



Ministry of Health, Welfare and Sport





www.ou.nl

Jan Krul Sjoerd Winia Judith Noijen Ella Overkleeft Tobias van Dijk Willem van Aken Floor van Bakkum Laura-Eva Jacobson Celebrate Safe Partners Party Panel participants



Ministry of Health, Welfare and Sport

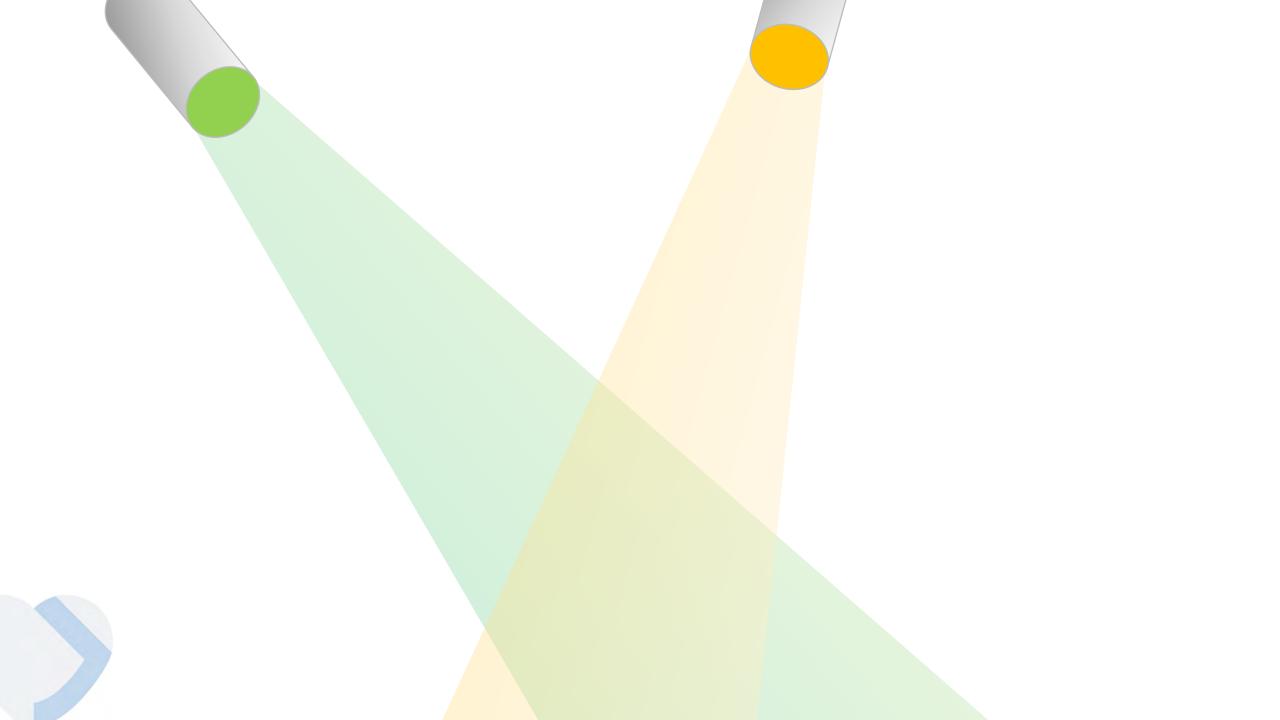




www.ou.nl

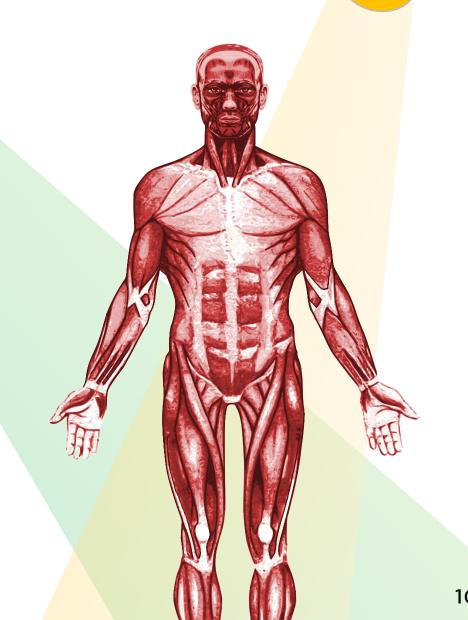
Jan Krul Sjoerd Winia Judith Noijen Ella Overkleeft Tobias van Dijk Willem van Aken Floor van Bakkum Laura-Eva Jacobson Celebrate Safe Partners Party Panel participants







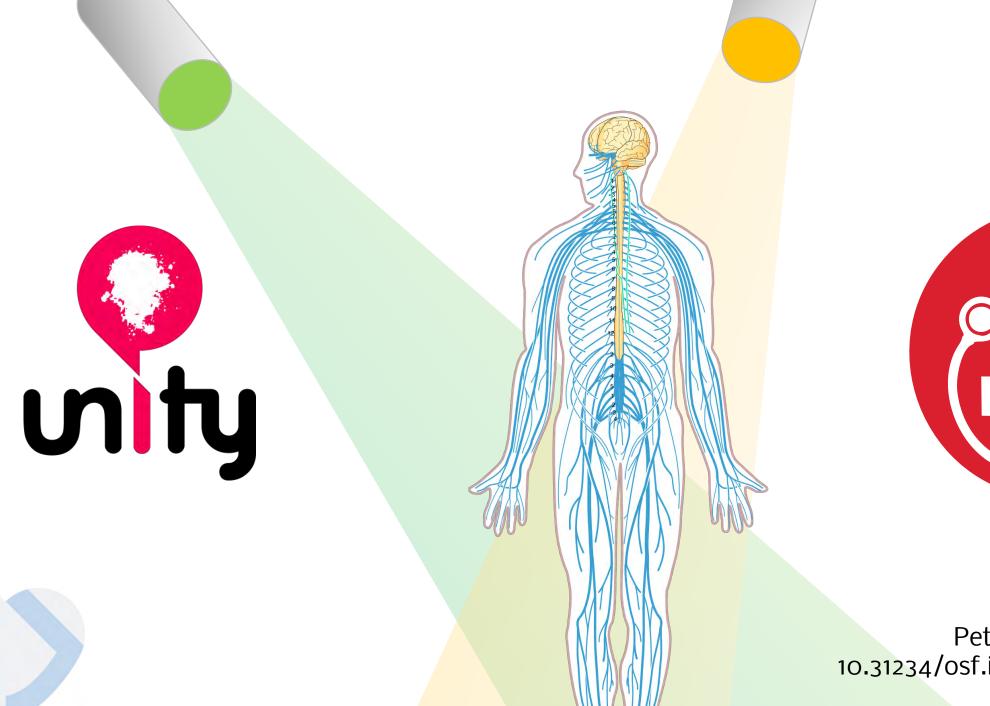






Peters, 2014 10.31234/osf.io/hy7mj



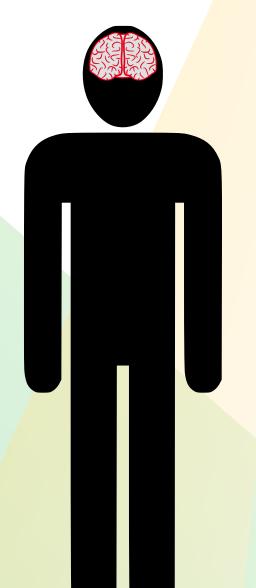




Peters, 2014 10.31234/osf.io/hy7mj



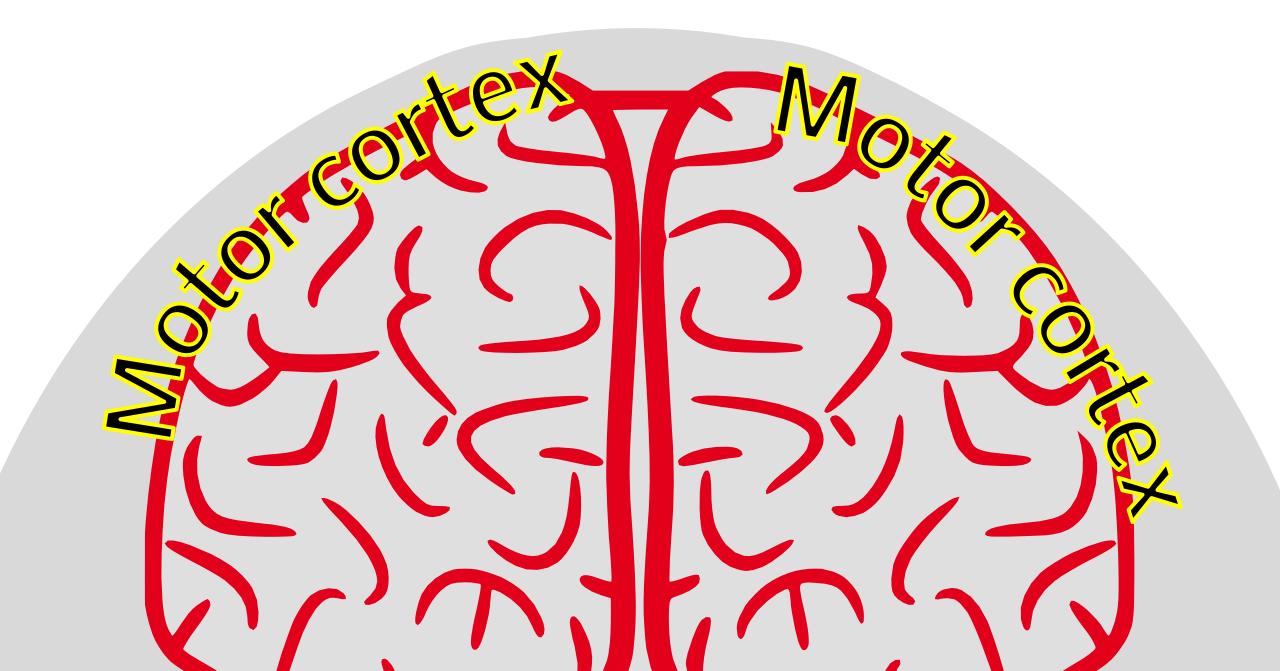


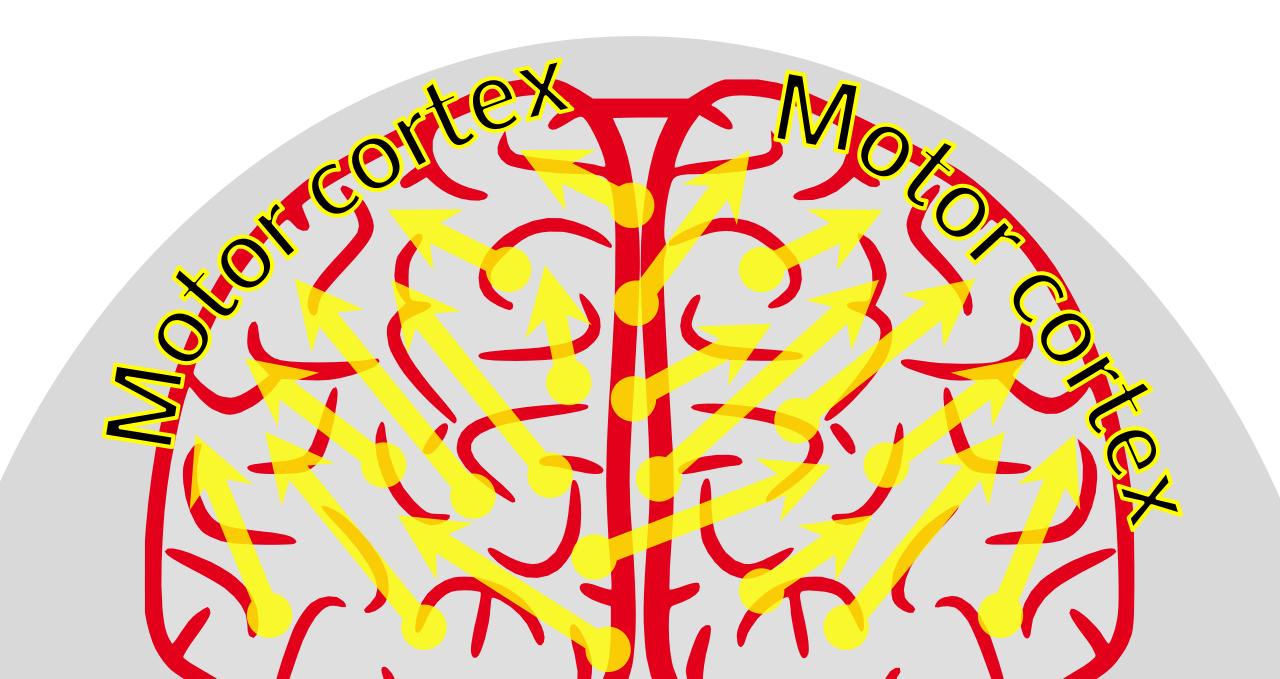




Peters, 2014 10.31234/osf.io/hy7mj











89.000.000.000

7.000 connections



89.000.000.000

Habituation



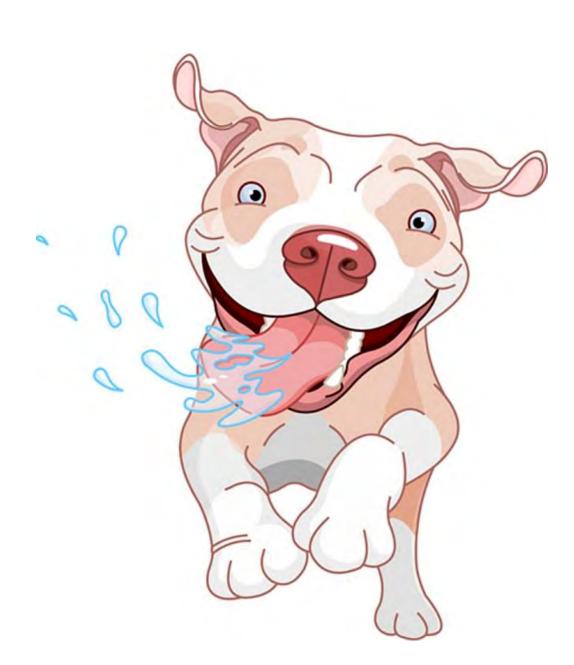


Sensitization



Classical conditioning





Operant conditioning

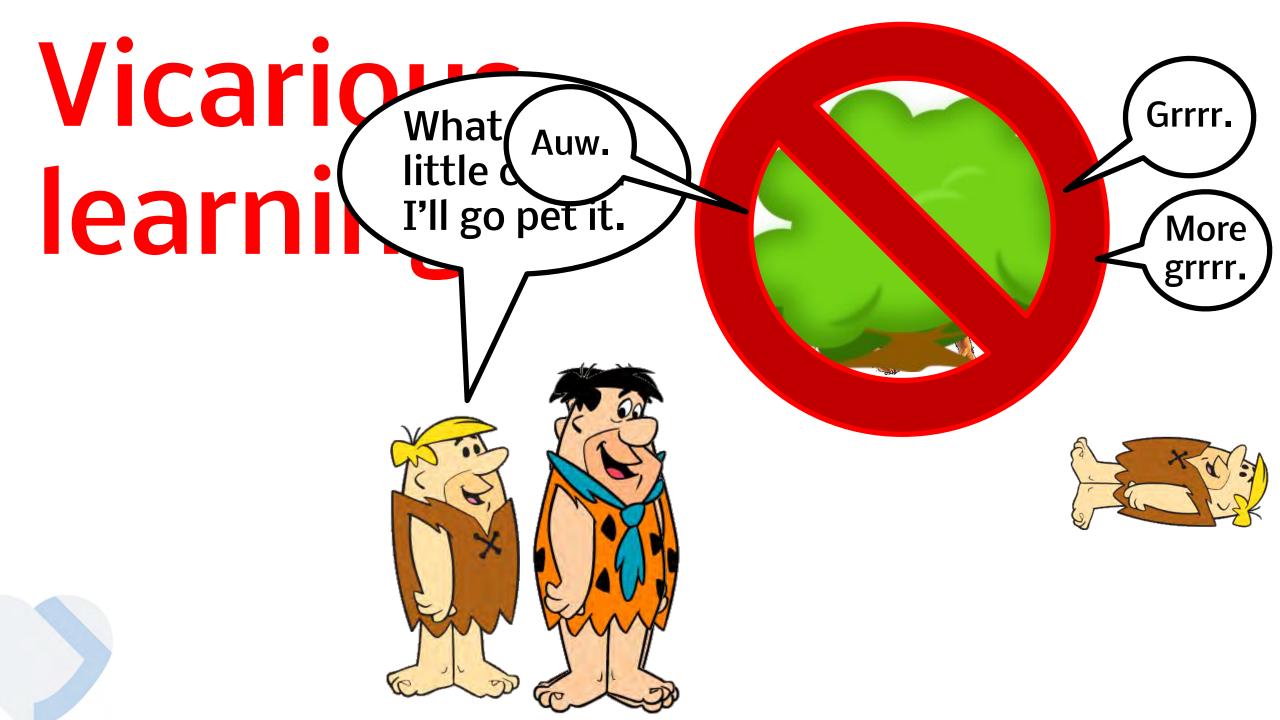




Procedural memory



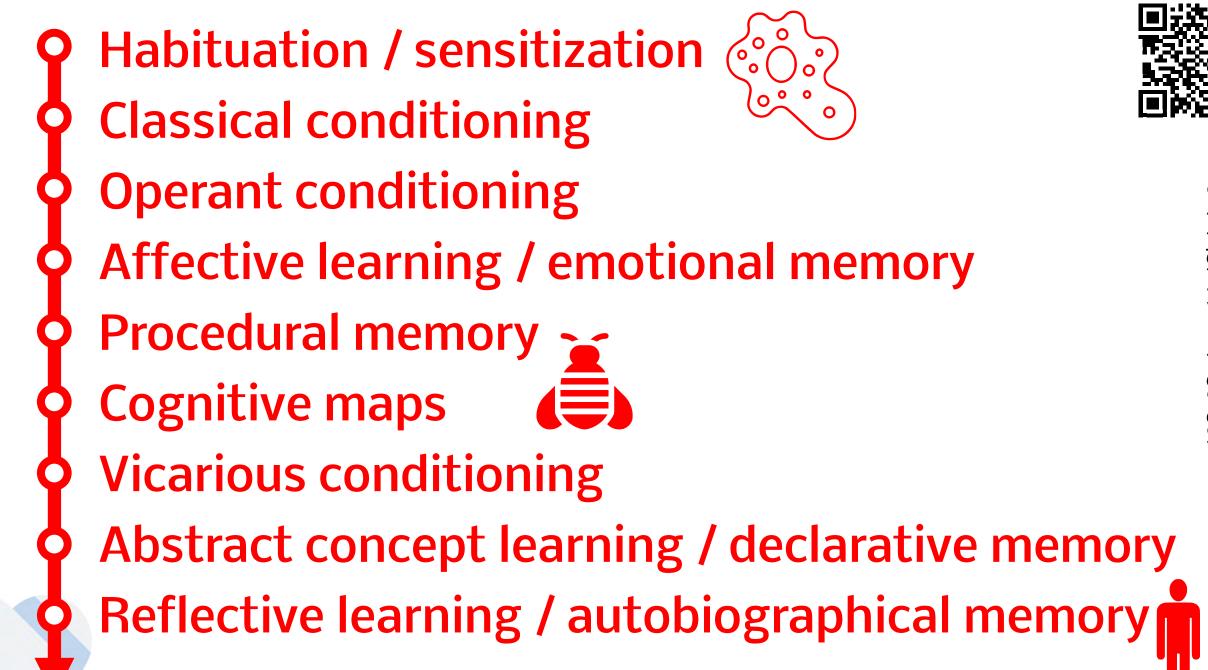




Abstract concepts









Procedural memory

Reflective learning

Planning coping responses

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

Requires practicing the response.



A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Kok^a, Nell H. Gottlieb^b, Gjalt-Jorn Y. Peters^{a,c}, trick Down Mullen^b, Guy S. Parcel^b, Robert A.C. Ruiter^a, María E. Fernández^b, Channe Ma khar and L. Kay Bartholomew^b

^aSchool of Psychology & Neuroscience, Maastrick Conversity Mastricht, MD, The Netherlands; ^bSchool of Public Health, University of Texas, Houston, TX, USA; Chool of Psychology, Open University, Heerlen, DL, The Netherlands

ABSTRACT

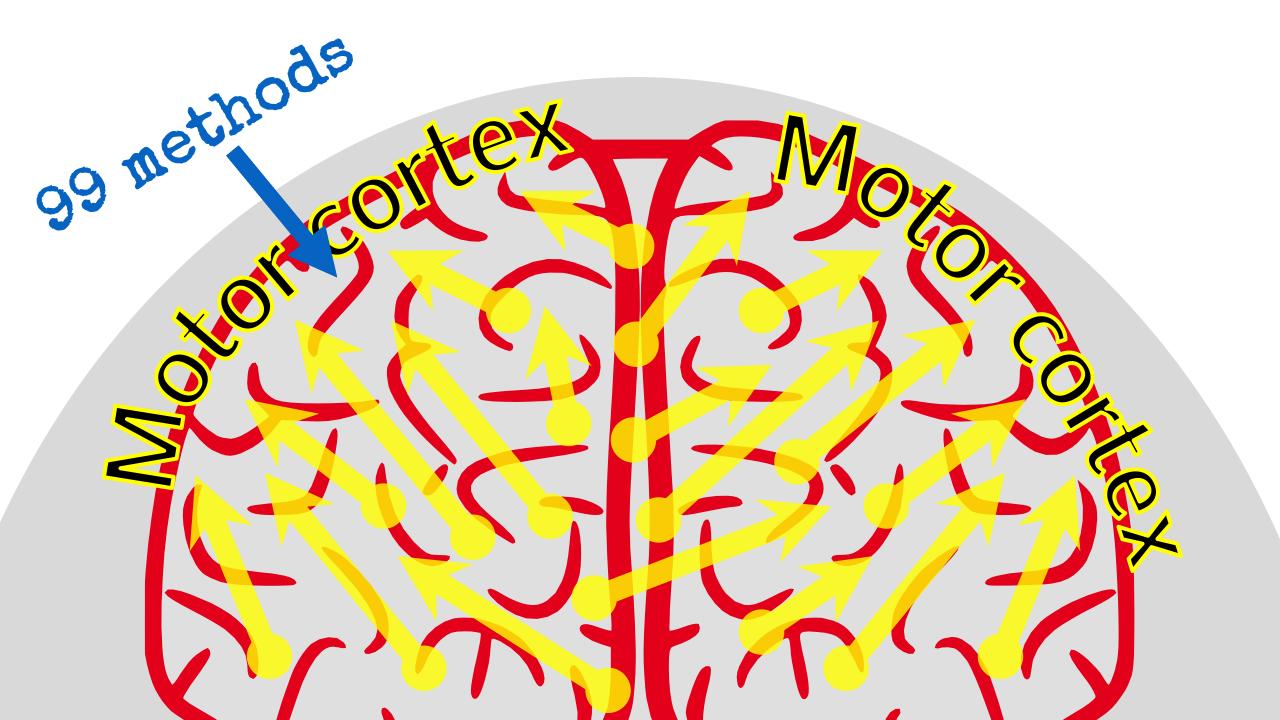
In this paper, we retroduce the Ir ervention Mapping (IM) taxonomy of behaviour change methods and its potential to be developed into a craing reconomy. That is, although IM and its taxonomy of behaviour change who was not in fact new, because IM was originally developed as a cool for intervention development, this potential was not immediately apparate econd, 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

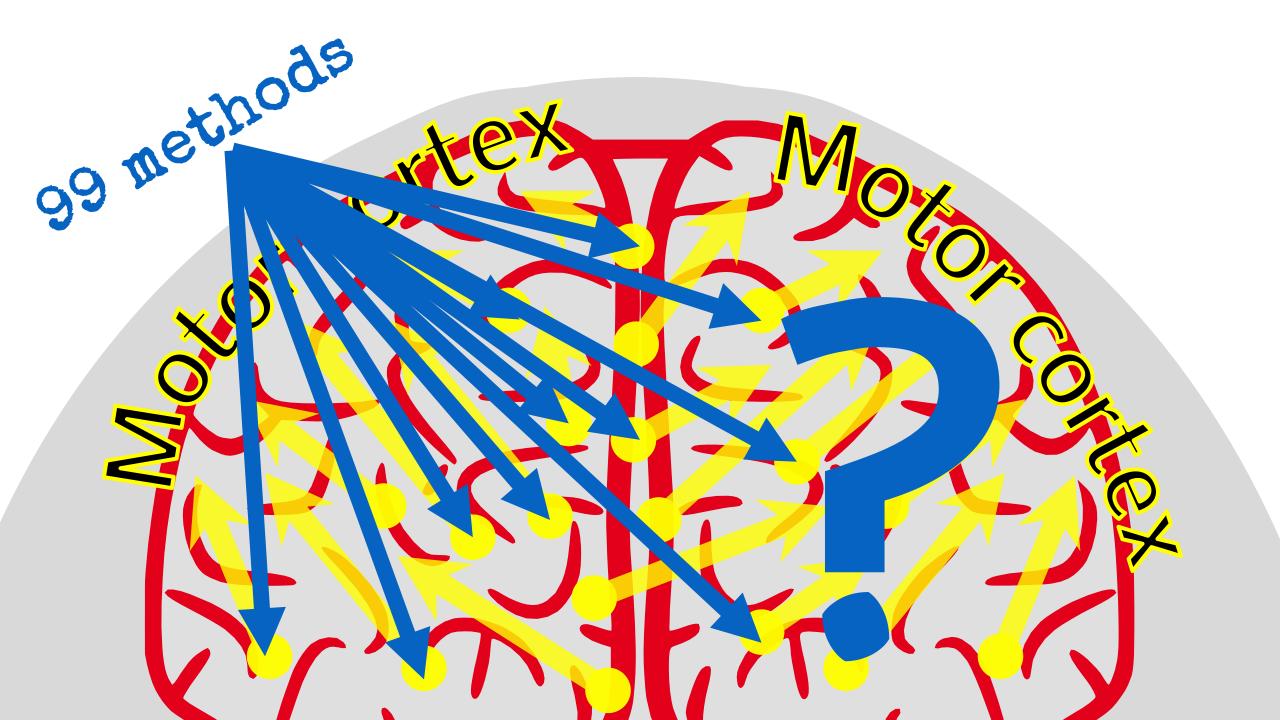
ARTICLE HISTORY

Received 24 July 2014 Accepted 24 July 2015

KEYWORDS

Taxonomy; behaviour change; meta-analysis; meta-analyses; review; interventions





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

Does a high dose make you hallucinate more?

friends think should do:



Can I obtain pills with a low dose of

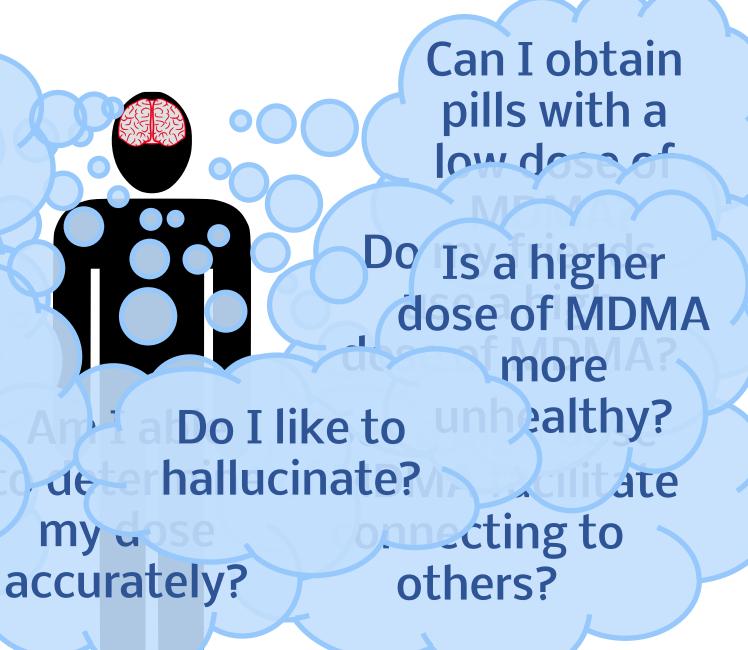
Do Is a higher dose of MDMA more unhealthy?

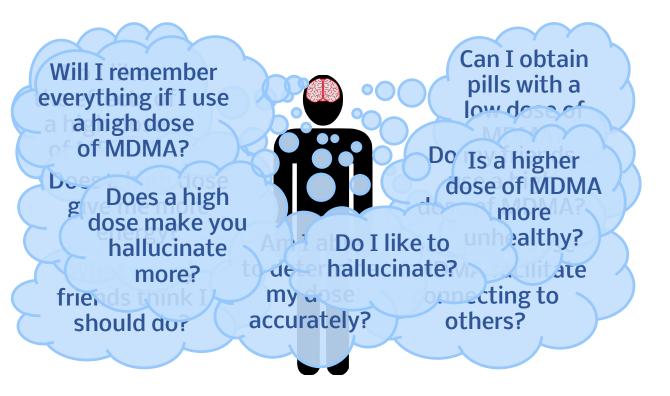
1DMA. Laciliate onnecting to others?

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

Does a high dose make you hallucinate more?

friends think should do:





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

Does a high dose make you hallucinate more? frie should au?



Can I obtain pills with a law do so

Do Is a higher dose of MDMA more ealthy?

hallucinate? my u

precting to accurately? others?







A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Koka, Nell H. Gottliebb, Gjalt-Jorn Y. Petersac, Patricia Dolan Mullenb, Guy S. Parcelb, Robert A.C. Ruiter^a, María E. Fernández^b, Christine Markham^b and L. Kay Bartholomew^b

^aSchool of Psychology & Neuroscience, Maastricht University, Maastricht, MD, The Netherlands; ^bSchool of Public Health, University of Texas, Houston, TX, USA; School of Psychology, Open University, Heerlen, DL, The Netherlands

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 ethod-effectiveness. Third, we recommend a minimal set of intervention ecteristics that may be reported when intervention descriptions and auations 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.

ARTICLE HISTORY

Received 24 July 2014 Accepted 24 July 2015

KEYWORDS

Taxonomy; behaviour change; meta-analysis; metaanalyses; review:

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

CONTACT Gerjo Kok a g.kok@maastrichtuniversity.nl

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

© 2015 The author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/Licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Am I able to determine my dose accurately?

Can I obtain pills with a low dose of MDMA?



Does a high dose make you hallucinate more?

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

Does a high dose of MDMA facilitate connecting to others?

Is a higher dose of MDMA more unhealthy?

Will I remember

everything if I use

a high dose

of MDMA?

Does a high dose give me more energy?

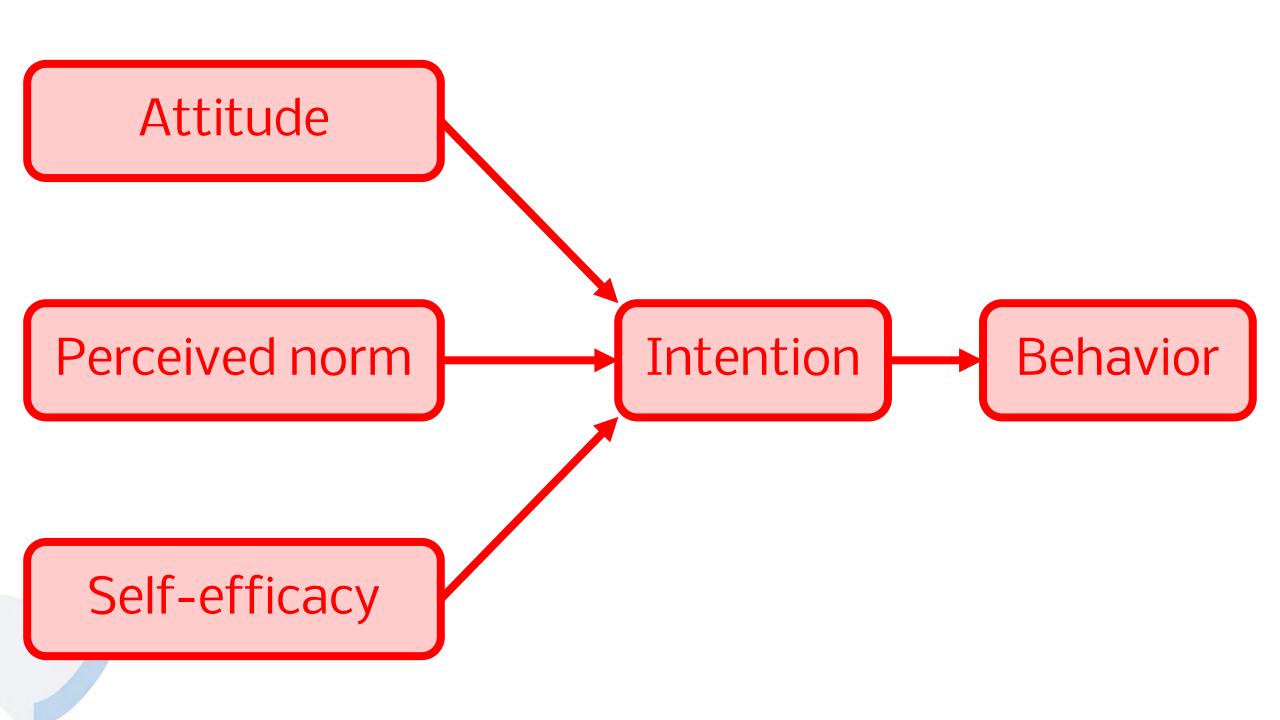
What do my friends think I should do?

Do my friends use a high dose of MDMA?

Does a high Do I like to Am I able Will I remember hallucinate? dose make you everything if I use to determine hallucinate my dose a high dose more? accurately? of MDMA? Does a high dose of MDMA facilitate Is a higher connecting to Do I like Can I obtain dose of MDMA others? the effects of pills with a more a high dose low dose of unhealthy? of MDMA? MDMA? Does a high dose give me more Attitude energy? Selfefficacy Do my friends What do my friends think I use a high dose of MDMA? should do?

Perceived norm

Self-efficacy



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 Most effective when the time interval is short and the CS precedes the UCS. 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. Stimulation of both cognitive and affective appraisal to improve appraisal and empathy skills.				
Classical conditioning (Theories of Learning; Kazdin, 2008)	Stimulating the learning of an association between an unconditioned stimulus (UCS) and a conditioned stimulus (CS).					
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.					
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.					
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)	istance to social pressure (Theory Stimulating building skills for Commitme relating building skills for relating into Approach; Evans, Getz, & psychologi					
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.				
rovide opportunities for Facilitating observation of nonexpert others in order to evaluate one's own opinions and heeler, 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 Subskill demonstration, instruction, and enactment with Individual feedback; requires supervision by an experienced person; some environmental changes cannot be rehearsed.				
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.					
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.				

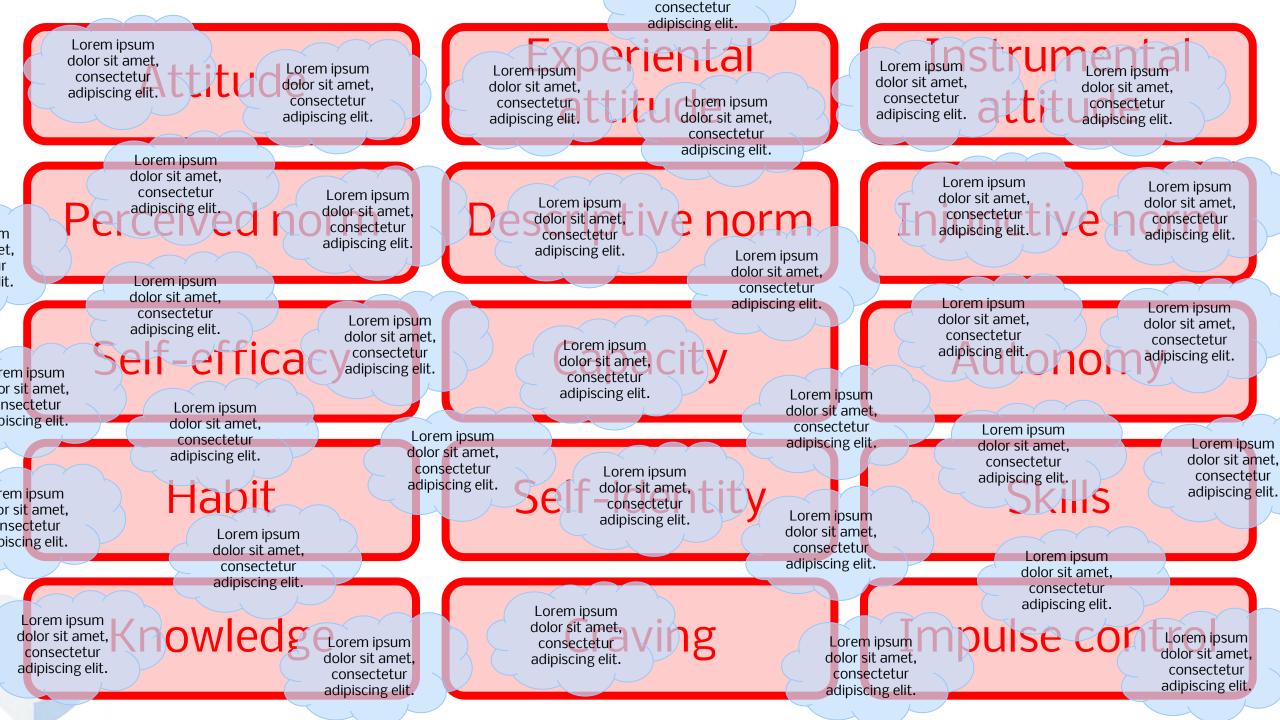


Table 6: Methods to Change Social Influence (Adapted from Bartholomew et al., 2011)

Method (related theories and references)	Definition	Parameters Positive expectations are available in the environment.				
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.					
Resistance to social pressure (Theory of Planned Behavior; Reasoned Action Approach; Evans, Getz, & Raines, 1992; Evans, 1984)	nce to social pressure (Theory Stimulating building skills for resistance to social pressure. Approach; Evans, Getz, &					
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.				

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

Attitude Does a high dose of MDMA facilitate connecting to others?



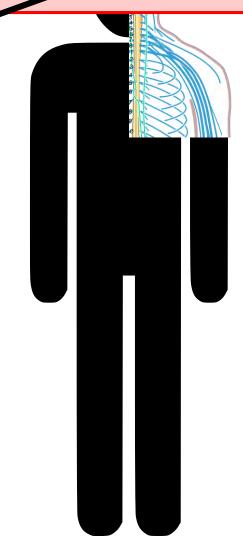




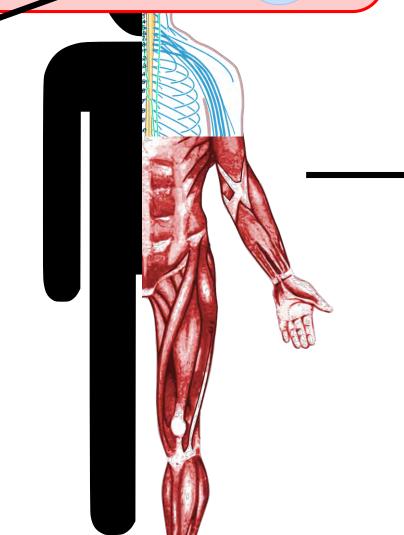
Table 6: Methods to Change Social Influence (Adapted from Bartholomew et al., 2011)

Method (related theories and references)	Definition	Parameters Positive expectations are available in the environment.				
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.					
Resistance to social pressure (Theory of Planned Behavior; Reasoned Action Approach; Evans, Getz, & Raines, 1992; Evans, 1984)	ance to social pressure (Theory need Behavior; Reasoned resistance to social 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.				

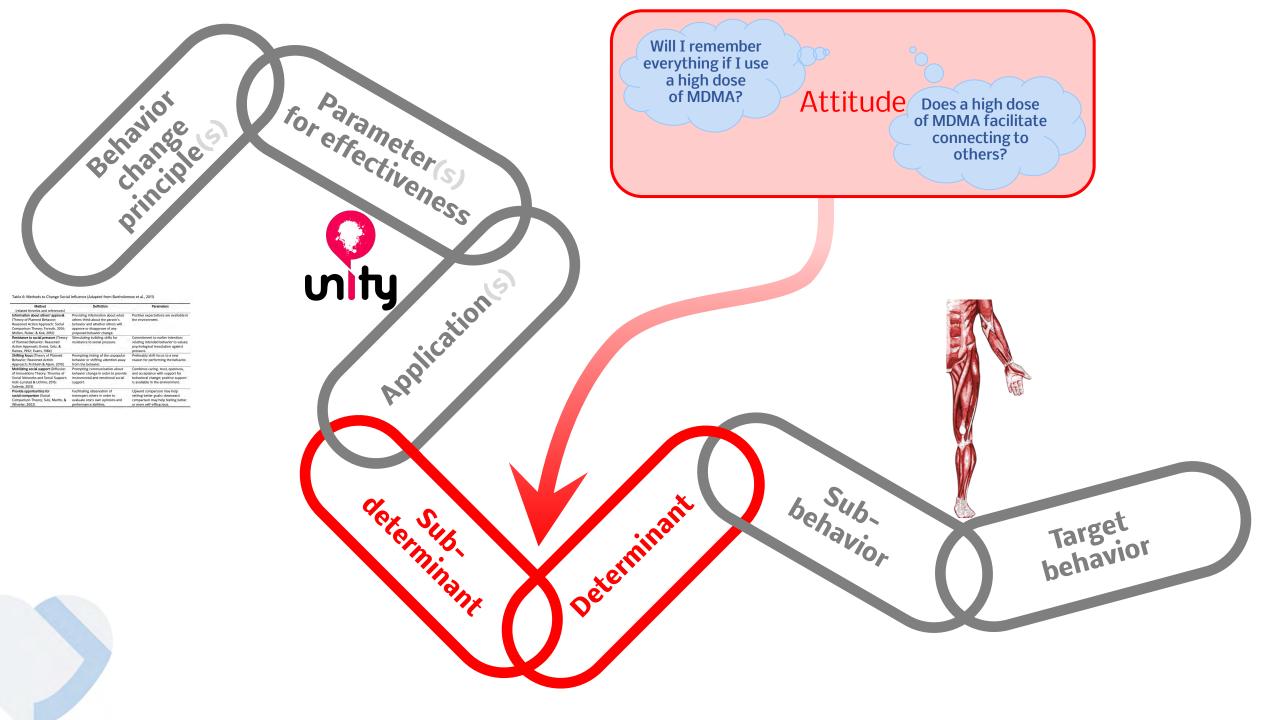
Will I remember everything if I use a high dose of MDMA?

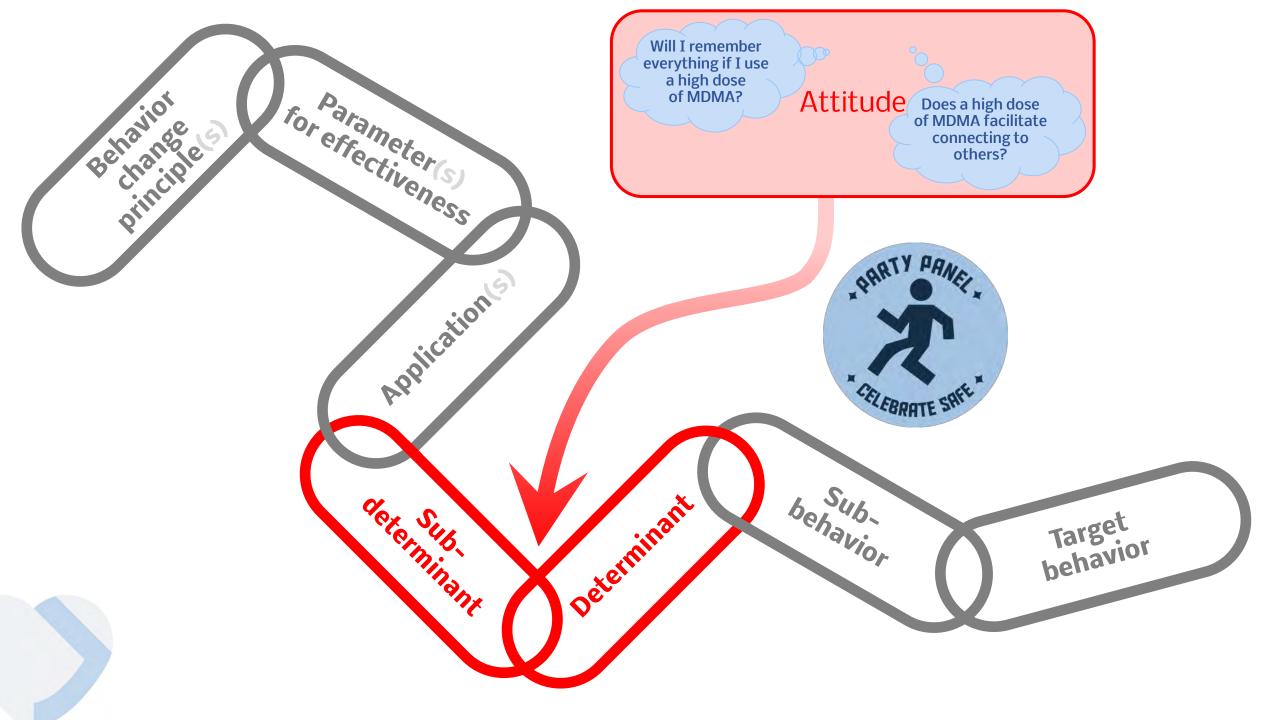
Attitude Does a high dose of MDMA facilitate connecting to others?















First, a number of questions about how using a high dose of XTC differs from using a regular dosis of XTC (MDMA).

If you have only used a regular dose, or if you have only used a high dose, please indicate what you think the difference will be.

		\ \\	(((1	>	$\rangle\rangle$	$\rangle\rangle\rangle$	
If I use a high dose of XTC, making contact with others is	Much harder	0	0	0	0	0	0	0	Much easier
If I use a high dose of XTC, time seems to pass	Much slower	0	0	0	0	0	0	0	Much faster
If I use a high dose of XTC, afterwards I remember	Much less	0	0	0	0	0	0	0	Much more
For my health, a high dose of XTC is	Much worse	0	0	0	0	0	0	0	Much better

Note that this is about what you think is a high dose, as you indicated in the beginning of this survey.



What do you imagine that people who matter to you would think you should do, if, during a night out, you have an alcohol-related complaint?

Most people who are important to me would think that I should go to the first aid post.

People whose opinions matter to me would think it was a good idea if I would go to the first aid post.

People who I respect and admire would go themselves Certainly to the first aid post.

Certainly

Certainly

not

this situation.

Most people like me would go to the first aid post in



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

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

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

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

Much less

Much slower

Much worse

Much easier

Much more

Much faster

Much better



CIBER plots, Crutzen, Peters & Noijen, 2017 10.3389/fpubh.2017.00165



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

Much easier

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

Much less

Much more

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

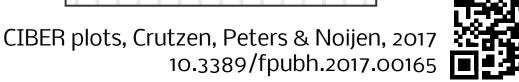
Much slower

Much faster

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

Much worse

Much better



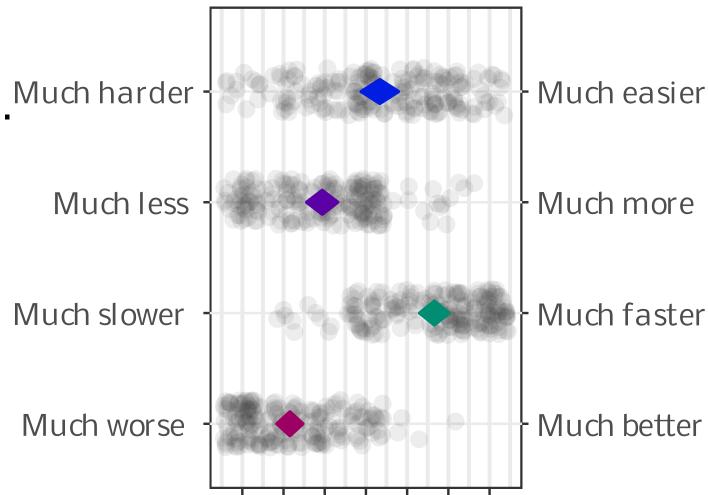


If I use a high dose of XTC, making contact with others is ...

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

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

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



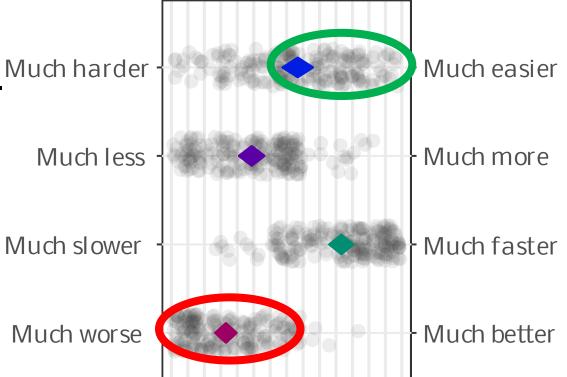


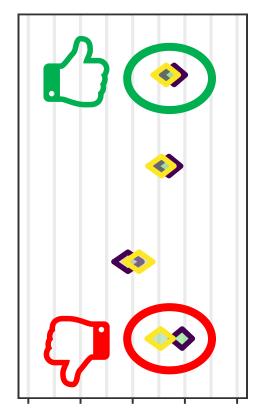
If I use a high dose of XTC, making contact with others is ...

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

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

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





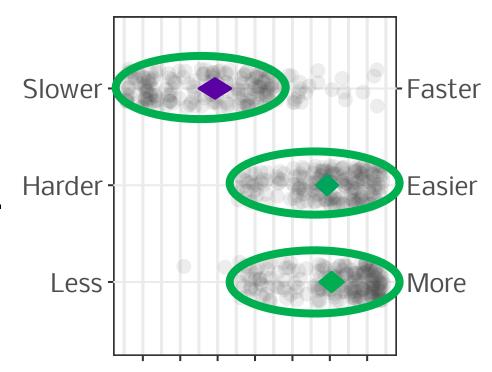


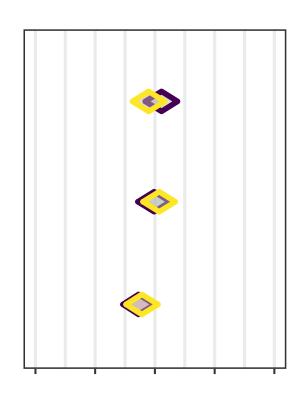


During an XTC trip, I prefer it if time seems to pass ...

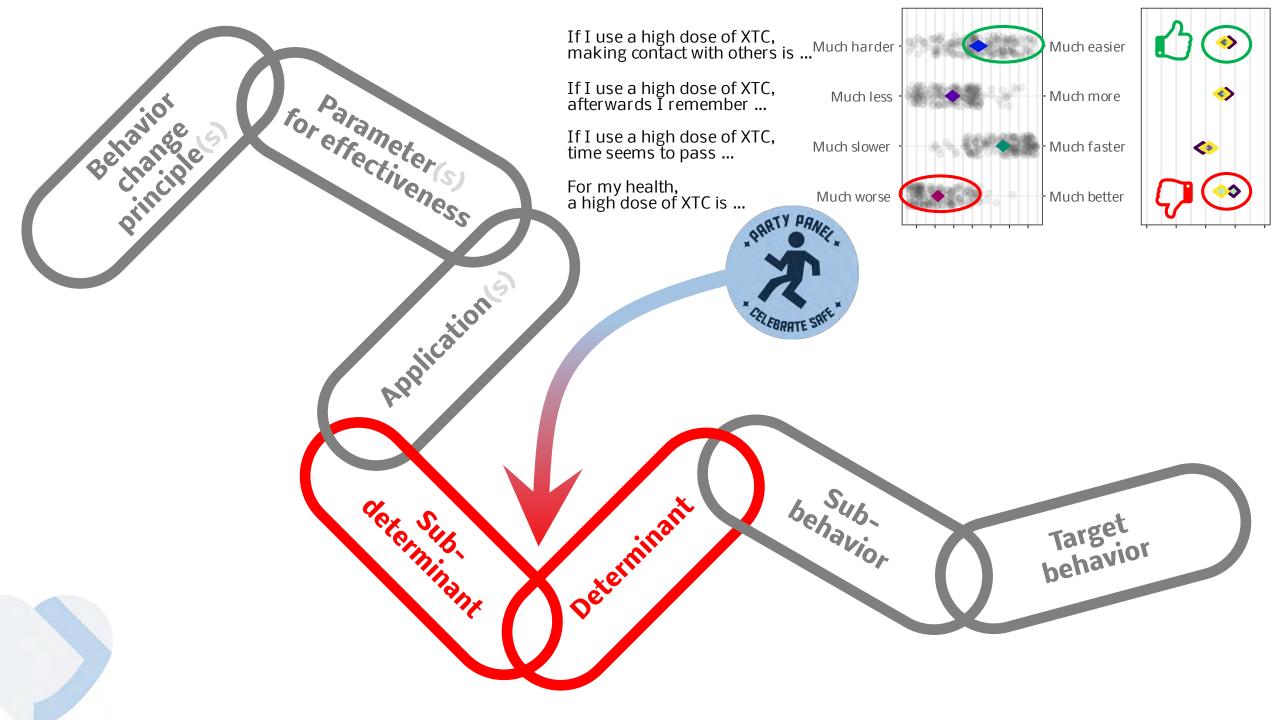
When using XTC, I prefer it if making contact with others is ...

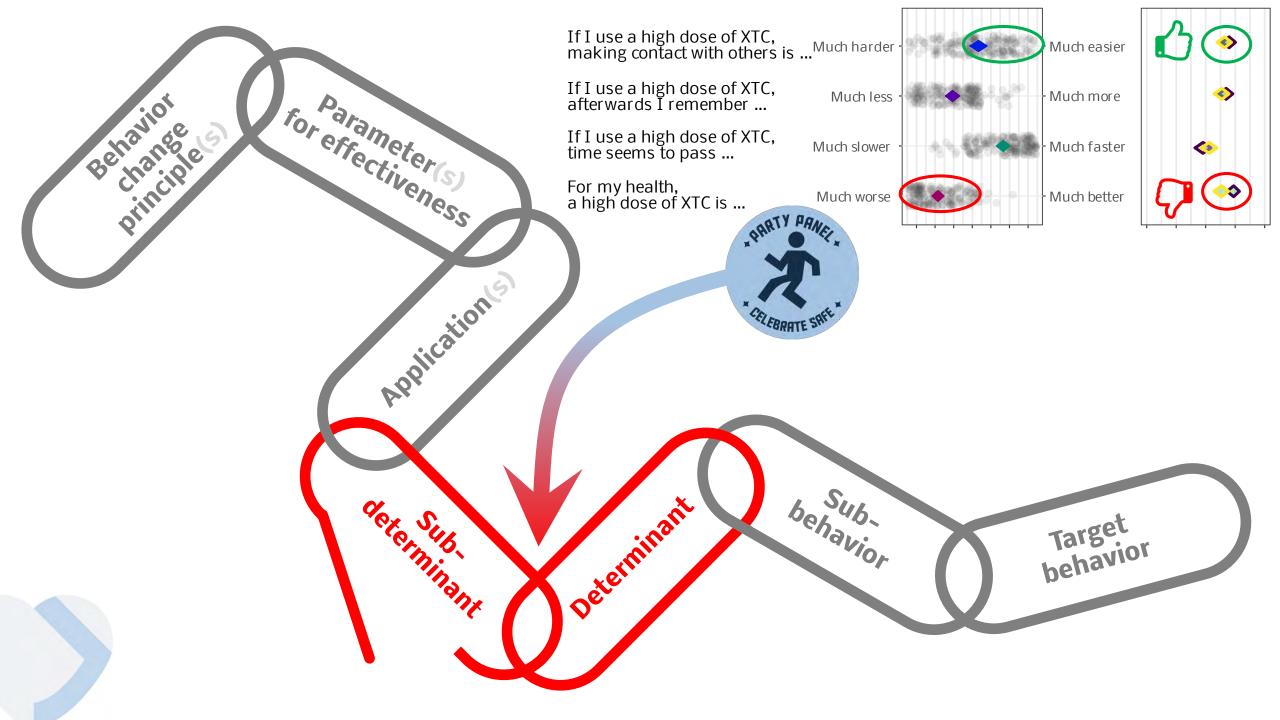
After an XTC trip, I prefer remembering ...

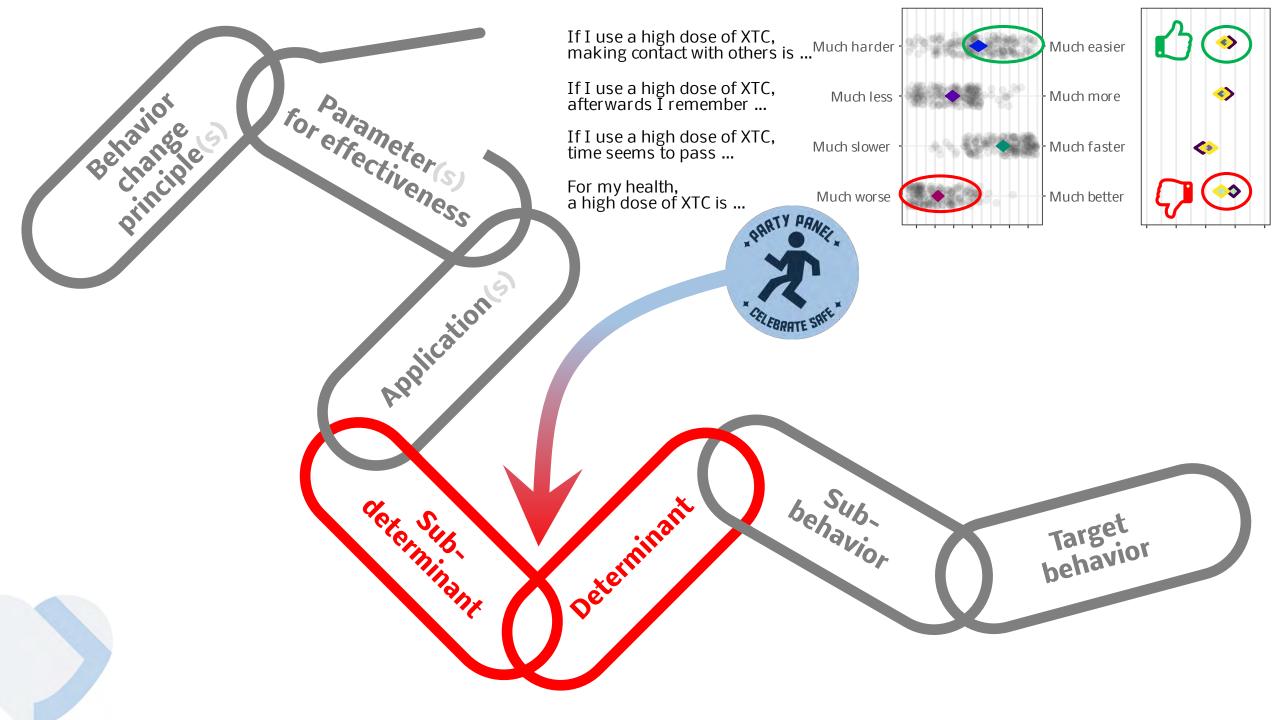




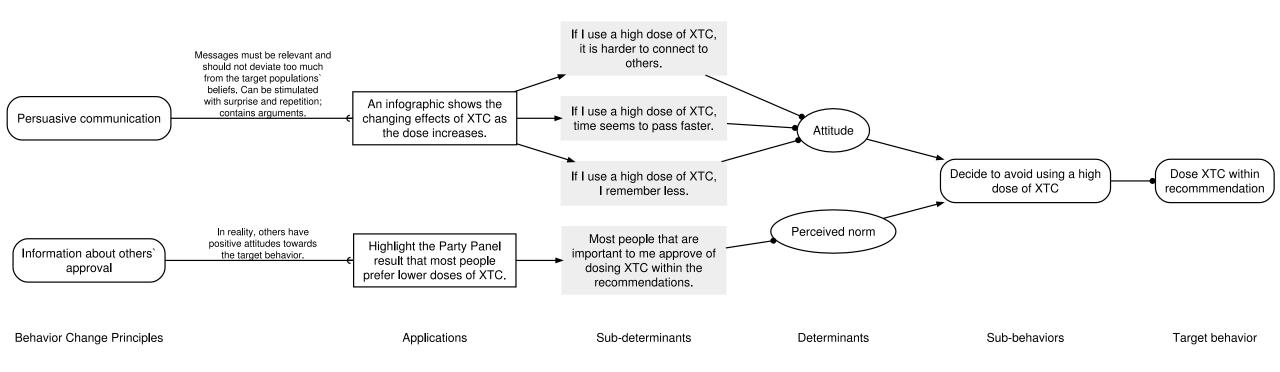


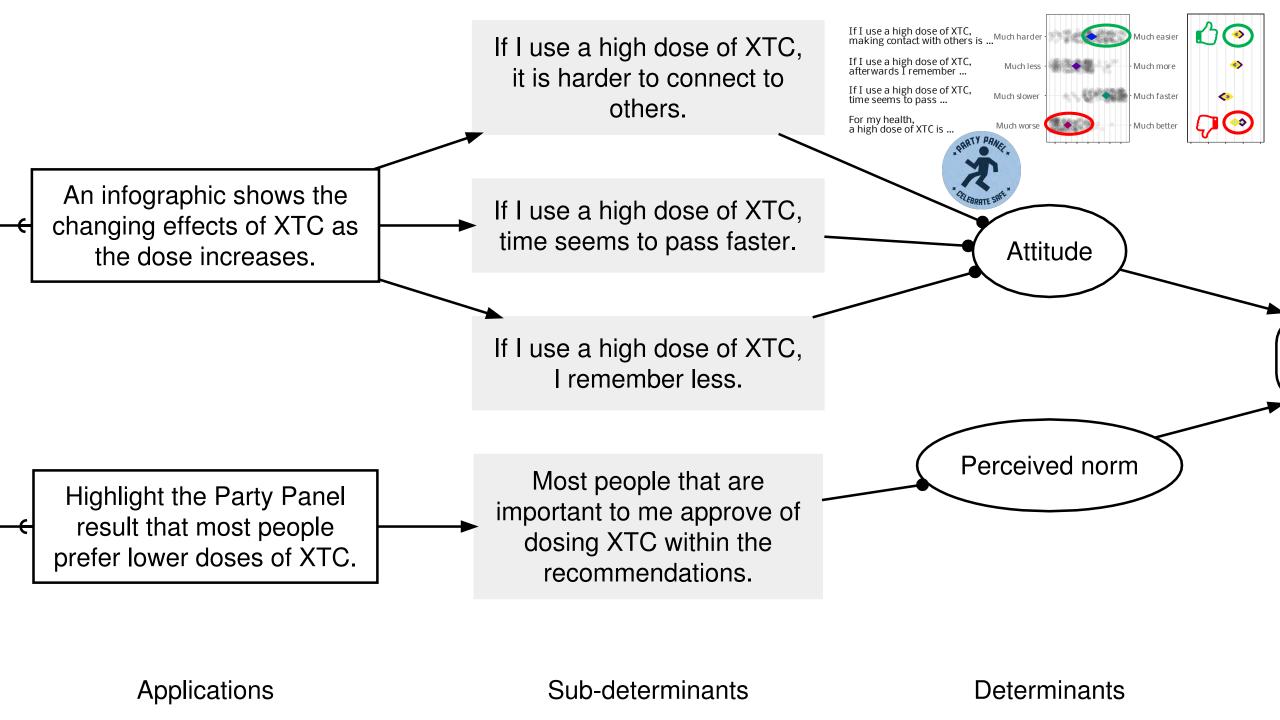


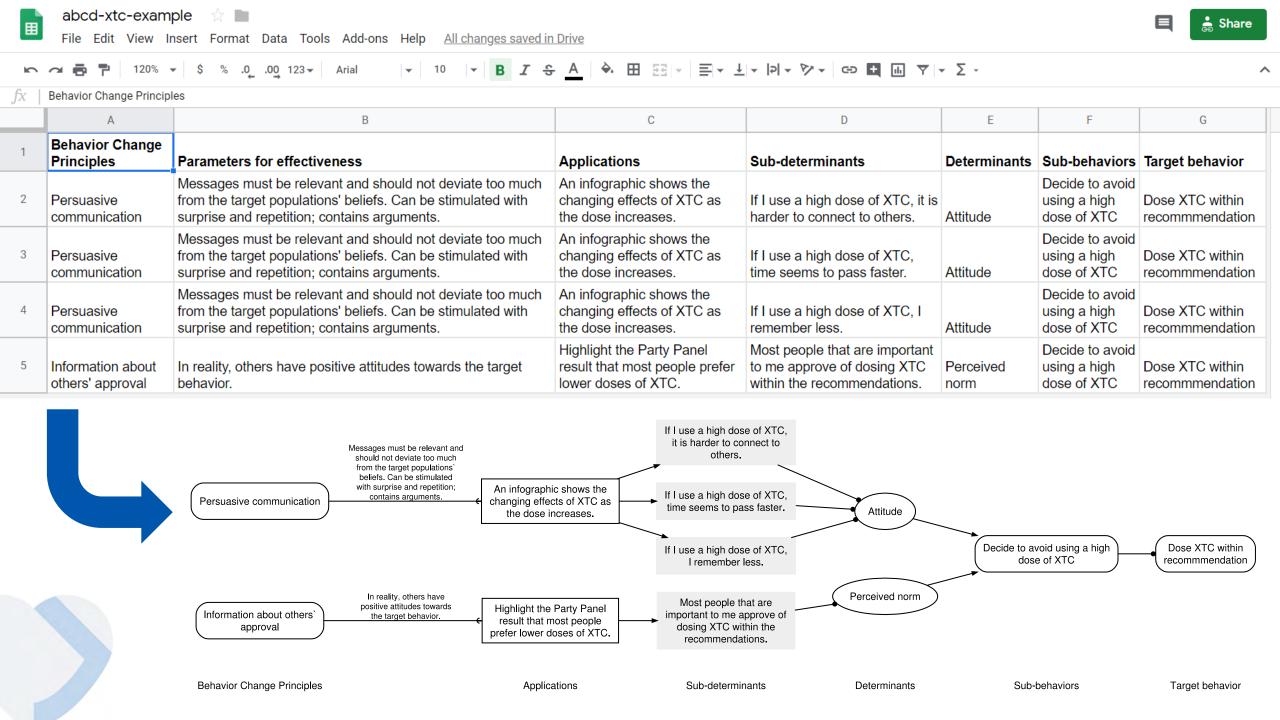


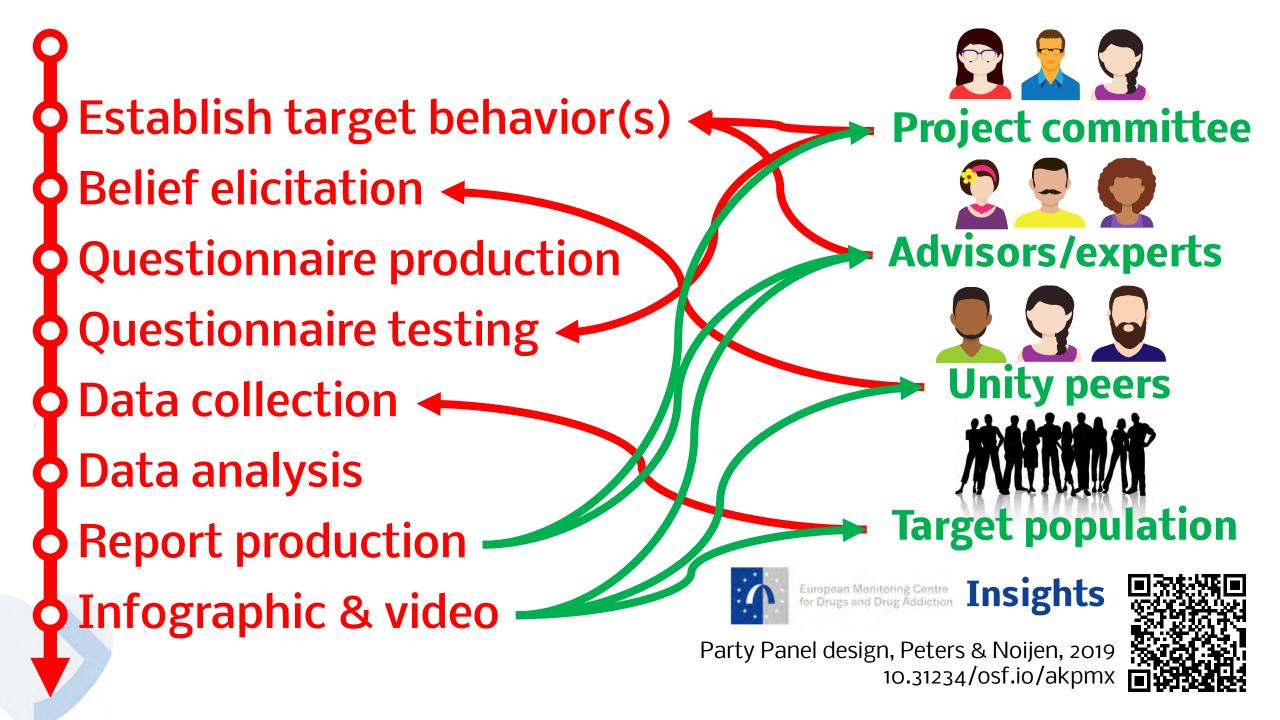


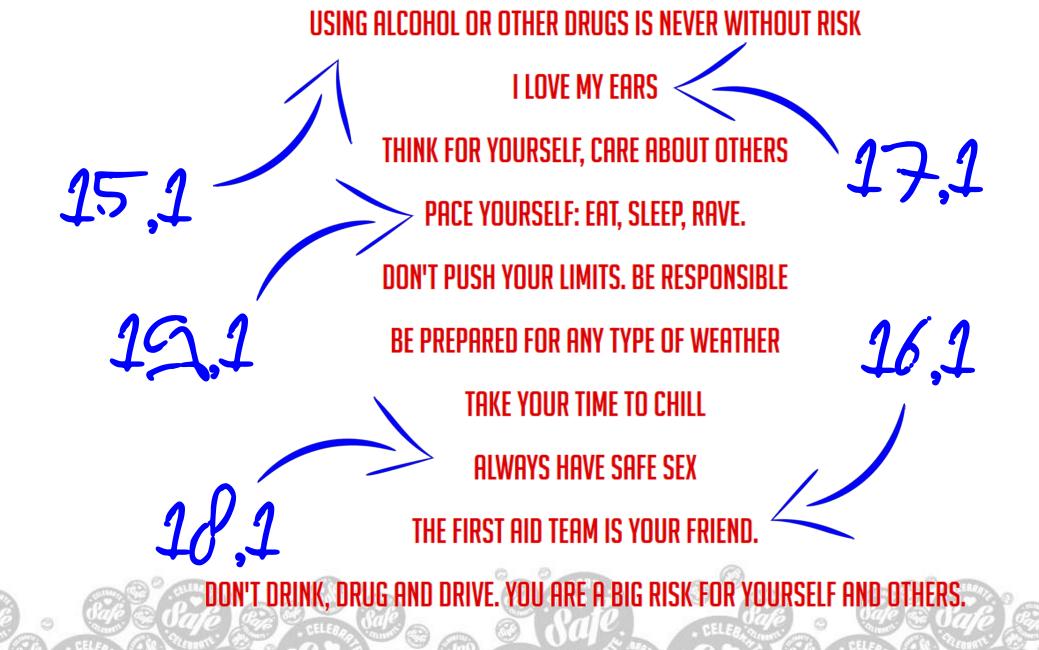
Acyclic Behavior Change Diagram (ABCD)















ZIE JE ONGEWENST SEKSUEEL GEDRAG? STEL DE VRAAG!

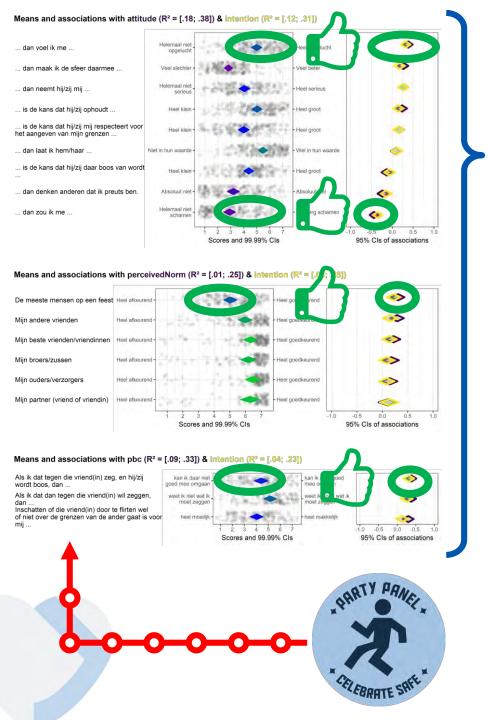
Ongewenst seksueel gedrag is niet oké, ook niet bij concerten, op festivals en in de clubs. Als je denkt dat iemand wordt lastiggevallen, vraag dan: 'Ben je oké?'

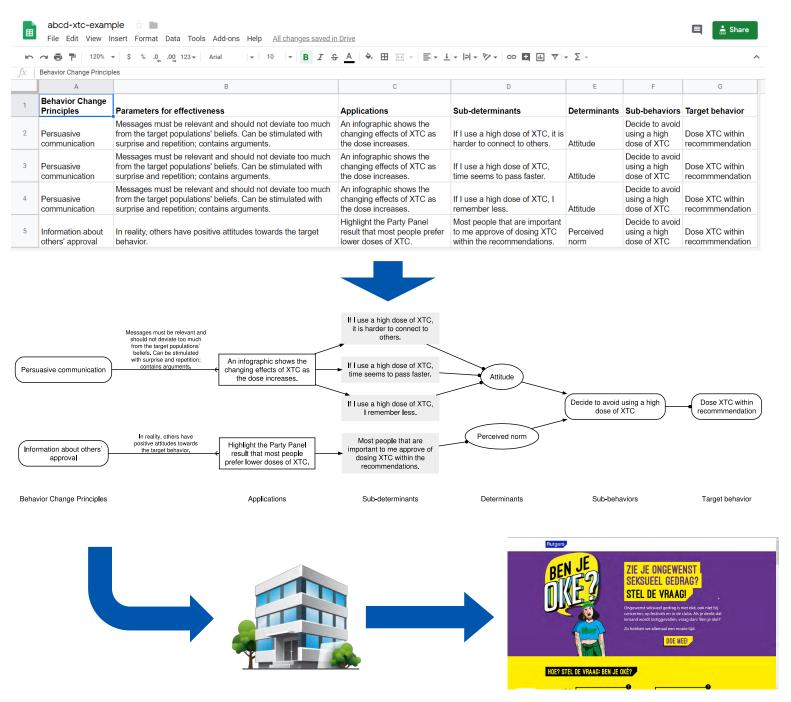
Zo hebben we allemaal een mooie tijd.

DOE MEE!









Party Panel data & resources: https://gitlab.com/partypanel



Confidence Interval-Based Estimation of Relevance (CIBER): https://a-bc.gitlab.io/website/tutorial/ciber



Acyclic Behavior Change Diagrams: https://a-bc.eu/apps/abcd



Party Panel data & resources: https://gitlab.com/partypanel



Confidence Interval-Based Estimation of Relevance (CIBER): https://a-bc.gitlab.io/website/tutorial/ciber







Thank you!

Gjalt-Jorn Peters
Open University of the Netherlands
matherion
gjalt-jorn@behaviorchange.eu
@