

# Action

**A taxonomy of behavior change techniques used in interventions (2008)**

**Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition (CSCW 2018)**

# A taxonomy of behavior change techniques used in interventions (2008)

- Defined 26 behavior change techniques, by coding existing published techniques, and verified with systematic reviews.

Technique (Theoretical Framework)	Definition
1. Provide information about behavior-health link. (IMB)	General information about behavioral risk, e.g., susceptibility to poor health outcomes or mortality risk in relation to the behavior.
2. Provide information on consequences (TRA, TPB, SCogT, IMB)	Information about the benefits as the person does/does not perform
3. Provide information about others' approval (TRA, TPB, IMB)	Information about what others' will approve or disapprove of any proposed behavior.
4. Prompt intention formation (TRA, TPB, SCogT, IMB)	Encouraging the person to decide resolution such as "I will take more exercise."
5. Prompt barrier identification (SCogT)	Identify barriers to performing the behavior.
6. Provide general encouragement (SCogT)	Praising or rewarding the person for performing specified behaviors or standards.
7. Set graded tasks (SCogT)	Set easy tasks, and increase difficulty until target behavior is performed.
8. Provide instruction (SCogT)	Telling the person how to perform a behavior and/ or preparing them to perform it.
9. Model/ demonstrate the behavior (SCogT)	An expert shows the person how to correctly perform a behavior.
10. Prompt specific goal setting (CT)	Involves detailed planning of what the person will do including specifying frequency, intensity or duration as well as specific where, when, how or with whom.
11. Prompt review of behavioral goals (CT)	Review and/or reconsideration of previously set goals or intentions.
12. Prompt self-monitoring of behavior (CT)	The person is asked to keep a record of specified behavior/s (e.g., time spent exercising).
13. Provide feedback on performance (CT)	Providing data about recorded behavior or evaluating performance or others' performance. Person received feedback.
14. Provide contingent rewards (OC)	Praise, encouragement or material rewards that are explicit for performing specified behaviors.
15. Teach to use prompts/ cues (OC)	Teach the person to identify environmental cues which can be used to perform a behavior, including times of day, contexts or elements of contexts.
16. Agree behavioral contract (OC)	Agreement (e.g., signing) of a contract specifying behavior to be performed so that there is a written record of the person's resolution witnessed by another.
17. Prompt practice (OC)	Prompt the person to rehearse and repeat the behavior or preparatory behaviors.
18. Use follow up prompts	Contacting the person again after the main part of the intervention is complete.
19. Provide opportunities for social comparison (SCompT)	Facilitate observation of non-expert others' performance e.g., in a group class or using video or case study.
20. Plan social support/ social change (social support theories)	Prompting consideration of how others' could change their behavior to offer the person help or instrumental social support, including "buddy" systems – and/or providing social support.
21. Prompt identification as role model	Indicating how the person may be an example to others and influencing their behavior or providing an opportunity for the person to set a good example.
22. Prompt self talk	Encourage use self instruction and self encouragement (aloud or silently) to support action.
23. Relapse prevention (Relapse Prevention Therapy)	Following initial change, help identify situations likely to result in re-adopting risk behaviors or failure to maintain new behaviors and help the person plan to avoid or manage these situations.
24. Stress management (stress theories)	May involve a variety of specific techniques (e.g., progressive relaxation) which do not target the behavior but seek to reduce anxiety and stress.
25. Motivational interviewing	Prompting the person to provide self-motivating statements and evaluations of their own behavior to minimize resistance to change.
26. Time management	Helping the person make time for the behavior (e.g., to fit it into a daily schedule).



## **Charles Abraham**

Professor of Psychology Applied to Health  
University of Exeter, UK  
D.Phil. Social Psychology, University of Sussex, 1982

### Most cited works:

- The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. 2013.
- A taxonomy of behavior change techniques used in interventions. 2008.



## **Susan Michie**

Professor of Health Psychology  
Director of the Centre for Behaviour Change  
University College London (UCL)  
DPhil in Developmental Psychology, Oxford University, 1982

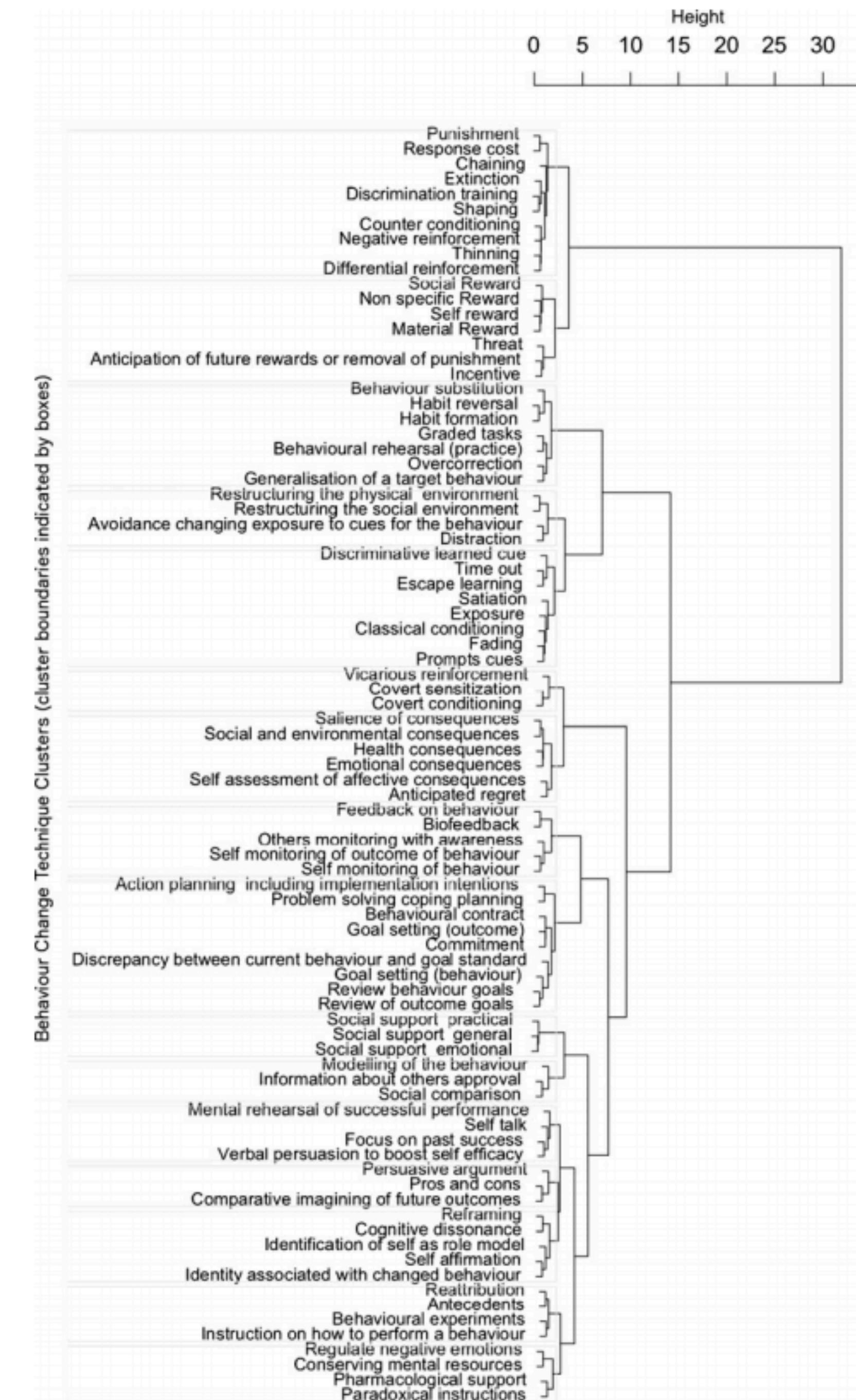
### Most cited works:

- The behaviour change wheel: a new method for characterising and designing behaviour change interventions. 2011.
- The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. 2013.

- The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. 2013.

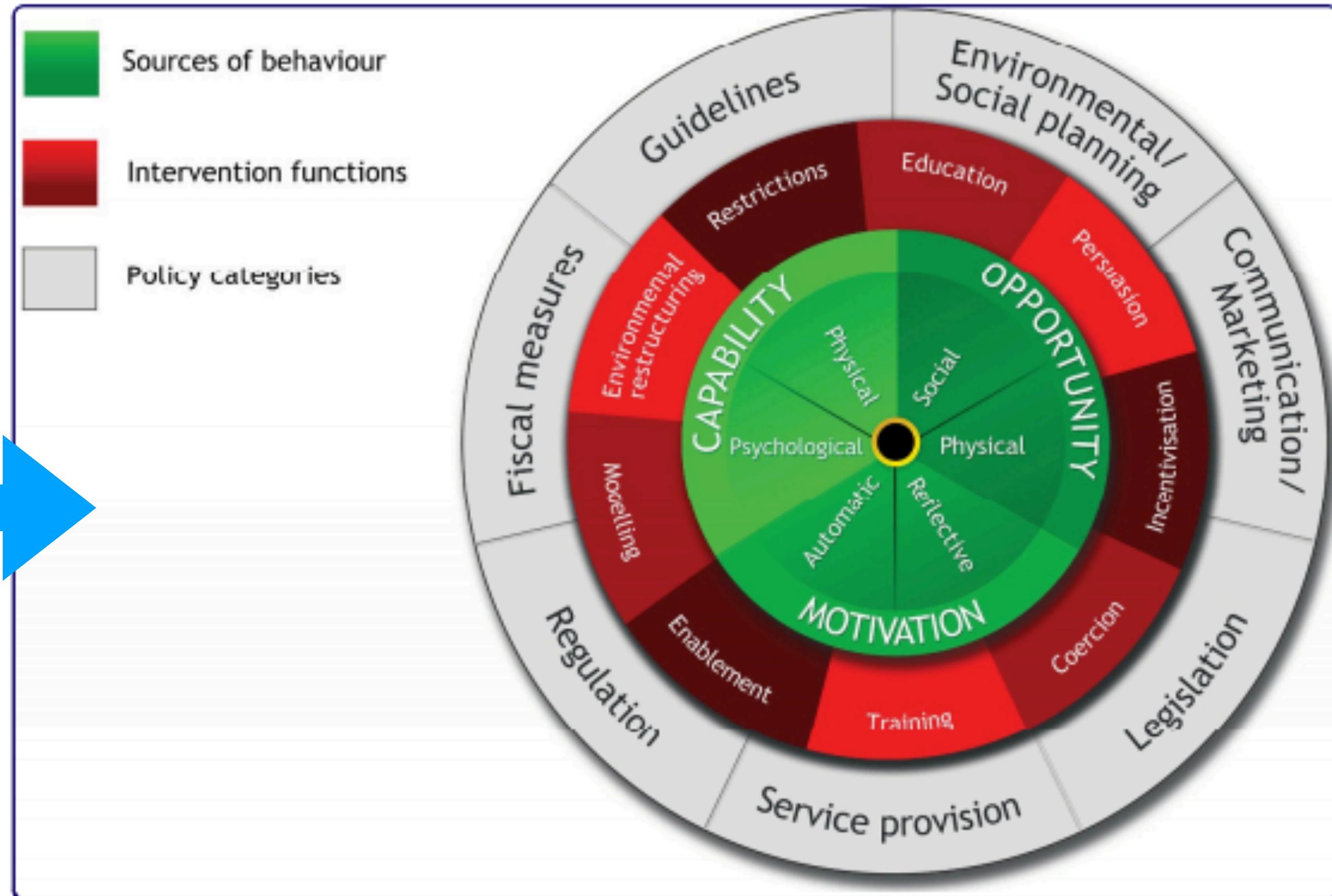
Technique (Theoretical Framework)	Definition
1. Provide information about behavior-health link. (IMB)	General information about behavioral risk, e.g., susceptibility to poor health outcomes or mortality risk in relation to the behavior.
2. Provide information on consequences (TRA, TPB, SC)	Information about the benefits and costs of action or inaction. Encouraging or discouraging behavior.
7. Set graded tasks (SCogT)	Set easy tasks, and increase difficulty until target behavior is performed.
8. Provide instruction (SCogT)	Telling the person how to perform a behavior and/ or preparatory behaviors.
9. Model/ demonstrate the behavior (SCogT)	An expert shows the person how to correctly perform a behavior e.g., in class or on video.
10. Prompt specific goal setting (CT)	Involves detailed planning of what the person will do including a definition of the behavior
17. Prompt practice (OC)	Prompt the person to rehearse and repeat the behavior or preparatory behaviors.
18. Use follow up prompts	Contacting the person again after the main part of the intervention is complete.
11. Prompt review	Facilitate observation of non-expert others' performance e.g., in a group class or using video or case study.
12. Prompt self-efficacy	
13. Provide feedback	Prompting consideration of how others' could change their behavior to offer the person help or (instrumental) social support, including "buddy" systems – and/or providing social support.
14. Provide contingencies	Indicating how the person may be an example to others and influencing their behavior or providing an opportunity for the person to set a good example.
15. Teach to use	Encourage use self instruction and self encouragement (aloud or silently) to support action.
23. Relapse prevention (Relapse Prevention Therapy)	Following initial change, help identify situations likely to result in re-adopting risk behaviors or failure to maintain new behaviors and help the person plan to avoid or manage these situations.
24. Stress management (stress theories)	May involve a variety of specific techniques (e.g., progressive relaxation) which do not target the behavior but seek to reduce anxiety and stress.
25. Motivational interviewing	Prompting the person to provide self-motivating statements and evaluations of their own behavior to minimize resistance to change.
26. Time management	Helping the person make time for the behavior (e.g., to fit it into a daily schedule).

**Fig. 1** Results of hierarchical cluster analysis (step 6): dendrogram for 85 behavior change techniques (BCTs) partitioned across 16 clusters



- The behaviour change wheel: a new method for characterising and designing behaviour change interventions. 2011.

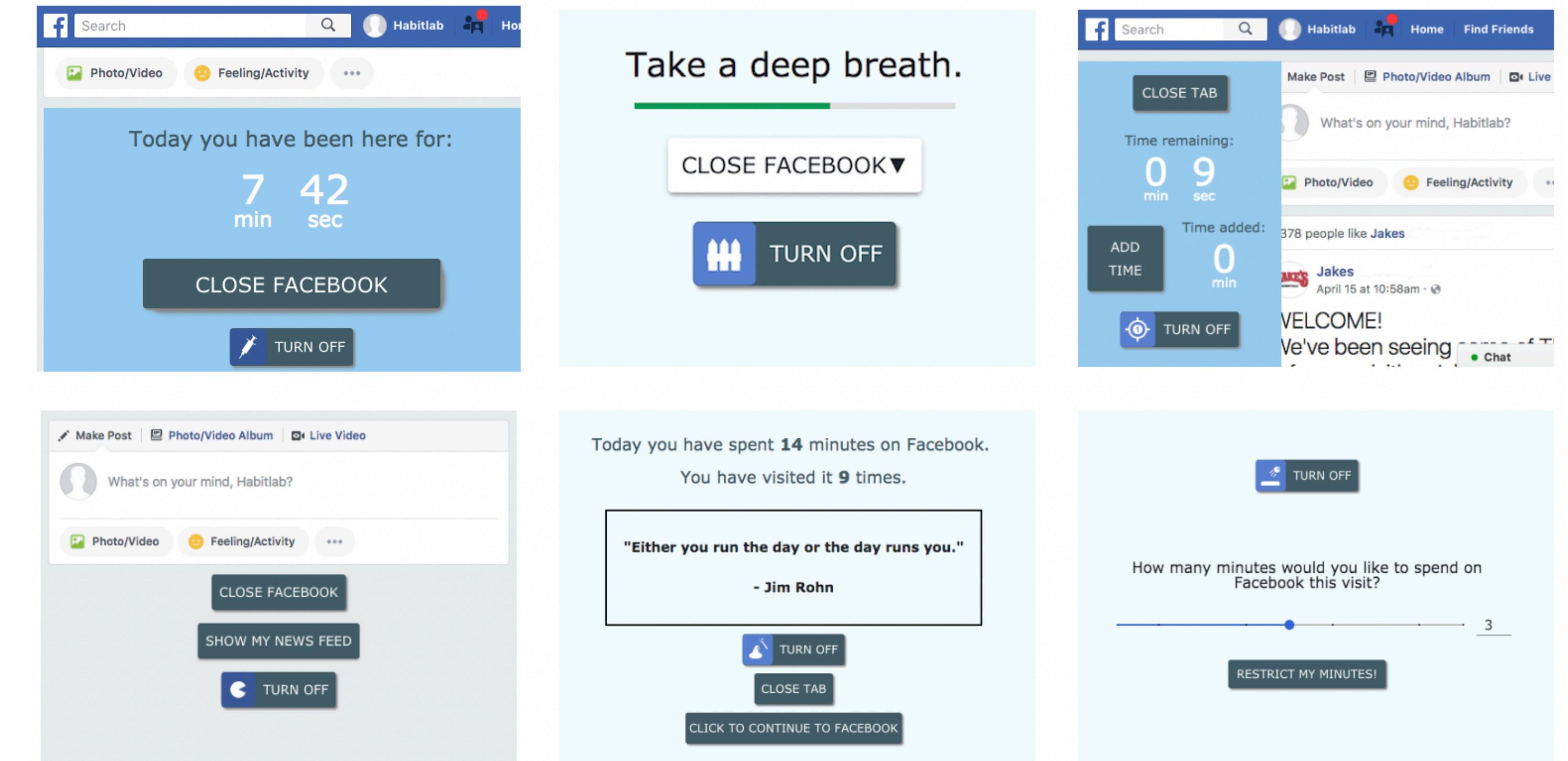
Technique (Theoretical Framework)	Definition
1. Provide information about behavior-health link. (IMB)	General information about behavioral risk, e.g., susceptibility to poor health outcomes or mortality risk in relation to the behavior.
2. Provide information on consequences (TR)	Information about the benefits and costs of action or inaction. Examples include health behavior information.
7. Set graded tasks (SCogT)	Set easy tasks, and increase difficulty until target behavior is performed.
8. Provide instruction (SCogT)	Telling the person how to perform a behavior and/ or preparatory behaviors.
9. Model/ demonstrate the behavior (SCogT)	An expert shows the person how to correctly perform a behavior e.g., in class or on video.
10. Prompt specific goal setting (CT)	Involves detailed planning of what the person will do including a definition of the behavior
17. Prompt practice (OC)	Prompt the person to rehearse and repeat the behavior or preparatory behaviors.
18. Use follow up prompts	Contacting the person again after the main part of the intervention is complete.
11. Prom. social comparison (SCompT)	Facilitate observation of non-expert others' performance e.g., in a group class or using video or case study.
12. Prom. social support (social support theories)	Prompting consideration of how others' could change their behavior to offer the person help or (instrumental) social support, including "buddy" systems – and/or providing social support.
13. Prom. identification as role model	Indicating how the person may be an example to others and influencing their behavior or providing an opportunity for the person to set a good example.
14. Prom. self talk	Encourage use self instruction and self encouragement (aloud or silently) to support action.
22. Relapse prevention (Relapse Prevention Therapy)	Following initial change, help identify situations likely to result in re-adopting risk behaviors or failure to maintain new behaviors and help the person plan to avoid or manage these situations.
23. Stress management (stress theories)	May involve a variety of specific techniques (e.g., progressive relaxation) which do not target the behavior but seek to reduce anxiety and stress.
24. Motivational interviewing	Prompting the person to provide self-motivating statements and evaluations of their own behavior to minimize resistance to change.
25. Time management	Helping the person make time for the behavior (e.g., to fit it into a daily schedule).



# Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition (CSCW 2018)

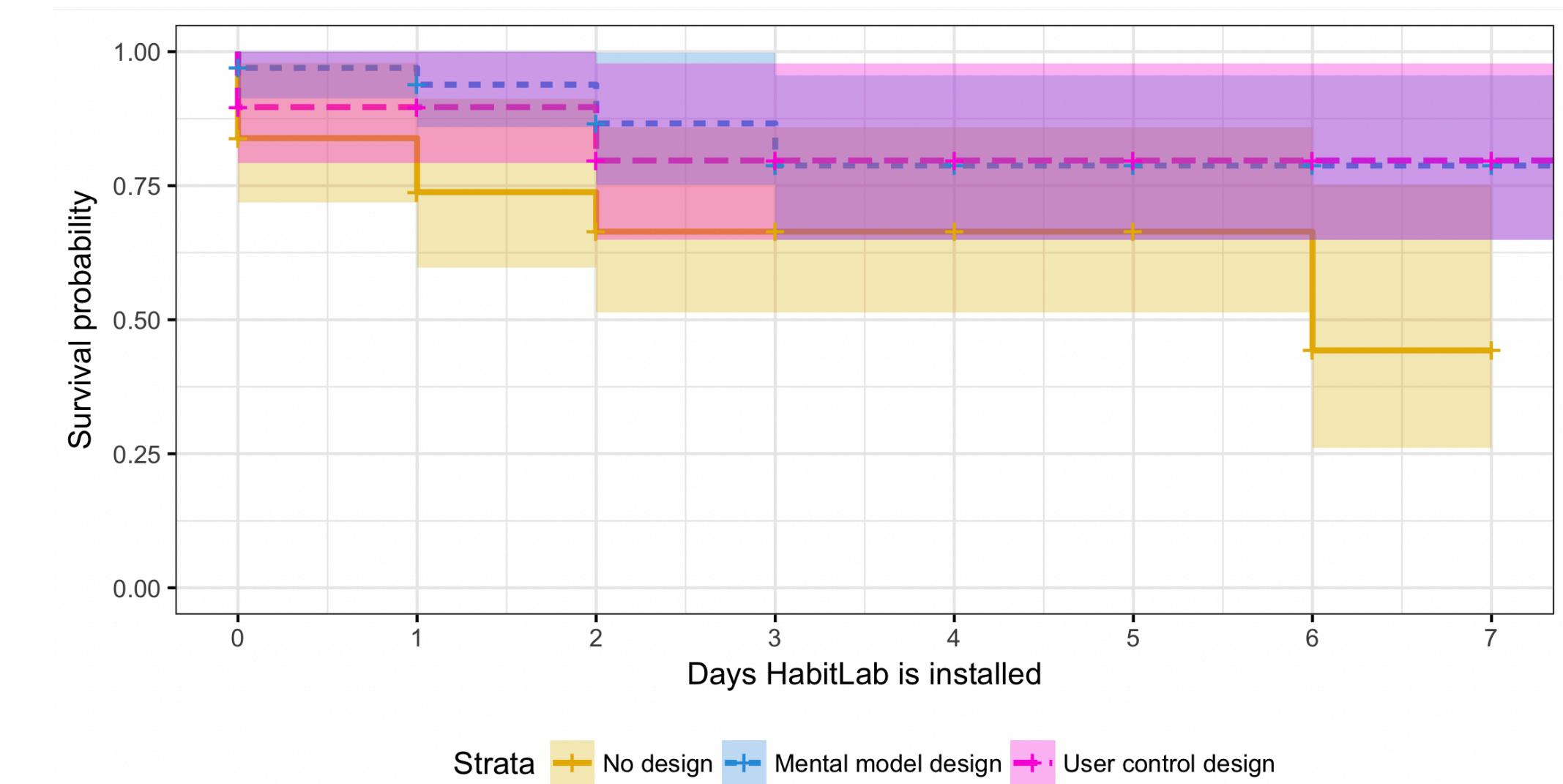
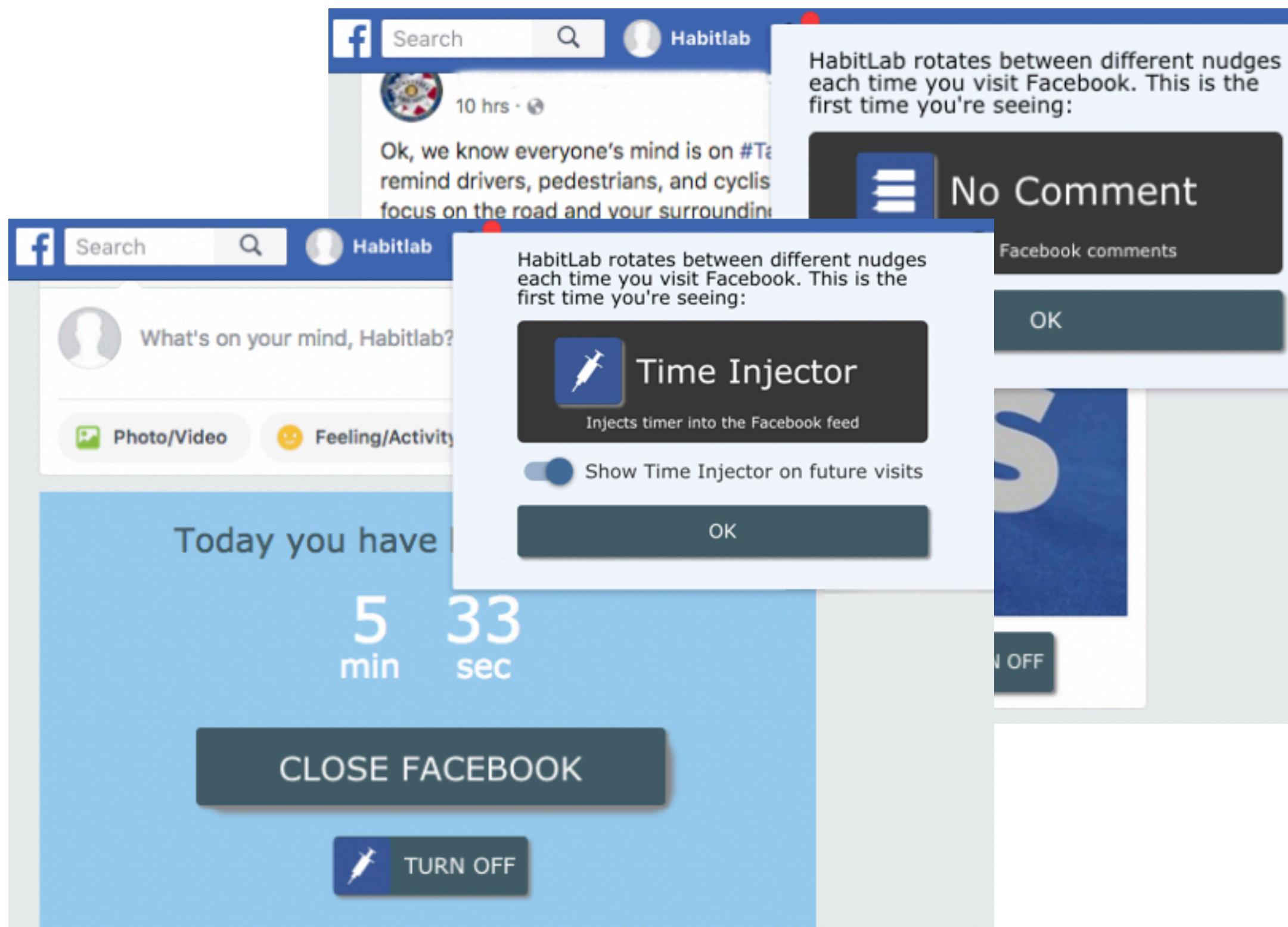
- Used rotating intervention instead of static intervention
- Increased effectiveness but attrition increased as well

- Interventions
  - Commitment
  - Enforce default limits
  - Reduce social incentives
  - Delaying Rewards
  - Removing Rewards
  - Inform the user



# Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition (CSCW 2018)

- Designed intervention (Mental model interface and User Control Interface) improved attrition while not reducing effectiveness





## **Geza Kovacs**

Senior Research Scientist at Lilt (builds intelligent software to augment translation for businesses and translators), from Aug 2019

Ph.D. in CS at Stanford University

Human-Computer Interaction Group, advised by Michael Bernstein.

Works based on HabitLab:

- Conservation of Procrastination: Do Productivity Interventions Save Time or Just Redistribute It? (CHI 2019)
- Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition (CSCW 2018)



## **Zhengxuan Wu**

Masters Student, MS&E, Stanford  
Software Developer at VMWare



## **Michael Bernstein**

Associate Professor of Computer Science and STMicroelectronics Faculty Scholar at Stanford University

Human-Computer Interaction Group  
Ph.D. in Computer Science from MIT

### Most cited works:

- Soylent: a word processor with a crowd inside. 2010.
- Quantifying the invisible audience in social networks. 2013.
- Crowds in two seconds: Enabling realtime crowd-powered interfaces. 2011.
- 4chan and /b/: An Analysis of Anonymity and Ephemerality in a Large Online Community. 2011.

# Major Citations

- Taxonomies of intervention
  - Charles Abraham and Susan Michie. 2008. **A taxonomy of behavior change techniques used in interventions.** Health psychology 27, 3 (2008), 379.
  - Susan Michie, Michelle Richardson, Marie Johnston, Charles Abraham, Jill Francis, Wendy Hardeman, Martin P Eccles, James Cane, and Caroline E Wood. 2013. **The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions.** Annals of behavioral medicine 46, 1 (2013), 81–95.
  - Susan Michie, Maartje M van Stralen, and Robert West. 2011. **The behaviour change wheel: a new method for characterising and designing behaviour change interventions.** Implementation Science 6, 1 (2011), 1.
- Time control on social media sites.
  - Manya Sleeper, Alessandro Acquisti, Lorrie Faith Cranor, Patrick Gage Kelley, Sean A. Munson, and Norman Sadeh. 2015. **I Would Like To..., I Shouldn't..., I Wish I...: Exploring Behavior-Change Goals for Social Networking Sites.** In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15).
  - Sarita Yardi Schoenebeck. 2014. **Giving up Twitter for Lent: how and why we take breaks from social media.** In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM, 773–782.
- Attrition
  - Gunther Eysenbach. 2005. **The law of attrition.** Journal of medical Internet research 7, 1 (2005).

## Cited by

- Lyngs, U., Lukoff, K., Slovak, P., Binns, R., Slack, A., Inzlicht, M., ... & Shadbolt, N. (2019, May). **Self-Control in Cyberspace: Applying Dual Systems Theory to a Review of Digital Self-Control Tools.** In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-18).
- Kovacs, G., Gregory, D. M., Ma, Z., Wu, Z., Emami, G., Ray, J., & Bernstein, M. S. (2019, May). **Conservation of Procrastination: Do Productivity Interventions Save Time or Just Redistribute It?.** In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (pp. 1-12).
- Daskalova, N., Yoon, J., Beltran, G., Araujo, C., Wang, Y., Williams, J. J., ... & Huang, J. **SleepBandits: Guided Flexible Self-Experiments for Sleep.**
- Lyngs, U., Lukoff, K., Slovak, P., Seymour, W., Webb, H., Jirotka, M., ... & Shadbolt, N. (2020). **'I Just Want to Hack Myself to Not Get Distracted': Evaluating Design Interventions for Self-Control on Facebook.** arXiv preprint arXiv:2001.04180.
- Hu, D., & Lee, S. W. (2020). **ScreenTrack: Using a Visual History of a Computer Screen to Retrieve Documents and Web Pages.** arXiv preprint arXiv:2001.10898.
- BARBER, R., & SUNDARAM, H. **When the Platform User Fights Back (with Software).**