



# Developing the Precision Paradigm

Mechanisms of Action Survey  
Early Results – Feedback to Intervention Researchers

April 2022

## Thank You!

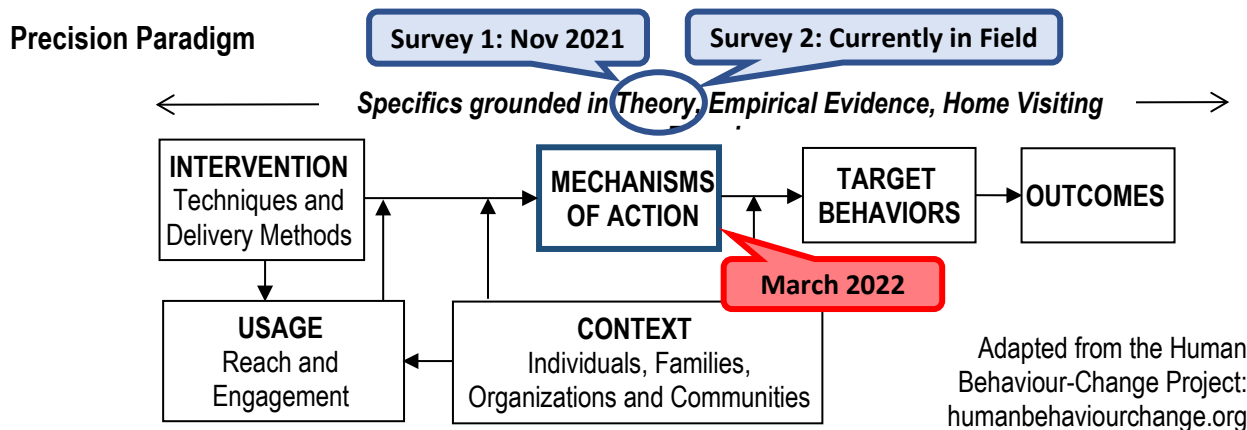
Thank you for being one of **over 100 intervention researchers across the country** helping to specify the **Precision Paradigm**.

## Precision Paradigm

The Precision Paradigm is the foundation for innovative research to learn, *What interventions within home visiting (HV) work best, for which families, in which contexts, why and how?*

With help from researchers and many others with an interest in HV, we are specifying each part of the Precision Paradigm to build a common framework and language for such research. Click [here](#) for brief video.

We are sharing what we learn each step of the way. This email shares results from our **March 2022 survey** of intervention researchers regarding Mechanisms of Action (MoA).

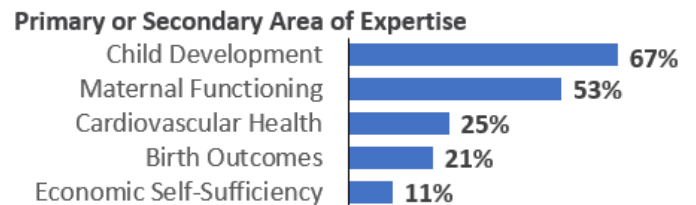


## Why We Did the Survey

Mechanisms of action (MoA) are the immediate targets of intervention and are defined as the processes through which an intervention influences target behaviors. There are many potential MoAs. We are using the expertise of intervention researchers and others to develop a clear and coherent taxonomy of MoAs relevant for HV research. We will make these taxonomies accessible to all with an interest in home visiting and include them in training and technical assistance to accelerate researchers' and practitioners' consideration of MoAs in designing, reverse engineering, and studying interventions.

## How We Did the Survey

- We invited 116 intervention researchers to complete the web-based survey.
- The survey asked about **26 MoAs** from an existing taxonomy<sup>i</sup>.
- Respondents rated each MoA on the **clarity** of its label and definition, **uniqueness**, and **relevance** for HV precision research.
- We received responses from **73 researchers** with expertise in five outcome areas.



## Highlights of What We Learned

### How did Intervention Researchers rate MoA clarity, uniqueness, and relevance for HV precision research (Table 1)?

- **Labels:** 24 of the 26 MoAs were rated clear by >80% of researchers.
- **Definitions:** 15 MoAs were rated clear by >80% of researchers.
  - *Knowledge* and *Emotion* were rated as unclear by >40% of researchers.
- **Uniqueness** (MoA doesn't overlap with other MoAs):
  - No MoA was rated as unique by all researchers.
  - 13 MoAs were rated unique by >80% of researchers.
- **Relevance:** All but one MoA, *Social/Professional Role and Identity*, were rated as relevant for HV by >80% of researchers.
- Only six MoAs were rated by >80% of researchers as being **clearly labeled and defined, unique, and relevant to HV** (*Skills, Optimism, Intention, Goals, Behavioral Regulation, and Perceived Susceptibility/Vulnerability*).

Table 1. Percent of Researchers Who Endorsed MoAs as Clear, Unique, and Relevant (n=73)

Mechanism of Action	Label is Clear	Definition is Clear	MoA is Unique <sup>1</sup>	Relevant to HV <sup>2</sup>
1 Knowledge	77%	59%	97%	97%
2 Skills	97%	84%	92%	100%
3 Social/Professional Role and Identity	82%	84%	82% <sup>†</sup>	61%
4 Beliefs about Capabilities	90%	90%	64% <sup>†</sup>	97%
5 Optimism	99%	84%	80% <sup>†</sup>	86%
6 Beliefs about Consequences	92%	77%	82% <sup>†</sup>	98%
7 Reinforcement	99%	75%	85%	97%
8 Intention	97%	92%	86% <sup>†</sup>	93%
9 Goals	94%	85%	89%	100%
10 Memory, Attention and Decision Processes	82%	77%	75%	90%
11 Environmental Context and Resources	80%	75%	73% <sup>†</sup>	98%
12 Social Influences	88%	80%	52% <sup>†</sup>	97%
13 Emotion	88%	48%	93%	90%
14 Behavioral Regulation	82%	89%	85%	99%
15 Norms	90%	81%	55% <sup>†</sup>	85%
16 Subjective Norms	90%	90%	59% <sup>†</sup>	86%
17 Attitude towards the Behavior	88%	81%	64% <sup>†</sup>	94%
18 Motivation	94%	73%	81%	97%
19 Self-image	99%	97%	67% <sup>†</sup>	93%
20 Needs	93%	78%	92%	94%
21 Values	96%	89%	78% <sup>†</sup>	86%
22 Feedback Processes	70%	68%	78% <sup>†</sup>	91%
23 Social Learning/Imitation	81%	78%	71% <sup>†</sup>	94%
24 Behavioral Cueing	93%	75%	71% <sup>†</sup>	97%
25 General Attitudes/ Beliefs	86%	86%	62% <sup>†</sup>	86%
26 Perceived Susceptibility/ Vulnerability	94%	82%	85%	86%

**Key:** Green – ≥80% of intervention researchers; Blue – 60-79% of intervention researchers; Orange – <60% of intervention researchers; <sup>1</sup>MoA does not overlap with any other MoA; <sup>2</sup>Answered Yes or Probably Yes; <sup>†</sup> 10 or more mentions of overlap with at least one other MoA (See Table 2)

### Which MoAs had the greatest overlap (Table 2)?

- Every MoA had at least 1 mention of overlap with another MoA.
- 16 MoAs had ≥ 10 mentions of overlap with another MoA.
- 8 MoAs had >20 instances of overlap with another MoA. These were *Beliefs about Consequences*, *Self-Image*, *Norms*, *Subjective Norms*, *Social Influence*, *Social Learning/Imitation*, *Attitudes to Behavior*, and *General Attitudes/Beliefs*.
- *General Attitudes/Beliefs* had the most (86) mentions of overlap across all other MoAs, with the greatest overlap with *Attitudes to Behavior*, *Beliefs about Capabilities*, *Beliefs about Consequences*, and *Values*.

Table 2. MoAs with ≥10 Mentions of Overlap<sup>1</sup>

	3	4	5	6	8	11	12	15	16	17	18	19	21	23	24	25	Total Mentions of Overlap <sup>2</sup>
3 Social/Professional Role												14					27
4 Beliefs about Capabilities			11									23				13	68
5 Optimism																	36
6 Beliefs about Consequences																10	44
8 Intentions											11						28
11 Environmental Context							13								15		49
12 Social Influence								16	13					21			77
15 Norms									28				12				76
16 Subjective Norms																	68
17 Attitudes to Behavior																26	78
18 Motivation																	40
19 Self-Image																	46
21 Values																12	43
23 Social Learning/Imitation															11		50
24 Behavioral Cueing																	51
25 General Attitudes/Beliefs																	86

**Key:** Yellow – 10-20 mentions of overlap; Green - >20 mentions of overlap; <sup>1</sup> Table is limited to the 16 MoAs with ≥10 mentions of overlap between two specific MoAs. <sup>2</sup> Total mentions across all MoAs, including the 10 MoAs not in this table and instances of <10 mentions among MoAs in the table, which are not shown in the cells.

### Implications

- Additional work is needed to improve the clarity of existing MoA definitions.
- Developing a clear, concise, and comprehensive taxonomy of MoAs will require achieving consensus on overlapping MoAs and whether and how to define additional MoAs applicable to HV.

## Next Steps

The HARC team is currently:

- Developing methods for refining the MoA taxonomy;
- Fielding a third survey on general, explanatory theories of behavior;
- Drafting TA resources for theories of behavior change for the HARC website; and
- Developing methods to elicit input on theories and MoAs from a broader range of HV partners, specifically HV models and local program leadership and staff.

<sup>i</sup> Connell, L.E., Carey, R.N., de Bruin, M., Rothman, A.J., Johnston, M., Kelly, M.P., & Michie, S. (2019). Links between behavior change techniques and mechanisms of action: An expert consensus study. *Annals of Behavioral Medicine*, 53(8): 708-720. <https://doi.org/10.1093/abm/kay082>