

The Science Of Behavior Change

Resources for Mechanism-Focused Research

Talea Cornelius, PhD, MSW, MS



COLUMBIA

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IRVING MEDICAL CENTER



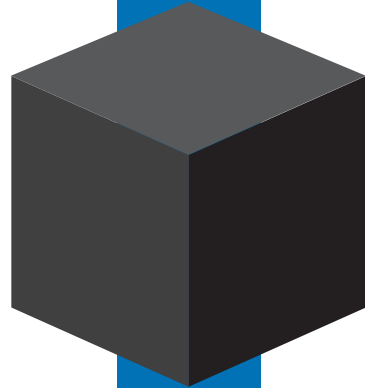
HEALTH BEHAVIOR

INTERVENTION

CHANGE IN BEHAVIOR

HEALTH BEHAVIOR

INTERVENTION



CHANGE IN BEHAVIOR



Experimental Medicine Approach

A **common method** for understanding behavior change



SO
BC | Science
Of
Behavior
Change



Unite basic and applied researchers

Focus on mechanisms of change

Develop and apply a common scientific method

Optimize interventions to promote effectiveness



Developing resources for behavior change scientists

[What is SOBC](#)

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[Method](#)

[Projects](#)

[Repository](#)

[CLIMBR Tool](#)

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The SOBC method aims to identify key mechanisms underlying successful change in health behaviors like diet and exercise. Going through the three steps of the method—Identify, Measure, and Influence—helps us to understand why an intervention worked or didn't work.

Prior SOBC research suggests that mechanisms in these three domains are relevant for understanding behavior change: Self-regulation, Stress Reactivity & Stress Resilience, and Interpersonal & Social Processes.

CHOOSE A DOMAIN TO WALK THROUGH THE METHOD



SELF-REGULATION



STRESS REACTIVITY &
STRESS RESILIENCE



INTERPERSONAL &
SOCIAL PROCESSES

CLIMBR

Checklist for Investigating
Mechanisms in
Behavior-change Research



Behavior Therapy

Available online 23 December 2022

In Press, Journal Pre-proof ?



Improving the rigor of mechanistic behavioral science: The introduction of the Checklist for Investigating Mechanisms in Behavior-change Research (CLIMBR)

Jeffrey L. Birk ^a  , Michael W. Otto ^b, Talea Cornelius ^a, Russell A. Poldrack ^c, Donald Edmondson ^a



- **Column A (X → M)** should be used to report the results of studies that investigate the effect(s) of an intervention or manipulation (X) on a putative mechanism of behavior change (M), *without* measuring a behavior change outcome (Y).
- **Column B (M → Y)** should be used to report the results of studies that investigate the association between a putative mechanism of behavior change (M) and a behavior change outcome (Y), *without* including an intervention or manipulation (M).
- **Column C (X → M → Y)** should be used to report the results of studies that investigate the effect(s) of an intervention or manipulation (X) on a behavior change outcome (Y) and test whether a putative mechanism of behavior change (M) can explain these changes in behavior via a test of mediation.

Section/topic	#	A: For studies that investigate the effect(s) of an <u>intervention or manipulation</u> (X) on a <u>putative mechanism of behavior change</u> (M), <u>without</u> measuring a behavior change outcome (Y) X → M <u>Example</u> : a study of the effects of a mindfulness intervention on self-compassion	B: For studies that investigate the association between a <u>putative mechanism of behavior change</u> (M) and a <u>behavior change outcome</u> (Y), <u>without</u> including an intervention or manipulation (M) M → Y <u>Example</u> : a study of the relationship between stress reactivity and nicotine use	C: For studies that investigate the effect(s) of an <u>intervention or manipulation</u> (X) on a <u>behavior-change outcome</u> (Y) and <u>test whether a putative mechanism of behavior change</u> (M) can explain these changes in behavior. X → M → Y <u>Example</u> : a randomized controlled trial of the effects of an episodic future thinking intervention on seatbelt use as mediated by future time perspective	Reported on page #
TITLE					
Title	1	If space allows, the title should refer to one or more mechanisms of behavior change as well as the intervention or manipulation. If the journal guidelines allow it, then titles that are informative rather than neutral about the study findings should be considered.	If space allows, the title should refer to one or more mechanisms of behavior change. If the journal guidelines allow it, then titles that are informative rather than neutral about the study findings should be considered.	If space allows, the title should refer to one or more mechanisms of behavior change as well as the intervention or manipulation. If the journal guidelines allow it, then titles that are informative rather than neutral about the study findings should be considered.	
<u>Author action</u>					
ABSTRACT					
Identify mechanism(s)	2	Specify at least one hypothesized mechanism of behavior change, and specify at least one behavior.			

Consider mechanisms when formulating hypotheses, choosing a study design, adapting to a specific population, selecting measures, conducting analyses, reporting results, evaluating results, synthesizing research...





MEASURES

INTERVENTIONS

BEHAVIORS

Q Search and filter

ADD MEASURE +

The **Science of Behavior Change (SOBC)** Repository provides resources that support the experimental medicine approach to behavior change. This approach involves the following steps:

1

Identify mental processes that could influence behavior

2

Develop **measures** of those mental processes that have good measurement properties

3

Create **interventions** that influence those measured mental processes

4

Behaviorally validate the interventions by assessing whether intervening to change the measured mental process also results in behavior change

The Repository aggregates resources on measures of mental processes, intervention protocols, and indicators of behavior. This page of the repository stores our collection of **measures of mental processes**, along with the properties of these measures and the materials required to deploy them in research projects.



Q Search and filter

ADD MEASURE +

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10-Item Personality Inventory

07/01/2019

The Ten-Item Personality Inventory (TIPI) is a brief assessment of the Big Five personality dimensions: (1) Extraversion, (2) Agreeableness, (3) Conscientiousness, (...)

Self-image & identity Self-report 0-5 minutes General adult population English



Download

30-Second Sit To Stand (30STS)

11/09/2024

This test is conducted to assess leg strength and endurance. Participants are asked to stand in front of a sturdy chair and monitored by the remote research...

Other Task 0-5 minutes General adult population English



Download

36-Item Short Form Survey (SF-36)

11/09/2024

A 36-item short-form (SF-36) was constructed to survey health status in the Medical Outcomes Study. The SF-36 was designed for use in clinical practice and research,...

Other Self-report 0-5 minutes General adult population English



Download

Q Search x ADD MEASURE +

- Domain >
- Specific Population >
- Measurement Mode >
 - 0-5 minutes 116
 - 6-10 minutes 81
 - 11-15 minutes 77
 - 16-20 minutes 17
 - 20+ minutes 11
 - Not specified 33
- Language >
- Duration >
- Data Source >
- Integrations >

Clear Filters x

Q Search x ADD MEASURE +

- Domain >
- Specific Population >
- Measurement Mode <
- Language >
- Duration >
- Data Source >
- Integrations >

- Observational 117
- Physiological 1
- Self-report 233
- Task 54
- Other 11
- Not specified 6

Clear Filters x

Q Search x ADD MEASURE +

- Domain >
- Specific Population >
- Measurement Mode >
- Language >
- Duration >
- Data Source <
- Integrations >

- Science of Behavior Change (SOBC) 113
- Group Evaluated Measures (GEM) 26
- Stress Measurement Network (SMN) 25
- Emotional Well-Being (EWB) 82
- Roybal 44
- Dyadic working group 46
- User upload 0
- Other 0

Clear Filters x

Q Search x ADD MEASURE +

- Domain >
- Specific Population >
- Measurement Mode >
- Language >
- Duration >
- Data Source >
- Integrations <

- Behavior change techniques 44
- Experiment Factory 33
- Cognitive Atlas 102

Clear Filters x

Q Search x ADD MEASURE +

- Domain >
- Specific Population <
- Measurement Mode >
- Language >
- Duration >
- Data Source >
- Integrations >

- General adult population 200
- Caregivers 4
- Children 26
- LGBTQIA+ 1
- Racial & ethnic minority groups 6
- Disease: Alzheimer's & other dementias 6
- Disease: Cancer 1
- Disease: Cardiovascular 7
- Disease: HIV/AIDS 0
- Disease: Obesity 0
- Other 0
- Not specified 0

Clear Filters x

Q Search x ADD MEASURE +

- Domain <
- Specific Population >
- Measurement Mode >
- Language >
- Duration >
- Data Source >
- Integrations >

- Affective & emotion-related processes 48
- Attitudes & beliefs 28
- Cognitive processes 28
- Interpersonal & relationship processes 28
- Quality of life 28
- Risk & decision-making 28
- Self-image & identity 28
- Self-regulation 18
- Stress reactivity & stress resilience 0
- Other 0
- Not specified 0

Clear Filters x

Specific Population <

Measurement Mode >

Language >

Duration >

Data Source >

Integrations >

Clear Filters ✕

- Caregivers 6
- Children 25
- LGBTQIA+ 1
- Racial & ethnic minority groups 0
- Disease: Alzheimer's & other dementias 6
- Disease: Cancer 1
- Disease: Cardiovascular 2

- Disease: Obesity 0
- Other 18
- Not specified 0

Care Values Scale

01/11/2024

The Care Values Scale is a 25-item scale that measures a person with dementia's (PWD) and caregiver's perceptions of the PWD's thoughts and feelings about...

Attitudes & beliefs Interpersonal & relationship processes Self-report 6-10 minutes

Disease: Alzheimer's & other dementias English

[Download](#)

Caregiver Well-Being Scale

13/12/2023

The Caregiver Well-Being Scale is for Social Workers and other helping professionals to use this self-administered scale to help caregivers examine the areas of their lives in...

Quality of life Self-care Self-report 6-10 minutes Caregivers English

[Download](#)

Caregiver-Targeted Quality-Of-Life...

07/12/2023

The caregiver-targeted quality-of-life measure (CGQOL) is an 80-item designed to assess quality of life of informal caregivers of persons with dementia...

Quality of life Self-care Self-report 11-15 minutes Caregivers English

[Download](#)

Carer Well-Being And Support (CWS)...

07/12/2023

A self-report instrument for measuring the experiences of carers of people with MHP or dementia.

...

Quality of life Interpersonal & relationship processes Affective & emotion-related processes

Decision-Making Involvement (DMI)...

01/11/2024

The DMI assesses 15 dimensions of day to day decision making for people living with dementia (PLWD). The DMI can be completed by PLWD or caregivers about the...

Risk & decision-making Self-report 0-5 minutes

Dyadic Readiness Assessment—...

01/11/2024

The Dyadic Readiness Assessment is based on the Transtheoretical Model (TTM) and has been used in both research and clinical capacities with dementia care dyads...

Risk & decision-making Self-report Disease: Alzheimer's & other dementias English

Cumulate scientific research *scientifically*

*Harmonization,
jingle/jangle, etc.*







Collaborations



SO | Science
BC | Of
Behavior
Change

**NORTHWELL
ROYBAL**

Coordinating Center



HB
CP | Human Behaviour Change Project
with  **APRICOT Ontology Tools**

The Team Center Cores Studies
CONFIDE Events Resources

BECOME A MEMBER

CONFIDE-ADRD

Massachusetts General Hospital Roybal Center For Behavioral
Research in Alzheimer's Disease and Related Dementias





Welcome to the Human Behaviour Change Project including the APRICOT Project

Advancing behavioural science through ontologies and AI/ML



APRICOT
Ontology Tools

Tools and resources for ontology development, alignment and application

The Human Behaviour Change Project (HBCP) funded by the [Wellcome Trust](#), and the Advancing Prevention Research in Cancer through Ontology Tools (APRICOT) Project funded by the [US National Institutes of Health](#), are developing the [Behaviour Change Intervention Ontology](#) and associated tools and resources to be used in reporting research; linking datasets and synthesising evidence; and AI/ML algorithms to predict intervention outcomes in novel scenarios.



Learn more about the HBCP and APRICOT >



Discover HBCP and APRICOT resources >



Explore the BCIO >



Our Network

Teams of dedicated scientists leading research studies on aging and dementia care.

[Learn more](#)

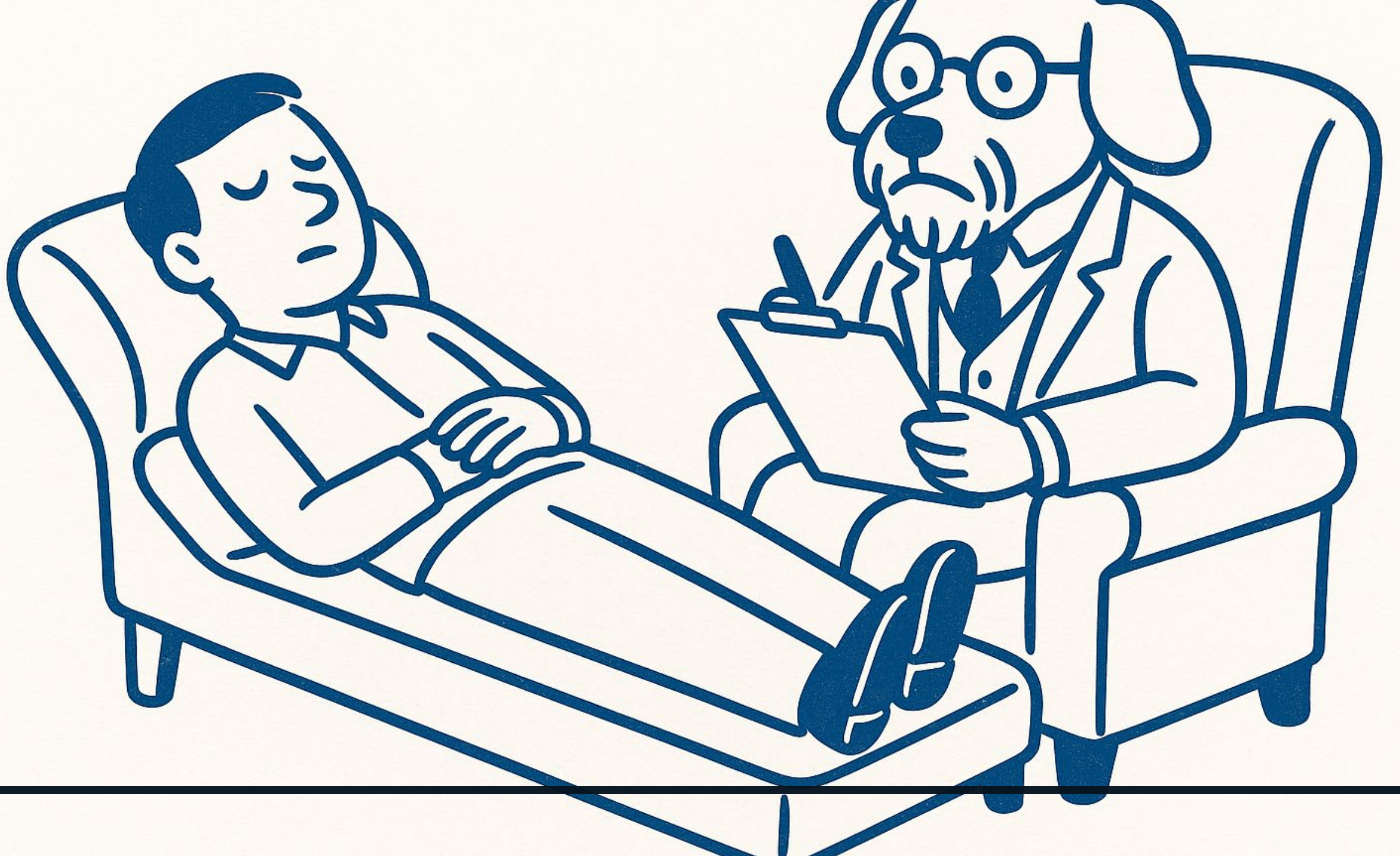


Our Methods

Our innovative teams use the framework of the NIH Stage Model to guide their efforts.

[Learn more](#)







Mechanisms as Stories

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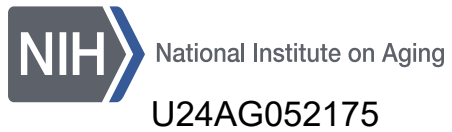
www.scienceofbehaviorchange.org

Questions?

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Thank you.

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