Understanding Implementation Processes with Normalisation Process Theory: Measuring it using NoMAD

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Implementation: Can we measure it?

Lewis et al (2015):

104 instruments measuring 8 implementation outcome ‘constructs’:

*Acceptability (n = 50), adoption (n=19), appropriateness, cost, feasibility, fidelity, penetration, sustainability*

Another approach to implementation outcomes:
Normalization Process Theory (NPT)

“By normalization, we mean the work that actors do as they engage with some ensemble of activities (that may include new or changed ways of thinking, acting, and organizing) and by which means it becomes routinely embedded in the matrices of already existing, socially patterned, knowledge and practices.”

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.

www.normalizationprocess.org
Improving the normalization of complex interventions: part 1 - development of the NoMAD instrument for assessing implementation work based on normalization process theory (NPT)

Tim Raley, Melissa Girdler, Frances S. Mair, Elizabeth Murray, Shaun Treweek, Elaine McColl, Ian Nicholas Steen, Carl R. Hay and Tracy L. Finch

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Improving the normalization of complex interventions: part 2 - validation of the NoMAD instrument for assessing implementation work based on normalization process theory (NPT)

Tracy L. Finch, Melissa Girdler, Carl R. Hay, Francis S. Mair, Elizabeth Murray, Shaun Treweek, Elaine McColl, Ian Nicholas Steen, Clare Cook, Christopher R. Vennessa, Niccola Rackstraw, Jumindu Sharma, Garry Sabeny, Jimmy Steele and Tim Raley

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NoMAD study – ESRC RES-062-23-3274
NPT for measurement in research: Why survey tools?

To compare

Sites, interventions, professional groups, etc

To quantify

Implementation progress, change over time, etc

To increase

Utility of NPT for practitioners and researchers
### Validation dataset

<table>
<thead>
<tr>
<th>Site</th>
<th>Intervention details</th>
<th>Staff involved</th>
<th>N</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Digital health record rollout</td>
<td>Health visitors</td>
<td>67</td>
<td>29%</td>
</tr>
<tr>
<td>2</td>
<td>Multi-component intervention for smoking cessation in pregnancy</td>
<td>Midwives; health visitors</td>
<td>21</td>
<td>21%</td>
</tr>
<tr>
<td>3</td>
<td>Implementation of electronic tool designed to support patient self-management</td>
<td>Allied Health Professionals; Consultant and Trainees; GP’s; Nurses and Pharmacists</td>
<td>91</td>
<td>23%</td>
</tr>
<tr>
<td>4</td>
<td>Oral health risk assessment tool/pathway in Dental Hospital</td>
<td>Dentists and Dental students</td>
<td>229</td>
<td>77%</td>
</tr>
<tr>
<td>5</td>
<td>Trust-wide technology implementation involving different occupational groups</td>
<td>Consultants &amp; trainees; Nurse; Admin clerical; Managers; Allied Health professional &amp; Technical services</td>
<td>87</td>
<td>22%</td>
</tr>
<tr>
<td>6</td>
<td>Implementation of sports injury interventions in the AFL</td>
<td>Football coaches &amp; managers</td>
<td>336</td>
<td>??</td>
</tr>
</tbody>
</table>

*Note: 522 sufficiently completed for pooled analysis*
Part C: Detailed questions about the intervention

For each statement please select an answer that best suits your experience using Option A. If the statement is not relevant to you please select an answer from Option B.

<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>Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can see how [the intervention] differs from usual ways of working</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not relevant to my role</td>
</tr>
<tr>
<td>2. Staff in this organisation have a shared understanding of the purpose of [the intervention]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not relevant at this stage</td>
</tr>
<tr>
<td>3. I understand how [the intervention] affects the nature of my own work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not relevant to the intervention</td>
</tr>
<tr>
<td>4. I can see the potential value of [the intervention] for my work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Theoretical translation challenges

Wording/ Ambiguity
The participant queries wording within the item, e.g. unsure of meaning

Who?
The participant has trouble with ‘who’ the item is relating to e.g. themself, or others (and who the ‘others’ may be)

Timing relevance
The participant does not consider the item ‘relevant’ to the timing of the intervention

Role relevance
The participant does not consider the item ‘relevant’ to their role in the intervention

Multiple Interpretations
The participant offers a response from their own perspective as well as that of others involved in the intervention, in a single response
<table>
<thead>
<tr>
<th>COHERENCE (4 items)</th>
<th>COLLECTIVE ACTION (7 items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s alpha = 0.71</td>
<td>Cronbach’s alpha = 0.78</td>
</tr>
<tr>
<td>1. I can see how the [intervention] differs from usual ways of working</td>
<td></td>
</tr>
<tr>
<td>2. Staff in this organisation have a shared understanding of the purpose of this [intervention]</td>
<td></td>
</tr>
<tr>
<td>3. I understand how the [intervention] affects the nature of my own work</td>
<td></td>
</tr>
<tr>
<td>4. I can see the potential value of the [intervention] for my work</td>
<td></td>
</tr>
<tr>
<td>1. I can easily integrate the [intervention] into my existing work</td>
<td></td>
</tr>
<tr>
<td>2. The [intervention] disrupts working relationships</td>
<td></td>
</tr>
<tr>
<td>3. I have confidence in other people’s ability to use the [intervention]</td>
<td></td>
</tr>
<tr>
<td>4. Work is assigned to those with skills appropriate to the [intervention]</td>
<td></td>
</tr>
<tr>
<td>5. Sufficient training is provided to enable staff to use the [intervention]</td>
<td></td>
</tr>
<tr>
<td>6. Sufficient resources are available to support the [intervention]</td>
<td></td>
</tr>
<tr>
<td>7. Management adequately support the [intervention]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COGNITIVE PARTICIPATION (4 items)</th>
<th>REFLEXIVE MONITORING (5 items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s alpha = 0.81</td>
<td>Cronbach’s alpha = 0.65</td>
</tr>
<tr>
<td>1. There are key people who drive the [intervention] forward and get others involved</td>
<td></td>
</tr>
<tr>
<td>2. I believe that participating in the [intervention] is a legitimate part of my role</td>
<td></td>
</tr>
<tr>
<td>3. I’m open to working with colleagues in new ways to use the [intervention]</td>
<td></td>
</tr>
<tr>
<td>4. I will continue to support the [intervention]</td>
<td></td>
</tr>
<tr>
<td>1. I am aware of reports about the effects of the [intervention]</td>
<td></td>
</tr>
<tr>
<td>2. The staff agree that the [intervention] is worthwhile</td>
<td></td>
</tr>
<tr>
<td>3. I value the effects the [intervention] has had on my work</td>
<td></td>
</tr>
<tr>
<td>4. Feedback about the [intervention] can be used to improve it in the future</td>
<td></td>
</tr>
<tr>
<td>5. I can modify how I work with the [intervention]</td>
<td></td>
</tr>
</tbody>
</table>

Finch TL, Girling, May et al. (2018) Improving the normalization of complex interventions: Part 2 - Validation of the NoMAD survey tool for assessing implementation work based on Normalization Process Theory (NPT), BMC Medical Research Methodology.
Outcomes or processes?

In research terms: ‘outcomes’ defined in relation to study time scales and objectives

In practice: ‘end points’ difficult to identify – more likely a ‘process’

I suggest: Measures likely to be used for both purposes
How to use NoMAD?

The NoMAD instrument may be used in different ways to suit your needs, but it needs to be adapted to ‘make sense’ for your participants. Here we provide guidance on how to do this.

What are you using it for?

We hope that the NoMAD instrument will be used for a wide range of purposes and across different settings. It could be used simply to describe participants’ views about how an intervention impacts on their work, and their expectations about whether it could become a routine part of their work. It could be used at different time points, to see if perceptions have changed after a period time. It also could be used as a way of improving implementation by identifying areas needing further work to progress an implementation project. For example, the
Some uses of NoMAD

- ‘Trouble-shooting’ – use survey data to identify potential obstacles and develop solutions

- Research studies:
  - evaluating the status or outcome
  - Assessing progress over time
  - Comparing (sites, settings or professional groups)
Aim: To understand implementation of AKI alerting on hospital wards

Observations (>44 hours)

Semistructured interviews (n=29)

NoMAD surveys (n=101)
Assessing change over time following intervention

Study of Improvement in Tracheostomy care across England

Brendan McGrath et al (forthcoming)

**Setting:** 20 Tracheostomy centres

**Mixed methods:** Service quality metrics; patient outcomes; qualitative interviews with staff

**NoMAD:** 1536 Surveys, 3 time points (yearly)

**Timelines:** Before, during and after implementation of Quality Improvement bundles
ImpleMentAll: Evaluating impact of tailored implementation of iCBT on implementation outcomes

IMA Protocol for evaluation of It-Fits

Effectiveness study
- Does using Itfits lead to improved implementation outcomes?

Data: 3-monthly measures (NoMAD/ORIC)

Cost-efficiency study
- Measures of implementation related costs - is it cost-efficient?

Process Evaluation

Toolkit exposure & usage
- Descriptive data from online platform
- Activities recorded, time spent in modules etc

Qualitative Process Evaluation
- Explanatory in-depth study of ItFits toolkit ‘in use’
- Evaluation/ description of Implementation as Usual (IAU)
Measuring implementation processes using NoMAD

Implementation work is complex and messy – revealed by ‘think aloud’

Need to think about: participant roles, characteristics of the intervention, stage of implementation trajectory

To be meaningful/ fit for purpose, tailoring & adaptation is needed

Use of NoMAD must align with research design and objectives
Acknowledgements

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