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Learning about How Things Work

Process Tracing Research Methods

SPIA CS Community of Practice Webinar

Application of Process Tracing Methodology within SPIA Country Studies (Colombia case study)

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DEPARTMENT OF POLITICAL SCIENCE

1. What is process tracing?

In-depth case study method used to:

1. empirically trace process that produced contribution (how things worked)
2. study how context shapes how things work (enabling/supporting factors)
3. understand why intervention did *NOT* work (deviant cases)
4. theorization can be used for policy design and strategic planning of interventions

1. What is process tracing?

- Correlation is *not* causation!
- PT is a within case method → opens the "black-box" of causation

› Process tracing = attempts to 'unpack' causal arrow linking causes and outcomes

1. What is process tracing?

- Asks "*how*" and "*why*" questions
- Bottom-up, case focused research approach
- A 'case' = one instance of CAUSE -> process -> OUTCOME taking place

1. What is process tracing?

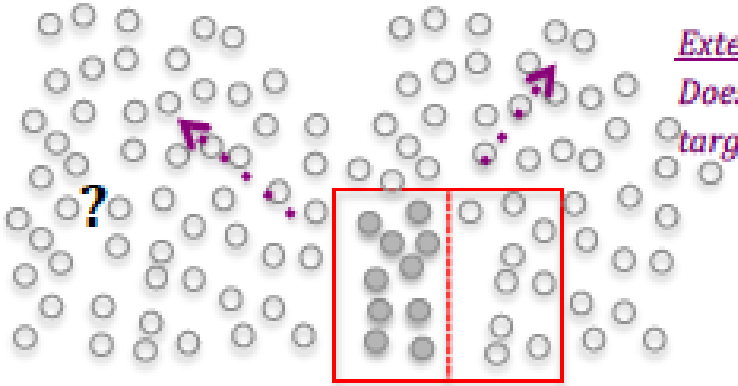
› whether research produced by CIAT has impacts on Colombian agricultural policy, and if so, HOW?

a 'case':

› research on instruments for monitoring and tracing deforestation -> forming part of public/private zero deforestation agreements in different products in Colombia

Variance-based (top-down) approach

'it works somewhere'



External validity

Does ACE hold in target population?

Internal validity

Amount of control in RCT

?

Unanswered:

What is local causal effect?

How does it work?

Case-based **Within-case, mechanistic claims about process linking cause and outcome**	**Variance-based** **Cross-case, counterfactual claims about average causal effects**
Multiple PT case studies in population	Meta-study of lab experiments
PT case study	Lab experiment
Non-mechanistic case study	Field experiment
Small-n comparison	Natural experiment
Medium-n comparison	Large-n comparison
	Small-n comparison

external validity

internal validity

Two parallel evidence hierarchies

1. What is process tracing?

Figure 1.1. A classification of causal mechanisms.

		Methodological approach	
		Case-based	Variance-based
TYPE	behavioral mechanisms	Realist Evaluation	Experiments, Causal Mediation Analysis
	process mechanism	Process tracing, Contribution analysis, related Theory of Change approaches	Experiments, Causal Mediation Analysis

Source: Author's conceptualization. Note: In this Special Issue, the behavioral mechanism approach of realist evaluation is part of Chapter 5, 6, 7, and 8. Chapters 2, 3, and 4 analyze process using process tracing and participatory case study approaches. Variance-based approaches such as experiments and causal mediation analysis of behavioral mechanisms are part of Chapters 9 and 10.

Schmitt, J. (2020). The causal mechanism claim in evaluation: Does the prophecy fulfill? In J. Schmitt (Ed.), *Causal Mechanisms in Program Evaluation. New Directions for Evaluation*, *167*, 11–26.

1. What is process tracing?

› Theory-based evaluation methods - how process is theorized differs

  › realist evaluation : theory of change (ToC) with CMO configurations

  › contribution analysis : theory of change (ToC) with linkages treated as 'assumptions'

  › ToC does not unpack theoretically the *interactions* between implementing actors and other actors (beneficiaries, other stakeholders)

  › PT translates linkages into activities and interactions, evidences linkages empirically

1. What is process tracing?

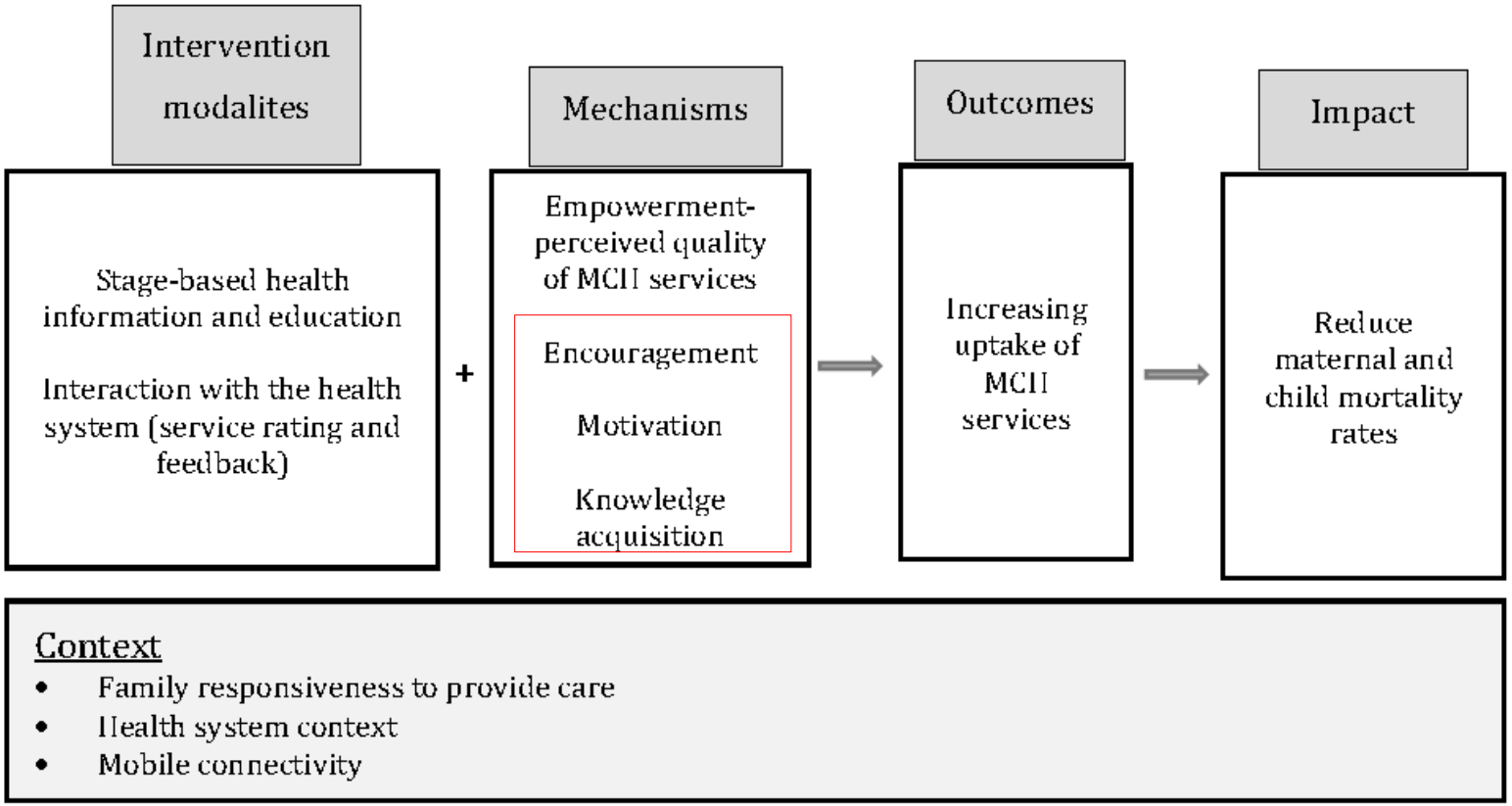


Figure 2.1. A realist evaluation model for MomConnect program.

Source: Adapted from Kabongo et al (2020).

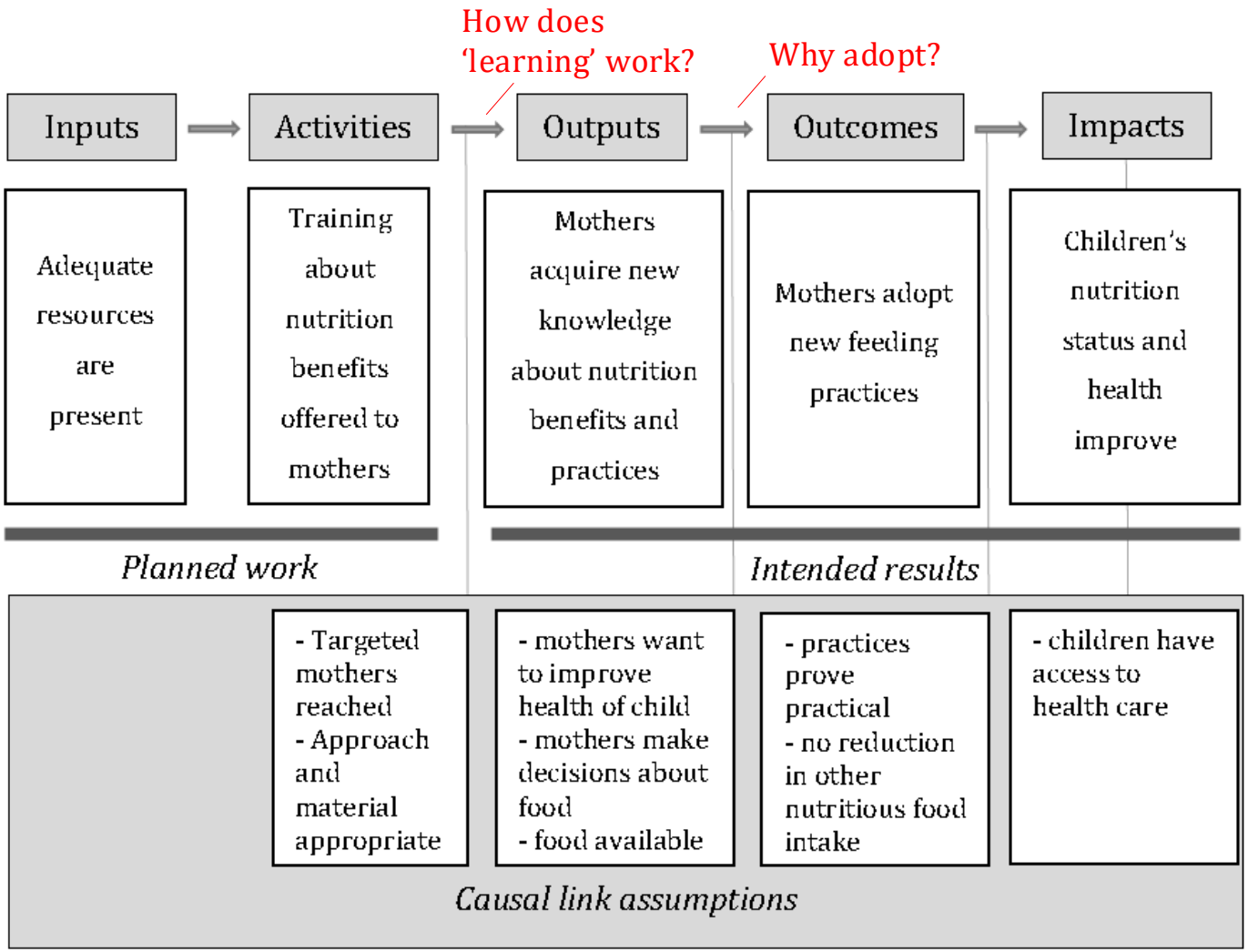


Figure 2.2. A nutrition intervention theory of change (ToC).

Source: Adapted from Mayne (2015).

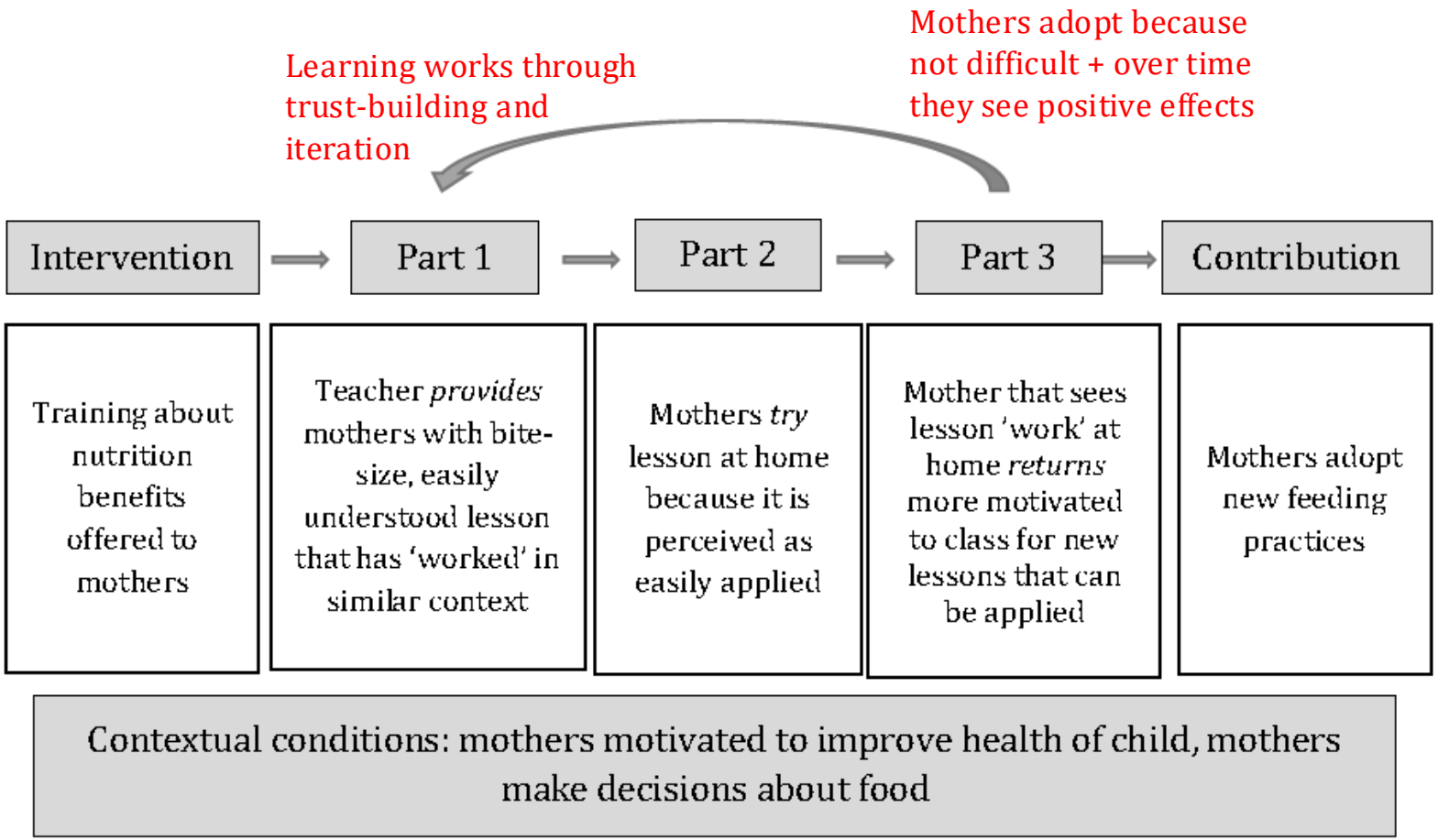


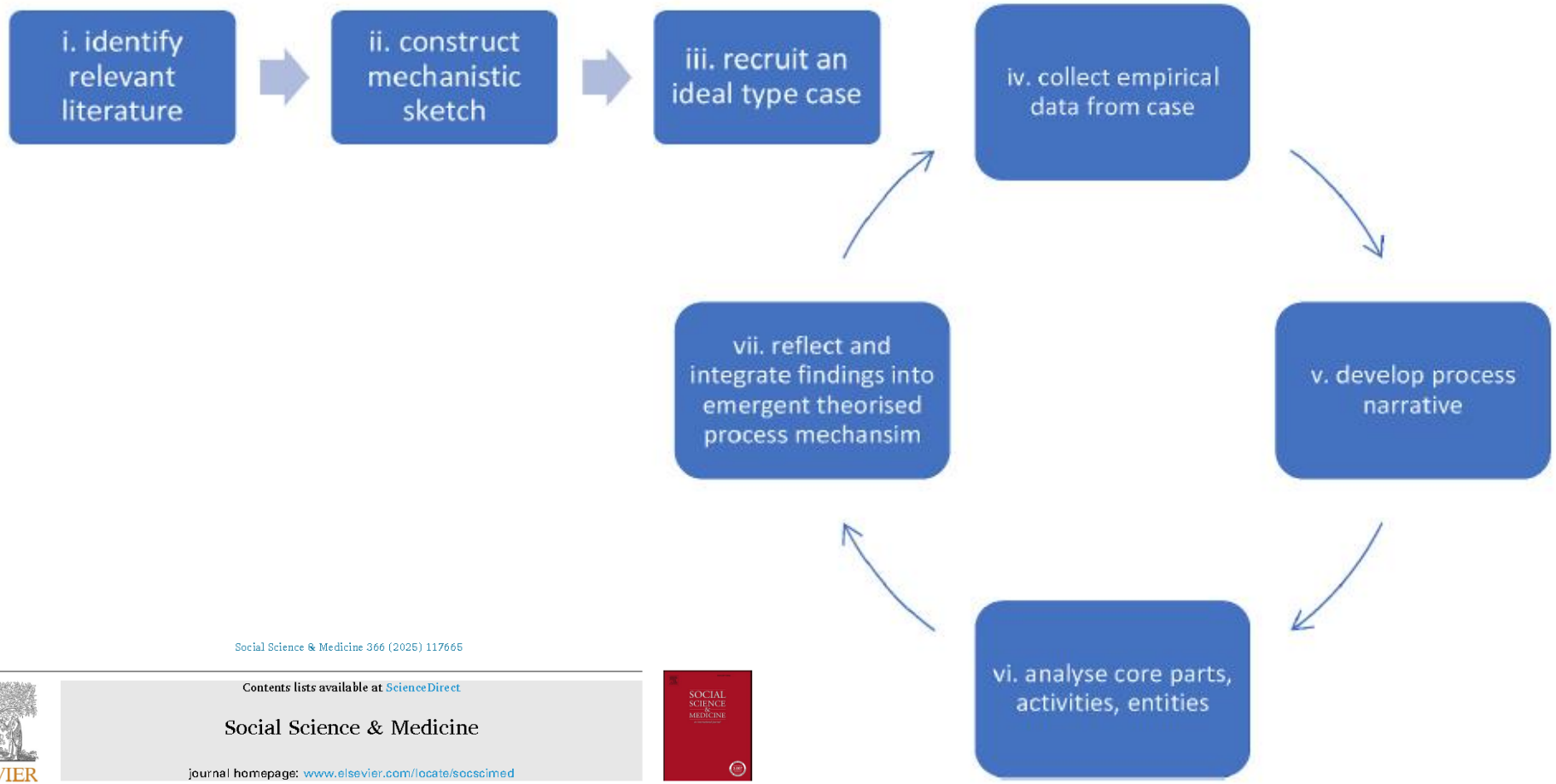
Figure 2.4. – A pToC linking nutrition training and mothers adopting new feeding practices. Based on Mayne (2015).

1. What is process tracing?

Process tracing : three elements

1. What we are tracing (process theory-of-change (pTOC))
2. Empirical analysis using process evidence of activities and linkages
3. Processual comparisons to assess context and avoid overgeneralizations

1. What is process tracing?



Social Science & Medicine 366 (2025) 117665

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

'Care as capital': Developing theory about school investment in mental health and wellbeing

Rebecca Johnson[a,1], Camille Allard[a,2], Colette Soan[b], Derek Beach[c], Hareth Al-Janabi[a,*]

2. Process theories of change (pToC)

Theorizing process theory-of-change (pTOC):

1. Theorize challenge/barrier between intervention and contribution (what actions do)
   - › f.ex. childhood vaccination program has to overcome parental skepticism

2. Theorize causal dynamics = simplied account of how intervention overcomes barrier
   - › f.ex. enlisting cooperation from trusted local leader(s)

› Focus on *actions/activities* = producers of change (what transmits *'causal forces'*)

› Make explicit why activities lead another actor to respond with activity

2. Process theories of change (pToC)

Key episode:

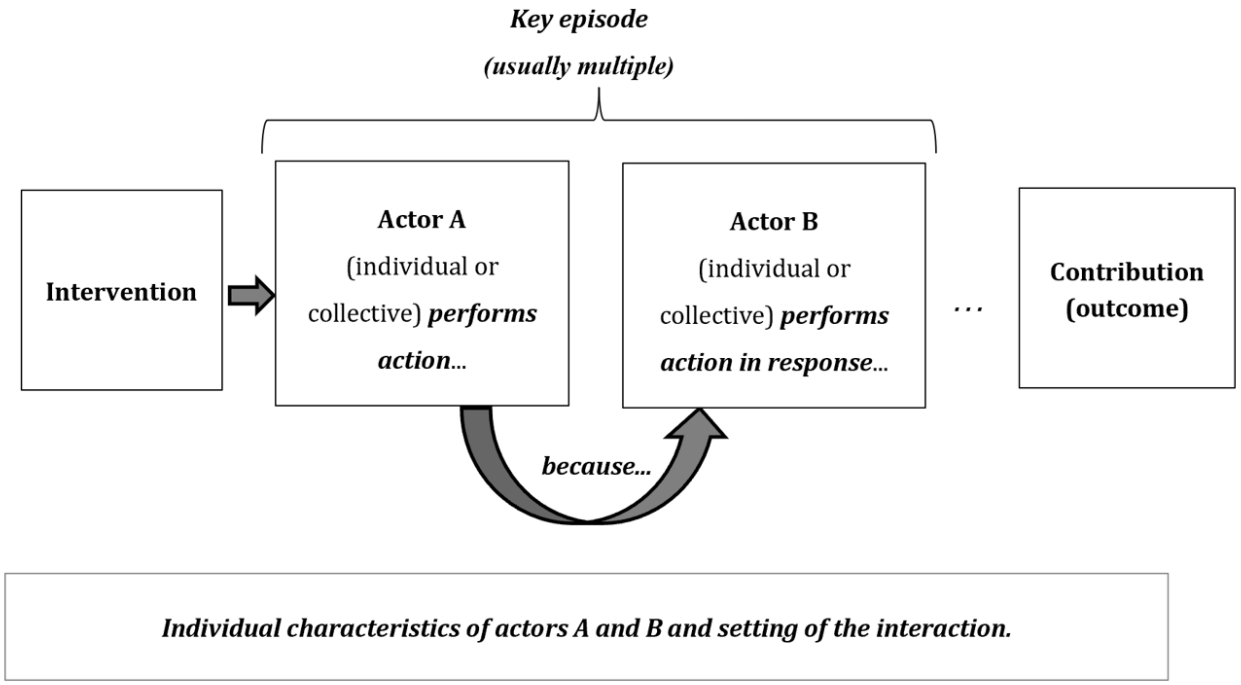


Figure 1 – A generic process theory-of-change.

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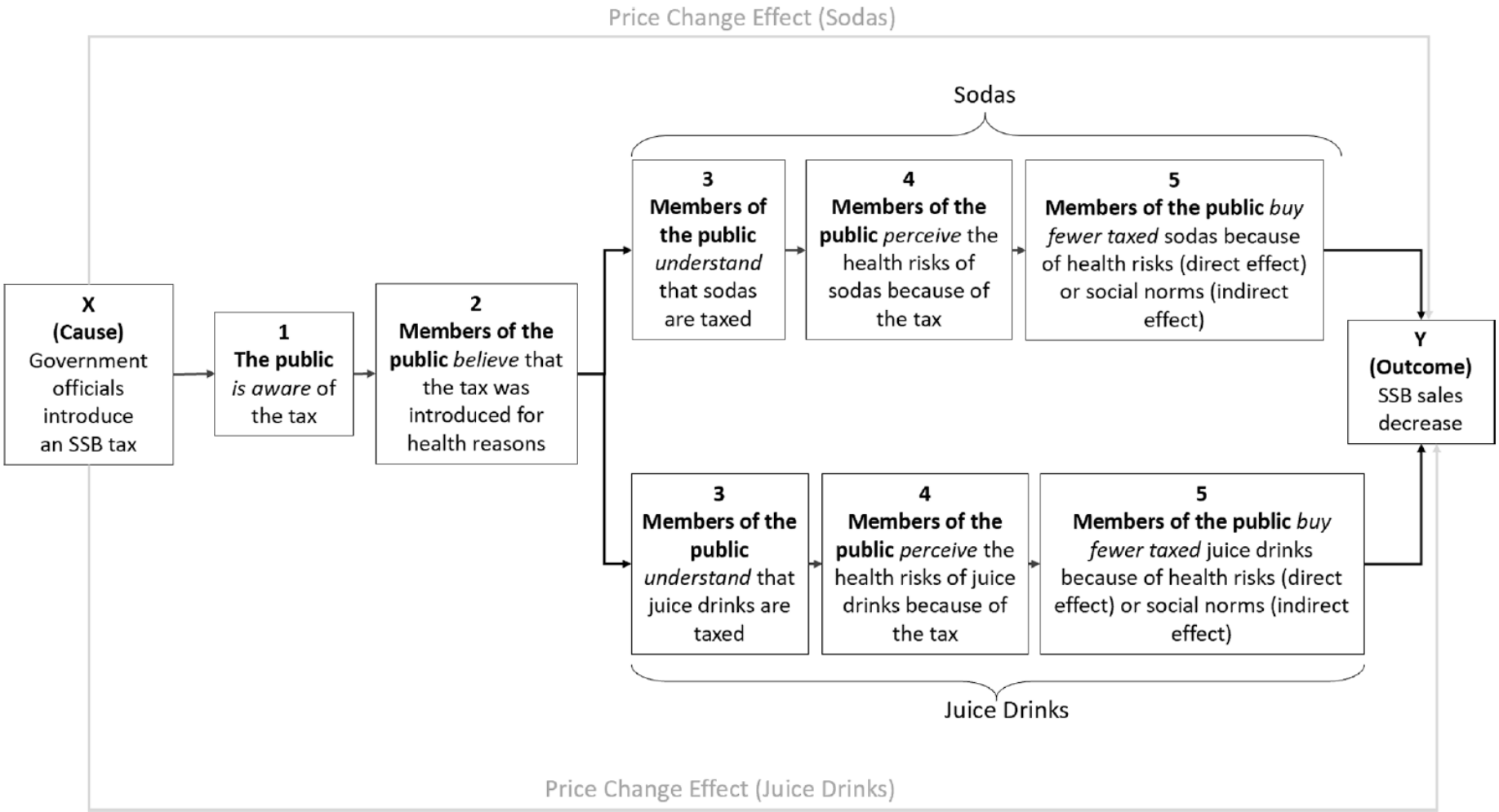
Evidence of a health risk 'signalling effect' following the introduction of a sugar-sweetened beverage tax

Miriam Alvarado [a,*], Tarra L. Penney [a,b], Nigel Unwin [c,d,e], Madhuvanti M. Murphy [e], Jean Adams [a]



3. Evidencing a pToC

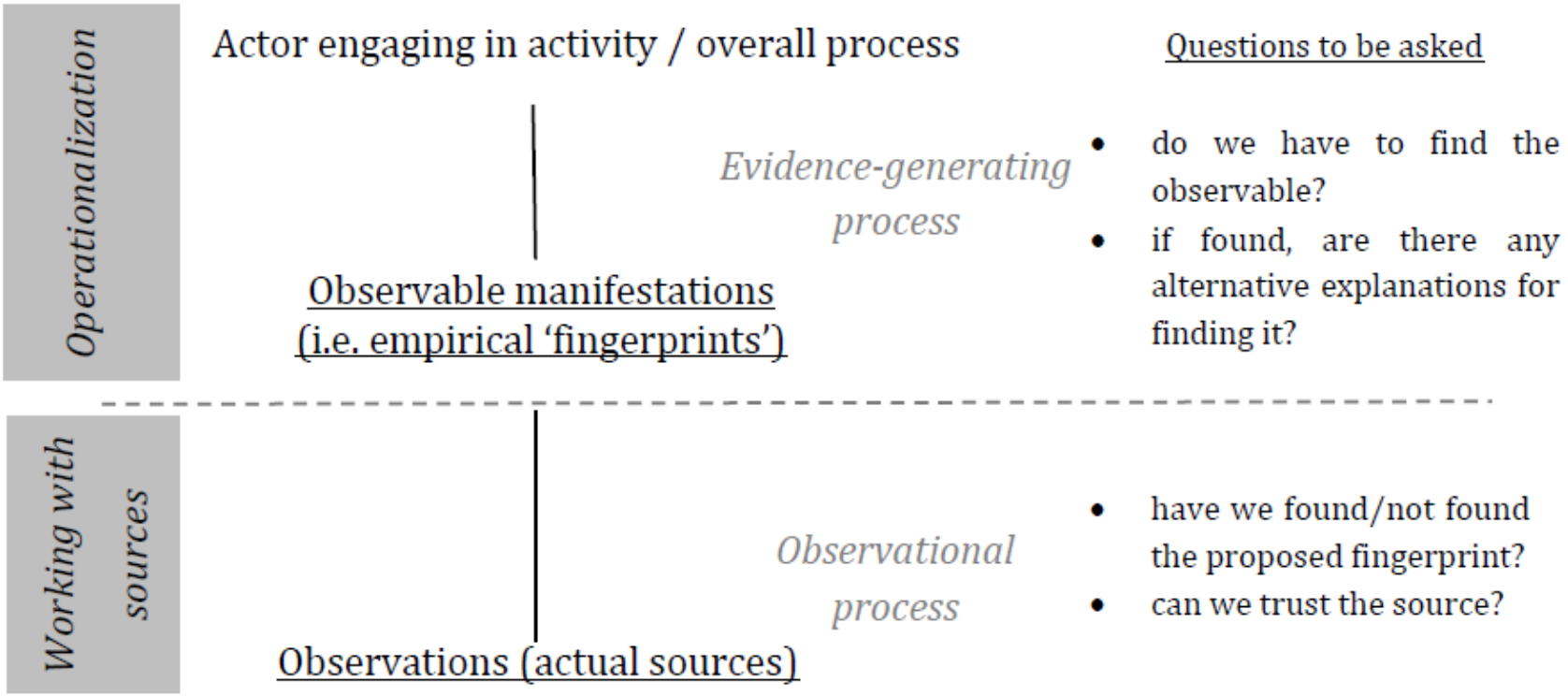


Figure 3 - Moving from process theory to actual empirical sources.

3. Evidencing a pToC

Operationalizing a process theory

› Expected observables of activities and linkages

› **Evidence be any type of empirical material that sheds light on whether activity/linkage existed in case or not**

› If do not find expected evidence -> revise process theory...

› Evidential 'bricolage' – often clusters of different types of evidence for each episode

3. Evidencing a pToC

How much we learn based on finding evidence?

- probative value = power of specific items of evidence to increase or decrease our confidence in a specific claim (Befani and Stedman-Bryce, 2017)

- theoretically certain (aka *sensitivity*) (disconfirmatory if *not* found)
- theoretically unique (aka *specificity*) ~ a 'signature' (confirmatory if found)

- Avoid confirmation bias by assessing alternative explanations of evidence

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3. Evidencing

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Table 1
Predicted empirical evidence and test types.

Hypotheses (*h*)	Prior p(h)	Part	Means of Verification	Predicted Empirical Evidence (*e*)	Test Type
(1) **The public** is *aware* of the SSB tax	Likely, given evidence of SSB tax awareness in other settings, e.g. 65% awareness in Mexico, (Álvarez-Sánchez et al., 2018) 68% in Berkeley, US (Falbe et al., 2016).	1a	Interviews with members of the public	Participants report being aware of the tax, and can describe details (e.g. when/how they heard about the tax, how it was introduced, etc.)	Hoop Finding *e* does not necessarily confirm *h* given potential bias of participants to report awareness Not finding *e* disconfirms *h*
		1b	Archived media data	Major news sources cover the tax, providing a plausible mechanism for the public to have learned about the policy	Hoop Finding *e* does not necessarily confirm *h* given potential bias of participants to report awareness/ news consumption Not finding *e* disconfirms *h* given the news is likely to be the main channel through which people learn about government actions
(2) **Members of the public** *believe* that the tax was introduced for health reasons	Agnostic	2a	Interviews with members of the public	Participants report that the tax was introduced because of the health risks of SSBs	Doubly Decisive Finding *e* confirms *h*, Not finding *e* disconfirms *h*
(3) **Members of the public** *understand* which products are taxed	Agnostic	3a	Interviews with members of the public	Participants report that the tax is applied on sodas and/or juice drinks	Doubly Decisive Finding *e* confirms *h*, Not finding *e* disconfirms *h*
(4) **Members of the public** *increase* their perception of the health risks of SSBs because of the tax	Likely, given evidence of increased newspaper coverage of SSBs as unhealthy in Barbados (Singh-Lalli, 2015).	4a	Interviews with members of the public	Participants mention health risks of sodas and/or juice drinks	Hoop Finding *e* does not necessarily confirm *h* given that participants may be aware of health risks of sodas and/or juices for reasons unrelated to the tax Not finding *e* disconfirms *h*

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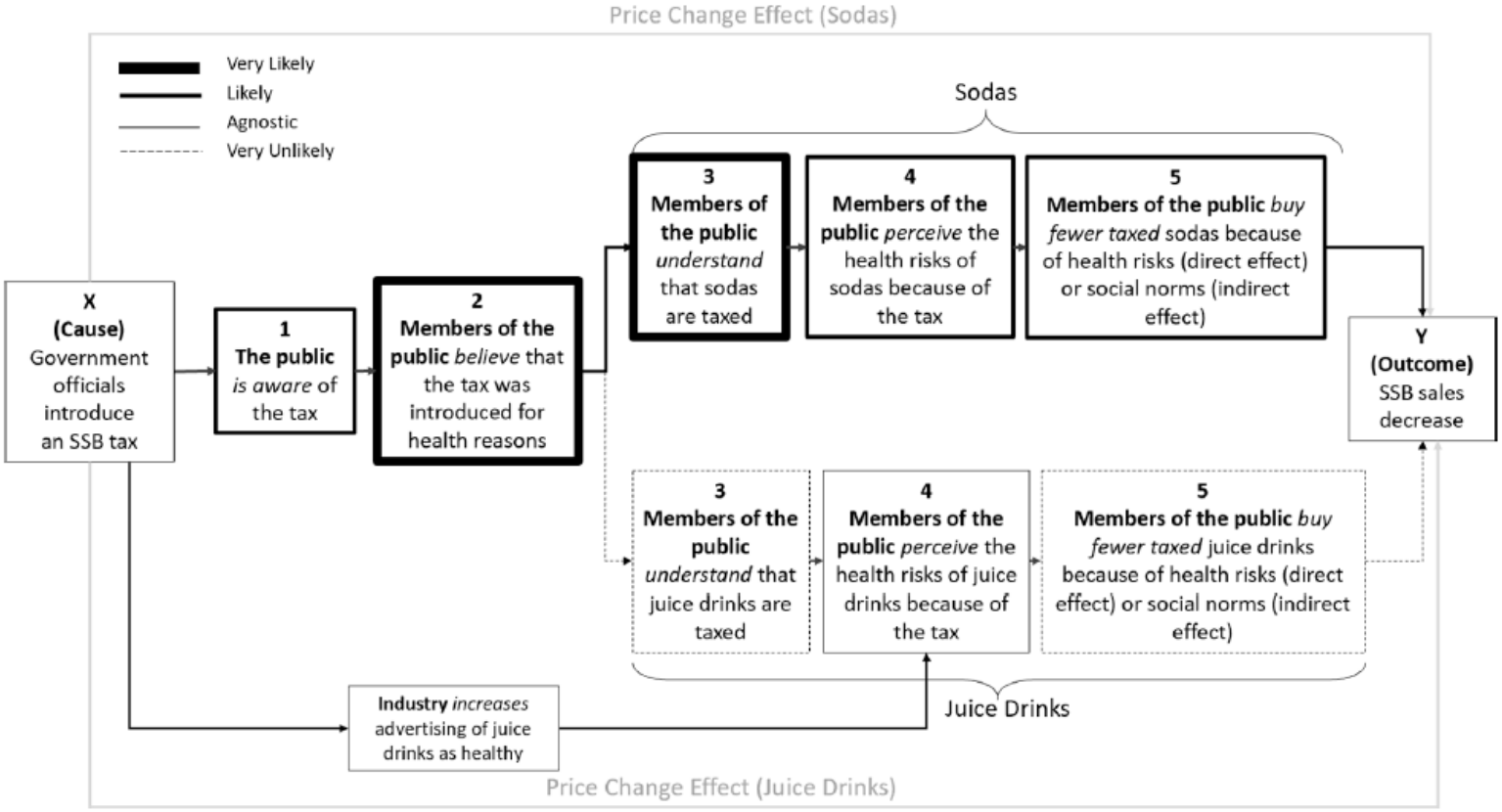

Fig. 6. Updated risk signalling theory based on process tracing. Note that our reported levels of confidence do not correspond to the strength of the effect, but rather to the level of confidence we have in each component of the theory after considering the evidence presented above.

5. Conclusions

Process tracing can be used when:

› Want to learn more about *how* intervention produced a contribution (often success)

› Ideally comparative processual analysis to avoid overlearning from one case

› PT can (relatively) easily be embedded in broader program evaluation (see IEG study)

› Or to understand how/why causal effects found using RCT (sequential usage)

References – further reading

› Beach, Derek, and Estelle Raimondo. 2025. *Process-Tracing Methods in Program Evaluation*. IEG Methods and Evaluation Capacity Development Working Paper Series. Independent Evaluation Group. World Bank. (link)

› Camacho, Gabriela and Derek Beach (2023) 'Theorizing how interventions work in evaluation: Process-tracing methods and theorizing process theories of change'. *Evaluation*, 29(4): 390-409. (link)

› Camacho Garland, Gabriela, Derek Beach, and Johannes Schmitt (2025) 'Working with interviews in Process Tracing evaluation methods.' *Evaluation*, 0(0). (link)