Improving the Normalization of Complex Interventions (NoMAD): Developing theory-based tools and measures for multiple users across diverse settings

Tracy Finch, Melissa Girling, Claire Dickinson, Carl May, Frances Mair, Elizabeth Murray, Shaun Treweek, Elaine McColl, Nick Steen, Tim Rapley.
Aim

To develop and validate a simple generic tool derived from NPT, to be used to improve the implementation of complex healthcare interventions.
A rational model for assessing and evaluating complex interventions in health care
Carl May*

Implementing, Embedding, and Integrating Practices: An Outline of Normalization Process Theory
Carl May and Tracy Finch
Sociology 2009 43: 535
DOI: 10.1177/0038038509103208
What is NPT?
A way of thinking about implementation problems that focuses on:
- How interventions can become part of everyday practice
- How different groups of people need to work together to achieve it

How do I use it?
Thinking of your intervention, use the four sets of questions on the right to identify possible barriers to successful implementation, and suggest solutions to improve the process.

<table>
<thead>
<tr>
<th></th>
<th>COHERENCE</th>
<th>COGNITIVE PARTICIPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How do people make sense of the intervention as something 'new'?</td>
<td>How do people get involved and stay committed?</td>
</tr>
<tr>
<td></td>
<td><em>(eg. what it involves, why?)</em></td>
<td>Can they see how they contribute?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>COLLECTIVE ACTION</th>
<th>REFLEXIVE MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How do people make it work in practice?</td>
<td>How do people assess whether it is worth the effort?</td>
</tr>
<tr>
<td></td>
<td>What do they need to make it happen?</td>
<td>Can improvements be made?</td>
</tr>
</tbody>
</table>
Evaluating complex interventions and health technologies using normalization process theory: development of a simplified approach and web-enabled toolkit

Carl R May¹, Tracy Finch², Luciana Ballini³, Anne MacFarlane⁴, Frances Mair⁵, Elizabeth Murray⁶, Shaun Treweek⁷ and Tim Rapley²∗

Website: www.normalizationprocess.org
NPT Toolkit

This is the NPT toolkit. To understand how to use it, click here, for an explanation and a powerpoint presentation that you can download and use collaboratively.

1. Participants distinguish the intervention from current ways of working.
   Not at all ← [slider] → Completely
   Whether the intervention is easy to describe to participants and whether they can appreciate how it differs or is clearly distinct from current ways of working.

2. Participants collectively agree about the purpose of the intervention.
   Not at all ← [slider] → Completely
   Whether participants have or are able to build a shared understanding of the aims, objectives, and expected outcomes of the proposed intervention.

3. Participants individually understand what the intervention requires of them.
   Not at all ← [slider] → Completely
   Whether individual participants have or are able to make sense of the work – specific tasks and responsibilities - the proposed intervention would create for them.

4. Participants construct potential value of the intervention for their work.
   Not at all ← [slider] → Completely
   Whether participants have or are able to easily grasp the potential value, benefits and importance of the intervention.
Protocol development

Conceptual framework development

Initial item development

Item mapping

Full team feedback

Item appraisal (QAS-99)

Next Stage: Testing across multiple sites

Literature review

Ethical approval

Co-applicant workshop

Co-applicant workshop

R1 Cognitive Interviews (n=18)

R1 Cognitive Interviews (n=18)

Online Expert survey (n=23)

R2 Cognitive Interviews (n=9)

Instrument Version 1

Instrument Version 2

Item revisions

Instrument Version 3

Co-applicant workshop
Online Toolkit (16 items)

Item Splitting (117 items)

Item reduction at team workshop (47 items)

Item Appraisal (QAS-99) (47 items)

V1 Cognitive Testing R1 (n = 18)

V2 Cognitive Testing R2 (n = 9)

Item Revisions (re-wording) (52 items)

Online Survey of Experts (n = 23; 51 items)

Version 3 (being finalised: 42 items approx)
Item Development Part 1: Cognitive interviews

• **Process:** ‘Think aloud’ technique applied to Item set, and team coding and analysis of item responses.

• Focused primarily on *relevance* and *comprehension* of items, and exploring ‘*multiple interpretations*’

• **Key findings:**
  – *Role relevance*: Challenges in accounting for multiple roles and perspectives in relation to an intervention - evaluators, observers and ‘doers’
  – *Time relevance*: How to frame questions to fit across the implementation ‘trajectory’?
Cognitive interviews

Q. I carry out the tasks that are expected of me

“Well that’s too vague, don’t know what it’s talking about erm [pause] as the developer and evaluator I carry out the tasks that are required of me to get this thing ready for implementation and to facilitate it’s implementation but that’s too vague that question so I can’t even rate it”

“Probably tapping into what they are thinking of their colleagues, probably a positive bias in that one, unless you got somebody super disgruntled that notices it’s anonymous…”

“Yeah, I do the job”
Item Development Part 2: Theoretical Validation

• **Aim**: To check on and address possible ‘theoretical drift’ of items from original NPT constructs.

• **Process**: Online survey of (23/30) NPT users, to rate items against theoretical constructs:
  
  – *Reflection* of main construct
  – *Alignment* with ‘sub-constructs’
  – Free-text *feedback*
Coherence is the sense-making work that people do individually and collectively when they are faced with the problem of operationalizing some sets of practices.

<table>
<thead>
<tr>
<th></th>
<th>Part A: Reflection of the construct of ‘coherence’: Indicate one of the following</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very weak</td>
</tr>
<tr>
<td>1.</td>
<td>I can see the potential value of the [intervention] for my work</td>
</tr>
<tr>
<td>2.</td>
<td>I can see the worth of the [intervention]</td>
</tr>
<tr>
<td>3.</td>
<td>Staff in this organisation have shared expectations about the likelihood of the success of this [intervention]</td>
</tr>
<tr>
<td>4.</td>
<td>I can see how the [intervention] differs from usual ways of working</td>
</tr>
<tr>
<td>5.</td>
<td>I can distinguish the [intervention] from usual ways of working</td>
</tr>
</tbody>
</table>
Coherence is the sense-making work that people do individually and collectively when they are faced with the problem of operationalizing some sets of practices.

### Part B: Please select the element of coherence best represented by each of the statements. If this is difficult to decide you may pick more than one option or none.

<table>
<thead>
<tr>
<th>A) Differentiation: Whether people can easily understand that the intervention is different from current ways of working</th>
<th>B) Communal specification: Whether people can build a collective understanding of the purpose of the intervention</th>
<th>C) Individual specification: Whether people understand the specific tasks and responsibilities that the intervention requires of them</th>
<th>D) Internalisation: Whether people can easily grasp the potential value of the intervention for their work</th>
<th>Neither A, B, C or D</th>
</tr>
</thead>
</table>

1. I can see the potential value of the [intervention] for my work

2. I can see the worth of the [intervention]

3. Staff in this organisation have shared expectations about the likelihood of the success of this [intervention]
For ‘Coherence’, team decided to:

Remove Item 3 – ‘The [intervention] is easy to describe’
Remove Item 10 – ‘I will benefit personally from being involved in the [intervention]’
Rewrite Item 9 – ‘I can see the worth of the [intervention]’
Cognitive participation is the relational work that people do to build and sustain a community of practice around a new technology or complex intervention.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Sub-Construct (Original)</th>
<th>Version 1 items</th>
<th>Sub-construct (revised)</th>
<th>Version 2 items</th>
<th>Online expert survey items</th>
<th>Re-writes &amp; exclusions</th>
<th>Version 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolment</td>
<td>V1</td>
<td>Enrolment</td>
<td>V2</td>
<td></td>
<td>Online Version</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Version 3 Revision comments:

Drawing on (i) website definitions and (ii) sociology paper we agreed that:

- Some confounding across sub-constructs because ‘willingness’ is key to CP generally. Enrolment is about rethinking group and individual relationships; people working together; establishing new ways of working together; willingness as well as capacity and ability.
Key challenges for the NoMAD Tool....

• One tool doesn’t fit all – multiple roles and multiple contexts!

• Instructions are KEY

• ‘Doers’ are the key to moving forward, for using the tool to understand the enactment of the intervention *in context*
Key challenges for NPT & theory-based measurement

• Tensions between sticking to the theory and making it accessible – need to continually reflect on this

• Tensions between use of NoMAD tool for different purposes – ‘measurement’ vs ‘planning’ vs ‘appraisal’
Phase 3 Plan

• Online testing of the utility of the instrument
• \( n=500^* \)
• Consider:
  – Stage of intervention
  – intervention complexity (thing / practice; flexibility / adaptability; impact on actions / work)
  – contextual complexity (number of sites; number of organisation types; number of groups)
• Multiple sites across the UK
<table>
<thead>
<tr>
<th>Section 1</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Not relevant to my role</th>
<th>Not relevant at this stage</th>
<th>Not relevant to this intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can distinguish the [intervention] from usual ways of working</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2. I can see how the [intervention] differs from usual ways of working</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3. Staff in this organisation have a shared understanding of the purpose of this [intervention]</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4. Staff in this organisation have shared expectations about the likelihood of the success of this [intervention]</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>5. I understand what tasks the [intervention] requires of me</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6. I understand how the [intervention] affects the nature of my own work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7. I can see the potential value of the [intervention] for myself</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>8. I can see the worth of the [intervention]</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>