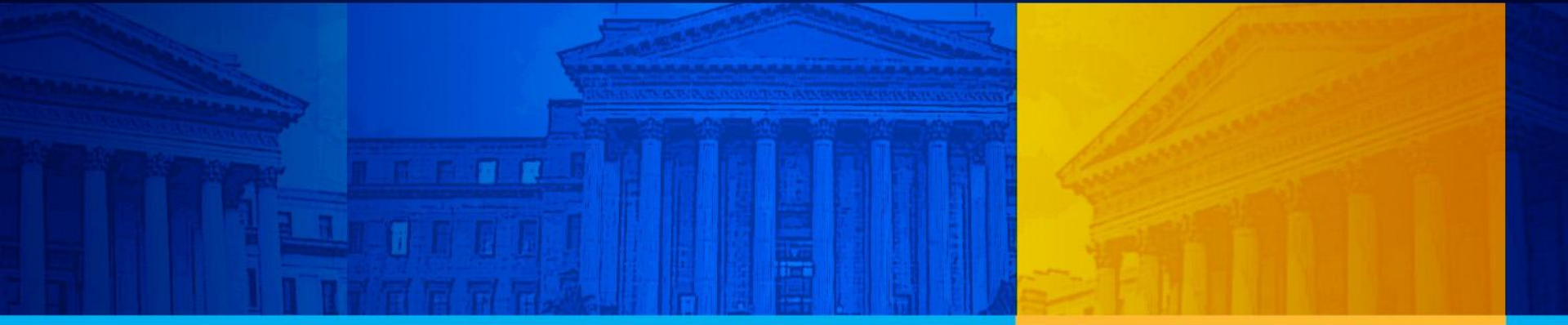


Evaluating environmental health promotion interventions: the role of program theory

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The social sciences have much to offer the field of environmental health. One contribution is to use and develop theories to understand both how effective environmental health programs are as well as why they may or may not work.



Overview

- Introduction
- Understanding the how much and the why in environmental health promotion
- The role of theory
- Implications for evaluation methods
- The way forward



Introduction

- Studies of increasing sophistication continue to highlight the health effects of poor environmental conditions across a number of domains.
- The latest global burden of disease estimates, for example, suggest a larger environment and health disease burden than previously thought.
- Many environment and health related concerns are entirely preventable.
- *Environmental Health Promotion* uses scientific evidence and applies health promotion theories and concepts to a) design environment and health programs and b) evaluate those programs.
- Environmental health programs are underpinned by a number of international and national policies and frameworks.



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- The problem, however, is that environmental health concerns are complex and difficult.
- What appear to be clear and ‘simple’ solutions at first may, in fact, turn out to be multifaceted and challenging.
- The situation is complicated by the need for low-cost interventions in developing countries that are both effective and sustainable.
- For example, interventions such as hand washing with soap, improved cook stoves and insecticide treated bed nets hold the potential to save millions of lives.
- Yet several studies have shown just how difficult it is to demonstrate impact in an effective and sustainable manner because of a number of complex barriers.
- Barriers may straddle structural (e.g. poverty), community (e.g. stigma, social capital, community buy-in), psychological (e.g. knowledge and health beliefs) and behavioral (e.g. skills) factors.



- There are two key questions that need to be considered in environmental health programs:
 - How effective was the program?
 - Why did the program work (or not)?
- The first question has been addressed, to varying degrees, in the literature.
 - See, for example, systematic reviews in the Cochrane Library, 3ie and the extant literature.
 - It is important to continue to find evidence of effectiveness.
- ***However, it is difficult to find information about why/how programs worked or not.***
- It is crucial to know this if we wish to ‘scale up’ interventions (from a project to a national program) or replicate programs in other contexts.
- We need to understand what the underlying assumptions of the program were and, importantly, the *theory of change* (what specific factors influenced the change).



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- In preparation for this seminar, I looked at the prevalence of *program theory* or *theory of change* in a number of high level published environmental health promotion evaluation studies published over the past decade.
- In other words, how many studies discussed why or how their programs worked (or not)?
- 55 intervention evaluations in WASH, indoor air pollution and malaria control were reviewed.
- The programs were aimed at prevention not treatment.
- Understandably, all 55 focused on the how much their intervention impacted on the health outcome of interest.
- BUT, only 12 of these discussed possible reasons why.
- This makes it very difficult to replicate, upscale or transfer the programs to other contexts.
- Can environmental health promotion learn from the program evaluation literature on the role of theory in evaluating complex interventions?



What is program theory?

- Program theory is a plausible and sensible model for how a program is supposed to work.
- A good program theory is absolutely essential for a good evaluation.
- Evidence that interventions that have a good program theory are more successful
- Program theory is program specific but understanding how a program works has implications for the ability to scale up.
- It is easy to understand.
- Program theory is not static and usually will change between start and finish.
- In plain English!
 - Before you intervene: how exactly do you think the program will work?
 - After the intervention: Why did the program work or not? What were the factors that moderated/mediated the relationship between your intervention and the outcome variable?



- Program theory serves a number of functions:
 - It contributes to scientific knowledge through identifying the reasons why programs worked.
 - Forces you to think through the key issues prior to evaluation.
 - May be useful to think through possible unintended consequences.
 - Describes intervening variables .
 - Discriminates between theory and programme failure e.g. did the program fail because of a problem with the theoretical assumptions to begin with or because the program was implemented incorrectly?
 - Clarifies measurement issues e.g. by identifying variables beforehand makes it easier to operationally define them and measure them in the evaluation.
 - Assists with consensus building by involving the key stakeholders prior to the study.



6 principles of developing program theory

- Map out the causal change. It is useful to develop a diagrammatic representation of how the program is likely to work.
- It is important to understand the context. Formative research or needs assessments may be useful.
- Anticipate heterogeneity.
- Think of design rigour (for impact evaluations, this should include a counterfactual i.e. control group).
- Rigorous factual analysis (what actually happened in the intervention group?)
- A move towards mixed methods (answers what [quantitative] and why [qualitative]).



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- You do not need to start from scratch. There are a number of existing health promotion theories that can help formulate program theory (next slide).
- You can also use elements of these or evidence from the literature to develop a program theory.



Level	Theories
Individual	<ul style="list-style-type: none">•Health Belief Model•Transtheoretical Model•Theory of reasoned action•Social learning model
Communities	<ul style="list-style-type: none">•Community mobilisation theory•Diffusion of innovation
Communication strategies	<ul style="list-style-type: none">•Behavioural Change Communication•Social Marketing
Organizations	<ul style="list-style-type: none">•Theory of organizational change
Policy	Ecological framework for policy development Indicators of health promotion policy
Multilevel	Social Ecological model



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You can find these theories in a number of places but a book called *Theory in a Nutshell (2004)* by Don Nutbeam & Elizabeth Harris summarises them in an understandable manner!



Theory example

- It is a common misconception that simply educating people of health hazards is sufficient for change.
- This finding, in part, influenced the conceptual development of the field from *health education* to *health promotion* (the latter focusing on a multitude of factors at multiple levels).
- Even at the individual level, improving knowledge is important but it is one piece of a complex picture of the determinants of health behaviour.
- The Health Belief Model is one such theory (there are others too) that suggests that behavioural change is influenced by a number of core beliefs beyond 'knowledge'.



The Health Belief Model

Perceived susceptibility
to illness

- My chances of getting diarrhoea are high if I don't wash my hands with soap

Perceived severity of
the illness

- Diarrhoea is a serious illness that can lead to death

Perceived costs of
carrying out a
behaviour

- Washing my hands with soap is difficult because soap is expensive

Perceived benefits of
carrying out the
behaviour

- Hand washing with soap will help me and my family be healthier. Being healthier will save us time and money = healthcare expenses. It will also help build my reputation as being a good, clean person.

Cues to action

- Internal (Learn to understand the symptoms of diarrhoea)
- External (Health information serves as a cue)



The Health Belief Model

Two further factors were added:

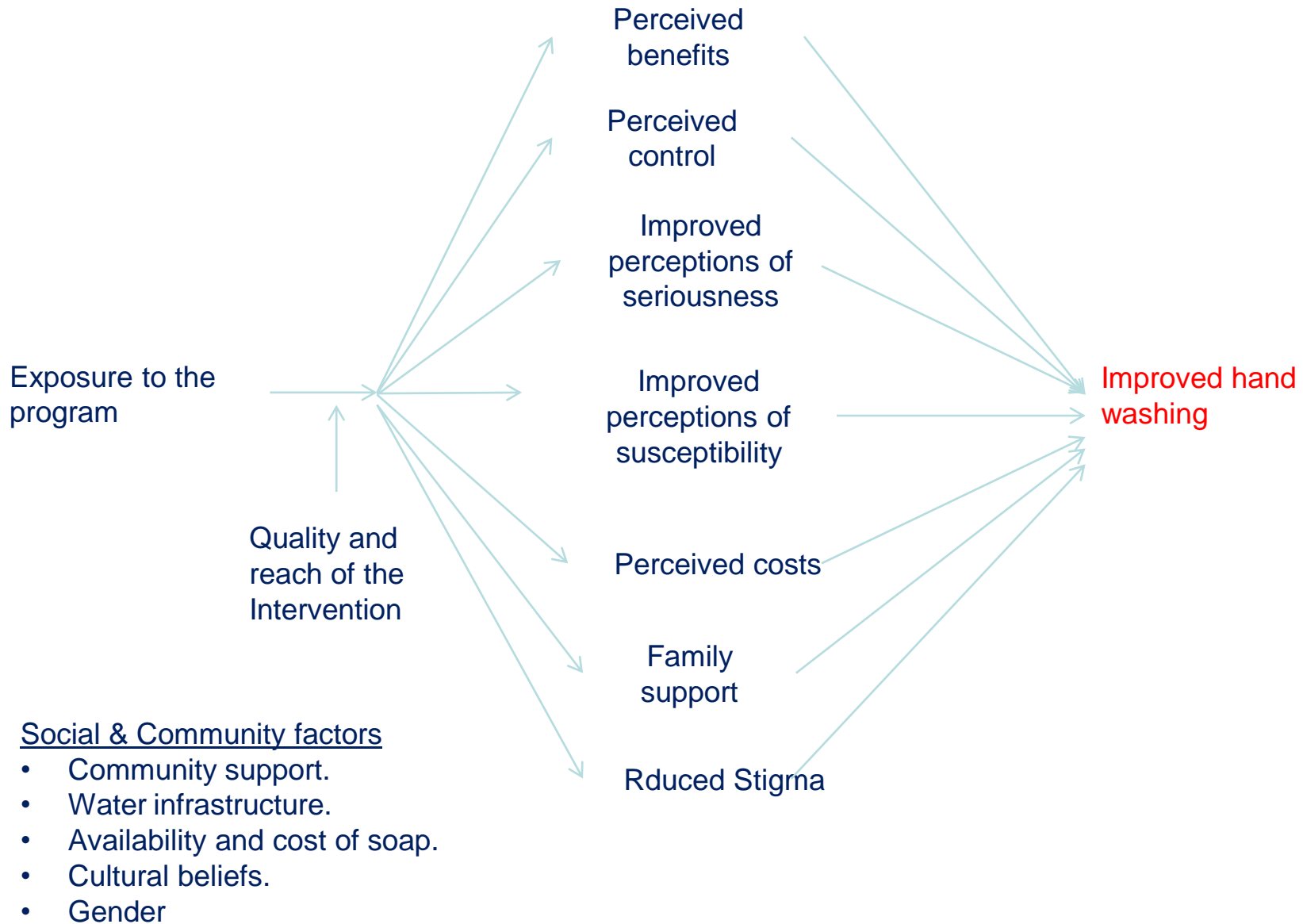
- *Health motivation*: individual's readiness to be concerned with health matters. 'I am concerned enough about diarrhoea now to want to improve my hand washing'.
- *Perceived control*: 'I am confident that I *can* wash my hands with soap more effectively'. 'My family also support me in this'

Example

Suppose you were asked to design a hand washing with soap intervention to reduce diarrhoeal disease in an impoverished community. The initial (simple) program theory might look like this:



In reality it might look like the following (i.e. much more complex)





Key points

- The factors that could possibly influence an intervention may be complex.
- Developing program theory before the evaluation offers possible causal bio-psycho-social pathways for how and why an intervention may work.
- After the intervention, it offers the evaluator a framework for understanding why the intervention worked or not (a theory of change).
- Most importantly, it also helps the evaluator identify what to measure or focus on.



Mixed Methods and Evaluation

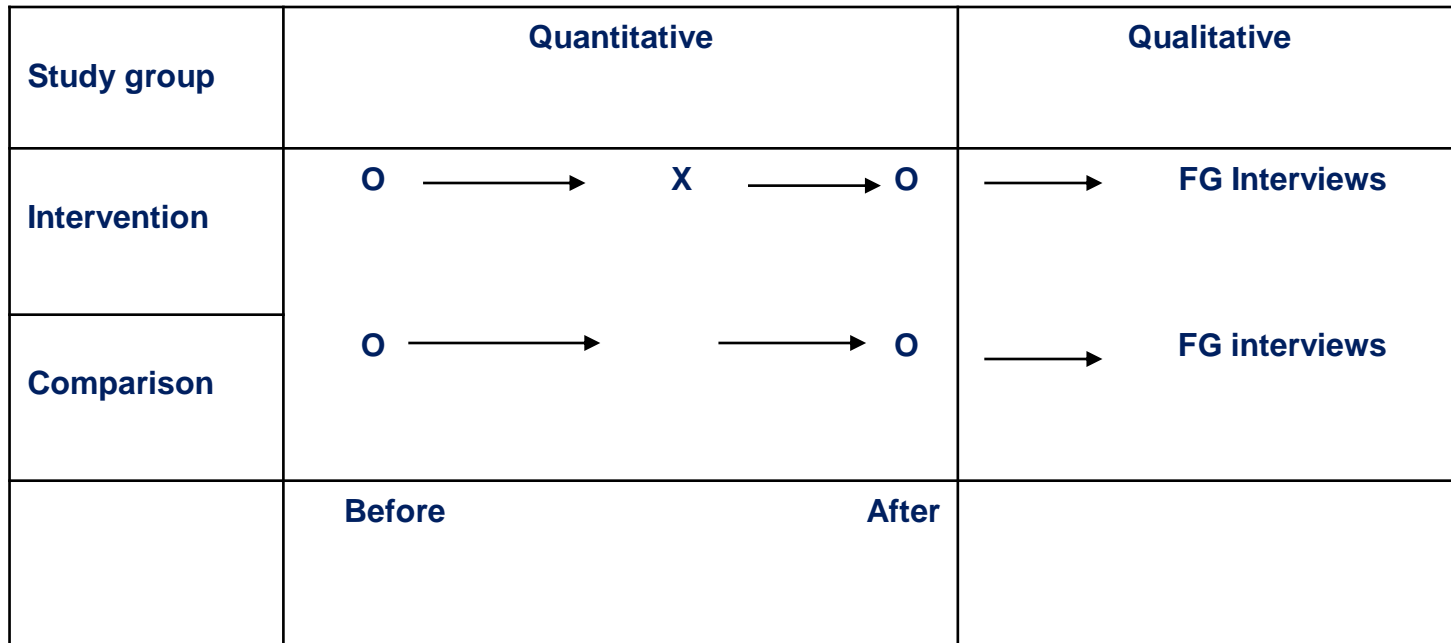
- Mixed methods are the integration of quantitative and qualitative methods into a single study.
- Mixed methods are now commonly used in program evaluation.
- Mixed method evaluations offer the opportunity to understand both ‘how much’ (quantitative) as well as ‘why’ (qualitative).
- A number of mixed methods designs but two designs may be useful for this seminar:
 - Sequential Explanatory Evaluation Design
 - Sequential Exploratory Evaluation Design



Sequential Explanatory Design

- Quantitative first followed by qualitative.
 - Quantitative phase used to determine the effectiveness of the intervention.
 - Qualitative phase used to explain the quantitative findings.
- Quantitative is usually given priority.
- Two sets of findings integrated at the interpretation phase.
- Useful to determine ‘theory of change’ – why and how the evaluation worked.
- Easy to understand.
- Useful when unexpected findings arise in the quantitative phase.
- Relatively easy to report.
- Disadvantage is that it is time consuming.

Example of a sequential explanatory design



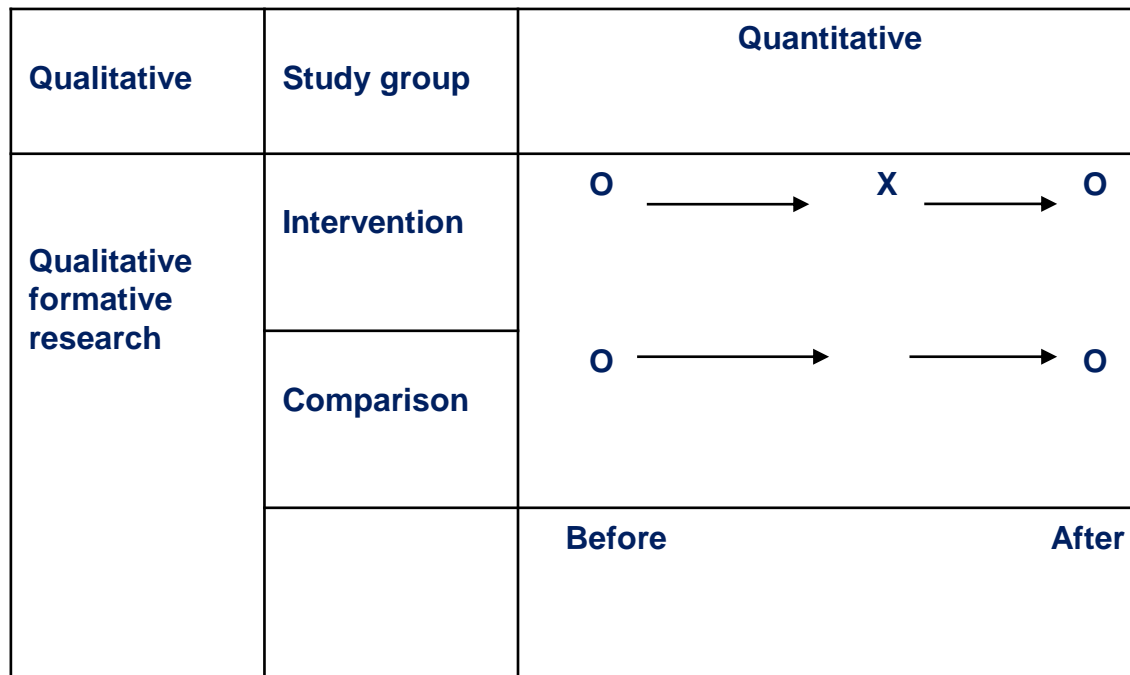
Legend	
O	Quantitative cross sectional assessment
X	Intervention implemented
FG	Focus group



Sequential Exploratory Design

- Qualitative first followed by quantitative (two phases).
- The aim is to use the qualitative phase to inform the quantitative phase.
- The qualitative phase is useful to refine the program theory.
- The qualitative is also useful to understand how to refine program goals and target messages.
- Useful to design and test instruments.
- Requires substantial length of time.
- Quantitative phase is highly dependent on the quality of the qualitative phase.

Example of a sequential exploratory design



Legend	
O	Quantitative cross sectional assessment
X	Intervention implemented



Concluding Remarks

- There is a need to continue to determine the health benefits of environmental health promotion programs.
- There is a concomitant need to understand why and how programs work.
- A number of theories and conceptual frameworks exist to help environmental health researchers to understand their programs better.
- This is essential to be able to scale up programs or replicate them in different contexts.
- It is hoped that this presentation will lead to more discussion about the role of theory in relation to environment and health promotion.



Additional Readings

- Bickman, L. (1997). *The functions of program theory* in L. Bickman (Ed) *Program theory in evaluation*. San Francisco: Jossey-Bass.
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- White, H. (2009). *Theory based impact evaluation: principles and practice*. Delhi: 3ie.
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- Saunders, R., Evans, M., Joshi, P. (2005). Developing a Process-Evaluation Plan for Assessing Health Promotion Program Implementation: A how-to guide. *Health Promotion Practice*, 6, 134-147.