Process Tracing

NERUPI network
Evaluating & Researching University Participation Interventions

Description:	In impact evaluation, process tracing shows how change might have come about and looks for evidence to support the theory. It is a case-based approach (focusing on one case such as a project or programme) and looks at the evidence within a case to make causal inferences and adjudicate between alternative possible explanation. The process involves identifying different hypotheses about how an outcome might have come about and applies a series of formal tests to assess the strengths and weaknesses of different explanations.
Type of evidence:	OfS Type 2 (empirical).
Strengths:	Process tracing is useful when attribution is difficult because it is designed to show the contribution to outcomes. It can investigate multiple causes (known as independent variables) and since it aims to establish the timeline or chronology of different influences it might pick up factors which a 'snap-shot' approach might miss. The process helps to uncover how and why change occurred – which supports learning about what works and why. This can be particularly useful when thinking about how to replicate success. It can be applied at the end of a programme, so long as there is evidence that an outcome occurred, because the process works backwards to assess the contribution (rather than needing a programme baseline or control group).
Weaknesses:	The specification of the hypotheses and application of tests could be confusing for non-experts because the process theorises at the abstract level the multiple different options (the process of hypothesising characterises process tracing as a scientific method). A lot of time is needed to firstly develop and describe multiple hypotheses, and then collect and analyse sufficient evidence on these, especially as it is often hard enough to collect evidence to assess one theory of change let alone many. Process tracing relies on clear evidence that change has occurred – and therefore would be difficult to apply in situations where the outcomes are uncertain.
Mixed Methods:	Multiple sources of, mainly qualitative, information tend to be involved as the process relies on a lot of evidence to tease out the dynamics and interactions which affected the outcomes. Participatory evaluation approaches could be useful to draw on stakeholder views, although it is important that multiple data streams are used so that the evidence is triangulated. Process tracing can supplement quantitative methodologies, by revealing how and why the outcomes came about. Mixed methods designs can strength the conclusions of process chasing, for example, using experimental designs to identify the extent of causes and effect.
Expertise:	High.
Requirements:	In-depth and fine-grained detail is needed in order to give a sufficient level of insight, to be able to identify observable manifestations and empirical evidence to determine whether each part of the mechanism happened (or did not happen). The evaluator needs to be highly skilled to be able to collect this type of evidence. They also need to be able to identify where the evidence might be obscured, subject to bias, or unreliable due to respondents having an agenda. The process needs to be undertaken objectively, so an external evaluator is probably needed.
Ethical considerations:	As appropriate to the research methods using to collect evidence.
Work planning:	There are different types of process tracing, depending on whether the aim is to test or build a theory as well as to explain an outcome.

The first step is to elaborate on the mechanism to be tested within the theory of change, including all the steps between A (the hypothesised cause) and B (the outcome of interest). Each part of the mechanism is framed as a hypothesis. This could be based on existing internal evidence but might also incorporate understanding about change in similar situations.

The specification of the mechanism should be at a level of abstraction from the specific case because this helps when generalising the results to other cases and making recommendations about what would happen in different contexts (although these would be tentative if only based on context-specific evidence from the case under investigation).

The next step is to work out what each part of the mechanism will look like in practice and the chronology of events. Ideally it should be possible to measure each part of the mechanism by identifying empirical evidence about whether it happened or not.

The next step involves collecting evidence. This could include multiple sources such as interviews, focus groups, oral accounts, observational evidence, and using monitoring and evaluation data show the patterns.

The final step is to assess the inferential weight of evidence. The process has been likened to coming to a verdict in a criminal trial. The evidence from various sources is weighed in order to test the strength of the evidence at each part of the causal chain.

The tests are applied to all the different possible explanations for how an outcome came about. At the end of the process, if the mechanism is accepted, there was sufficient evidence for the evaluator to be confident that the cause led to the effect described. If there is not enough evidence the mechanism might still be valid (more evidence however would be needed to show this).

Analysis: A series of 'tests' are used: 'straw-in-the-wind' tests, 'hoop' tests, 'smoking gun' tests and 'doubly decisive' tests (for further information see links below). Probabilities could be developed for outcomes under specific conditions to draw conclusions about the causes of outcomes.

Reporting: The results would provide an assessment of the extent to which competing hypotheses have contributed to the observed change, with a description of how and why the change came about.

Useful links: Collier, D. (2011). Understanding Process Tracing. PS: Political Science & Politics, 44(4), 823-830. doi:10.1017/S1049096511001429