Applying Prevention Science

Intervention Mapping as an Integrative Framework

[slides at https://osf.io/gkyza]

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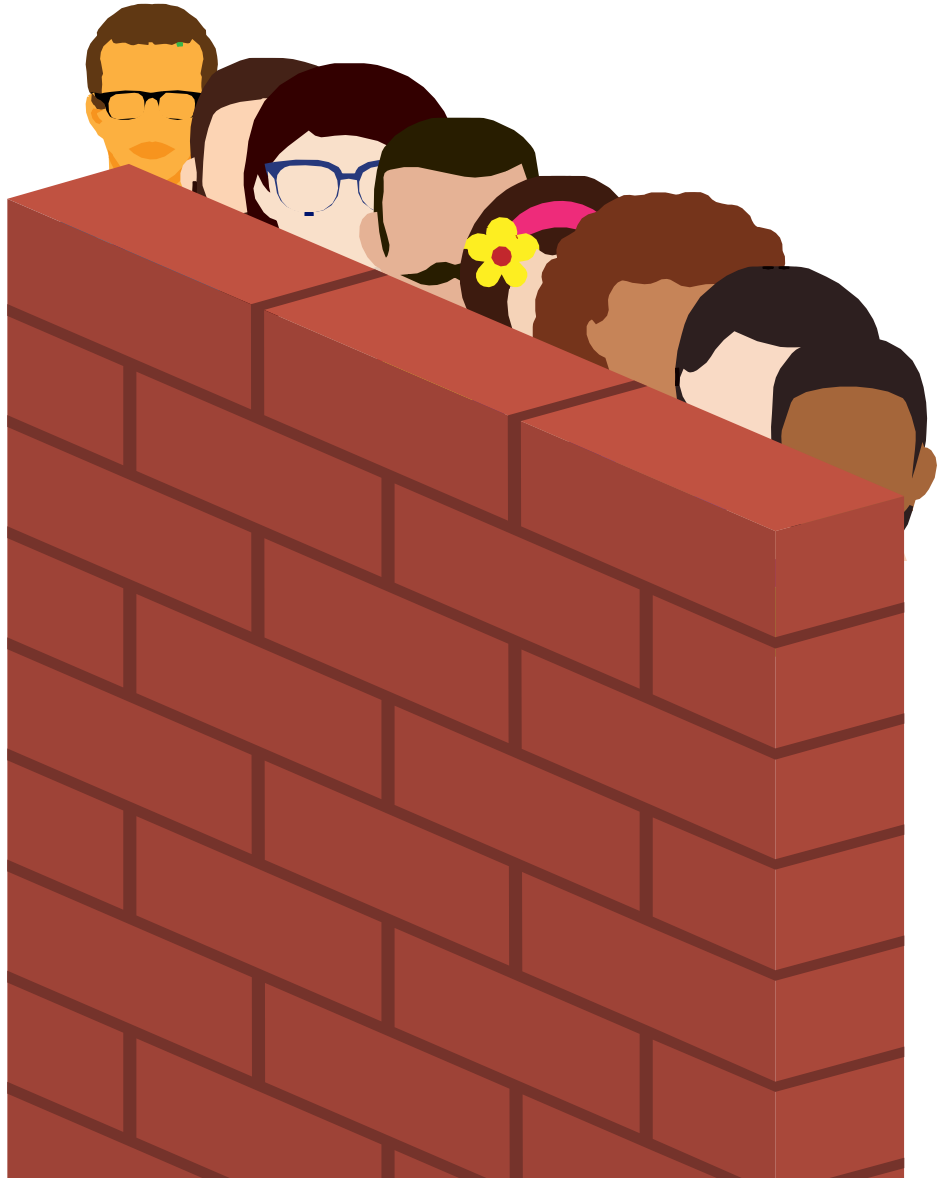
Looking over the wall



[slides at https://osf.io/gkyza]

The needs assessment: mapping the situation

Cannabis consumption in school-based adolescents: sex and personality traits [EC oral communication]

» Ms. María del Carmen Torrejón-Guirado[1], Ms. Ana Ruíz-Iglesias[1], Ms. María Isabel Acuña-San Román[1], Dr. Marta Lima-Serrano[1] (1. University of Seville)

Home Drinking in Women over 30 years of age. Findings from an internet survey [oral communication]

» Dr. Martha Canfield[1], Mrs. Valerie Chandler[2], Dr. John Foster[2] (1. Kings College London, 2. University of Greenwich)

Young drug users in the criminal justice system [campfire]

» Dr. Günter Stummvoll[1], Dr. Rahel Kahlert[1], Dr. Cees Goos[1] (1. European Centre for Social Welfare Policy and Research)

Developmental perspective on substance use prevention (paper 1: scientific underpinnings) [themed session]

» Dr. Simone Onrust[1], Ms. Renee Verkerk[1], Ms. Ester Speth[1], Ms. Daphne Visser[1] (1. Trimbos Institute)

The why: mapping determinants of behavior

Predictors of mentoring relationship quality: a mixed methods study on a school-based mentoring programme [EC oral communication]

» Dr. Giovanni Aresi[1], Ms. Chiara Riccardi[1], Dr. Elena Marta[1] (1. Università Cattolica del Sacro cuore)

Attitudes towards alcohol use: A study among young adults and teenagers drinking in the streets [EC oral poster]

» Ms. Maite Kefauver[1], Ms. Joella Anupol[1], Ms. Mariàngels Duch Moya[1], Ms. Zara Quigg[4], Prof. Elena Gervilla[5] (1. IREFREA - European Institute of Studies on Prevention, 2. LJMU, 3. University of the Balearic Islands)

Do the parental permissive attitudes toward cigarette smoking and alcohol use influence illicit drug use among adolescents? [EC oral communication]

» Ms. Emina Mehanović[1], Prof. Rosaria Galanti[2], Prof. Fabrizio Faggiano[3], Prof. Federica Vigna-Taglianti[1], Dr. the EU-Dap Study Group[5] (1. Department of Clinical and Biological Sciences, University of Torino, Italy and Piedmont Centre for Drug Addiction Epidemiology, ASL TO3, Grugliasco (Torino), Italy, 2. Department of Public Health Sciences, Karolinska Institutet, Stockholm, Sweden and Centre for Epidemiology

The how: behavior change principles

Using powerful solutions for prevention – are we doing enough? [themed session]

» Ms. Karin Streimann[1] (1. National Institute for Health Development)

Moderators of the effect of psychological and psychoeducational interventions to prevent anxiety disorders: A systematic review [EC poster]

» Ms. Carmen Martín-Gómez[1], Dr. Patricia Moreno-Peral[2], Dr. Sonia Conejo-Cerón[2], Ms. Henar Campos[2], Dr. Emma Motrico[1] (1. Universidad Loyola Andalucía, 2. Biomedical Research Institute of Málaga (IBIMA), Spain)

Effective components of parent training programs in preventing child abuse: A meta-analytic review [EC poster]

» Mrs. Jeanne Gubbels[1], Dr. Claudia van der Put[1], Dr. Mark Assink[1], Prof. Geert Jan Stams[1] (1. University of Amsterdam)

The result: program pretesting & production

An Exploratory Study of Teacher's Requirements to Deliver Drug Education Help! I Have a Lesson - A UK Case Study [oral communication]

» Mr. Richard Lynas[1], Dr. Elizabeth Hurst[1], Ms. Kate Holley[1] (1. Mentor UK)

Am I on the right track with the development of my harm reduction intervention? The development and use of an evaluation instrument [oral communication]

» Dr. Desiree Spronk[1], Mrs. Lotte Voorham[1], Dr. Ferry Goossens[1] (1. Trimbos Institute)

Strong Families: A new open-source family skills prevention programme aiming to prevent a broad spectrum of risk behaviours in different regions [oral communication]

» Dr. Wadih Maalouf[1], Dr. Karin Haar[1], Prof. Virginia Molgaard[3], Prof. Rachel Calam[4], Dr. Aala El-Khani[4] (1. United Nations Office on Drugs and Crime (UNODC), 2. Iowa State University, 3. The University of Manchester)

The future: program implementation

Challenges and Solutions in Translating Evidence-Based Research into Practice [oral communication]

» Dr. Pamela Buckley[1], Dr. Karl Hill[1], Dr. Abigail Fagan[3] (1. University of Colorado Boulder, 2. University of Florida)

Implementing and evaluating a brief digital alcohol and drug prevention intervention among adolescents and young adults [EC poster]

» Dr. Pia Kvillemo[1], Dr. Tobias Elgan[1], Dr. Anna K Strandberg[1], Dr. Johanna Gripenberg[1] (1. Karolinska Institutet)

Is the ability of implementation the key evaluation criterion? Short or long prophylactic impacts on the universal level? [oral poster]

» Prof. Krzysztof Wojcieszek[1] (1. Pedagogium WSNS in Warsaw)

The effects: program evaluation

The effectiveness of school-based intervention programs targeting stress in adolescents: A multilevel meta-analysis [EC oral communication]

» Mrs. Amanda van Loon[1], Dr. Hanneke Creemers[2], Dr. Michiel Westenberg[3], Dr. Jessica Asscher[2] (1. Utrecht University, 2. University of Amsterdam, 3. Leiden University)

Evaluation of the many not the few: how can we usefully evaluate interventions when a randomised controlled trial is impossible, improbable or unnecessary? [oral communication]

» Dr. Nick Axford[1], Dr. Tim Hobbs[2] (1. University of Plymouth, 2. Dartington Service Design Lab)

The effectiveness of the "Who really wins?" youth gambling prevention program – results with regard to different types of high-school [EC oral communication]

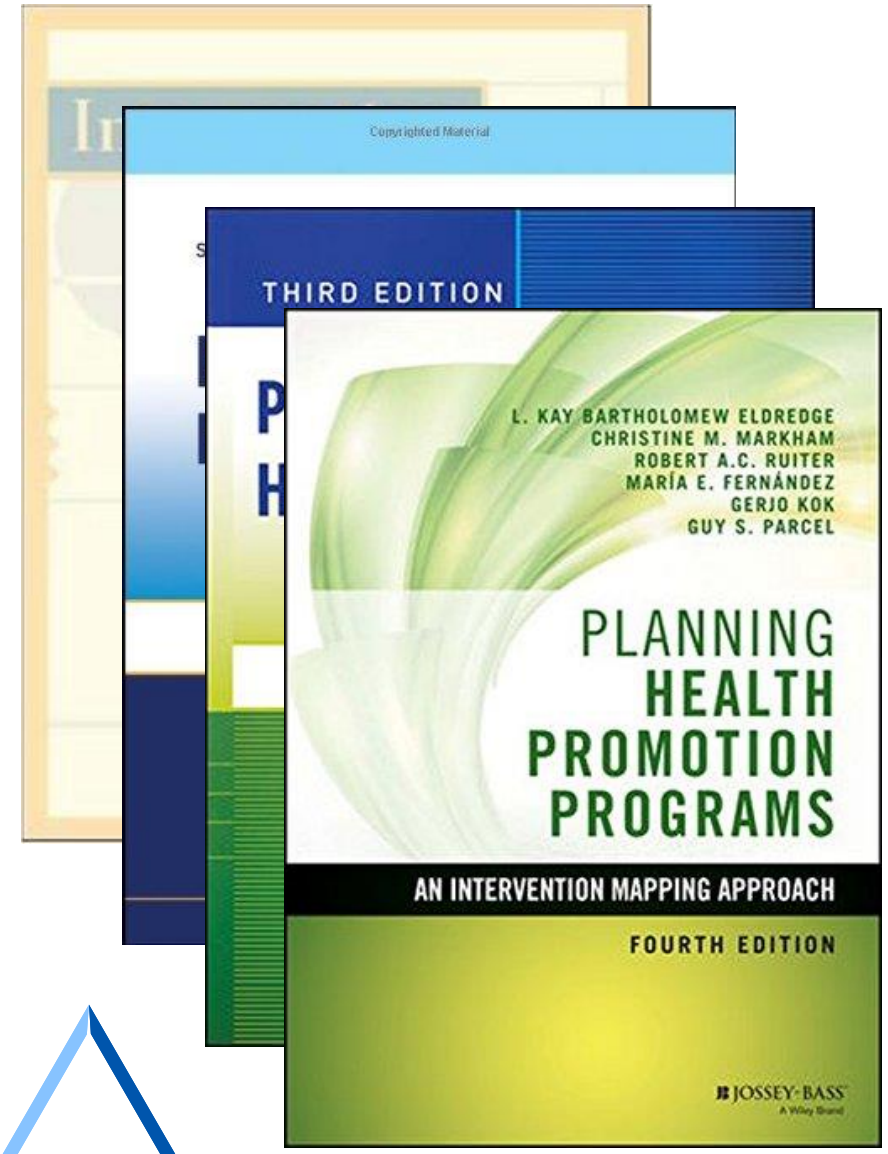
» Mrs. Sabina Mandić[1], Mr. Neven Ricijaš[1], Ms. Dora Dodig Hundrić[1] (1. Faculty of Education and Rehabilitation Sciences University of Zagreb)

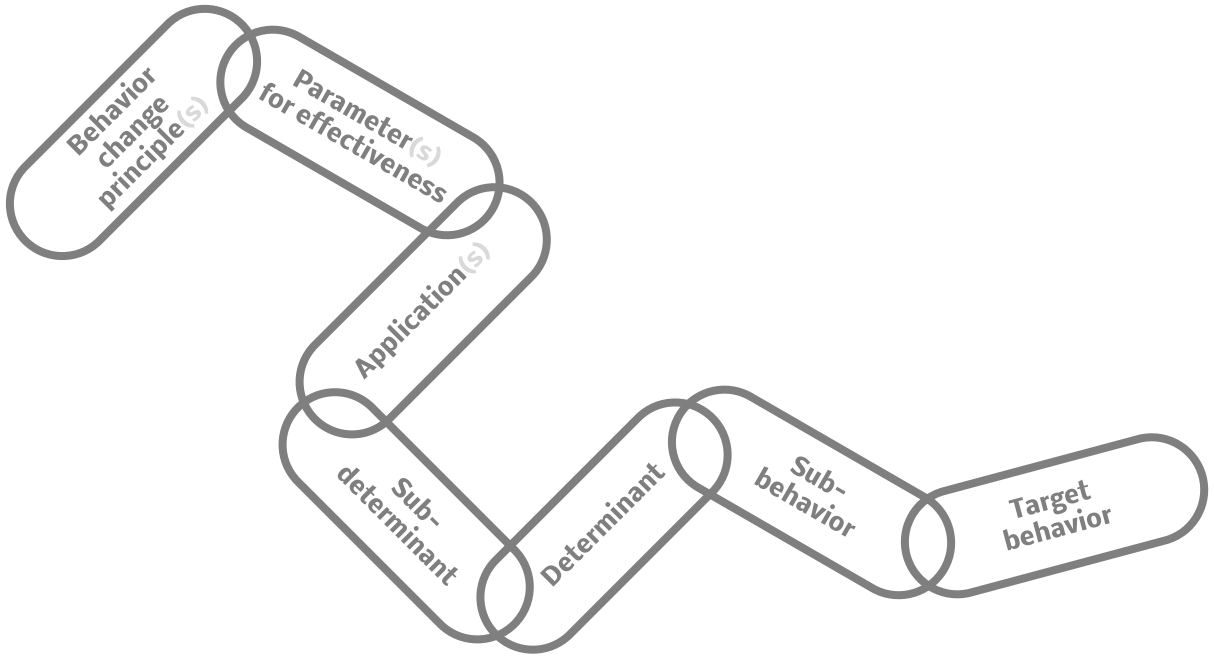
Everything together

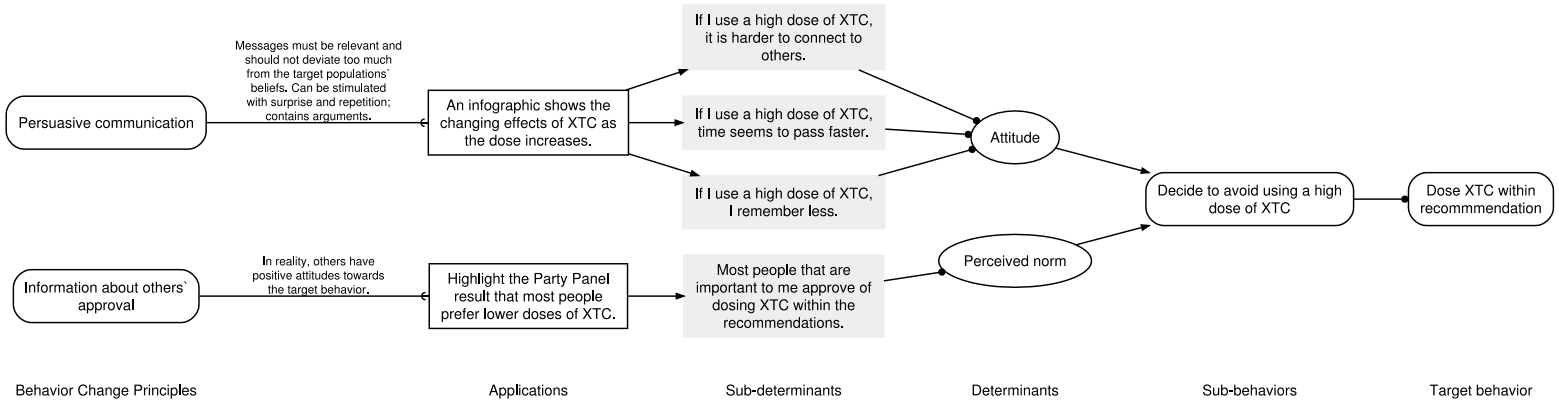
Why do flagship evidence-based programmes from the US run aground in Europe, and how should online repositories of programmes deal with this? [campfire]

» Mr. Gregor Burkhart[1], Dr. Nick Axford[2], Ms. Shreya Sonthalia[3], Prof. David Foxcroft[4], Prof. Fabrizio Faggiano[5], Ms. Charlotte De Kock[6] (1. European Monitoring Centre for Drugs and Drug Addiction, 2. University of Plymouth, 3. Dartington Service Design Lab, 4. Oxford Brookes University, 5. Department of Clinical and Biological Sciences, University of Torino, Italy and Piedmont Centre for Drug Addiction Epidemiology, ASL TO3, Grugliasco (Torino), Italy, 6. University College Ghent)

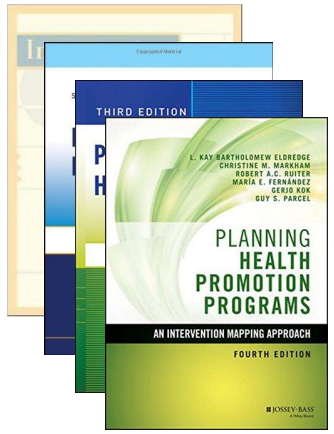
Answers in this presentation







What is Intervention Mapping?



- A **framework**
  - Not a theory
  - Not a recipe

- Finding a route from a problem

  … through an intervention …

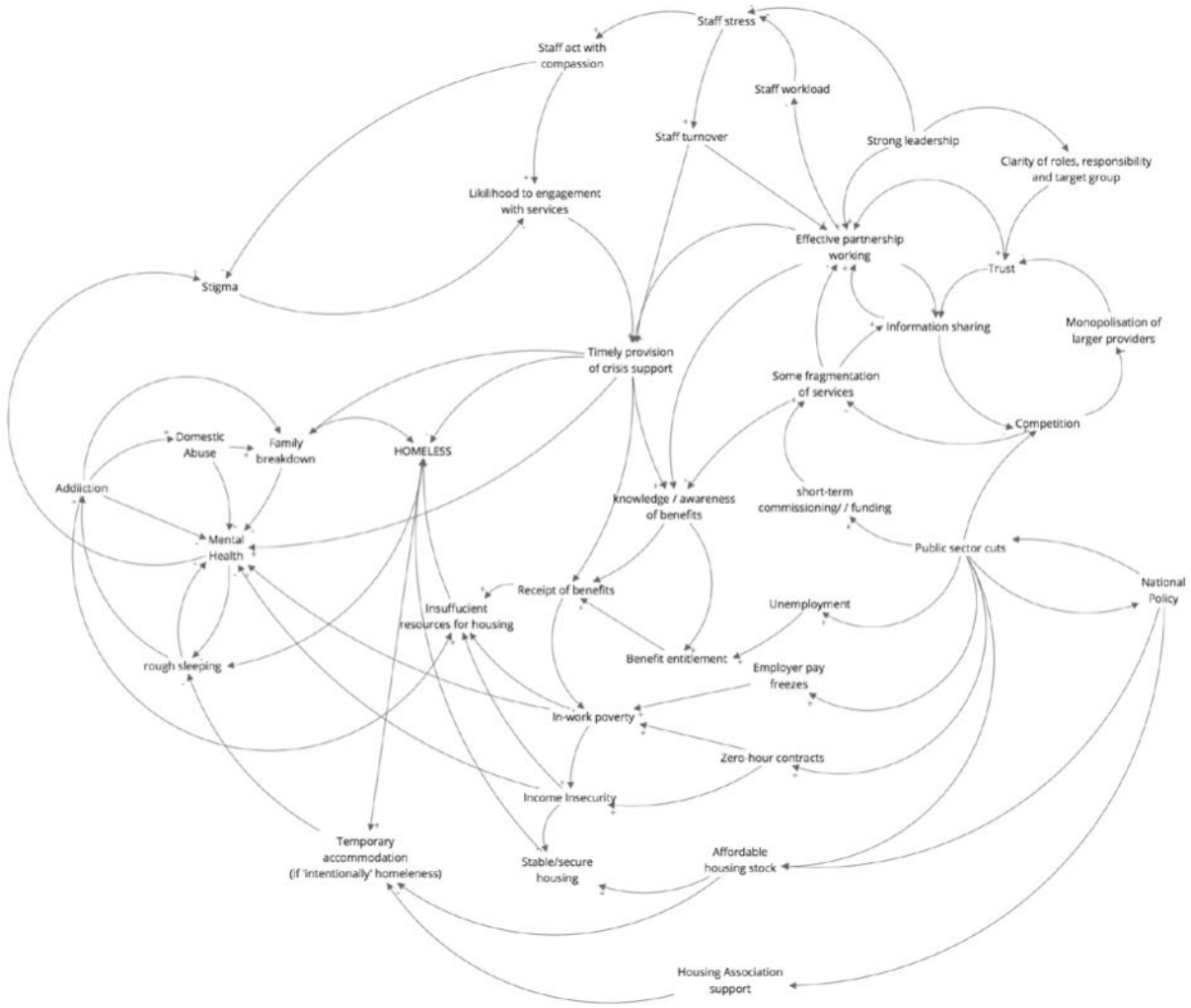
  … to a solution.

- A shared vocabulary

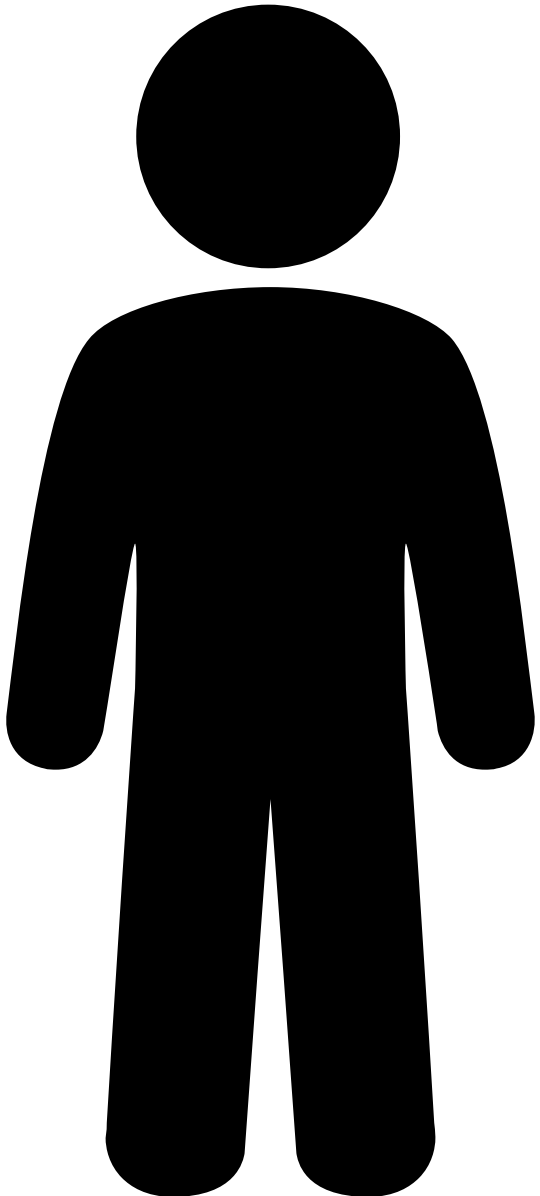
Intervention Mapping

- Step 1: What? (needs assessment)
- Step 2: Why? (determinant studies)
- Step 3: How? (behavior change principles)
- Step 4: Program production
- Step 5: Implementation
- Step 6: Evaluation

Why is it all so hard?


Staff stress
Staff act with compassion
Staff workload
Staff turnover
Strong leadership
Clarity of roles, responsibility and target group
Likilihood to engagement with services
Effective partnership working
Trust
Stigma
Information sharing
Monopolisation of larger providers
Timely provision of crisis support
Some fragmentation of services
Competition
Domestic Abuse
Family breakdown
HOMELESS
Addiction
knowledge / awareness of benefits
short-term commissioning/ / funding
Mental Health
Public sector cuts
National Policy
Receipt of benefits
Unemployment
Insuffucient resources for housing
Benefit entitlement
rough sleeping
Employer pay freezes
In-work poverty
Zero-hour contracts
Income Insecurity
Temporary accommodation (if 'intentionally' homeless)
Stable/secure housing
Affordable housing stock
Housing Association support


HIV and STDs including syphilis are rising in Alaska
Get in and get tested!
FREE WALK-IN TESTING
Saturday, August 23
10:00am – 5:00pm
Municipality Health Clinic
825 L St., Anchorage
You know how this works. You pee in a cup, we draw some blood, and you walk away with some condom swag.
• Free rapid HIV testing
• Syphilis, gonorrhea, & chlamydia testing
• Condoms and lube
WRAP IT UP ALASKA
Everyday almost 25,000 young people age 15-24 get an STD.
USE A CONDOM EVERY TIME. DO IT FOR YOUR COUNTRY.
THE GREAT AMERICAN CONDOM CAMPAIGN
More than 80% of young people have had sex by age 20.
USE A CONDOM EVERY TIME. DO IT FOR YOUR COUNTRY.
THE GREAT AMERICAN CONDOM CAMPAIGN
REMEMBER THE LAST TIME YOU HAD SEX?
Alcohol use during pregnancy
Take a Pregnancy Test
Healthy relationships
WE RESPECT EACH OTHER WE TALK ABOUT PROBLEMS AND SHARE OUR FEELINGS WITHOUT FEAR. I FEEL FREE TO SEE MY FRIENDS. IF I DON'T WANT TO DO SOMETHING I DO NOT HAVE TO. I AM NOT FORCED TO.
I AM NOT SHAMED.
I RESPECT MY PARTNER AND FEEL RESPECTED.
iknowmine.
WRAP IT UP ALASKA
DON'T BE DAFT
START WITH A HALF
mxmag

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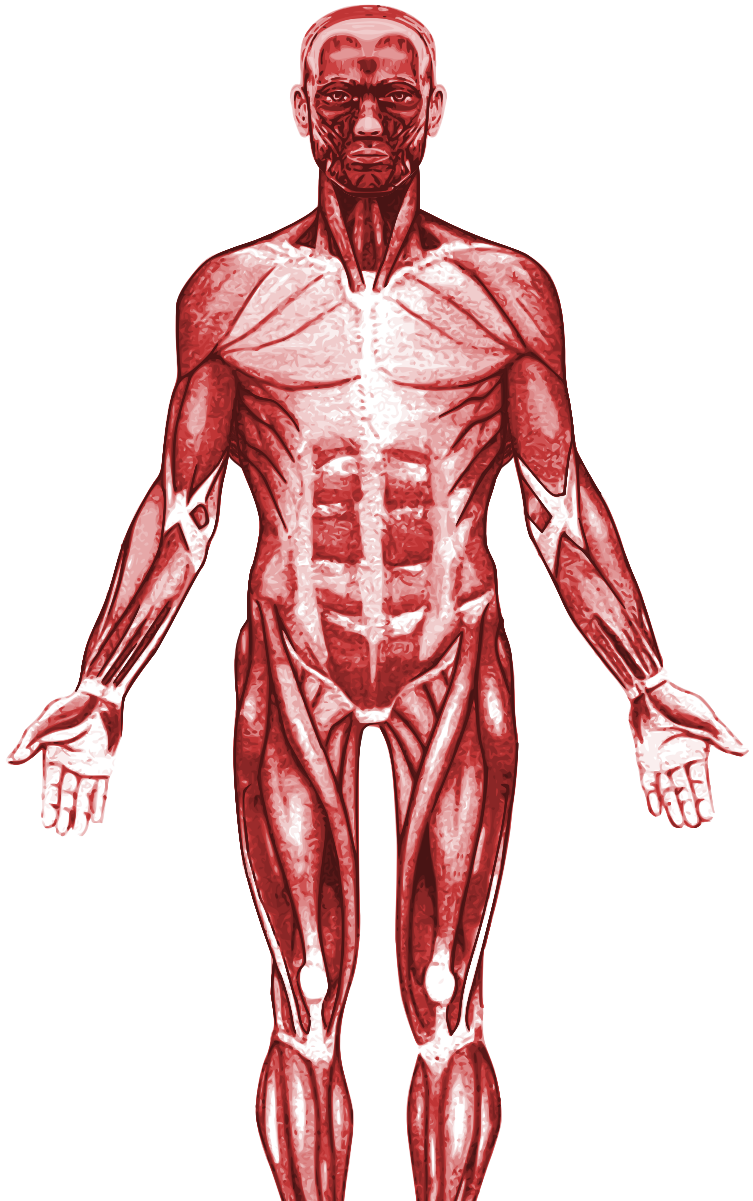


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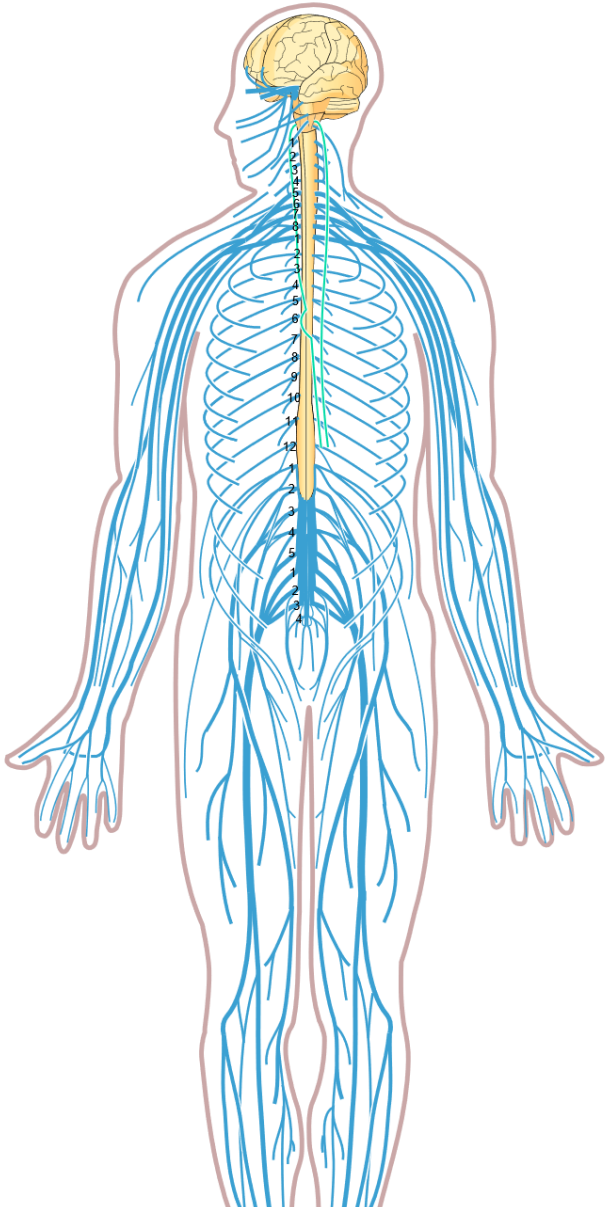

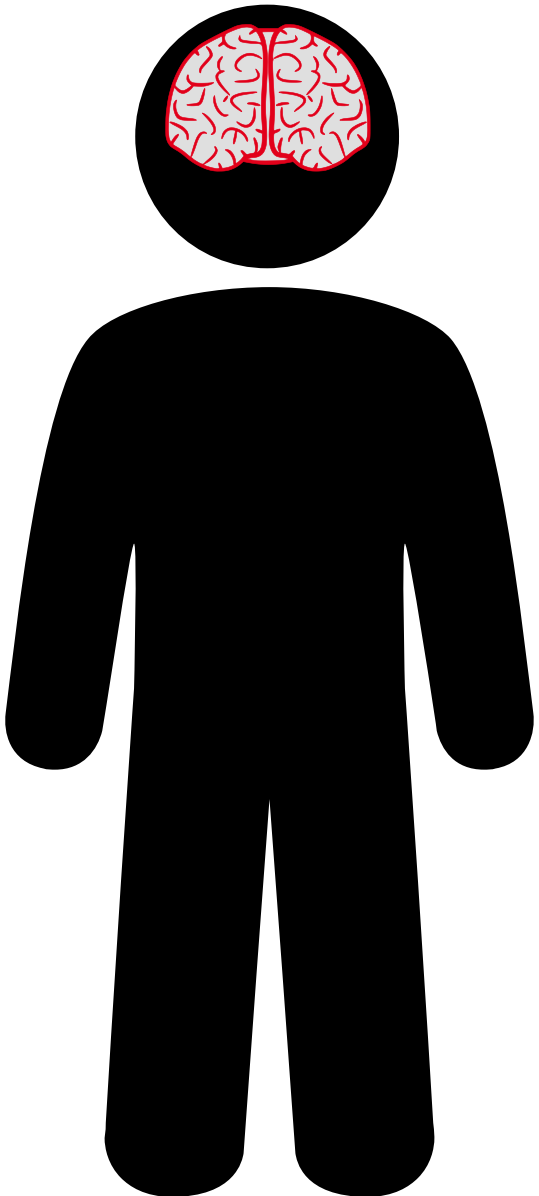

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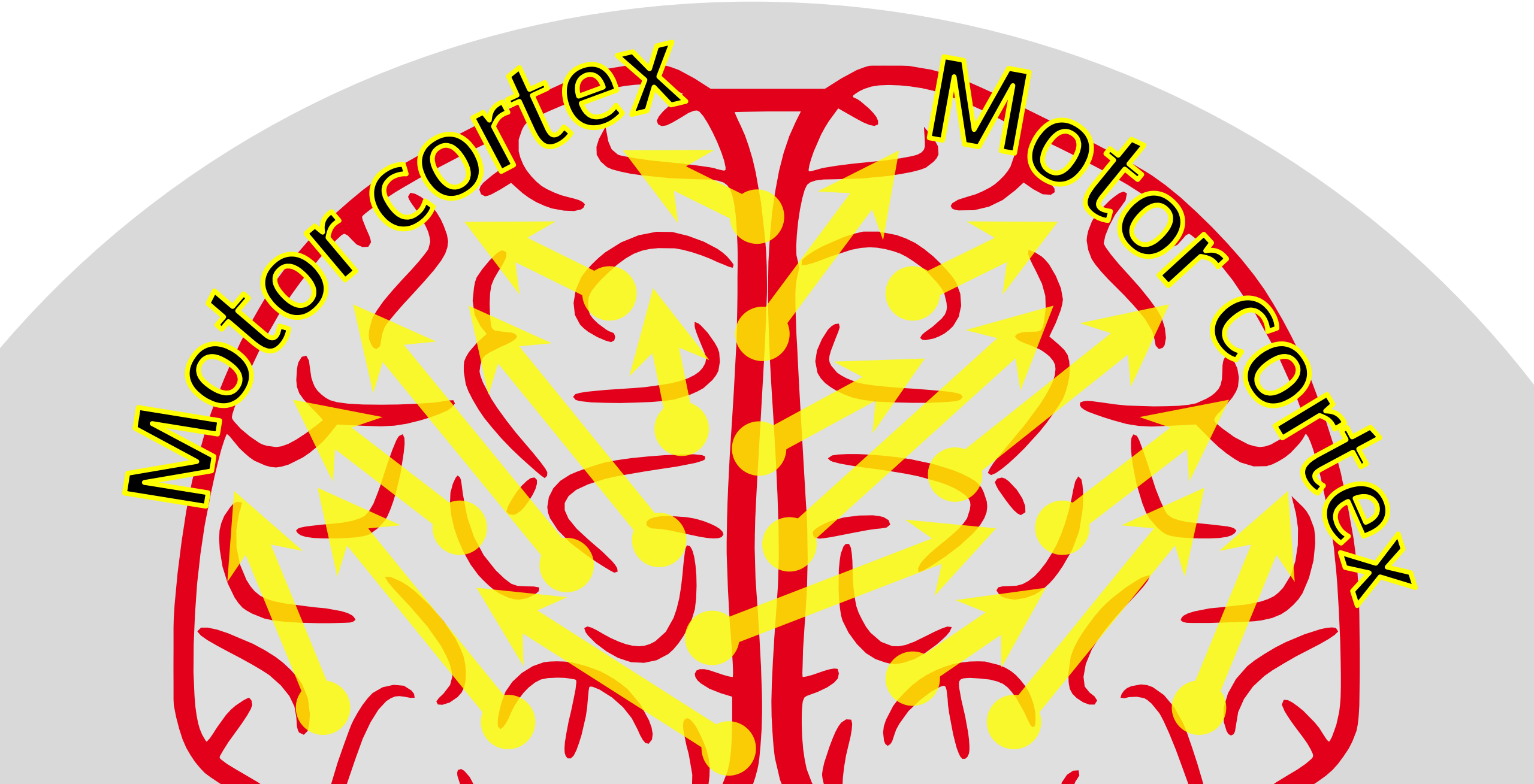
Motor cortex
Motor cortex

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7.000.000.000

89.000.000.000

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7.000 connections

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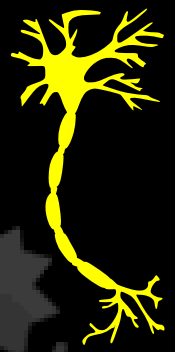
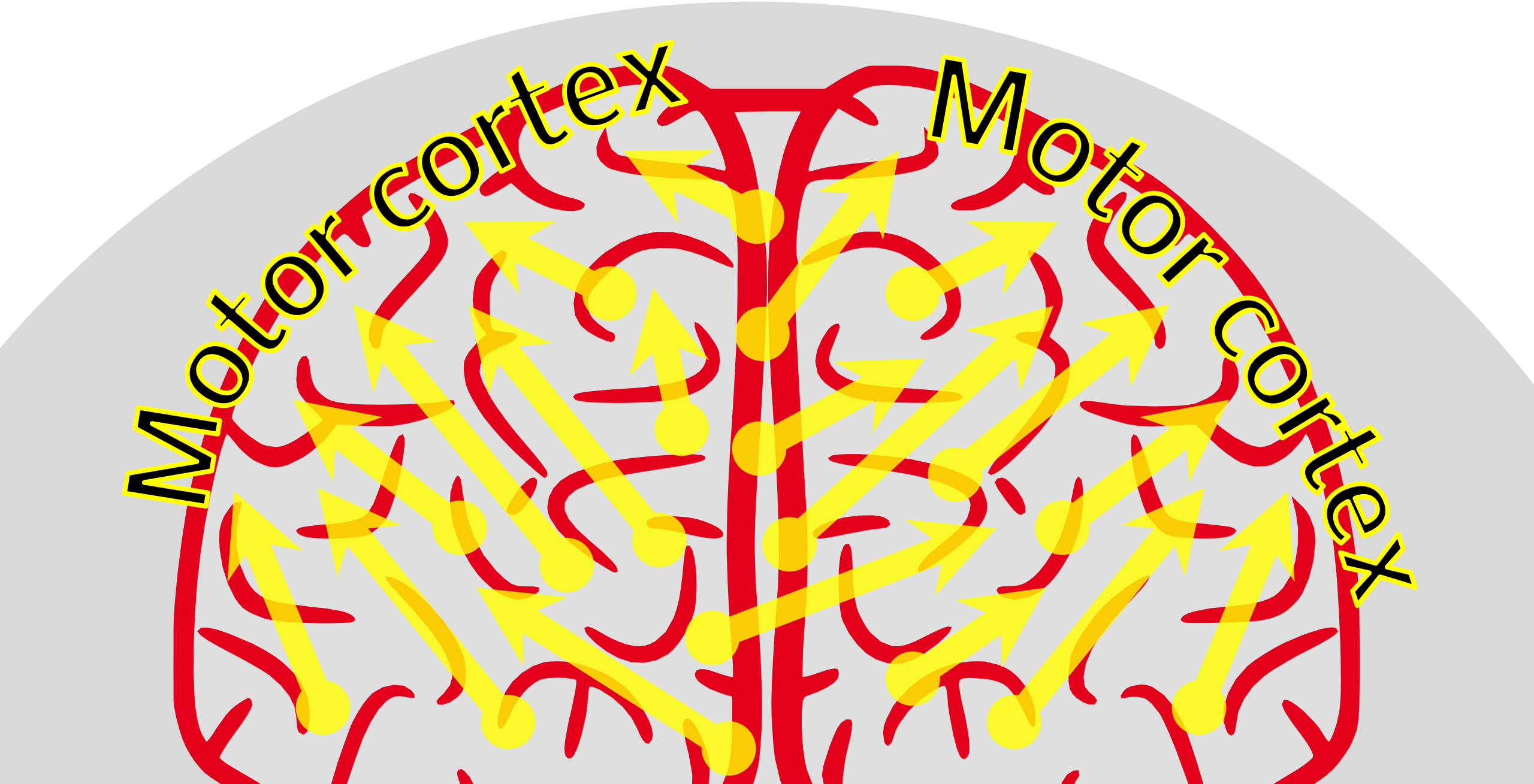



Motor cortex
Motor cortex

Supra-national

Society

Community

Organizational

Inter-personal

Personal

A model of behavior

Environmental condition

Environmental condition

Health

Target behavior

Quality of life

Target population
individual

Environmental agent

Target behavior

Environmental condition

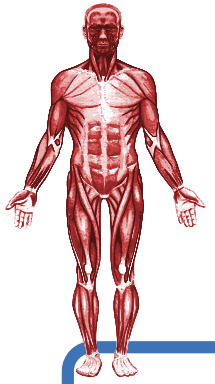
Environmental condition

Environmental condition

Health

Target behavior

Quality of life



Environmental condition

Environmental condition

Health

Sub-behavior

Sub-behavior

Sub-behavior

Target behavior

Quality of life

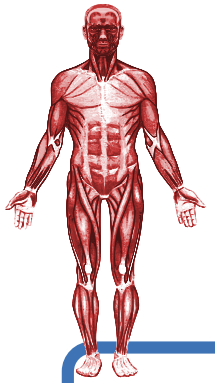
Target population
individual

Target behavior

Environmental condition

Environmental condition

Environmental condition



Sub-behavior

Sub-behavior

Sub-behavior

Sub-determinant

Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant

Targ

If I use a high dose of XTC,

Much harder

Much easier

Behavior change principle

Application

Sub-determinant

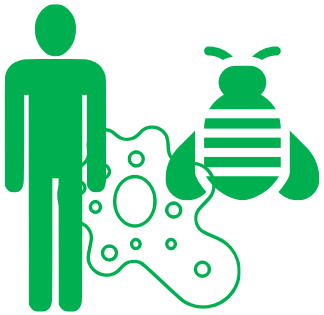
Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant



Parameter for effectiveness

Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Requires practicing the response.

Do my friends use a high dose of MDMA?

If I use a high dose of XTC, making contact with others is ... Much ha

If I use a high dose of XTC, afterwards I remember ... Much

If I use a high dose of XTC, time seems to pass ... Much slo

For my health, a high dose of XTC is ... Much w

Target behavior

Behavior change principle

Application

Sub-determinant

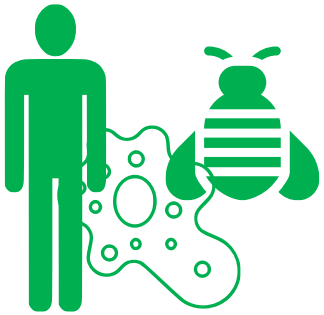
Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant



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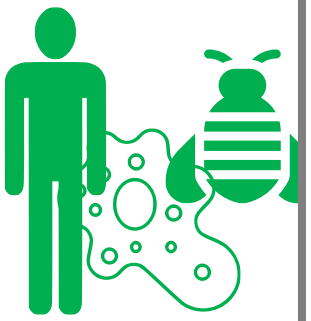
princip



Determinant

Determinant

Determinant

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health,
dose of XTC is ... Much w

Requires practicing the response.

Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies

Maria E. Fernandez[1], Gill A. ten Hoor[2], Sanne van Lieshout[3], Serena A. Rodriguez[1,4], Rinad S. Beidas[5,6], Guy Parcel[1], Robert A. C. Ruiter[2], Christine M. Markham[1] and Gerjo Kok[2]*

[1] Center for Health Promotion and Prevention Research, University of Texas Health Science Center at Houston School of Public Health, Houston, TX, United States, [2] Department of Work and Social Psychology, Maastricht University, Maastricht, Netherlands, [3] Department of Public Health, Amsterdam UMC, University of Amsterdam, Amsterdam, Netherlands, [4] Department of Population and Data Sciences, University of Texas Southwestern Medical Center, Dallas, TX, United States, [5] Department of Psychiatry, University of Pennsylvania, Philadelphia, PA, United States, [6] Department of Medical Ethics and Health Policy, University of Pennsylvania, Philadelphia, PA, United States

Background: The ultimate impact of a health innovation depends not only on its effectiveness but also on its reach in the population and the extent to which it is implemented with high levels of completeness and fidelity. Implementation science has emerged as the potential solution to the failure to translate evidence from research into effective practice and policy evident in many fields. Implementation scientists have developed many frameworks, theories and models, which describe implementation determinants, processes, or outcomes; yet, there is little guidance about how these can inform the development or selection of implementation strategies (methods or techniques used to improve adoption, implementation, sustainment, and scale-up of interventions) (1, 2). To move the implementation science field forward and to provide a practical tool to apply the knowledge in this field, we describe a systematic process for planning or

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Mary Evelyn Northridge,
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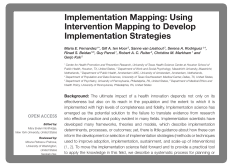
Sankalp Das,

Implementer

Target behavior



Environmental agent

Target behavior

Environmental agent

Target behavior

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Sub-behavior

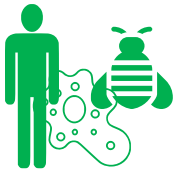
Sub-behavior

Sub-behavior

Health

Quality of life

Behavior change principle



Application

Parameter for effectiveness

Sub-determinant

Sub-determinant

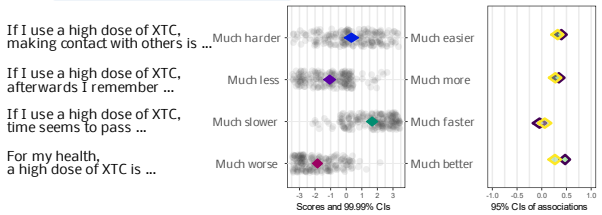
Sub-determinant

Determinant

Determinant

Determinant

Do my friends use a high dose of MDMA?



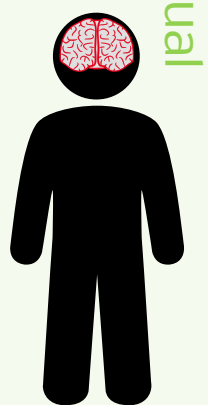
Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Requires practicing the response.

Target behavior

Target population individual



A deep dive

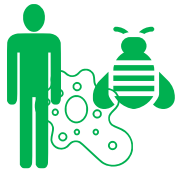
Implementer

Target behavior

Behavior change principle

Application

Parameter for effectiveness



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Target behavior

Environmental condition

Environmental condition

Environmental condition

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Environmental agent

Target behavior

Sub-behavior

Sub-behavior

Sub-behavior

Sub-determinant

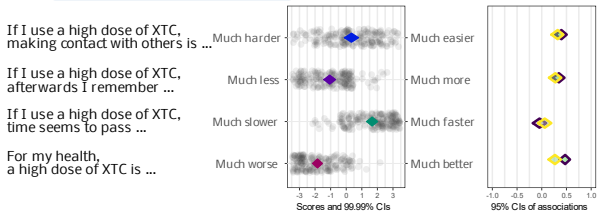
Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant



Environmental condition

Environmental condition

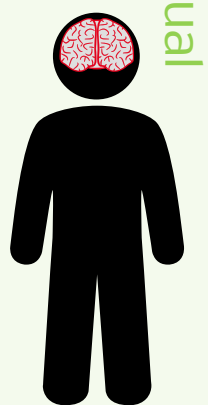
Environmental condition

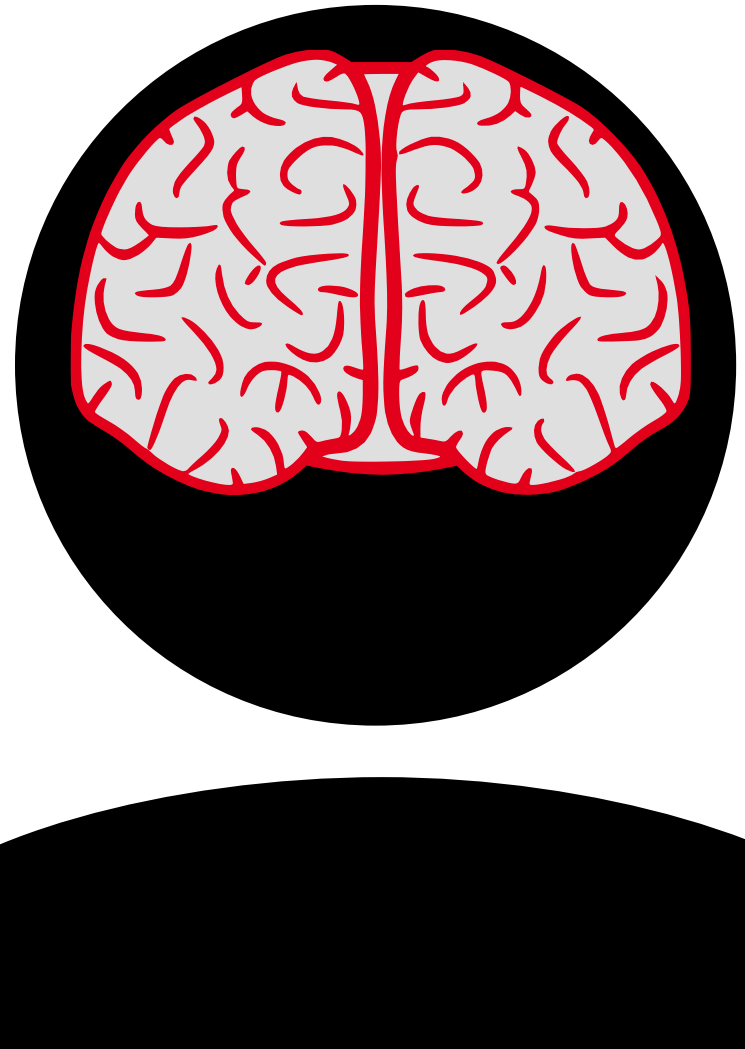
Health

Target behavior

Quality of life

Target population individual





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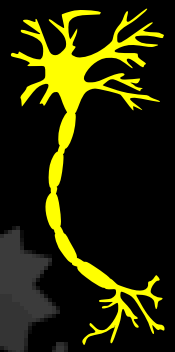
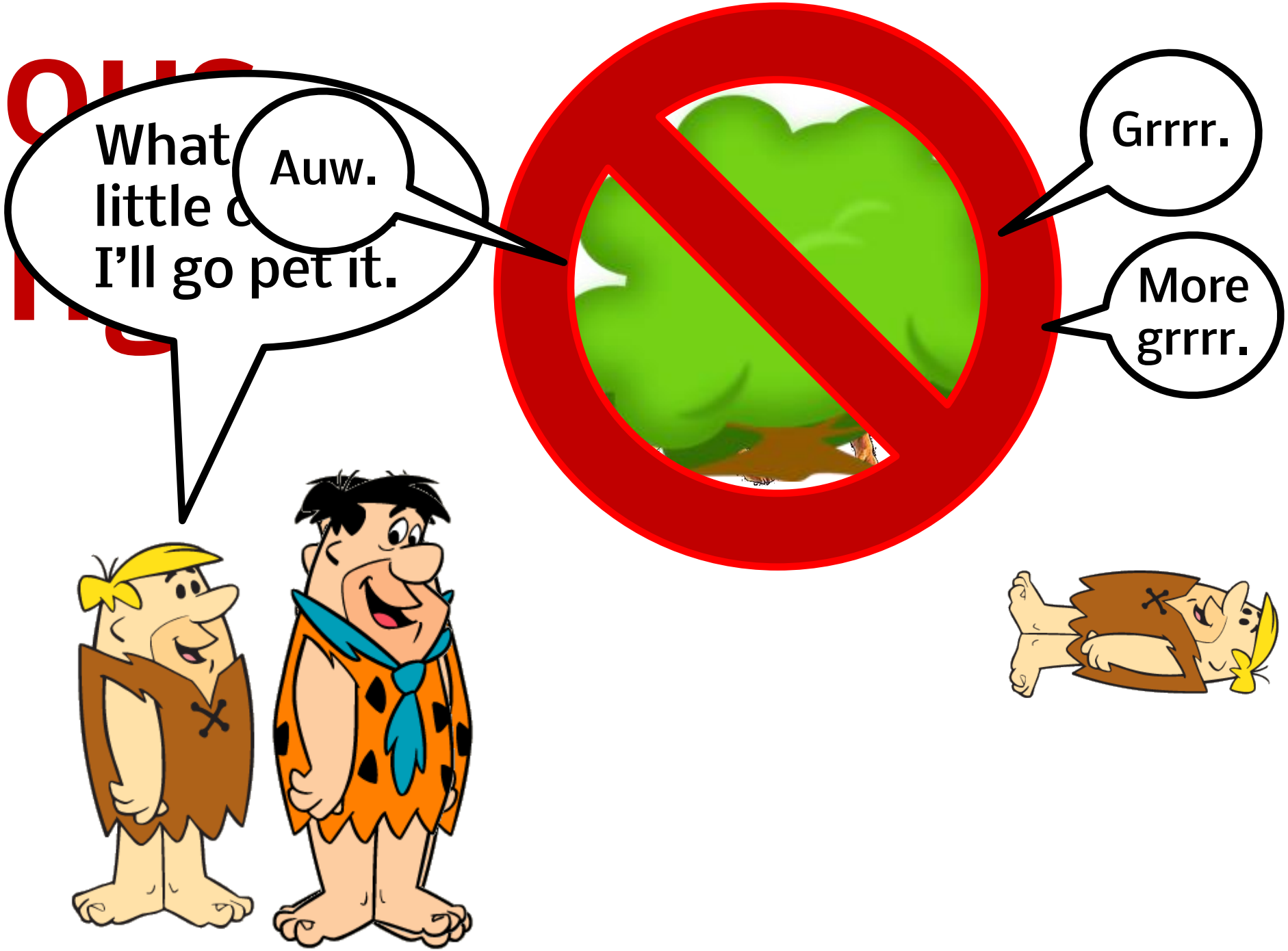


Habituation

Operant conditioning

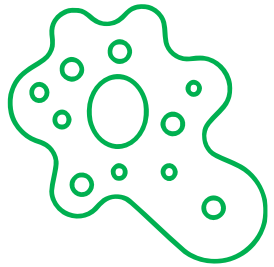
Procedural memory

Vicarious learning

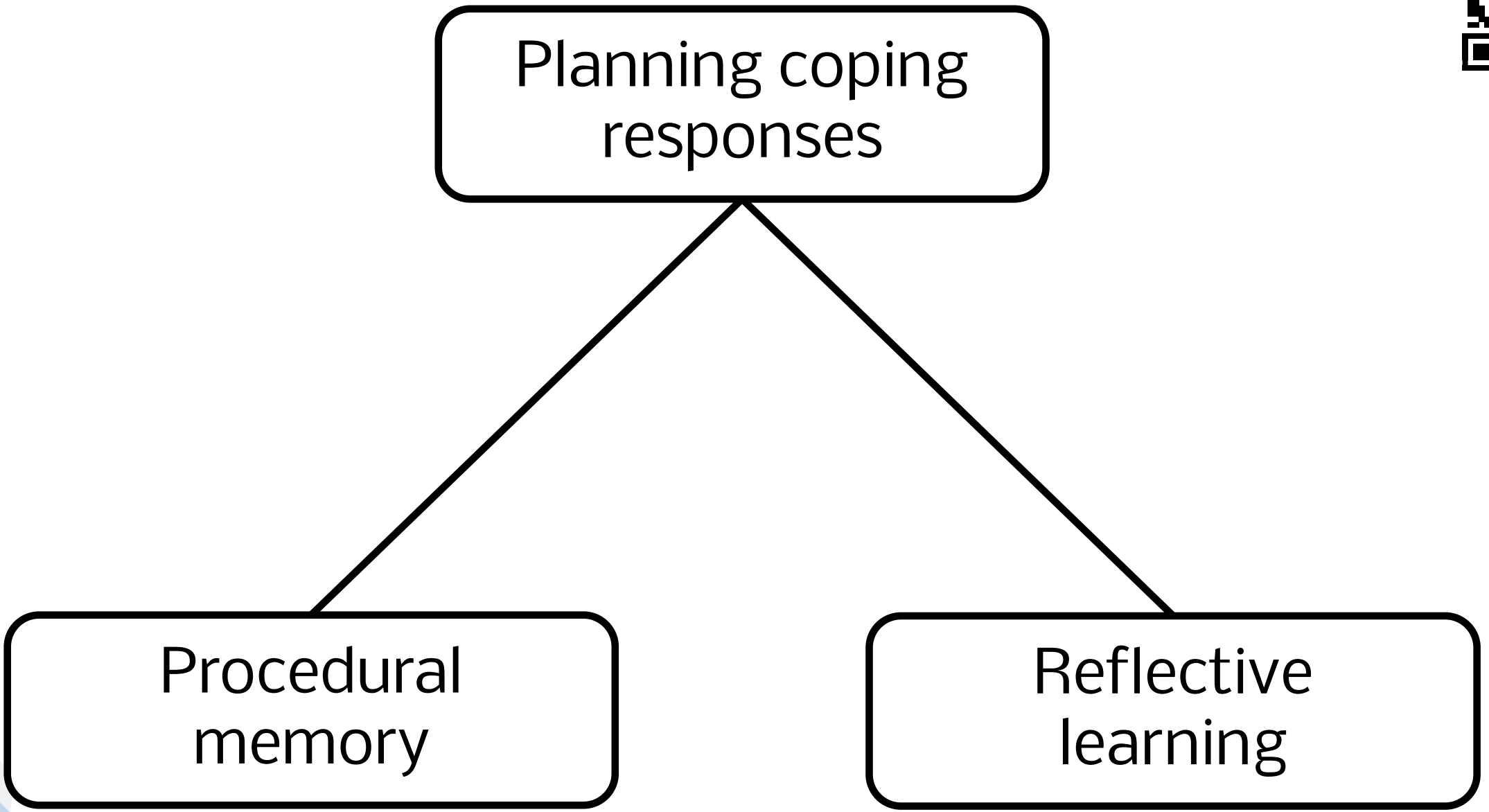


Reflective learning

- Habituation / sensitization
- Classical conditioning
- Operant conditioning
- Affective learning / emotional memory
- Procedural memory
- Cognitive maps
- Vicarious conditioning
- Abstract concept learning / declarative memory
- Reflective learning / autobiographical memory



Evolutionary Learning Processes, Crutzen & Peters, 2018
10.1080/17437199.2017.1362569

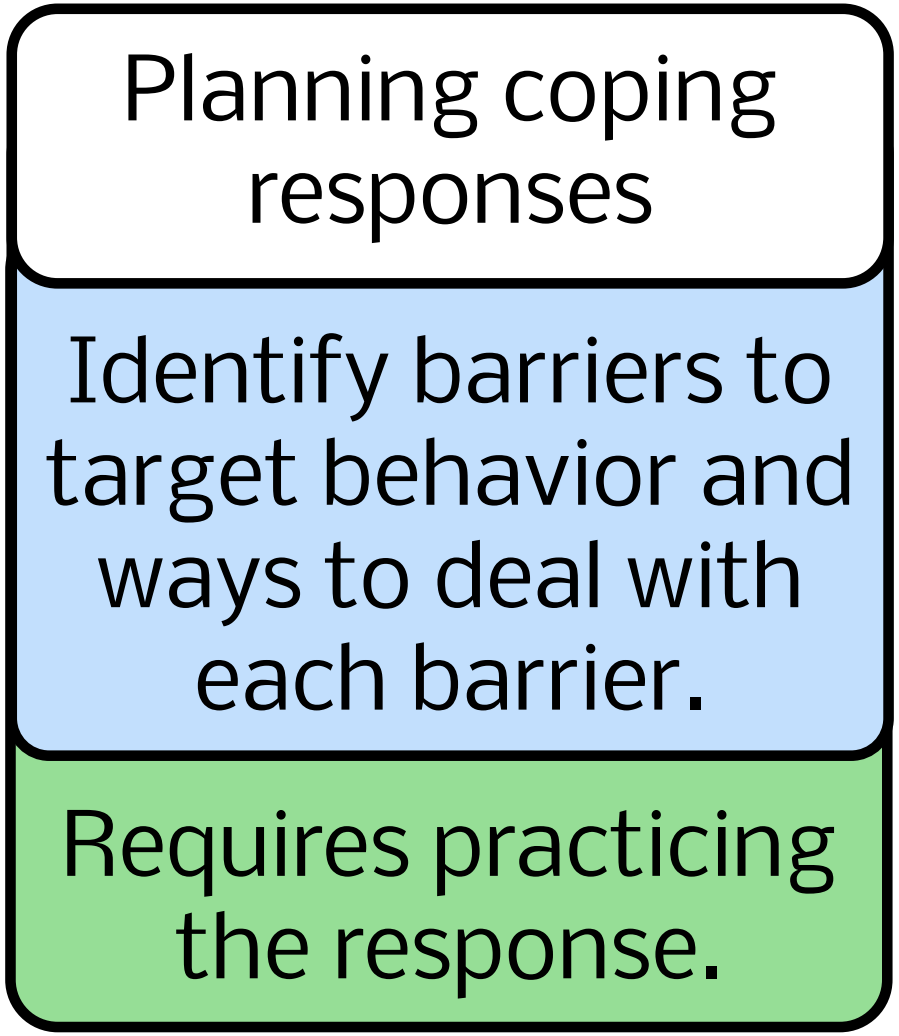


Evolutionary Learning Processes, Crutzen & Peters, 2018
10.1080/17437199.2017.1362569

Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Behavior Change Methods, Kok et al., 2018
10.1080/17437199.2015.1077155



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HEALTH PSYCHOLOGY REVIEW, 2016
VOL. 10, NO. 3, 297–312
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A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Kok[a], Nell H. Gottlieb[b], Gjalt-Jorn Y. Peters[a,c], Patricia Dolan Mullen[b], Guy S. Parcel[b], Robert A.C. Ruiter[a], María E. Fernández[b], Christine Markham[b] and L. Kay Bartholomew[b]

[a]School of Psychology & Neuroscience, Maastricht University, Maastricht, MD, The Netherlands; [b]School of Public Health, University of Texas, Houston, TX, USA; [c]School of Psychology, Open University, Heerlen, DL, The Netherlands

ABSTRACT

In this paper, we introduce the Intervention Mapping (IM) taxonomy of behaviour change methods and its potential to be developed into a coding taxonomy. That is, although IM and its taxonomy of behaviour change methods are not in fact new, because IM was originally developed as a tool for intervention development, this potential was not immediately apparent. Second, in explaining the IM taxonomy and defining the relevant constructs, we call attention to the existence of parameters for effectiveness of methods, and explicate the related distinction between theory-based methods and practical applications and the probability that poor translation of methods may lead to erroneous conclusions as to

ARTICLE HISTORY
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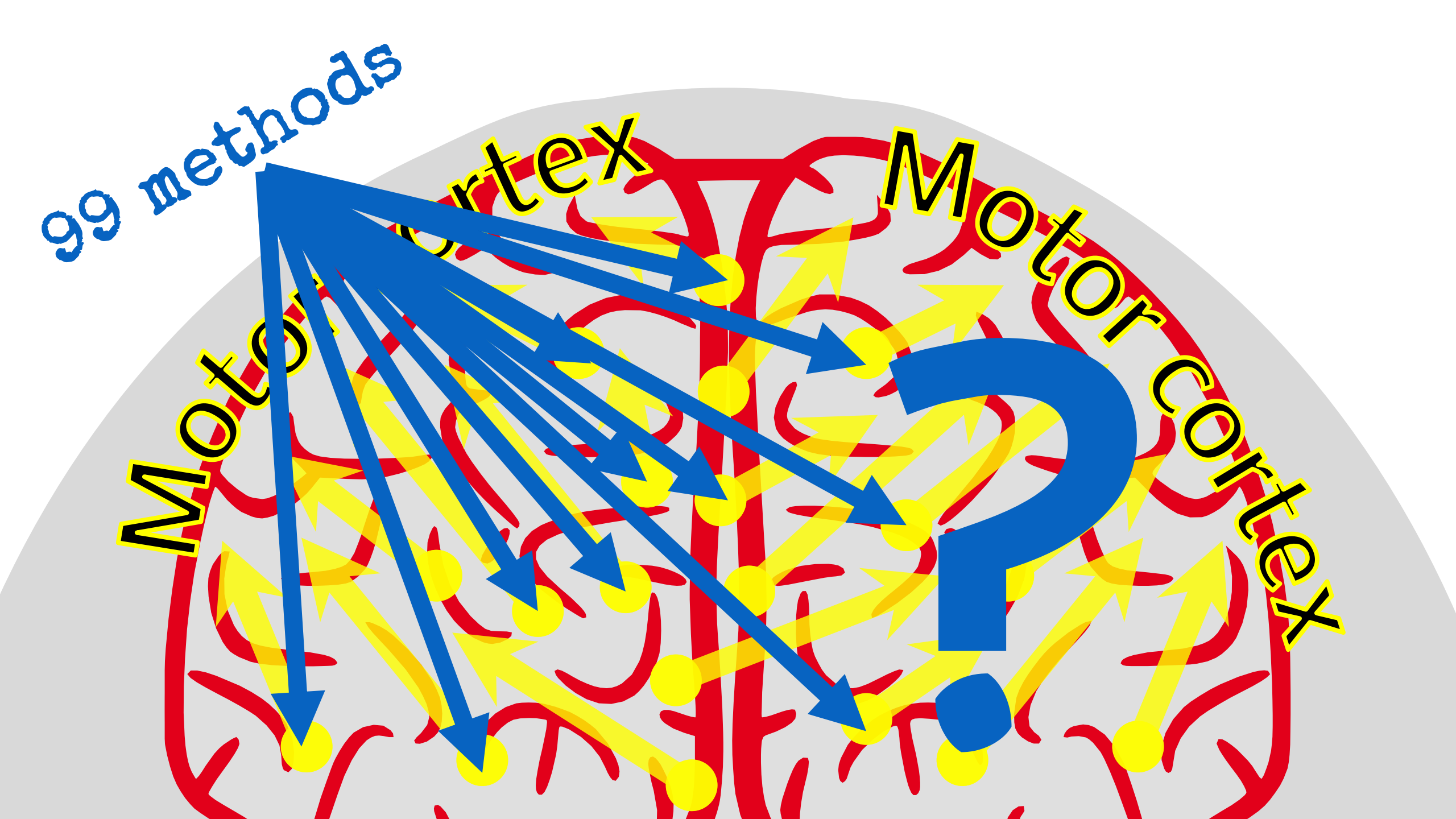
KEYWORDS
Taxonomy; behaviour change; meta-analysis; meta-analyses; review; interventions


99 methods
Motor cortex
Motor cortex
?

Will I remember everything if I use a high dose of MDMA?

Does a high dose make you hallucinate more?

Am I able to determine my dose accurately?

Can I obtain pills with a low dose of MDMA?

Is a higher dose of MDMA more unhealthy?

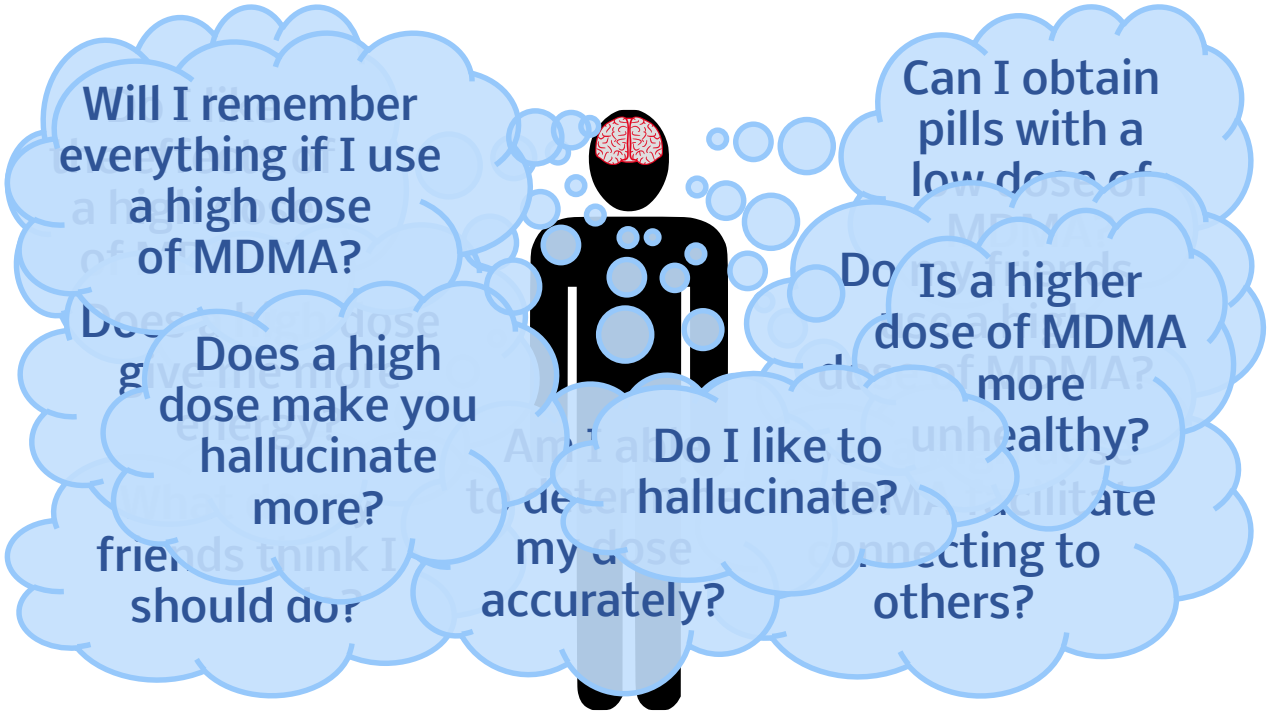
Will I remember everything if I use a high dose of MDMA?

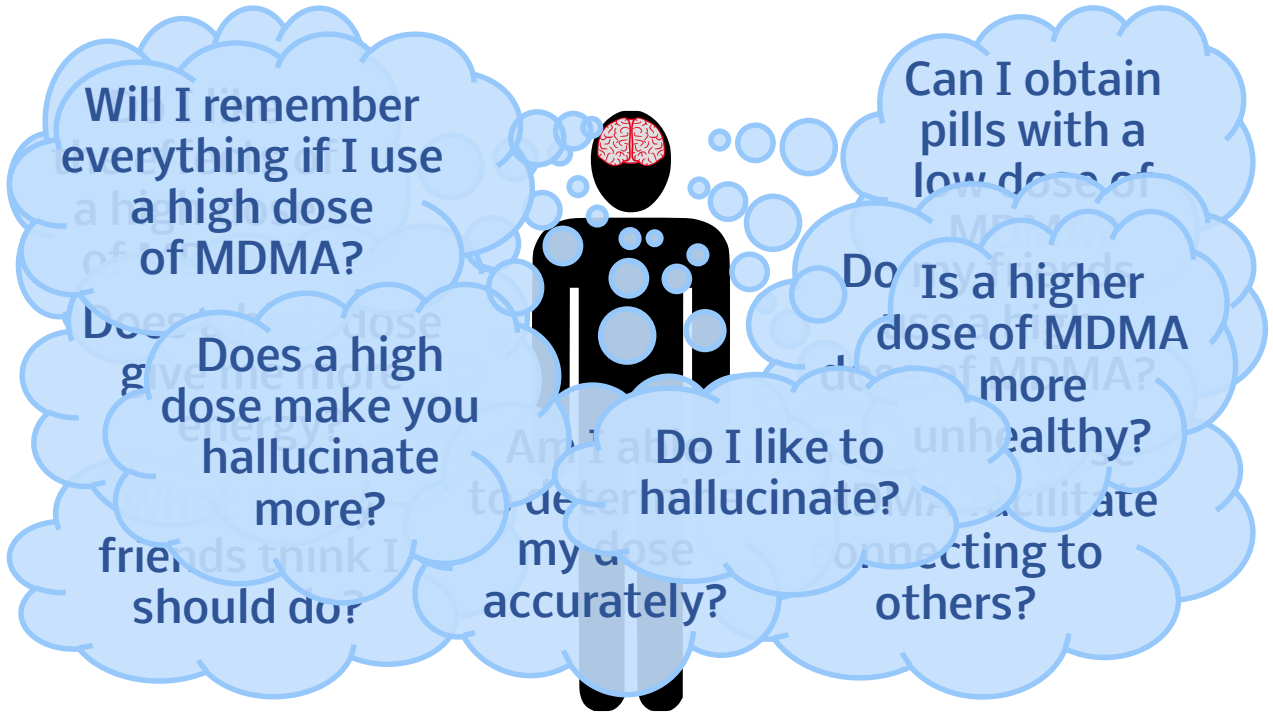
Does a high dose make you hallucinate more?

Do I like to hallucinate?

Can I obtain pills with a low dose of MDMA?

Is a higher dose of MDMA more healthy?


Will I remember everything if I use a high dose of MDMA?
Does a high dose make you hallucinate more?
Do I like to hallucinate?
Is a higher dose of MDMA more
Can I obtain pills with a
others?



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ABSTRACT

In this paper, we introduce the Intervention Mapping (IM) taxonomy of behaviour change methods and its potential to be developed into a coding taxonomy. That is, although IM and its taxonomy of behaviour change methods are not in fact new, because IM was originally developed as a tool for intervention development, this potential was not immediately apparent. Second, in explaining the IM taxonomy and defining the relevant constructs, we call attention to the existence of parameters for effectiveness of methods, and explicate the related distinction between theory-based methods and practical applications and the probability that poor translation of methods may lead to erroneous conclusions as to method-effectiveness. Third, we recommend a minimal set of intervention characteristics that may be reported when intervention descriptions and evaluations are published. Specifying these characteristics can greatly enhance the quality of our meta-analyses and other literature syntheses. In conclusion, the dynamics of behaviour change are such that any taxonomy of methods of behaviour change needs to acknowledge the importance of, and provide instruments for dealing with, three conditions for effectiveness for behaviour change methods. For a behaviour change method to be effective: (1) it must target a determinant that predicts behaviour; (2) it must be able to change that determinant; (3) it must be translated into a practical application in a way that preserves the parameters for effectiveness and fits with the target population, culture, and context. Thus, taxonomies of methods of behaviour change must distinguish the specific determinants that are targeted, practical, specific applications, and the theory-based methods they embody. In addition, taxonomies should acknowledge that the lists of behaviour change methods will be used by, and should be used by, intervention developers. Ideally, the taxonomy should be readily usable for this goal; but alternatively, it should be clear how the information in the taxonomy can be used in practice. The IM taxonomy satisfies these requirements, and it would be beneficial if other taxonomies would be extended to also meet these needs.

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Introduction

Recent attempts to establish a cumulative science of behaviour change have used taxonomies of behaviour change techniques (or methods; BCTs) to derive effectiveness of such techniques through meta-analysis of intervention evaluations (Michie & Johnston, 2012). These taxonomies

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Supplemental material for this article can be accessed here: http://dx.doi.org/10.1080/17437199.2015.1077155 or at http://osf.io/sqtuz.

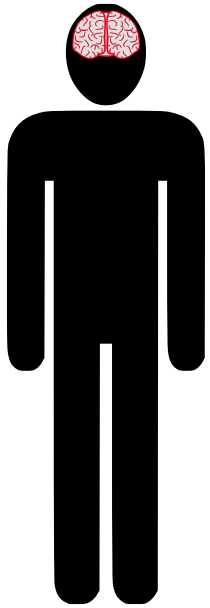
Am I able to determine my dose accurately?

Does a high dose make you hallucinate more?

Do I like to hallucinate?

Will I remember everything if I use a high dose of MDMA?

Can I obtain pills with a low dose of MDMA?



Do I like the effects of a high dose of MDMA?

Does a high dose of MDMA facilitate connecting to others?

Is a higher dose of MDMA more unhealthy?

Does a high dose give me more energy?

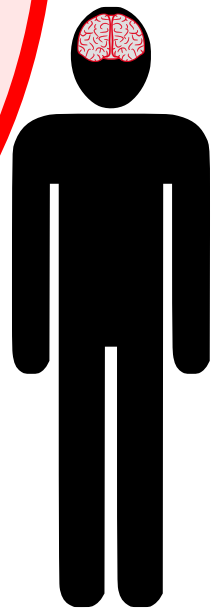
What do my friends think I should do?

Do my friends use a high dose of MDMA?

Am I able to determine my dose accurately?

Can I obtain pills with a low dose of MDMA?

Self-efficacy



Does a high dose make you hallucinate more?

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Does a high dose give me more energy?

Attitude

What do my friends think I should do?

Do my friends use a high dose of MDMA?

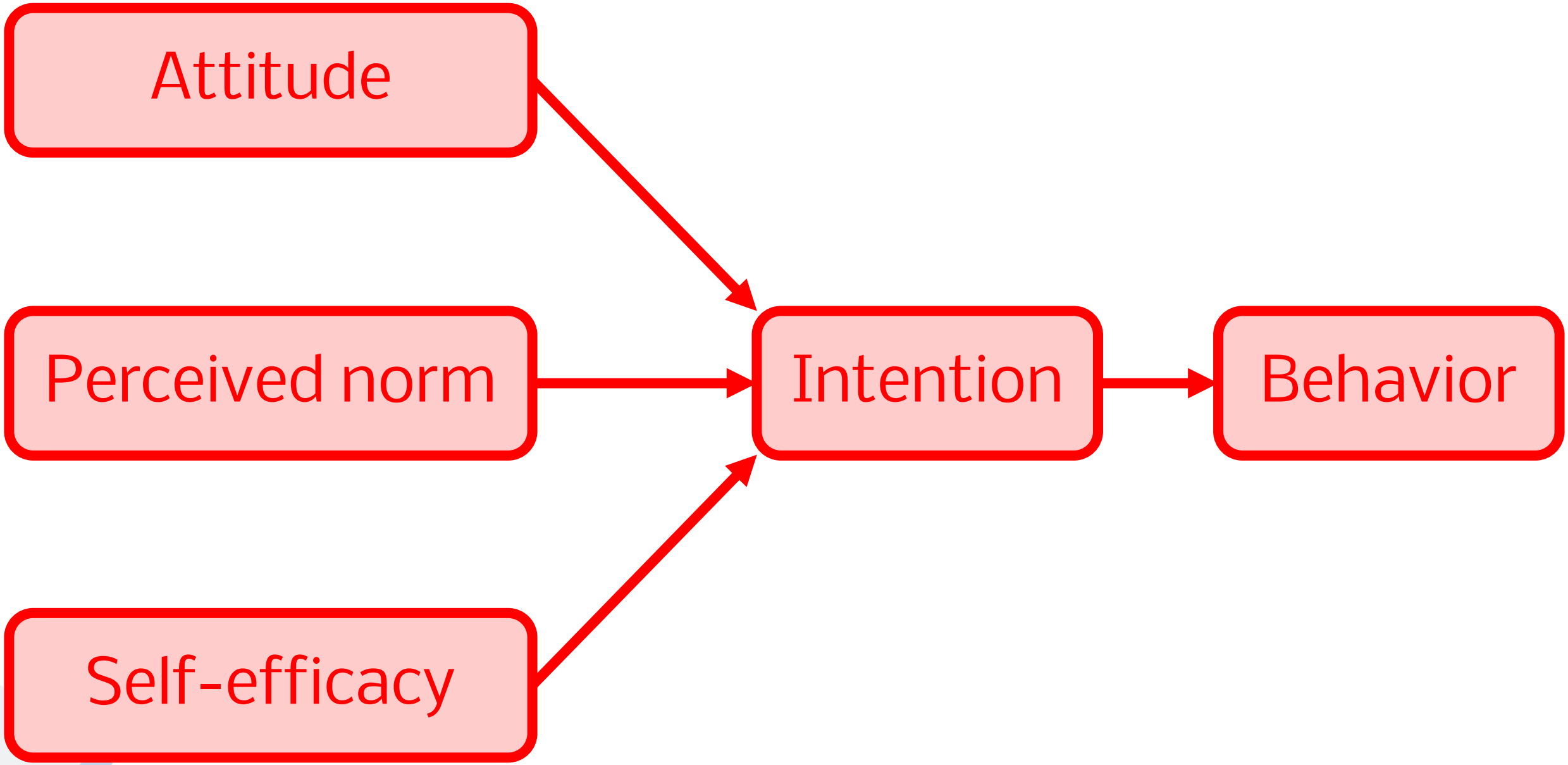
Norm

Attitude

Perceived norm

Self-efficacy

Pragmatic Nihilism, Peters & Crutzen, 2018
10.1080/17437199.2015.1077155


Attitude
Perceived norm
Self-efficacy
Intention
Behavior

Attitude

Perceived norm

Self-efficacy

Table 5: Methods to Change Attitudes, Beliefs, and Outcome Expectations (Adapted from Bartholomew et al., 2011)

Method (related theories and references)	Definition	Parameters
Classical conditioning (Theories of Learning; Kazdin, 2008)	Stimulating the learning of an association between an unconditioned stimulus (UCS) and a conditioned stimulus (CS).	Most effective when the time interval is short and the CS precedes the UCS.
Self-reevaluation (Trans-Theoretical Model; Prochaska et al., 2015)	Encouraging combining both cognitive and affective assessments of one's self-image with and without an unhealthy behavior.	Stimulation of both cognitive and affective appraisal of self-image. Can use feedback and confrontation; however, raising awareness must be quickly followed by increase in problem-solving ability and self-efficacy.
Environmental reevaluation (Trans-Theoretical Model; Prochaska et al., 2015)	Encouraging realizing the negative impact of the unhealthy behavior and the positive impact of the healthful behavior.	Stimulation of both cognitive and affective appraisal to improve appraisal and empathy skills.
Shifting perspective (Theories of Stigma and Discrimination; Batson, Chang, Orr, & Rowland, 2002)	Encouraging taking the perspective of the other.	Initiation from the perspective of the learner; needs imaginary competence.
Arguments (Communication-Persuasion Matrix; Elaboration Likelihood Model; McGuire, 2012; Petty & Wegener, 2010)	Using a set of one or more meaningful premises and a conclusion.	For central processing of arguments they need to be new to the message receiver.
Direct experience (Theories of Learning; Maibach & Cotton, 1995)	Encouraging a process whereby knowledge is created through the interpretation of experience.	Rewarding outcomes from the individual's experience with the behavior or assurance that the individual can cope with and reframe negative outcomes.
Elaboration (Theories of Information Processing; Elaboration Likelihood Model; Petty et al., 2009; Smith, 2008)	Stimulating the learner to add meaning to the information that is processed.	Individuals with high motivation and high cognitive ability; messages that are personally relevant, surprising, repeated, self-pacing, not distracting, easily understandable, and include direct instructions; messages that are not too

Attitude

Perceived norm

Self-efficacy

Table 6: Methods to Change Social Influence (Adapted from Bartholomew et al., 2011)

Method (related theories and references)	Definition	Parameters
Information about others' approval (Theory of Planned Behavior; Reasoned Action Approach; Social Comparison Theory; Forsyth, 2014; Mollen, Ruiter, & Kok, 2010)	Providing information about what others think about the person's behavior and whether others will approve or disapprove of any proposed behavior change.	Positive expectations are available in the environment.
Resistance to social pressure (Theory of Planned Behavior; Reasoned Action Approach; Evans, Getz, & Raines, 1992; Evans, 1984)	Stimulating building skills for resistance to social pressure.	Commitment to earlier intention; relating intended behavior to values; psychological inoculation against pressure.
Shifting focus (Theory of Planned Behavior; Reasoned Action Approach; Fishbein & Ajzen, 2010)	Prompting hiding of the unpopular behavior or shifting attention away from the behavior.	Preferably shift focus to a new reason for performing the behavior.
Mobilizing social support (Diffusion of Innovations Theory; Theories of Social Networks and Social Support; Holt-Lunstad & Uchino, 2015; Valente, 2015)	Prompting communication about behavior change in order to provide instrumental and emotional social support.	Combines caring, trust, openness, and acceptance with support for behavioral change; positive support is available in the environment.
Provide opportunities for social comparison (Social Comparison Theory; Suls, Martin, & Wheeler, 2002)	Facilitating observation of nonexpert others in order to evaluate one's own opinions and performance abilities.	Upward comparison may help setting better goals; downward comparison may help feeling better or more self-efficacious.

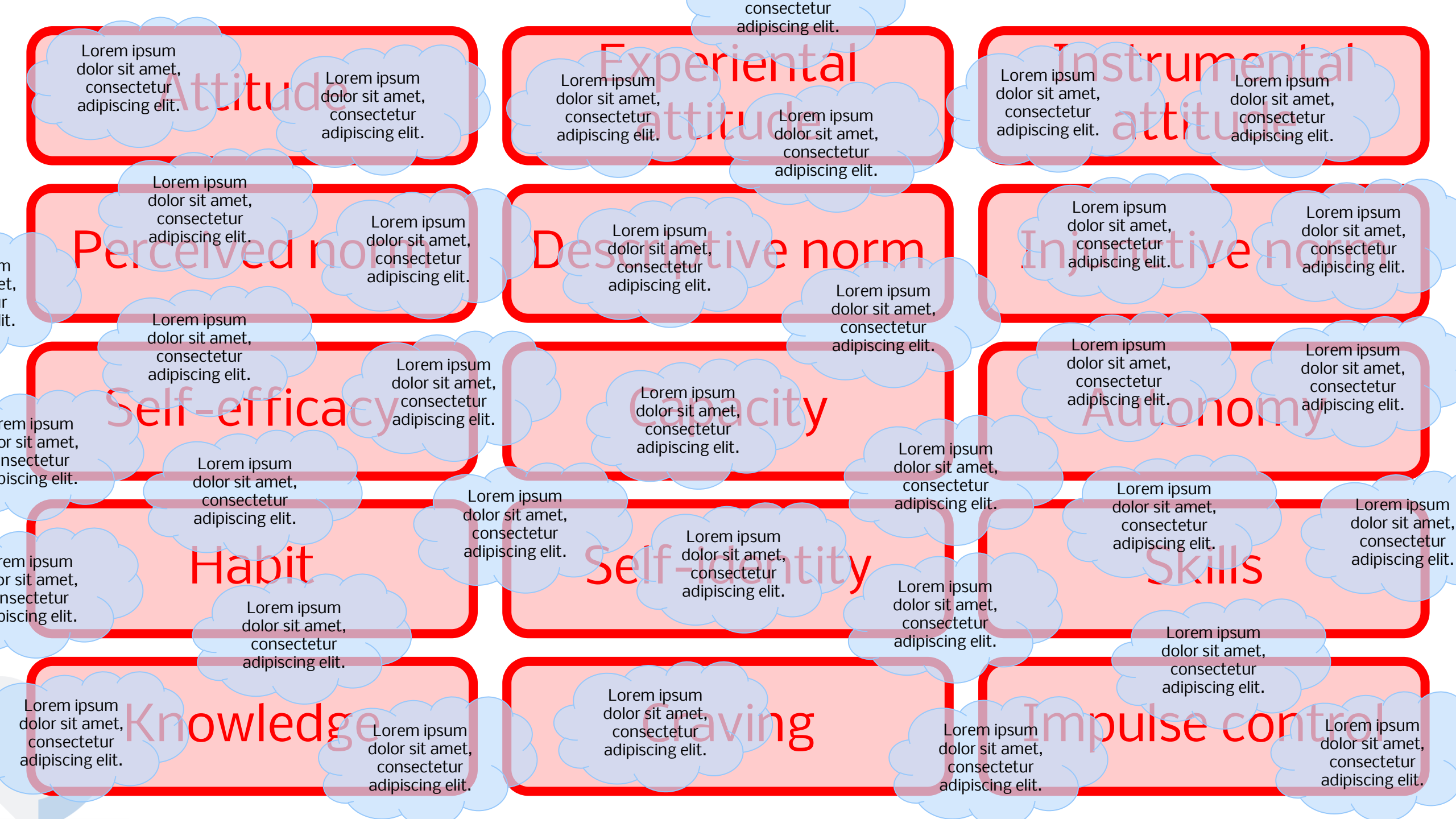
Attitude

Perceived norm

Self-efficacy

Table 7: Methods to Change Skills, Capability, and Self-Efficacy and to Overcome Barriers (Adapted from Bartholomew et al., 2011)

Method (related theories and references)	Definition	Parameters
Guided practice (Social Cognitive Theory; Theories of Self-Regulation; Kelder et al., 2015)	Prompting individuals to rehearse and repeat the behavior various times, discuss the experience, and provide feedback.	Subskill demonstration, instruction, and enactment with Individual feedback; requires supervision by an experienced person; some environmental changes cannot be rehearsed.
Enactive mastery experiences (Social Cognitive Theory; Theories of Self-Regulation; Kelder et al., 2015)	Providing increasingly challenging tasks with feedback to serve as indicators of capability.	Requires willingness to accept feedback.
Verbal persuasion (Social Cognitive Theory; Theories of Self-Regulation; Kelder et al., 2015)	Using messages that suggest that the participant possesses certain capabilities.	Credible source.
Improving physical and emotional states (Theories of Self-Regulation; Kelder et al., 2015)	Prompting interpretation of enhancement or reduction of physiological and affective states, to judge own capabilities.	Must carefully interpret and manage emotional states.
Reattribution training (Attribution Theory and Relapse Prevention Theory; Theories of Self-Regulation; Marlatt & Donovan, 2005)	Helping people reinterpret previous failures in terms of unstable attributions and previous successes in terms of stable attributions.	Requires counseling or bibliotherapy to make unstable and external attributions for failure.
Self-monitoring of behavior (Theories of Self-Regulation; Creer, 2000; Harkin et al., n.d.)	Prompting the person to keep a record of specified behavior(s).	The monitoring must be of the specific behavior (that is, not of a physiological state or health outcome). The data must be interpreted and used. The reward must be reinforcing to the individual.
Provide contingent rewards (Theories of Learning; Theories of Self-Regulation; Bandura, 1986)	Praising, encouraging, or providing material rewards that are explicitly linked to the achievement of specified behaviors.	Rewards need to be tailored to the individual, group or organization, to follow the behavior in time, and to be seen as a consequence of the behavior.
Cue altering (Theories of Automatic,	Teaching changing a stimulus,	Existing positive intention.


Attitude
Experiental attitude
Instrumental attitude
Perceived norm
Descriptive norm
Injunctive norm
Self-efficacy
Capacity
Autonomy
Habit
Self-identity
Skills
Knowledge
Craving
Impulse control
Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Implementer

Target behavior

Environmental agent

Target behavior

Environmental agent

Target behavior

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Health

Quality of life

Behavior change principle

Application

Parameter for effectiveness

Sub-determinant

Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant

Sub-behavior

Sub-behavior

Sub-behavior

Target behavior

Target population individual

Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Requires practicing the response.

Do my friends use a high dose of MDMA?

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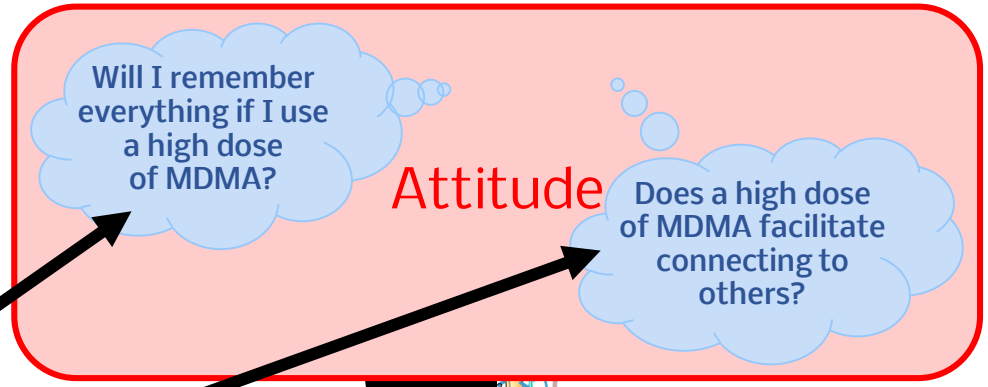
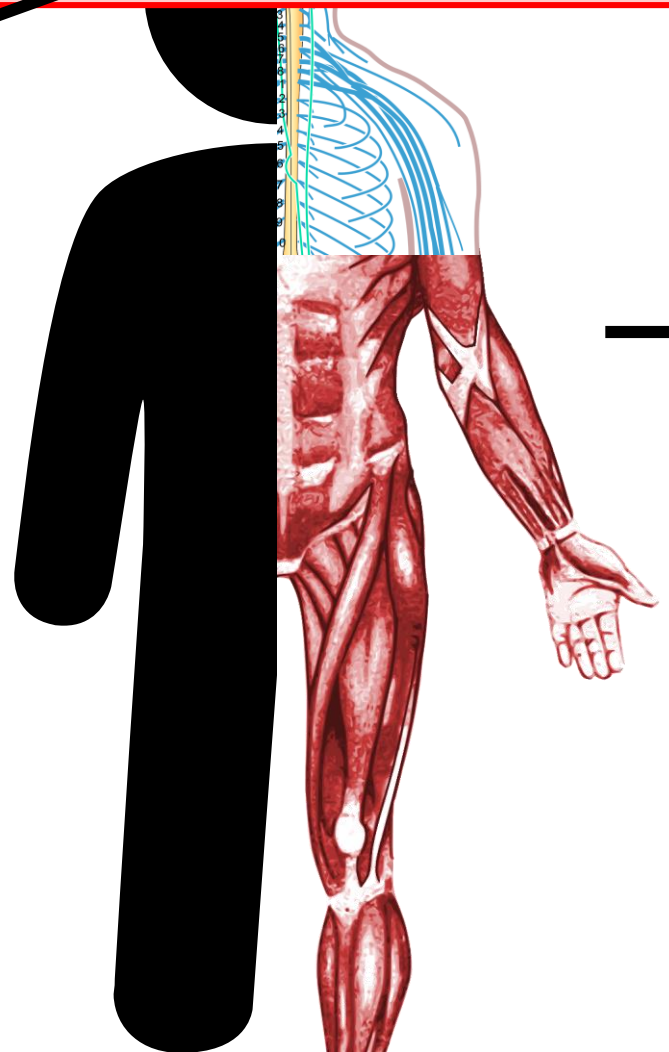




The Intervention Mapping protocol

[slides at https://osf.io/gkyza]

Step 1
Needs assessment

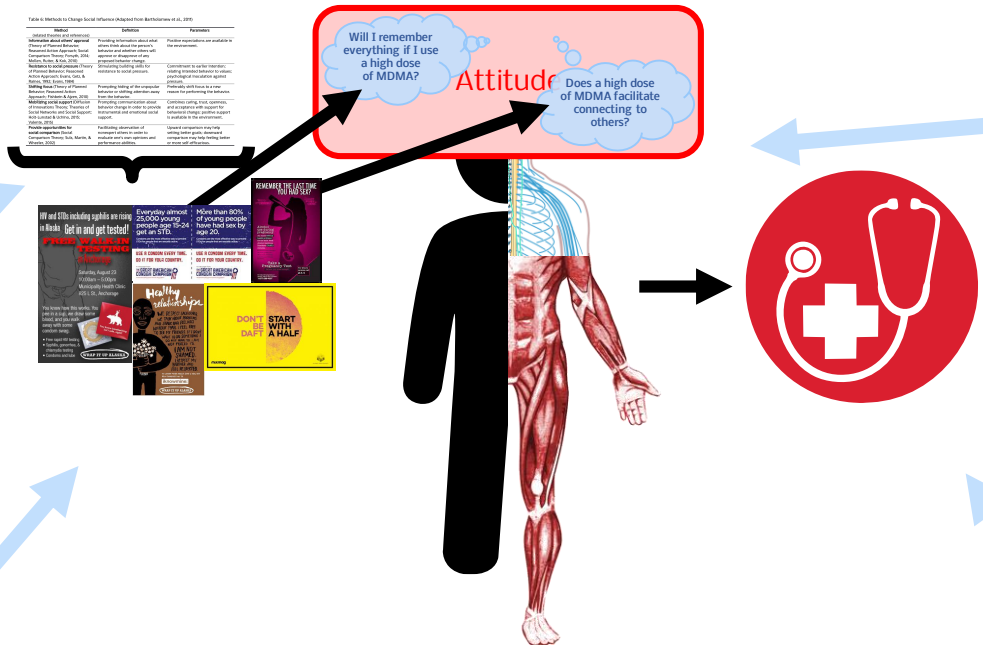
Step 2
Determinant analysis

Step 3
Methods & applications

Step 4
Intervention

Step 5
Implementation

Step 6
Evaluation

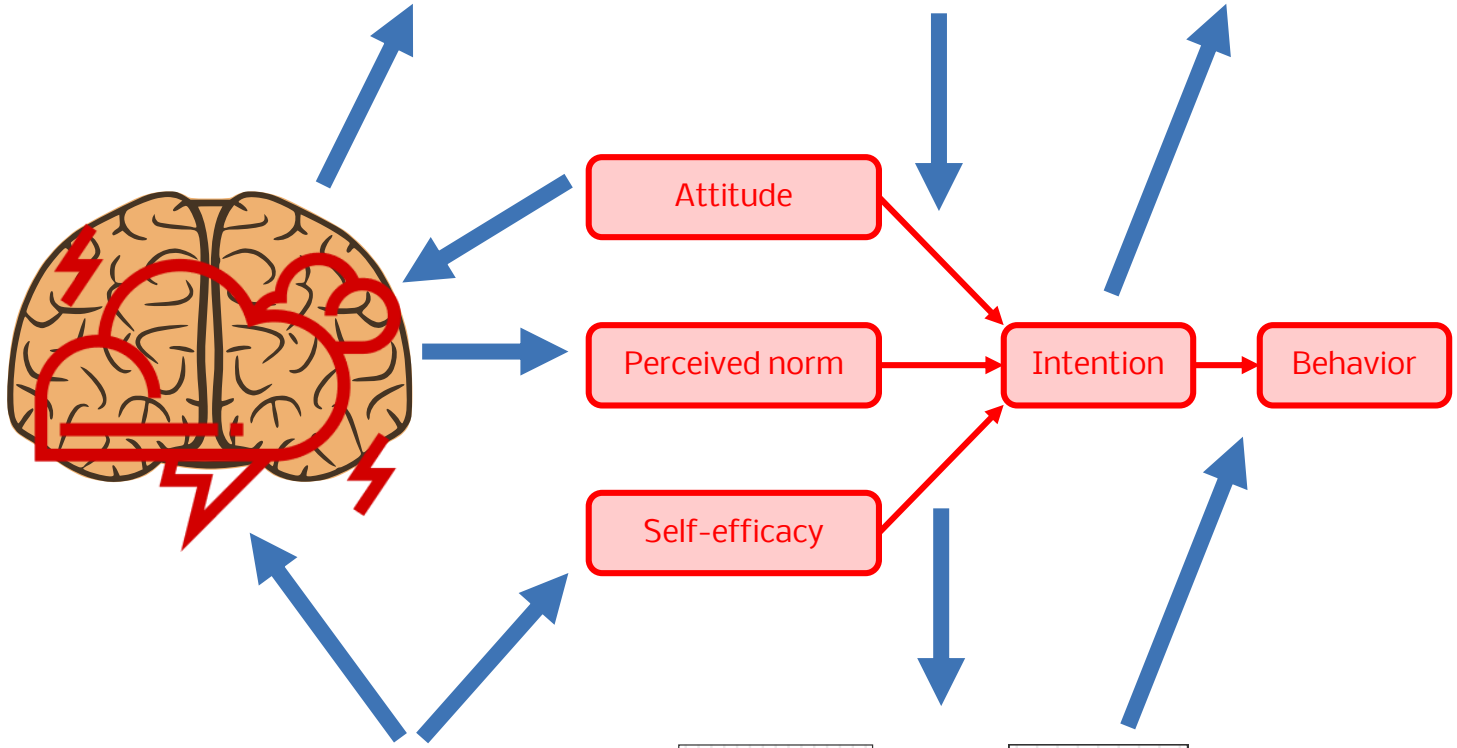


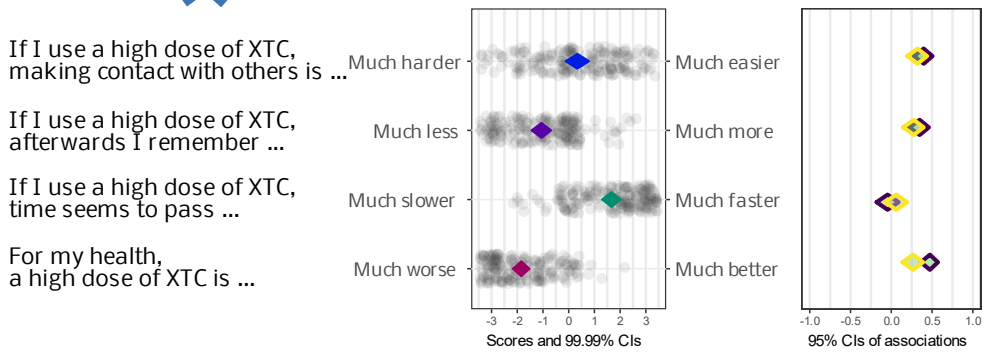
Throughout

- Ecological model
- Core processes
  - Brainstorm
  - Empirical evidence
  - Theory
  - New research

Attitudes towards alcohol use: A study among young adults and teenagers drinking in the streets [EC oral poster]

» Ms. Maite Kefauver[1], Ms. Joella Anupol[1], Ms. Mariàngels Duch Moya[1], Ms. Zara Quigg[4], Prof. Elena Gervilla[5] (1. IREFREA - European Institute of Studies on Prevention, 2. LJMU, 3. University of the Balearic Islands)





IM step 1

- Planning group:
  - Prevention scientist
  - Experts on problem and target population
  - Target population members
  - Implementers
  - Other stakeholders, experts, etc
- Logic model of the problem
- Program goal(s)

IM step 2

- Performance objectives, environmental conditions, determinants
- Matrices of change objectives:

Who …

A target population individual …			

IM step 2

- Performance objectives, environmental conditions, determinants
- Matrices of change objectives:

Who ...

... does what

A target population individual ...			
Performance objective 1: ... decides to avoid using a high dose of XTC			
Performance objective 2: ... gets their XTC tested			

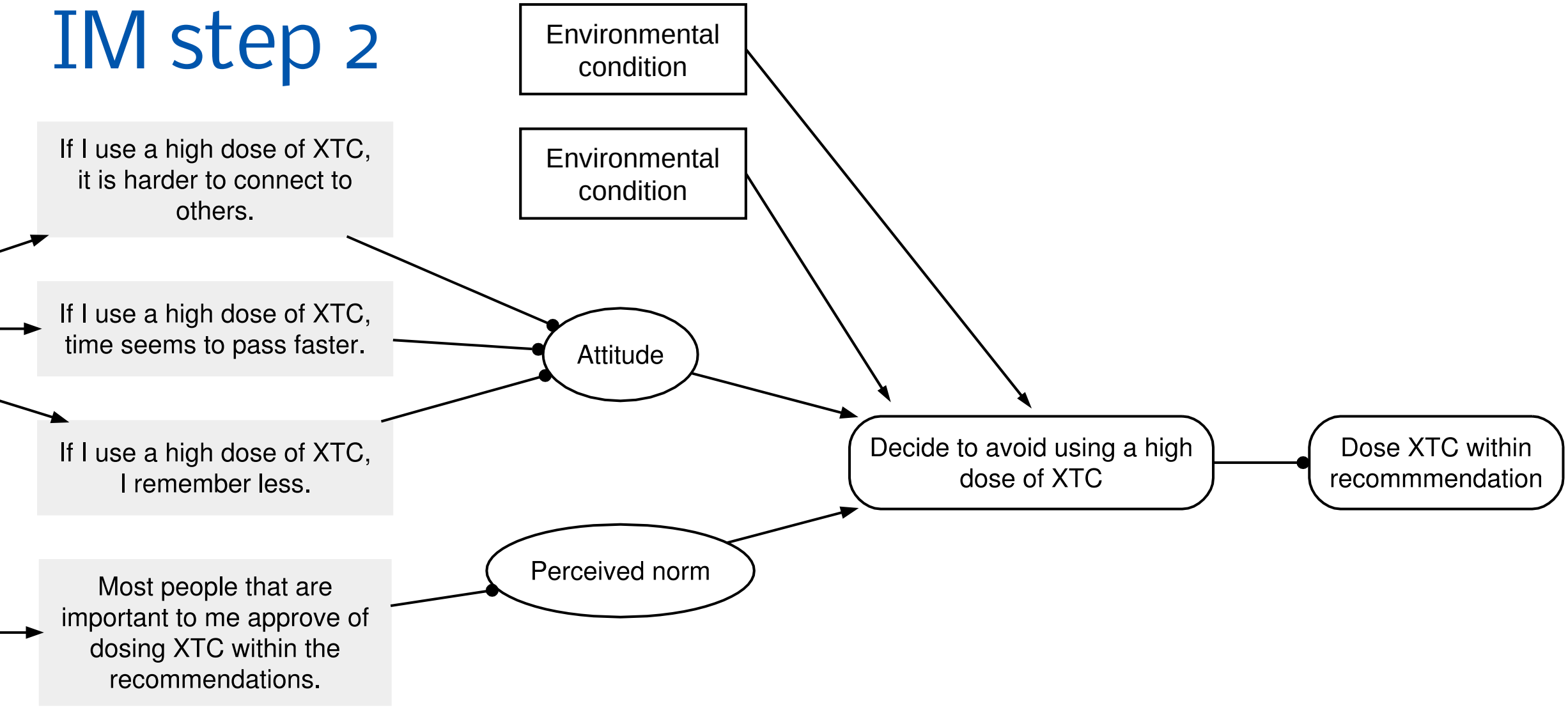
IM step 2

- Performance objectives, environmental conditions, determinants
- Matrices of change objectives:

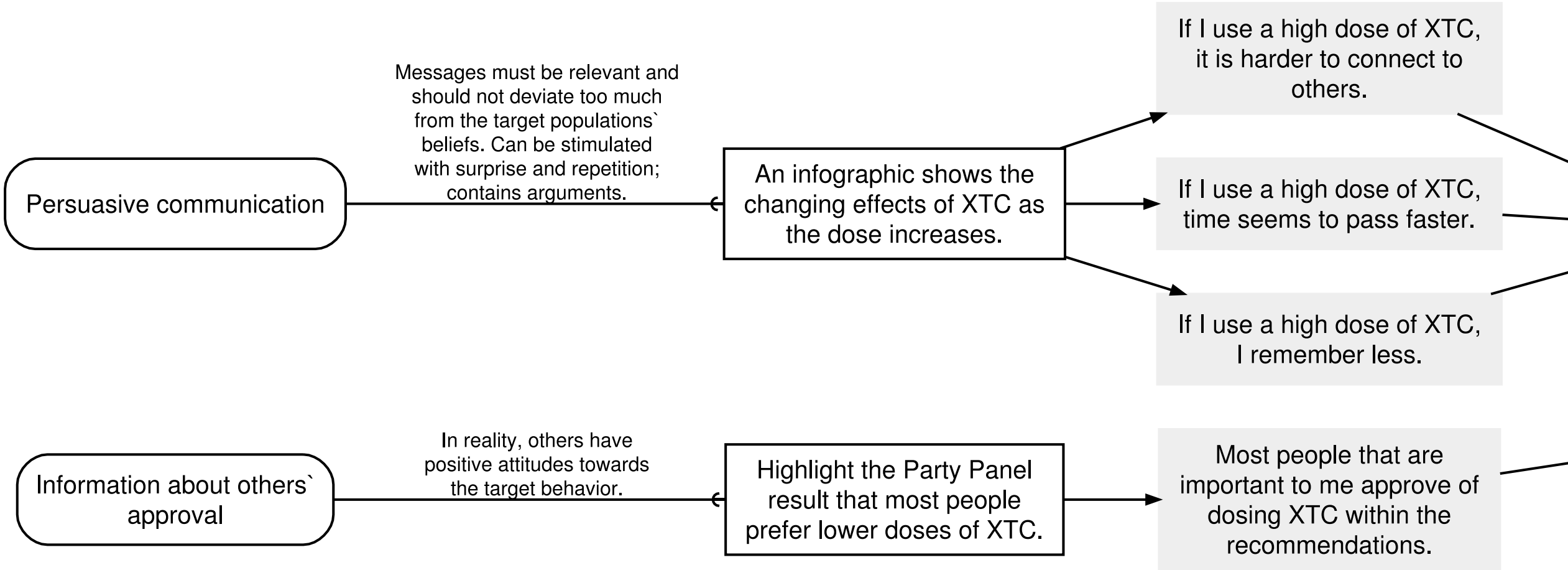
Who ... | ... does what | ... why?

A target population individual ...	Attitude	Perceived norms	Self-efficacy
Performance objective 1: ... decides to avoid using a high dose of XTC	... explains that high doses make connecting to others harder	... explains that important people approve of recommended dosing	
Performance objective 2: ... gets their XTC tested		... explains that their friends approve of them getting their XTC tested	... expresses confidence to drop XTC pill off at testing centre

IM step 2


Environmental condition
Environmental condition
If I use a high dose of XTC, it is harder to connect to others.
If I use a high dose of XTC, time seems to pass faster.
If I use a high dose of XTC, I remember less.
Attitude
Most people that are important to me approve of dosing XTC within the recommendations.
Perceived norm
Decide to avoid using a high dose of XTC
Dose XTC within recommmendation
Sub-determinants
Determinants
Sub-behaviors
Target behavior

IM step 3

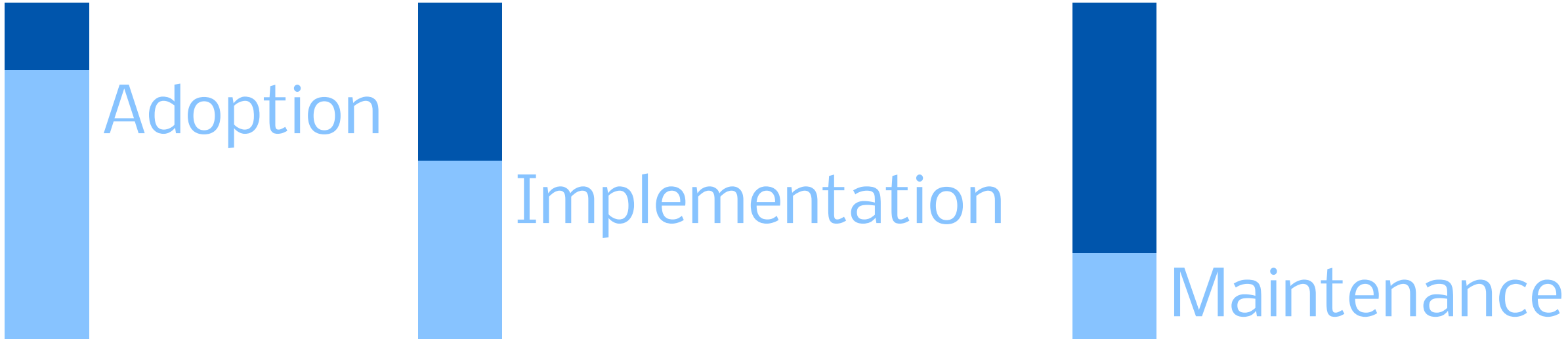

Persuasive communication
Messages must be relevant and should not deviate too much from the target populations` beliefs. Can be stimulated with surprise and repetition; contains arguments.
An infographic shows the changing effects of XTC as the dose increases.
If I use a high dose of XTC, it is harder to connect to others.
If I use a high dose of XTC, time seems to pass faster.
If I use a high dose of XTC, I remember less.
Information about others` approval
In reality, others have positive attitudes towards the target behavior.
Highlight the Party Panel result that most people prefer lower doses of XTC.
Most people that are important to me approve of dosing XTC within the recommendations.
Behavior Change Principles
Applications
Sub-determinants

IM step 4

- Integrating applications into program
- Preparing for program production
- Overseeing executive producers
  - (e.g. advertising agencies, copywriters, app builders, etc)
- Pretesting, pretesting, pretesting
- Design!

IM step 5

- Anticipating on implementation



- Include stakeholders in planning group
- Repeat steps 2 onward for each group

Implementer

Target behavior

Environmental agent

Target behavior

Environmental agent

Target behavior

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Health

Quality of life

Sub-behavior

Sub-behavior

Sub-behavior

Target behavior

Target population individual

Behavior change principle

Application

Parameter for effectiveness

Sub-determinant

Sub-determinant

Sub-determinant

Determinant

Determinant

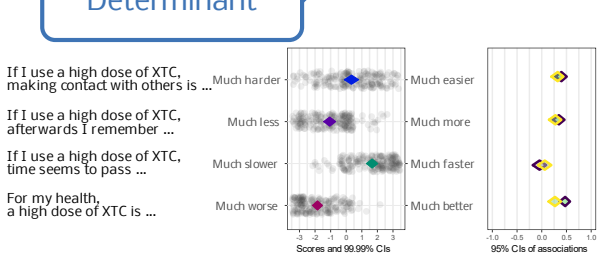
Determinant

Do my friends use a high dose of MDMA?

Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Requires practicing the response.



IM step 6

- Anticipating on evaluation
- SMART goals and objectives (Change objective phrasing)
- Select/develop measurement instruments
- Plan evaluation
  - Design (RCT? ESM? Quantitative? Qualitative?)
  - Sample size computations
  - Logistics

Step 1
Needs assessment

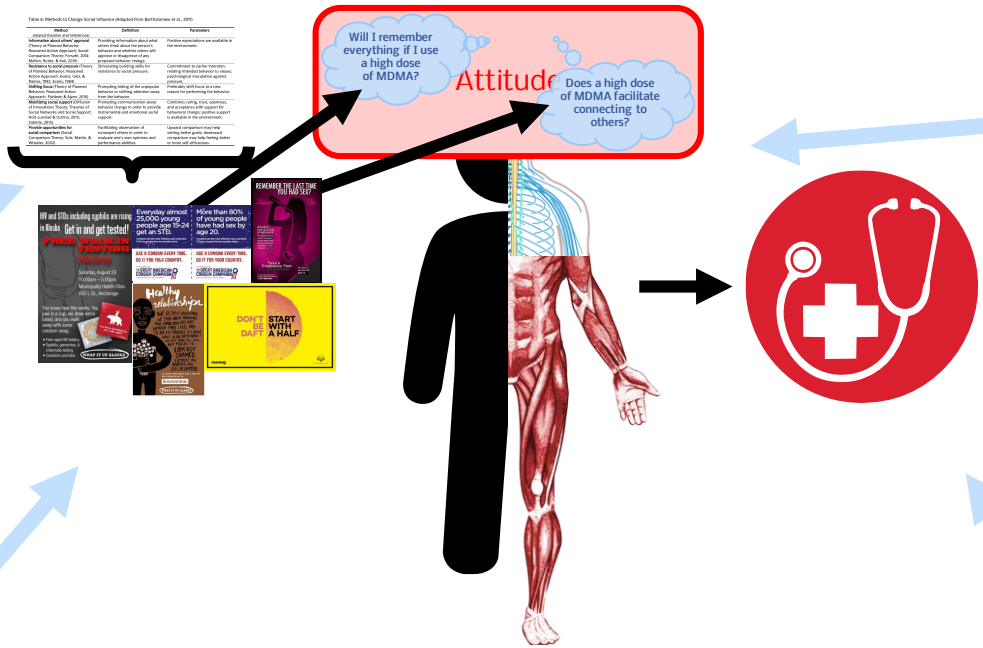
Step 2
Determinant analysis

Step 3
Methods & applications

Step 4
Intervention

Step 5
Implementation

Step 6
Evaluation



Easy, practical tools:

the causal structural chain and acyclic behavior change diagram

[slides at https://osf.io/gkyza]

Causal-Structural Chain

Behavior change principle(s)

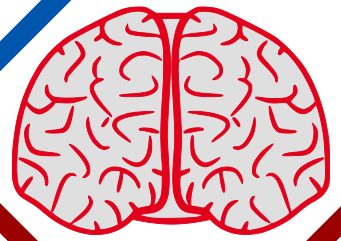
Parameter(s) for effectiveness

Planning coping responses

Identify barriers to target behavior and ways to deal with each barrier.

Requires practicing the response.

Application(s)

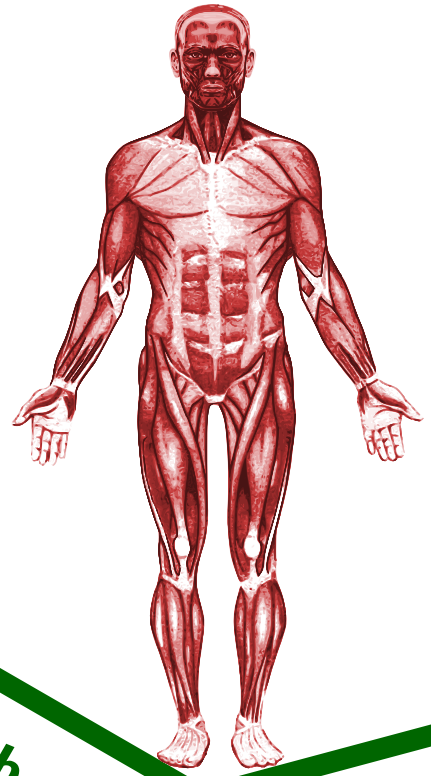


Sub-determinant

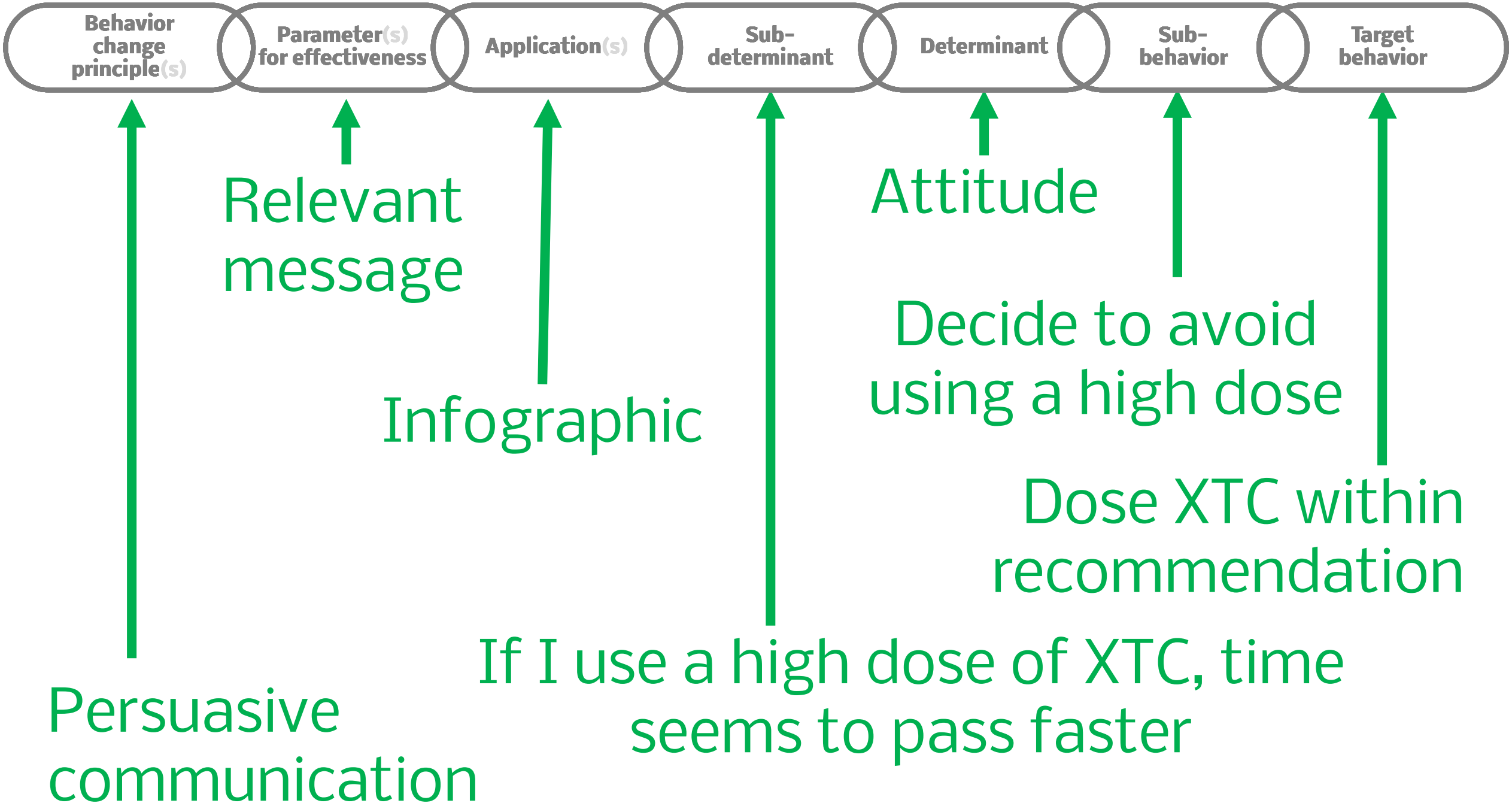
Determinant

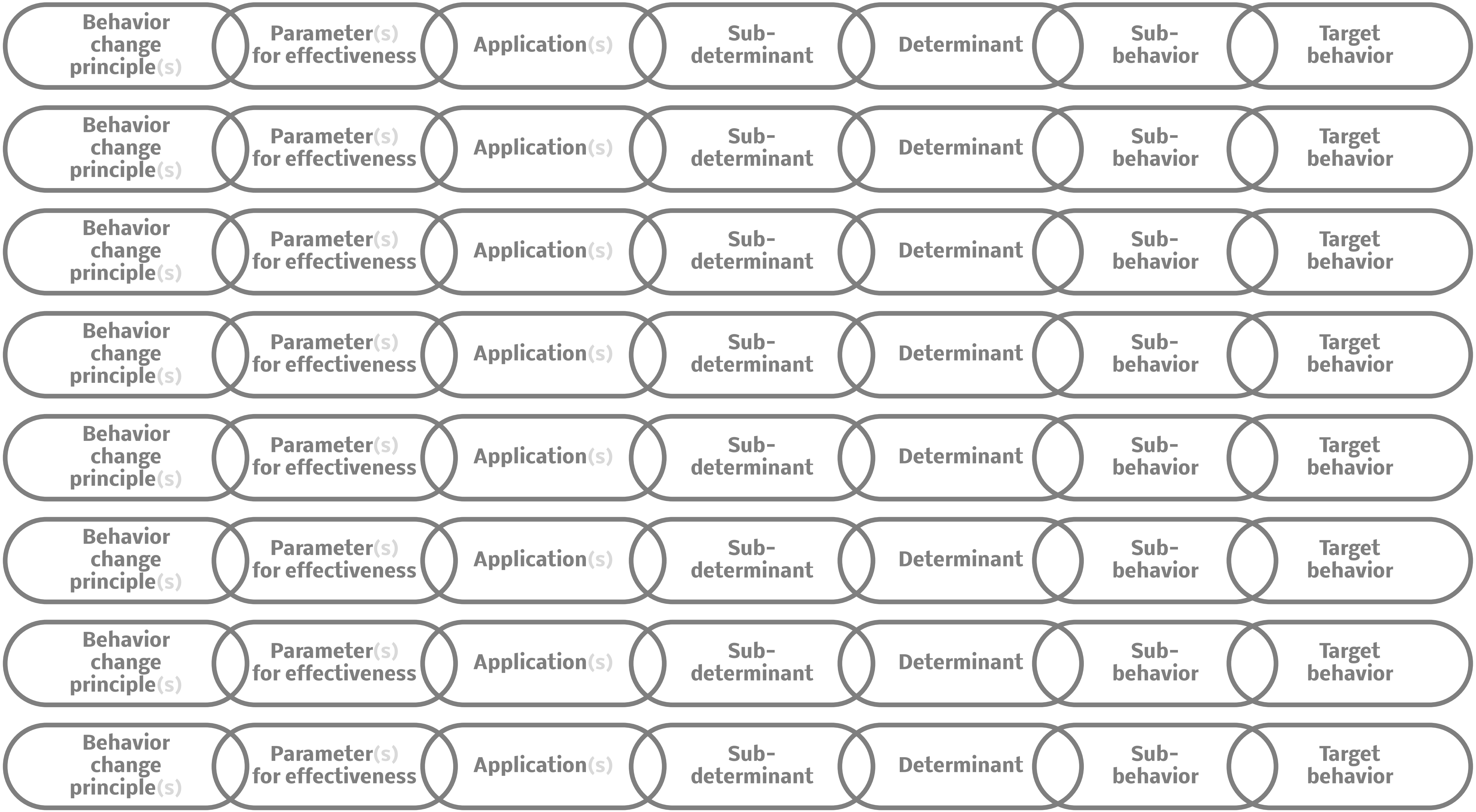
Sub-behavior

Target behavior



Behavior change principle(s)	Parameter(s) for effectiveness	Application(s)	Sub-determinant	Determinant	Sub-behavior	Target behavior


Behavior change principle(s)
Parameter(s) for effectiveness
Application(s)
Sub-determinant
Determinant
Sub-behavior
Target behavior
Persuasive communication
Relevant message
Infographic
If I use a high dose of XTC, time seems to pass faster
Attitude
Decide to avoid using a high dose
Dose XTC within recommendation



Behavior change principle(s)
Parameter(s) for effectiveness
Application(s)
Sub-determinant
Determinant
Sub-behavior
Target behavior
Behavior change principle(s)
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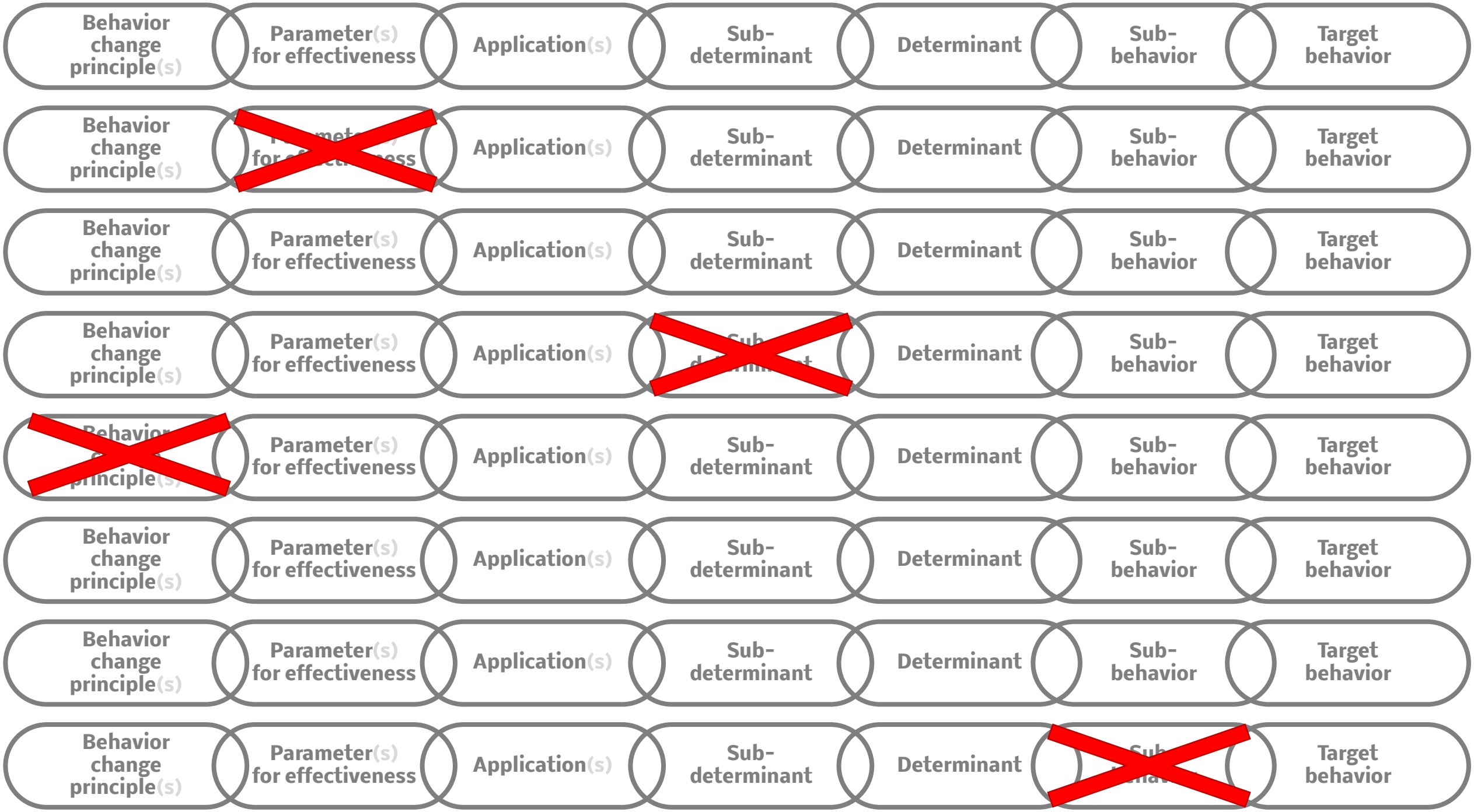
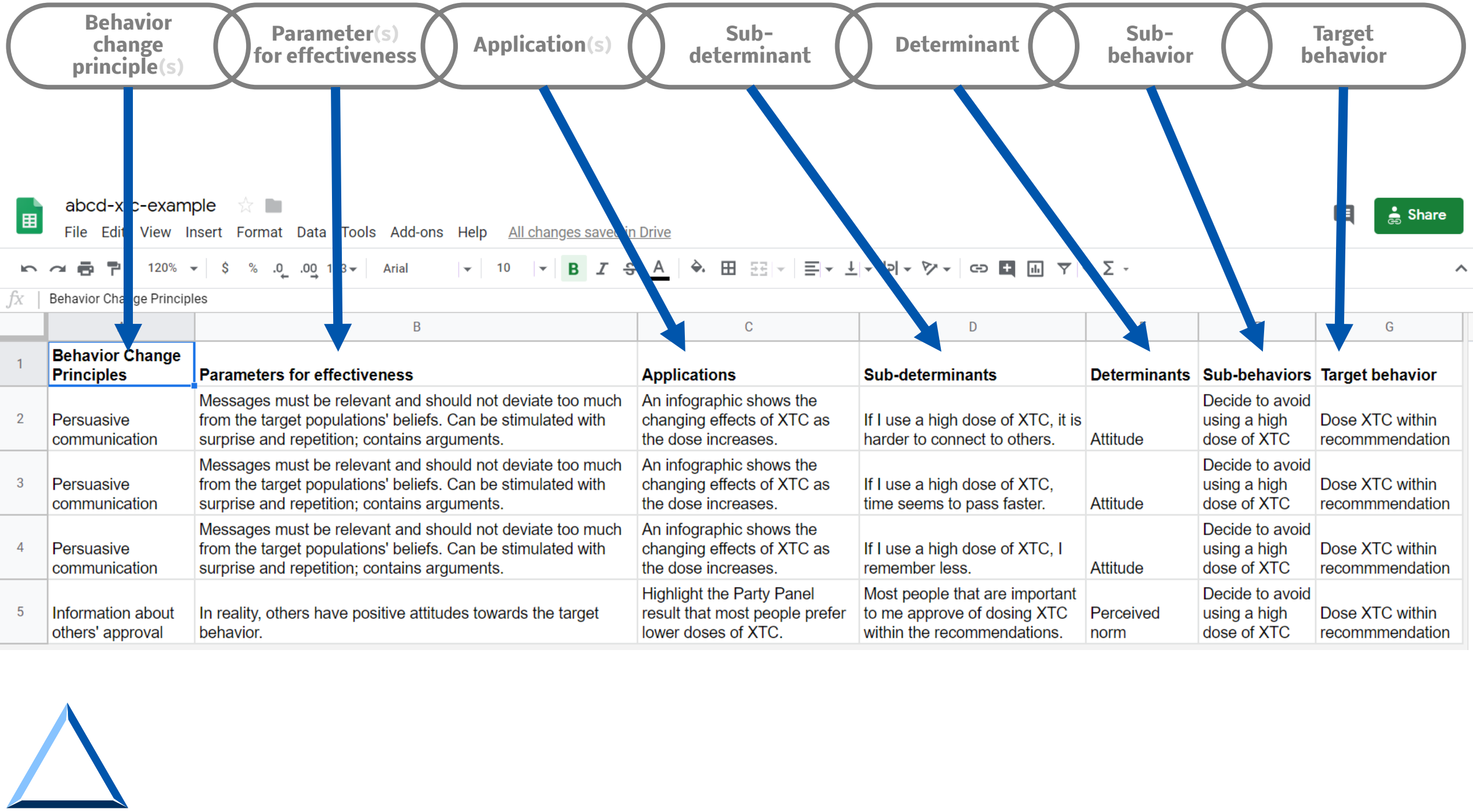

Behavior change principle(s)
Parameter(s) for effectiveness
Application(s)
Sub-determinant
Determinant
Sub-behavior
Target behavior

Behavior change principle(s)	Parameter(s) for effectiveness	Application(s)	Sub-determinant	Determinant	Sub-behavior	Target behavior



	A	B	C	D	E	F	G
1	**Behavior Change Principles**	**Parameters for effectiveness**	**Applications**	**Sub-determinants**	**Determinants**	**Sub-behaviors**	**Target behavior**
2	Persuasive communication	Messages must be relevant and should not deviate too much from the target populations' beliefs. Can be stimulated with surprise and repetition; contains arguments.	An infographic shows the changing effects of XTC as the dose increases.	If I use a high dose of XTC, it is harder to connect to others.	Attitude	Decide to avoid using a high dose of XTC	Dose XTC within recommmendation
3	Persuasive communication	Messages must be relevant and should not deviate too much from the target populations' beliefs. Can be stimulated with surprise and repetition; contains arguments.	An infographic shows the changing effects of XTC as the dose increases.	If I use a high dose of XTC, time seems to pass faster.	Attitude	Decide to avoid using a high dose of XTC	Dose XTC within recommmendation
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5	Information about others' approval	In reality, others have positive attitudes towards the target behavior.	Highlight the Party Panel result that most people prefer lower doses of XTC.	Most people that are important to me approve of dosing XTC within the recommendations.	Perceived norm	Decide to avoid using a high dose of XTC	Dose XTC within recommmendation

	Behavior Change Principles	Parameters for effectiveness	Applications	Sub-determinants	Determinants	Sub-behaviors	Target behavior
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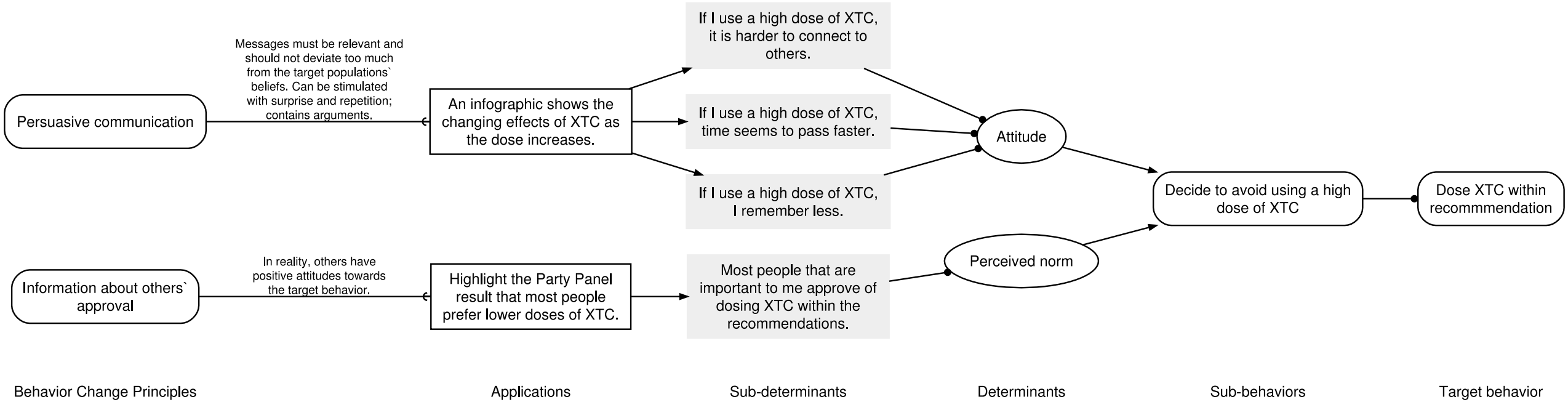
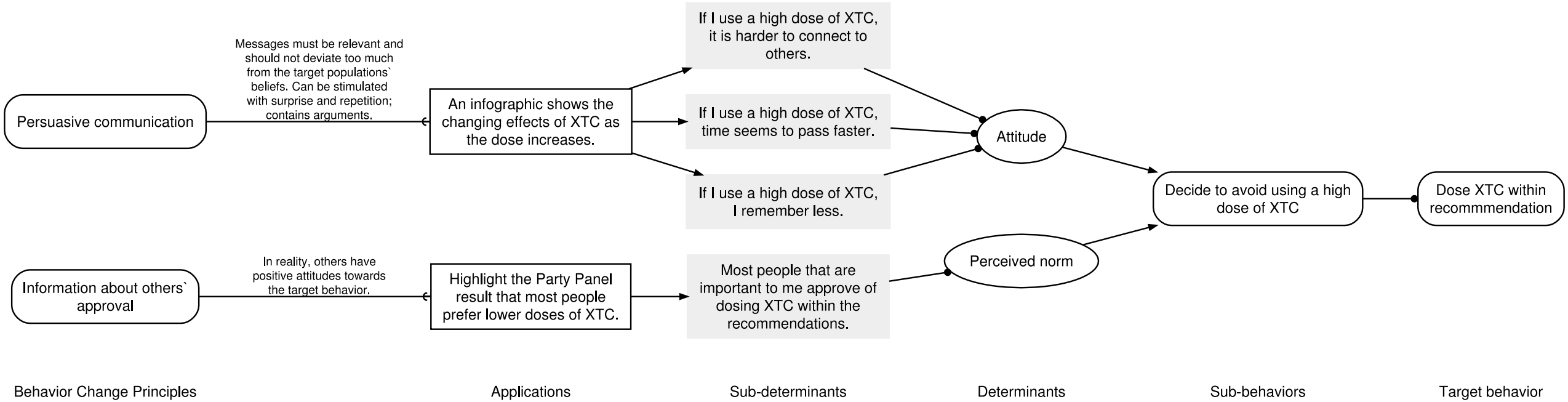


Behavior Change Principles | Applications | Sub-determinants | Determinants | Sub-behaviors | Target behavior

Acyclic Behavior Change Diagram (ABCD)

Why do flagship evidence-based programmes from the US run aground in Europe, and how should online repositories of programmes deal with this? [campfire]

» Mr. Gregor Burkhart[1], Dr. Nick Axford[2], Ms. Shreya Sonthalia[3], Prof. David Foxcroft[4], Prof. Fabrizio Faggiano[5], Ms. Charlotte De Kock[6] (1.



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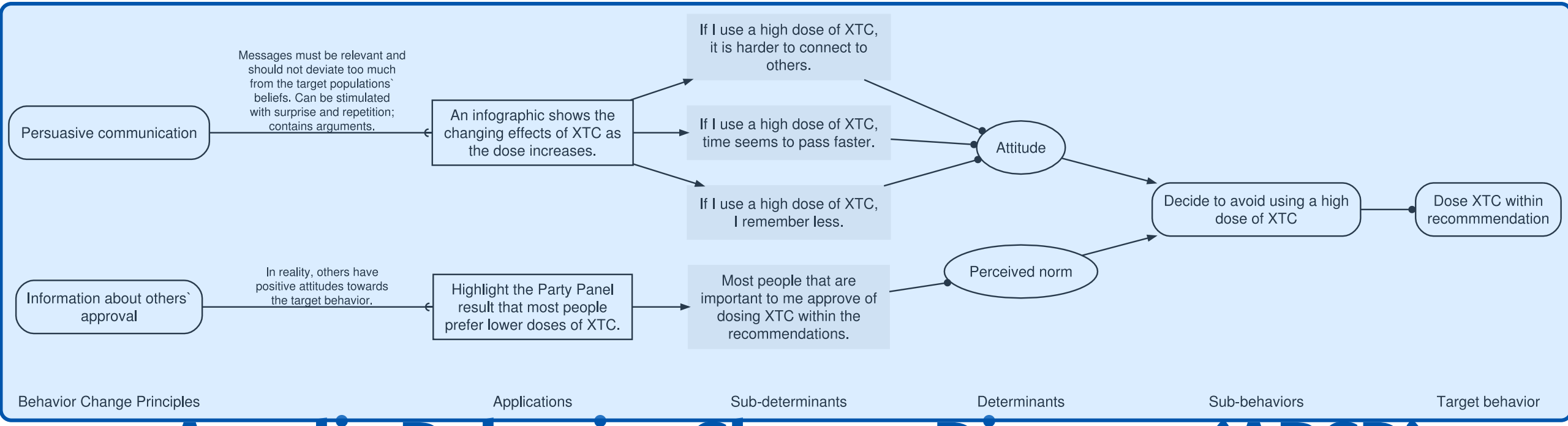

Acyclic Behavior Change Diagram (ABCD)

Implementer

Target behavior

Environmental agent

Target behavior

Environmental agent

Target behavior

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Environmental condition

Health

Quality of life

Behavior change principle

Application

Parameter for effectiveness

Sub-determinant

Sub-determinant

Sub-determinant

Determinant

Determinant

Determinant

Sub-behavior

Sub-behavior

Sub-behavior

Target behavior

Target population individual

Planning coping responses

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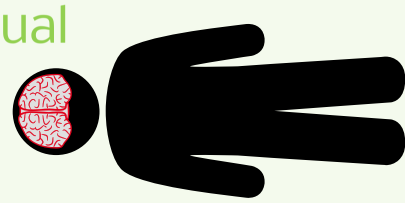
Requires practicing the response.

Do my friends use a high dose of MDMA?

Target population individual



Supra-national

Society

Community

Organizational

Inter-personal

Personal

Applying Prevention Science

Intervention Mapping as an Integrative Framework

More resources & references:

https://bookofbehaviorchange.com

https://interventionmapping.com

https://effectivebehaviorchange.com

[slides at https://osf.io/gkyza]

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