



OCTOBER 2020

CEDIL Methods Brief

Using **middle-level theory** to improve programme and evaluation design

What can middle-level theory do?

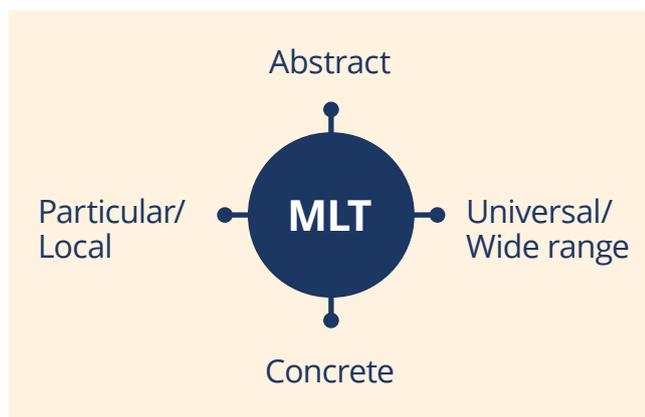
Middle-level theory (MLT) has several uses in development planning and evaluation.

- It helps predict whether a programme can be expected to work in a new setting.
- It offers insights into what design features are needed for success.
- It provides invaluable information for monitoring to see if the programme is on track and to fix problems that arise.
- It reveals the causal processes and related assumptions to be tested in an evaluation and helps identify evaluation questions.
- It helps in interpreting evaluation findings, assessing their relevance and locating a description of them that is useful for programme design and evaluation in other settings.

This CEDIL methods brief outlines ten steps for building and using a middle-level 'causal-process-tracing' theory of change to serve these purposes.

Middle between what and what?

The 'middle' in middle-level theory refers to both the level of abstraction and the level of generality and breadth.



'Middle' covers a lot of territory: middle-level theories themselves can be more or less abstract and general. For example, from 'People respond to incentives' to 'Parents enrol their children in school if offered Conditional Cash Transfers (CCTs) for doing so'. MLT is at a sufficiently general level to cover a reasonably wide range of settings, but it should not be so general as to be empirically untestable. There is usually a trade-off. Theories can be made to apply more widely by using more abstract concepts, but this is at the cost of practical use: the more abstract a claim, the harder it is to see what it amounts to on the ground. What is a good balance between these two will vary with context.

In this example, the high-level theories use abstract concepts like 'subordination' 'maximises', 'expectations' and 'utility'.

High level

- Subordinated individuals become passionately attached to, and thus psychologically invested in, their own subordination.
- Agents act to maximise their expected utility in the face of expected actions of others.

Middle level

- People respond to incentives
- People offered CCTs to do something tend to do it
- Parents enrol their children in school if offered CCTs for doing so

Concrete and particular/local level

- In Brazil's Bolsa programme if conditional allowances are given preferentially to female heads of household through 'Citizen Cards' that operate like debit cards where the funds can be withdrawn in more than 14,000 locations, the parents involved will enrol their children in school.

The MLT principles use more specific and concrete language. The high-level theories hold very widely, MLT principles are more restricted. For example, people will not send their children to school, even if offered cash for doing so, where other factors dominate, like far heavier concern with present than future benefits or distrust, fear or disapproval of education.

What is middle-level theory?

'Middle-level theory' (also called 'middle-range theory') is a term used by different people to do different jobs. Here we introduce two related types of MLT that can help with programme design, with predicting programme success ex ante and with ex post evaluation:

1. A particular kind of middle-level theory of change (ToC) for a programme: a causal-process-tracing theory of change, in short, a 'process' theory of change (pToC)
2. Middle-level causal principles – psychological, social, political and economic.

This brief deals with the first of these: middle-level pToCs. It will explain what they are and what steps to follow in building them. But in building these, the second type of MLT – middle-level causal principles – plays a major role.

ToCs have become well-established as a tool for programme design and implementation, for framing evaluation questions and for interpreting evaluation findings. They describe the causal processes by which inputs and related activities are supposed to produce outputs and outcomes.

ToCs are usually produced for one specific setting. We call these 'local' theories of change. In contrast with these low-level local theories, a middle-level pToC applies to a range of settings. A middle-level pToC for a programme needs to be 'thickened' to produce a local pToC specific to a particular setting. It is thickened by drawing in information about the setting and what in that setting can fill the role of the factors

cited in the programme's middle-level theory. For example: What exactly will a 'cash transfer' consist in in this local setting? A cheque that arrives through the post and needs to be cashed at a local bank – or maybe at a post office? A debit card issued by a bank? If so, where can the money be drawn?

The middle-level pToC shows how a programme is supposed to work. It lays out the step-by-step process by which the programme is to produce the intended outcomes and unpacks the causal principles at work at each step.

These causal principles will usually be middle-level and thus reusable across different programmes, though not universally. These are often familiar behavioural principles, like 'parents tend to act in the interest of their children'. Equally, they may be the result of social science research, like 'even people who feel themselves unprejudiced tend to harbour implicit biases'. Either way, they generally cannot be relied on to tell what must happen. Instead they describe what the cause tends to, and thus are called tendency principles. This means that:

- You may have to do something to call the cause into action.
- Even when the cause acts, the indicated effect may not be the observed outcome because other causes influence that outcome as well.
- Nevertheless, the cause may push the outcome in the direction indicated.

Ten steps for building a middle-level theory of change

The steps are illustrated using the example of a CCT programme with conditions that beneficiary households enrol their children in school and ensure they attend on at least 80 per cent of school days.

1. Specify the overall middle-level theory of change

The overall MLT for the programme tell what the programme is to achieve and why it can do so. The overall theory for CCTs for education that we present, employs a number of middle-level causal principles.

CEDIL is currently sponsoring a number of projects aimed at developing better overall MLTs. Audrey Prost’s work on meta-ethnography provides useful ideas on one way to do so.

The overall MLT for CCTs for education: Households spend in their children’s interests, if there are no significant barriers to doing so. Other needs prevent poor households from being able to pay for educational resources (school fees, books, etc.). They also induce households to send children to work instead of school. The combination of cash and conditions overcomes these barriers.

2. Produce a step-by-step diagram

Next, identify and graphically illustrate the programme inputs, outputs and outcomes, and the significant stages between them. This is often done with a ‘boxes and arrows’ diagram. See Figure 1 for illustration with respect to our CCTs example.

In this case there are three components to the programme input, which will initiate the causal process.

Boxes 1, 1’, 1”:

- 1 Cash is transferred to households.
- 1’ The cash transfer is labelled for education purposes.
- 1” The conditionality of the transfer on

school enrolment and attendance is announced.

These three components together are supposed to produce the next outcome in the sequence, represented in Box 2.

Box 2: Households enrol their children in school.

In this short version, Box 2 leads directly to the outcome in Box 3.

Box 3: More children are enrolled.

There are in fact many significant steps between 2 and 3 that should be spelled out if the ToC is to serve our six purposes well.

Figure 1: A diagram with intermediate steps in a middle-level pToC



3. Describe the causal principles at work at each stage

Describing the causal principles exposes the logic of the programme. The processes in Figure 1 are in accord with the following causal principles:

1 + 1' → 2. Labelling a cash transfer (e.g. 'for school attendance') increases the importance of the indicated good and in turn increases spending on that good even in the absence of a requirement to spend the transfer on that good.

1 + 1'' → 2 Making continued cash transfers conditional on a requirement increases the financial cost of not meeting the requirement. This induces a 'substitution effect' – increasing the

price of a good encourages choosing an alternative to that good – thus increasing the attractiveness of meeting the requirement. (So, the more CCTs are transferred to the household, the more costly it is to fail to enrol children in school.)

The causal principles play a central role in figuring out what information is needed in the next steps.

4. Add support factors to the diagram

The actions described in the antecedent of a causal principle are seldom enough to have the influence expected. They need support factors to be in place if they are to do so. These support factors are also called 'moderators' as their absence or presence determines whether there is an effect or moderates the scale of that effect. We represent support factors in ovals enclosing all the factors that together are necessary for the next step, as in Figure 2. The causal principles suggest what support factors are needed.

Many support factors might seem so obvious that you don't need to know the causal principles at work to figure them out. However, evaluations show that many failures can be traced to missing support factors. Moreover, *each* step must have its support factors in place to produce the next. If any support factor is missing along

the way, and no substitute is in place, the whole process is endangered.

For example, the causal principles that explain how the three programme inputs in our CCT diagram are to lead to the outcome in Box 2 suggest the need for these support factors:

1''a The conditions for the transfer that have been announced are conveyed to the recipients.

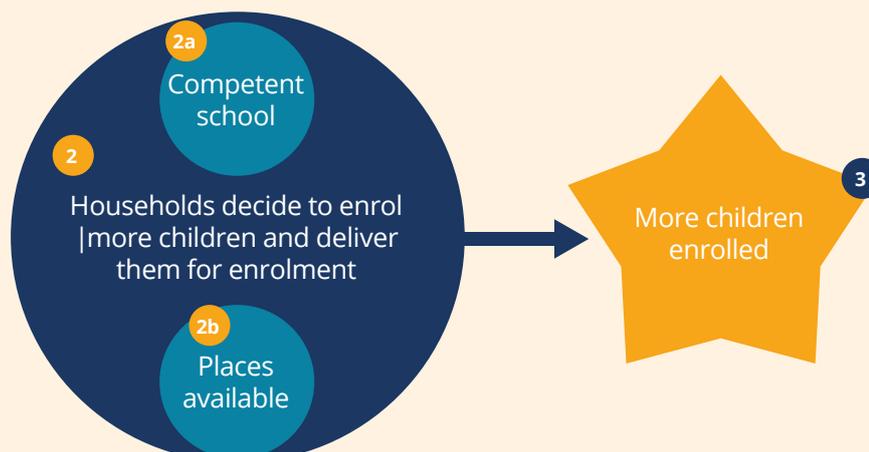
1''b There is a credible threat of enforcement of the condition.

From Box 2 to 3 the causal principle is 'When a school is presented with a child for enrolment, the child is enrolled'. This requires at least these two support factors:

2a The school is competent to enrol students.

2b Places are available.

Figure 2: A diagram of support factors in a CCT



5. Add derailers to the diagram

A causal process can be going well, then something happens to prevent the expected outcome. In this case the programme is encountering derailers. A derail is anything that can intervene and stop a cause from producing its effect or substantially diminish the effect.

For example, the household may accept the cash understanding that it is meant to defray the costs of sending children to

school and intend to do so, but then give in to temptation spending or yield to other priorities.

Derailers are represented, as in Figure 3, in jagged shapes along the causal arrow joining cause and effect to show the possibility of breaking the causal chain at that point.

6. Add safeguards against the derailers to the diagram

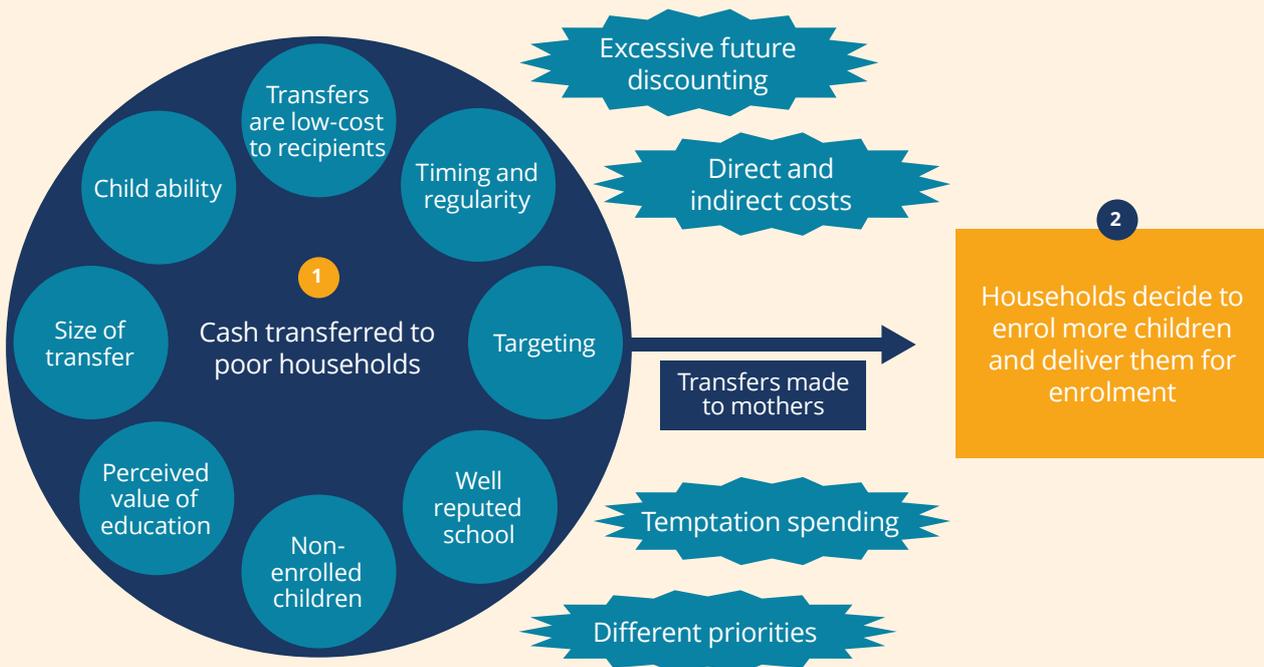
Safeguards can be thought of as ‘walls’ that prevent derailers from intruding. When safeguards cannot be implemented against every likely derail, programme designers should be wary of predicting programme success.

For example, mothers are often more concerned about the education of their children than fathers, and they are less

likely to give in to temptation spending or yield to other priorities. Giving the CCT to mothers is a safeguard in these circumstances.

Safeguards are represented in rectangular boxes ‘protecting’ the causal arrow from the jagged derailers.

Figure 3: A diagram of derailers and safeguards against derailers



7. Allow for causal loops

Causal (or feedback) loops are circular causal processes. They can be either positive or negative and frequently operate over a longer time than the project itself.

Example of a positive causal loop: As more children are enrolled, some may be

withdrawn from schooling due to external circumstances. Cash transfers are supposed to be stopped for them. If this is widely noticed and understood, this increases the credibility of the threat of stopping transfers if children do not attend. This incentivises parents to ensure attendance.

8. Specify the expected range of application

It is important to be explicit about where the middle-level pToC can apply. Indicators for this come from the overall programme theory, the individual middle-level causal principles and the support factors, derailleurs and safeguards. These predictive features of a middle-level pToC can help in figuring out where a programme is likely to work and where not and what must be in place if it is to do so. If essential features are missing in a setting and cannot be substituted for, or derailleurs are likely to occur that cannot be guarded against, it is risky to try the programme in that setting.

Start with the overall programme theory. The one for our education CCT supposes that CCTs remove financial barriers standing in the way of sending children to school. So the programme is not likely to be effective in settings where households have

resources but do not send their children to school because they think the school is of low quality, they do not trust it or they disapprove of school education.

Next look at the catalogue of support factors, derailleurs and safeguards for an indication of what must be present and absent if the programme process is to carry through successfully. This tells you a lot about where the programme can work and where not. One of the support factors for CCTs is that transfers be low cost for recipients. A CCT programme is not likely to work where there is no way to achieve this. Another support factor is that there be school places available. This may seem too obvious to mention but CCT programmes have been set up to encourage households to attend clinics that did not exist.

9. Draw implications for monitoring and for evaluation questions and indicators

Identifying the causal principles, required supporting factors, potential derailleurs and safeguards helps inform evaluation questions.

For example, evaluation questions for our educational CCT programme could include:

- Are school seats available?
- Does the beneficiary understand the conditions?
- To what extent are the conditions monitored and enforced?

While interpreting evaluation findings, if it is discovered *ex post* that essential features were missing, this is evidence that the programme had little responsibility for the results even if the expected outcome occurred.

The causal principles, supporting factors, potential derailleurs and safeguards from a

pToC also suggest monitoring and evaluation indicators.

For example:

- Number of intended beneficiaries participating
- Parental knowledge and understanding of the CCT scheme
- Verification of receipt of the transfer
- How well conditions are monitored and enforced
- The outcomes of school enrolment and attendance.

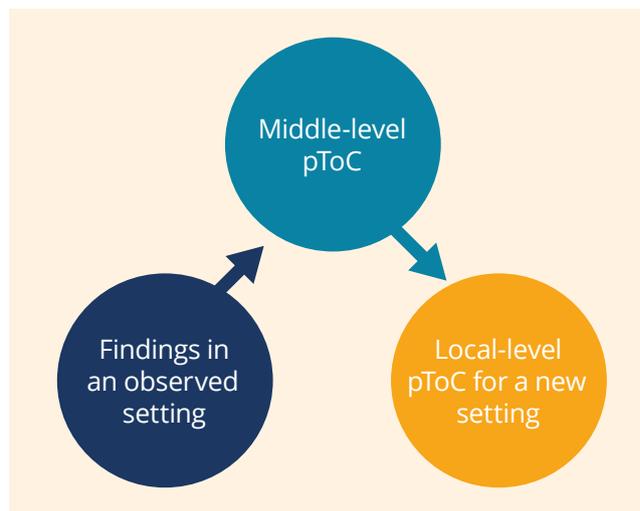
Recall that we have introduced pToCs at two levels: the middle-level pToC, which is meant to apply across a range of settings, and the local pToC designed for a specific setting. The middle-level pToC suggests general types of monitoring and evaluation indicators that may be adapted to each specific programme context through thickening.

10. Draw implications for future programme design

Middle-level pToCs help with applying evaluation findings from one setting to inform programme design in another. The underlying logic is to 'go up' from the findings of how a programme worked in a specific setting to build a middle-level pToC that accommodates those findings and then 'go down' to inform the local programme pToC for a new setting. This is what gives the approach the label 'middle'-level theory: from an observed programme to middle-level theory and back down to a new programme theory.

For example, an evaluation in a studied setting could find that households there did not take part in the CCT scheme because transfers were made to bank accounts, but households did not have bank accounts. The middle-level statement of this finding is that transfers should be made in ways that make them accessible to intended beneficiaries. In a new setting, the time,

place and method of transfer need to be chosen to ensure that they are convenient and accessible for recipients in that setting. There also needs to be a valid means of verifying the identity of intended beneficiaries.



Recommendations

The ten steps presented here describe ten different kinds of information that a ToC should supply to serve the planning and evaluation purposes laid out at the start. This model is based on assumptions about how causal processes work wherever they appear. Though the specific information will look very different across subject matter, the basic structure is the same. (Cartwright et al. 2020 apply the model to the areas of democratisation and nutrition, as well as to CCTs. Munro et al. 2016 discuss a similar model for use in child protection.)

The complete middle-level pToC for the CCT programme is shown in Figure 4.

Figure 4 may appear complex and difficult to devise. It can take hard thought as well as more research and theorising. Building it up step by step, as described here, should make this easier. But difficult or easy, if you are designing a programme for repeated use across a range of circumstances, this job must be done. Those making decisions about what to do locally are generally not in a good position to figure out the details of how the programme is supposed to work and thus what must be in place if the

programme process is to carry through. You need to assist them by providing as much information as possible.

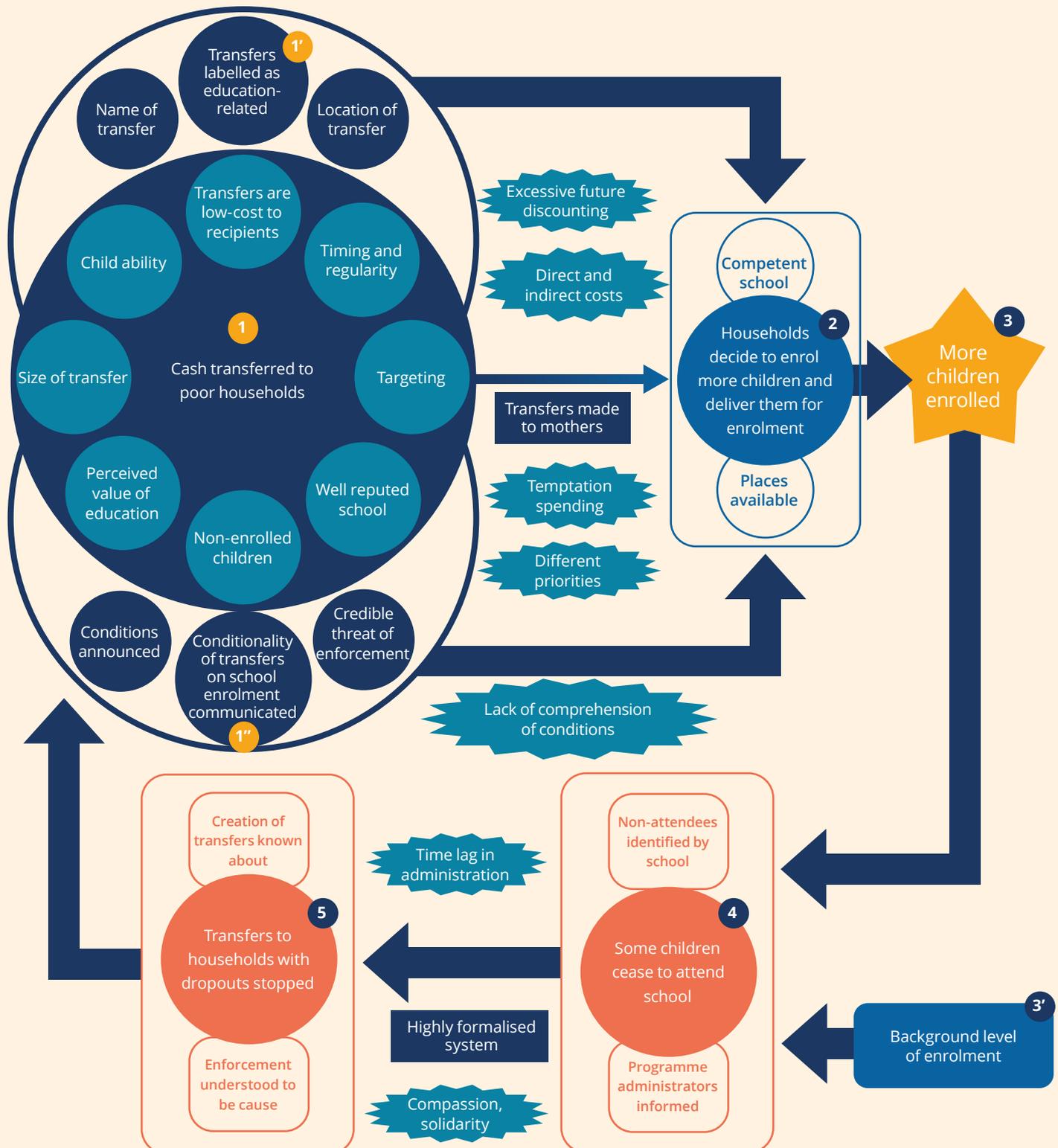
Similarly, those who deliberate at the local level need to build a good local-level pToC if their decisions about whether and in what ways to implement the programme are to be reliable and warranted. A good middle-level pToC is an invaluable starting point. Thickening that theory to fit the local circumstances requires knowledge about the local setting, which may take additional research. The local programme and its theory should generally be developed in consultation with key stakeholders, such as decision-makers, programme managers, implementers, frontline staff and intended beneficiaries.

Justification for a pToC will come from a variety of sources, requiring a broad mix of methods. The better the support for each of the many components that go into the pToC, the stronger the justification. A middle-level pToC can also be tested by looking to see if the programme works as predicted when developed in accord with an appropriately thickened local pToC.

The strength of this support will depend on how well the successful local design fits the middle-level one and how strong the justification is for this assumption. This leads to a process of mutual adjustment between the middle and the local level.

The process of iteration between the theory and its application can continue as the theory is used in designing and implementing a programme or gathering evaluation evidence.

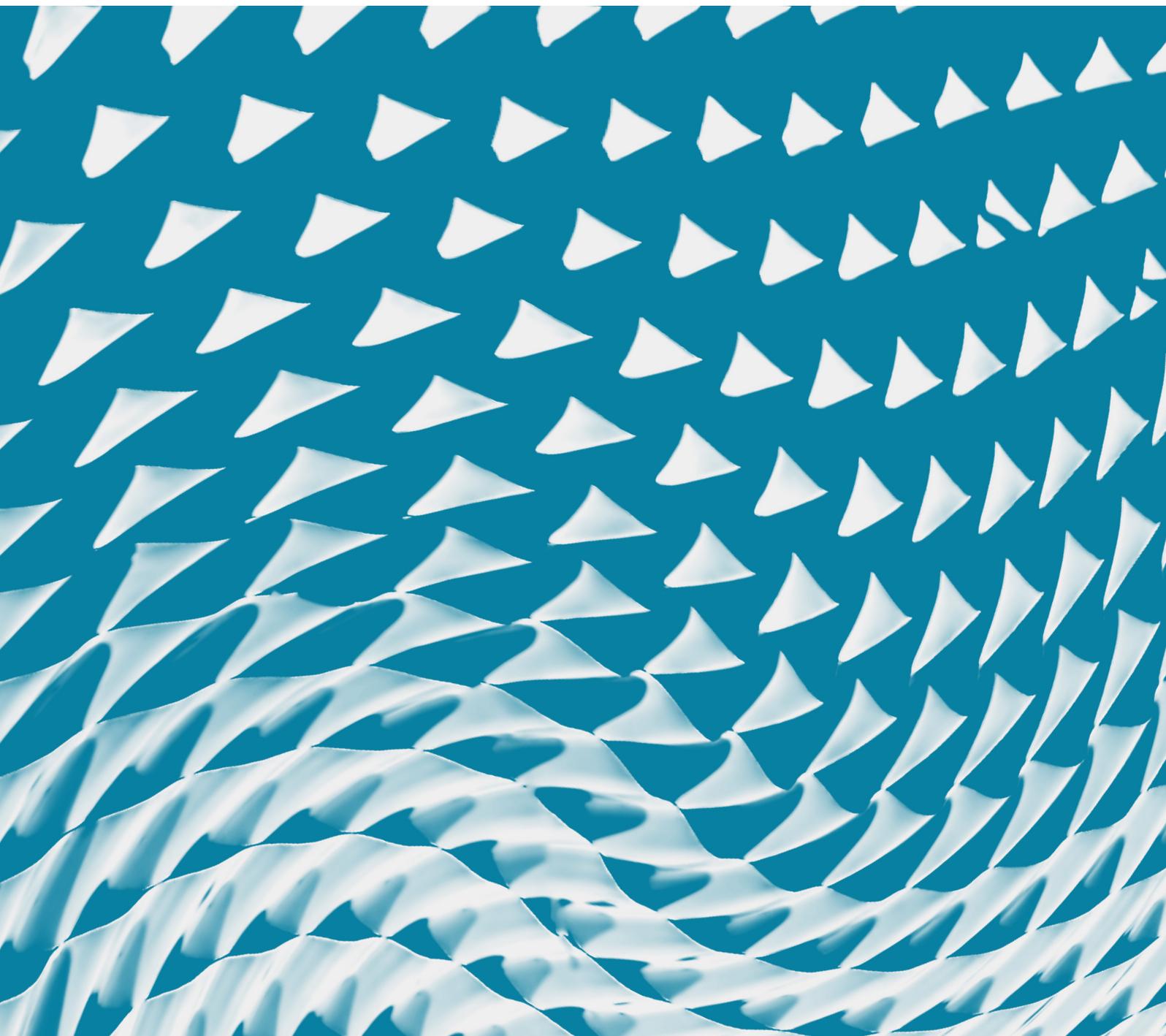
Figure 4: Final causal-process-tracing theory of change for CCT programme



What CEDIL is doing for MLTs

CEDIL is putting these ideas to use in a number of ways. CEDIL currently funds 12 projects specifically aimed at developing MLTs and using them across a range of programme types. For example, there are studies aiming to develop an MLT for a programme to generate demand for contraception in adolescents, an empirically driven MLT for poverty reduction and another about governance in forcibly displaced communities. In addition, CEDIL evaluations are improving the degree to which evidence can be used to produce

MLTs and in this way inform programmes in other settings. CEDIL is also improving the predicative power of MLTs so local programme designers are better informed about which factors are likely to apply in their situation.



About this brief

This brief is based on

Cartwright, N., Charlton, L., Juden, M., Munslow, T. & Williams, R.B. 2020. *Making predictions of programme success more reliable*. CEDIL Methods Working Paper. Oxford: CEDIL
cedilprogramme.org/wp-content/uploads/2020/10/CEDIL-methods-WP-N.-Cartwright-Oct-2020.pdf

[READ HERE](#)

Suggested citation

Cartwright, N. 2020. *Using middle-level theory to improve programme and evaluation design*. CEDIL Methods Brief. Oxford: CEDIL

Further reading

Munro, E., Cartwright, N., Hardie, J. & Montuschi, E. 2016. *Improving Child Safety: Deliberation, Judgement and Empirical Research*. Durham: Centre for Humanities Engaging Science and Society (CHESS).
https://www.dur.ac.uk/resources/chess/ONLINE_Improvingchildsafety-15_2_17-FINAL.pdf

[READ HERE](#)

Audrey Prost's work on using meta-ethnography to develop overall middle-level programme theory can be found in her CEDIL lecture: 'Meta-ethnography to build middle-range theories: an exploration in three case studies', 6 May 2020.
https://cedilprogramme.org/events/cedil-centre_for_evaluation

[READ HERE](#)



About CEDIL

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