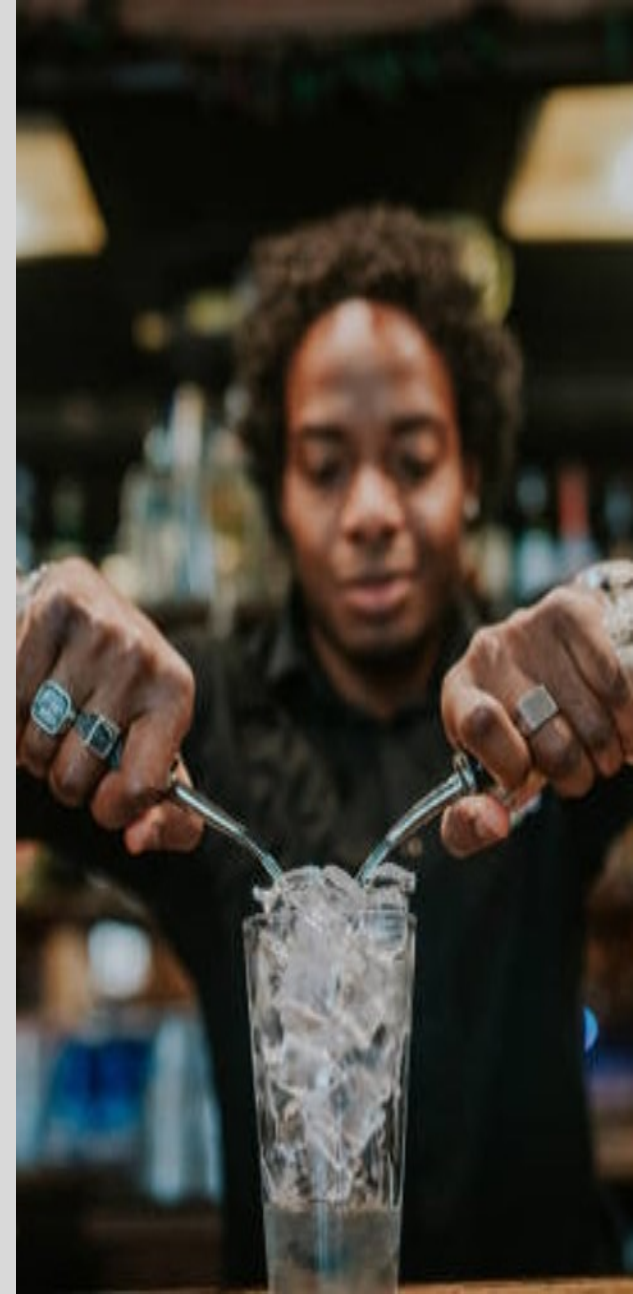
Comparison



Connection of  
phases

## Assimilation

- **Purpose:** To **increase pool** of available evidence
- **Question:** Typically designed to answer **single question**
- **Assumptions:** Qualitative and quantitative evidence on a similar topic can address the same research question(s) and so that they **can be synthesised together**.
- **Strategy:** **Transform** one type of evidence (qualitative or quantitative) into other type so that both sets can be **merged** together.
  - Methods **mostly** focused on transforming quantitative into qualitative or **‘qualitising’** - e.g., numerical data transformed into words / themes so can be merged with qual data
  - Small body of work on **‘Quantifying’** qualitative evidence – i.e. calculating ‘qualitative effect sizes’ to quantify strength of relationships found within qualitative research (See van Grootel et al 2020) but remains **controversial** and contested



## Example MMSR using ‘qualitizing’: Guillaume et al 2020

### **Barriers to Cervical Cancer Screening Among Women Living With HIV in Low- and Middle-Income Countries: A Systematic Review**

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#### **Abstract**

Women living with HIV in low-and-middle-income countries (LMICs) are at high risk of developing cervical cancer due to their immunocompromised status. Screening is an imperative prevention measure for early detection and for ultimately reducing high rates of cervical cancer; however, cervical cancer screening uptake among this group remains low. This systematic review aimed to identify barriers to cervical cancer screening among women living with HIV in LMIC. A comprehensive literature search was undertaken, and an analysis of included studies was completed to abstract major themes related to cervical cancer screening barriers for women living with HIV in LMIC. Lack of cervical cancer and cervical cancer screening knowledge among patients was found to be the most prevalent barrier to cervical cancer screening. Our findings highlight a dire need for interventions to increase knowledge and awareness of cervical cancer screening among women living with HIV in LMIC, along with addressing barriers within health care systems.

**Key words:** developing countries, female, health promotion, human papilloma virus, sexual and reproductive health

#### *Analysis of Studies*

Data from quantitative and qualitative studies were integrated and analyzed using thematic analysis combined with a deductive approach. Quantitative data from surveys and questionnaires were qualitized and coded (Aromataris & Munn, 2017; Nzabonimpa, 2018; Thomas & Harden, 2008). Data from qualitative studies were coded line-by-line (Saldana, 2009). Patterns were searched for amongst coded data, and codes were subsequently categorized into descriptive themes (Aromataris & Munn, 2017; Nzabonimpa, 2018; Saldana, 2009; Thomas & Harden, 2008).

## Comparison

- **Purpose:** To examine **varied facets** of the same **complex phenomenon**
- **Question:** **Separate question(s)** for QES, quantitative synthesis and mixed-method synthesis
- **Assumptions:** The **distinct methods and worldviews** underpinning qualitative and quantitative evidence mean that they **must be synthesized separately** – but that the findings of one type of evidence can **help to explain the findings** of the other.
- **Strategy:** To **juxtapose** findings from QES and quantitative / effectiveness synthesis to offer **insight about how findings may be interpreted**.



# What to **compare** and how?

	If your aim is ...	What to compare	Comparison tool
1	To illustrate weight of evidence supporting QES themes / gaps in evidence.	<b>QES themes</b> <i>compared with</i> <b>quant findings</b>	Matrix
2	To illustrate extent to which interventions reflect needs / preferences identified in QES.	<b>QES themes</b> <i>compared with</i> <b>Individual interventions</b>	Matrix
3	To illustrate whether effectiveness evidence supports overarching QES theory.	<b>QES theory</b> <i>compared with</i> <b>quant findings</b>	Annotated logic model
4	To illustrate how results of QES and effectiveness synthesis are discordant	<b>QES themes</b> <i>compared with</i> <b>quant findings</b>	Line of argument



## Example 1 - QES themes **compared** with Quant findings (matrix)

- **Review:** Houghton et al (2020) Factors that impact on **recruitment to randomised trials** in health care: a qualitative evidence synthesis
- **Review objectives:** To explore potential trial participants' views and experiences of the recruitment process for participation [...] and to what extent barriers and facilitators identified are addressed by strategies to improve recruitment evaluated in previous reviews.
- **Integration methods:** QES findings integrated with two previous intervention effects reviews (Gardner et al 2020; Treweek et al 2018) by juxtaposing quantitative and qualitative findings in a matrix.
- **Value of integration:** QES enabled development of key questions that trialists can ask when developing recruitment strategies. Matching these to the identified evidence and gaps from effectiveness reviews.



## Example 1. QES themes compared with Quant findings

Juxtaposing the findings in a matrix			
Summary of qualitative findings	Implications for trialists	Treweek Review	Gardner effectiveness Review
<b>TRIAL INFLUENCES ON THE DECISION TO PARTICIPATE</b>			
<b>Communication of trial information</b>			
<b>Finding 1: Trial information delivered verbally during face-to-face contact can be less confusing than written trial information.</b>	<i>Will trial information be delivered verbally with face-to-face contact?</i>	[D2] Researcher reading out the consent details (GRADE: very low).	
<b>Finding 2: Written trial information may be beneficial as an adjunct to verbal information and facilitates time and space for reflection without the added influence of recruiters' presence.</b>	<i>Will written information be offered as a supplement to / in addition to verbal information?</i>	[C3] Giving quotes from previous participants in SMS messages (GRADE: moderate).  [D3] Easy to read consent form (no GRADE*).	
<b>Finding 3: The person delivering trial information should have good communication skills, be approachable, trustworthy, person-centred and</b>	<i>Is the person delivering the trial information approachable, trustworthy, participant-centred and knowledgeable with a good</i>	E18] Trained recruiters from a similar ethnic background to study population already taking part in a trial as lay	



## Example 2. QES themes **compared** with interventions (matrix)

- **Review:** Bohren et al (2019) Perceptions and experiences of labour companionship: a qualitative evidence synthesis
- **Review objectives:** To explore perceptions of women, partners, community members, healthcare providers and administrators, and other key stakeholders regarding labour companionship [...] to explore how the findings of this review can enhance understanding of the related Cochrane systematic review of interventions
- **Integration methods:** A matrix compared features of labour companionship identified as important in the QES with features of interventions in effectiveness review.
- **Value of integration:** Summary of how the QES findings are reflected in content of the interventions – i.e. do interventions address needs?



## Example 2. QES themes **compared** with individual interventions

**Main takeaway from integration: most interventions did not include the key features of labour companionship that were identified in the qualitative evidence synthesis**

Factors identified from QES:

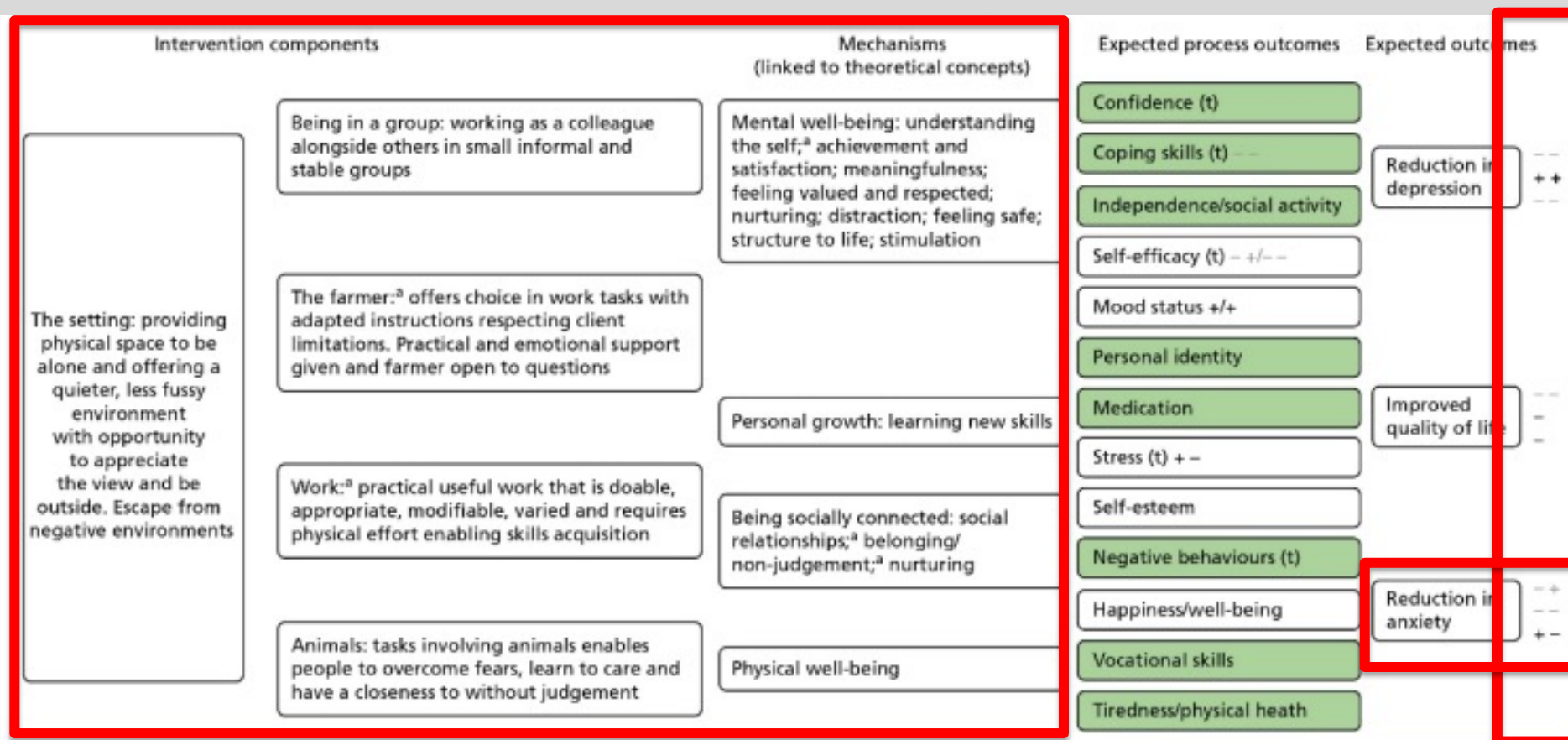
1. Providers trained on benefits of labour companionship?
2. Women educated about benefits of labour companionship?
3. Labour ward structured or restructured in a way to ensure privacy?
4. Providers trained to integrate companions into care team?
5. Clear roles and expectations set for companions and providers?
6. For trials with lay companions, was training for companions on how to support women integrated into antenatal care?
7. Did the woman choose her own companion?

## Example 3. QES theory **compared** with Quant findings (logic model)

- **Review:** Murray et al (2019) The impact of care farms\* on quality of life, depression and anxiety among different population groups: A systematic review (\*care farm = therapeutic use of agricultural and farming practices)
- **Review objectives:** To systematically review the available evidence of the effects of care farms on quality of life, health and social well-being on service users [...] to understand the mechanisms of change for different population groups.
- **Integration methods:** Logic models depicting care farming components, mechanisms and proximal outcomes were developed from QES. Effectiveness evidence mapped onto both proximal and endpoint health outcomes (anxiety, depression and health-related quality of life) to identify whether supported by the evidence base.
- **Value of integration:** Communicates the complexity of the intervention theory juxtaposed against the nature, extent and direction of effectiveness evidence.



# Example 3. QES theory compared with Quant findings



Logic model for combined mental ill health and substance misuse group. a, Mechanisms that were most frequently found and with greatest spread across studies. Grey and black symbols show quantitative evidence for which -- means no significant difference and + means significant difference; grey represents RCT evidence; two symbols beside each other show different time points within the same study; and shaded process outcomes equate to evidence from qualitative literature. t, theory based.



## Example 4. QES themes **compared** with Quant findings (line of argument)

- **Review:** Lester et al (2019) What helps to support people affected by **Adverse Childhood Experiences (ACEs)**? A review of evidence
- **Review objectives:** What helps to mitigate harmful impacts of ACEs?
- **Review design:** 3 parts – 1) Review of reviews on effectiveness of interventions, 2) QES on the experiences and service needs, 3) stakeholder consultation with young people with lived experiences of ACEs in the UK.
- **Integration methods:** A narrative line-of-argument was used to illustrate key areas of discord between the types of interventions examined in systematic reviews and the findings of the QES and stakeholder consultation.
- **Value of integration:** Exposed fundamental disconnect between types of interventions examined in systematic reviews and people's needs as revealed in the QES and consultation findings.



## Example 4. QES themes **compared** with Quant findings (line of argument)

- Key findings from integration: When **comparing** evidence three areas of discordance identified:
  - First, importance of day-to-day practical and emotional support underpinned by relationships with a trusted adult (or mentor/ peer(s)) was consistently highlighted in QES. By contrast, the evidence relating to interventions focused on individualised ‘crisis point’ approaches. In the short term, these psychological interventions did improve mental health but failed to address the multifaceted and ongoing needs identified by young people in the QES and the stakeholder work.
  - Second, whilst QES highlighted that young people valued consistency and stability, many interventions evaluated in systematic reviews were short-term in nature and so were unable to address this need.
  - Third, whilst QES revealed that children and young people felt the attributes of supportive adults were more important for providing effective support than their professional role, the interventions evaluated in the systematic reviews tended to be delivered by staff otherwise unknown to the young person in community or clinical settings.



## Comparison recap

- **Purpose:** To examine **varied facets** of the same **complex phenomenon**
- **Strategy:** To **juxtapose** findings from QES and quantitative / effectiveness synthesis to offer **insight about how findings may be interpreted**.
- **What to compare:**
  1. QES findings with effectiveness synthesis findings (recruitment to trials)
  2. QES findings with individual interventions (labour companions)
  3. QES theory with effectiveness synthesis findings (care farms)
  4. QES findings with effectiveness synthesis findings (ACEs)



## Connection

- **Purpose:** To **use the findings** of one synthesis **to inform** the conduct and focus of another
- **Question:** **Separate question(s)** for QES, quantitative synthesis and mixed-method synthesis
- **Assumptions:** The **distinct methods and worldviews** underpinning qualitative and quantitative evidence mean that they **must be synthesized separately** – but that the synthesis of one type of evidence can **inform** the synthesis of the other.
- **Strategy:** To **connect** findings from QES and quantitative / effectiveness synthesis - e.g. to test QES derived theories using effectiveness evidence.



## What to **connect** and how?

Aim	What to connect	Connection tool
5. To derive hypotheses from QES that can then be <b>tested</b> using effectiveness / quantitative data.	QES themes <i>inform</i> <b>Effectiveness synthesis</b>	Sub-group analysis
6. To identify key intervention, contextual or implementation factors that may influence outcomes from a QES. Combinations of interrelated factors <b>tested</b> via QCA.	QES themes <i>inform</i> <b>Analysis of intervention complexity</b>	Qualitative comparative analysis (QCA)
7. To ensure QES findings can be translated for policy and practice. Findings of effectiveness research are used as a framework to <b>guide</b> the extraction and synthesis of qualitative data for the QES.	Effectiveness synthesis <i>informs</i> <b>QES</b>	Framework



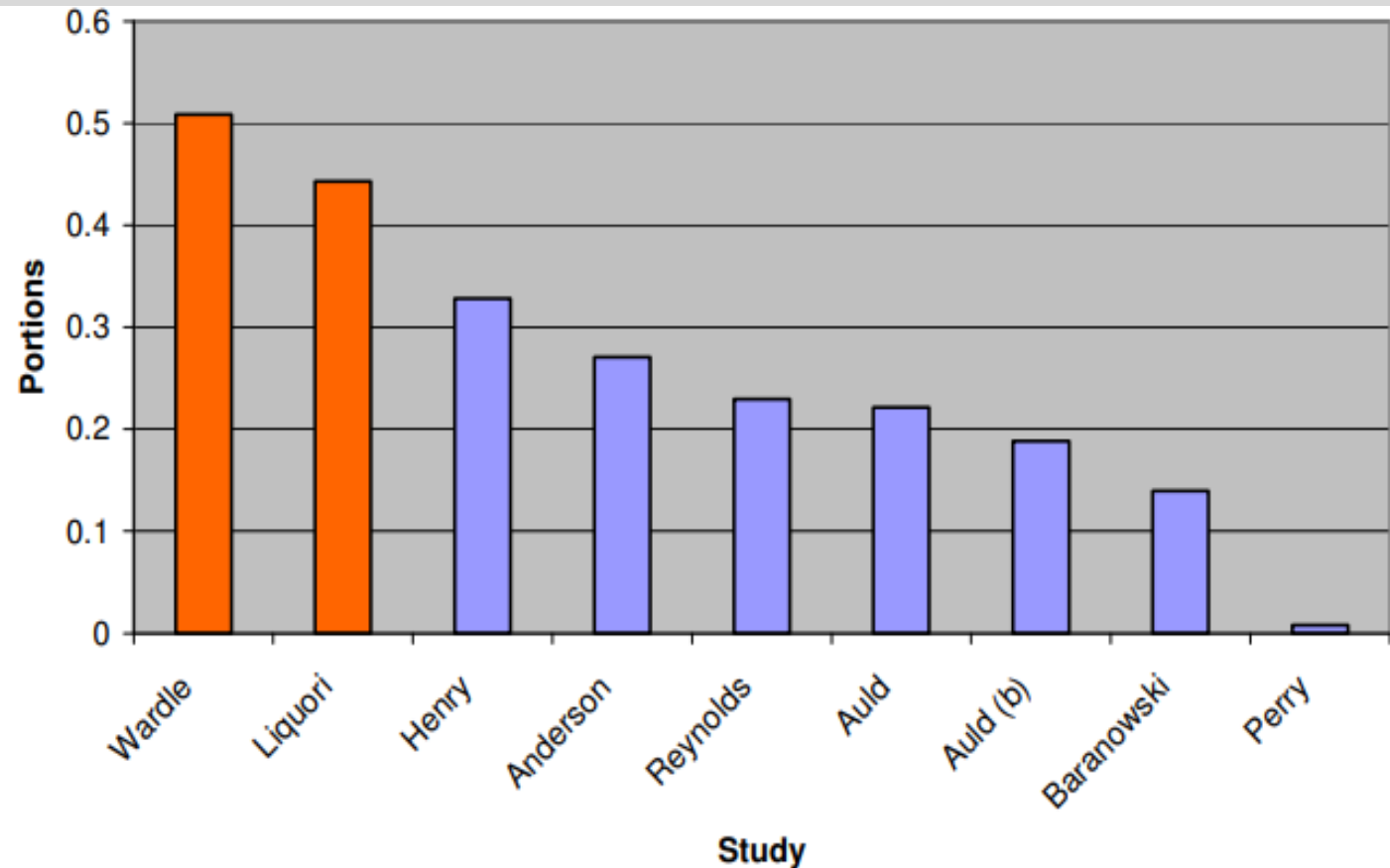
## Example 5. QES **informs** sub-group analyses

- **Review:** Children and healthy eating: a systematic review of barriers and facilitators
- **Review objectives:** To understand what is known about the barriers to and facilitators of healthy eating amongst children aged four to 10 years old.
- **Integration objective:** To derive hypotheses from QES that can then be tested using effectiveness / quantitative data.
- **Integration methods:** QES provided analytic themes about important intervention features that could then be tested via sub-group analysis.
- **Value of integration:** The QES suggested that interventions should treat fruit and vegetables in different ways, and should not focus on health warnings. Sub-group analyses showed that interventions which were in line with these suggestions tended to be more effective than those that were not.



## Example 5. QES **informs** sub-group analyses

- QES key finding: children not interested in health benefits of F&V
- Red bars: trials that did not focus on health benefits of F&V



## Example 6: QES Themes **inform** analysis of intervention complexity

- **Review:** Melendez-Torres et al (2019) Developing and testing intervention theory by incorporating a QES into a qualitative comparative analysis of intervention effects
- **Review objectives:** To identify critical features of successful weight management programmes (WMPs) for adults.
- **Integration objective:** To identify key intervention, contextual or implementation factors that may influence outcomes from QES. Combinations of interrelated factors then tested via QCA.
- **Integration methods:** QES provided working theory to structure QCA, suggested specific intervention features to be examined.
- **Value of integration:** QES helped to sharpen focus on the most salient features to be examined, supported interpretation of findings, and ensured that we avoided data dredging.



# Example 6: QES Themes **inform** analysis of intervention complexity

Critical feature	Example view	Most effective interventions (n=10)	Least effective interventions (n=10)
Good quality provider relationships	'You feel that somebody's battling for you'	<b>All 10</b> most effective interventions had: Provider-user relationships emphasised AND Characteristics perceived to foster self-regulation.	<b>All 10</b> least effective interventions had: <b>NO</b> emphasis on provider relationships. OR An emphasis on provider relationships BUT <b>NO</b> self-regulation characteristics.
Provider direction and support	'I need someone to take my hand and take me over'	<b>All 10</b> most effective interventions had: Provider-set energy-intake goals AND Provider-set exercise goals AND EITHER direct provision of exercise OR provider-set weight goals.	<b>All 10</b> least effective interventions had: <b>NO</b> provider-set energy-intake goals AND <b>NO</b> provider-set exercise goal AND <b>NO</b> direct provision of exercise. OR Direct provision of exercise AND provider-set exercise goals BUT <b>NO</b> provider-set energy-intake goals AND <b>NO</b> provider-set weight goals.
Opportunities for peer relationships	'You wanted to come back and hear how the guys were getting on'	All interventions with both of the following characteristics (n=5) were in the most effective group*: Group work AND Targeted at a specific population group.	All interventions with both of the following characteristics (n=5) were in the least effective group*: <b>NO</b> group work AND <b>NO</b> population targeting



## Example 7: Effectiveness synthesis **drives** QES

- **Review:** Flemming (2010) Synthesis of quantitative and qualitative research: an example using Critical Interpretive Synthesis
- **Review objectives:** To synthesize quantitative research, in form of effectiveness review / guideline, with qualitative research, in form of a QES, to examine the use of morphine to treat cancer-related pain.
- **Integration objective:** To ensure QES findings can be translated for policy / p'tice.
- **Integration methods:** The findings from the effectiveness review interface with and drive the synthesis of qualitative research. Matrix based on effectiveness findings drives conduct / focus of QES.
- **Value of integration:** demonstrated how practical enactment of effective interventions can alter in relation to other elements, e.g. threats to health, interaction with healthcare professionals and perceived meaning of the intervention.



## Example 7: Effectiveness synthesis **drives** QES

	Opioid of first choice is morphine	If pain returns on a regular basis, regular dose should be increased and rescue medication taken	For patients on normal release medication a double dose should be taken at bedtime	Successful pain management requires adequate analgesia without adverse effects
Coyle 2004	Morphine is viewed as positive to relieve pain Good analgesia leads to a sense of control	Poorly controlled pain is interpreted as worsening disease Unlimited analgesia is required for a comfortable death		Adverse effects are a burden Cognitive side effects lead to 'loss of self' Opioids are a burden because of side effects
Ersek <i>et al.</i> 1999	Need to prove pain to get analgesia Patients took opioids regularly to improve functioning Side effects are tolerated		Patients wake at night in pain as they can't afford sustained release preparations	Functionality more important than pain relief Adverse effects are a deterrent Analgesic use altered because of side effects Side effects seen as a sign of addiction
Johnston-Taylor <i>et al.</i> 1993	Morphine works so it gets taken despite side effects	Patients had conflict over management of opioids, what, when how to take?	Fear that pain will increase towards death	Negative connotations associated with morphine use because of side effects Carers have concerns over side effects and addiction Nurses concerns over side effects



# Connection recap

- **Purpose:** To **use the findings** of one synthesis to **inform the conduct** and focus of another
- **Strategy:** To **connect** findings from QES and quantitative / effectiveness synthesis - e.g. to **test** QES derived theories using effectiveness evidence.
- **Note:** **Connection** syntheses often involve the use of **comparison** as a first step in the analysis
- **What to connect:**
  5. QES themes **inform** quantitative synthesis – e.g. fruit and veg sub-group analysis
  6. QES themes **inform** analysis of intervention complexity – e.g. weight management QCA
  7. Quantitative synthesis findings **inform** QES – e.g. cancer pain review



Approach	Useful when ...	Strengths	Limitations
<b>Assimilate</b>	Limited available evidence	Makes use of scant evidence	Does not harness diversity
1. <b>Compare</b> : synthesis matrix (trial recruitment)	QES aims to understand existing quant synthesis	Understand weight of evidence supporting QES	Synergies between QES and interventions unclear
2. <b>Compare</b> : interventions matrix (labour companions)	Seeking detail about interventions	Offers finer grained detail re interventions	Depends on detailed intervention descriptions
2. <b>Compare</b> : annotated logic model (care farms)	Seeking to understand theory / mechanisms	Offers holistic picture of how interventions work	Challenging to link evidence to mechanisms
4. <b>Compare</b> : line of argument (ACEs)	Synthesis findings do not “speak to each other”	Conceptual enlightenment / reveals research gaps	Lacks detail / limited use in decision-making
1. <b>Connect</b> : QES inform subgroup analysis (fruit & veg)	Seeking to test QES derived theory	Enables testing of factors difficult to identify in advance	Depends on sufficient trials / outcome variation
2. <b>Connect</b> : QES informs QCA (weight management)	Exploring intervention complexity	Understand interaction of intervention / context	Depends on sufficient trials / outcome variation
3. <b>Connect</b> : Effectiveness synthesis informs QES (pain)	Need to interpret existing quant synthesis	Ensures QES is relevant for interpreting quant	Important QES findings missed if driven by quant?

## Other considerations

- Selection of integration approach needs to balance your review aims / purpose against:
  - which approach is most suited to available evidence?
  - what resources / time / skills do you have available?
- Because of need to tailor approach to evidence at hand - what is possible / preferable may not be known at outset of your review
- These are examples seen in literature so far – MMSR is inherently creative – what else might be possible?
- Key goal = make most of having diverse evidence types



# Thank you!

- Further resources
  - ESI 2-day in-person workshop 25<sup>th</sup> / 26<sup>th</sup> September ‘Mixed-method evidence synthesis’ – with James Thomas & Angela Harden  
<https://evidencesynthesisireland.ie/conference/mixed-methods-evidence-synthesis-workshop-in-person/>
  - Cochrane-Campbell Handbook for Qualitative Evidence Synthesis – Chapter 14 ‘Integrating Qualitative and Quantitative Evidence’  
<https://training.cochrane.org/cochrane-campbell-handbook-qualitative-evidence-synthesis>