National Institutes of Health

SOBC | Science Of Behavior Change

Project Overview

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Behaviors are among the most important factors that determine whether people will live long, healthy lives.

Researchers need a way to better identify the mechanisms that make behavior change efforts successful, so that we can quickly find out what works—and what doesn't. We are developing new scientific methods that will reveal how and why people start and sustain healthy behaviors. This new approach will benefit scientists and the public by providing blueprints for effective and efficient behavior interventions that will reliably improve health outcomes.

Human behavior

accounts for almost 40% of the risk associated with preventable premature deaths in the United States. Health-injuring behaviors such as smoking, drinking, and drug abuse, as well as inactivity and poor diet contribute to many common diseases and adverse health conditions. Unfortunately, there are few tried and true approaches to motivate people to adopt and maintain healthy behaviors. It is difficult for people to change unhealthy behavior and even more difficult for them to maintain positive behavior changes over time. Effective and personalized approaches to achieve sustained behavior change are typically outside the routine practice of medical care. We often use terms like "willpower" and "self-control" to explain behavior change, although the underlying biological, social, and cultural contexts for these terms are not clearly understood.

Understanding the basic mechanisms of behavior change, across a broad range of health-related behaviors, can lead to more effective approaches and interventions, improving the health of our nation.

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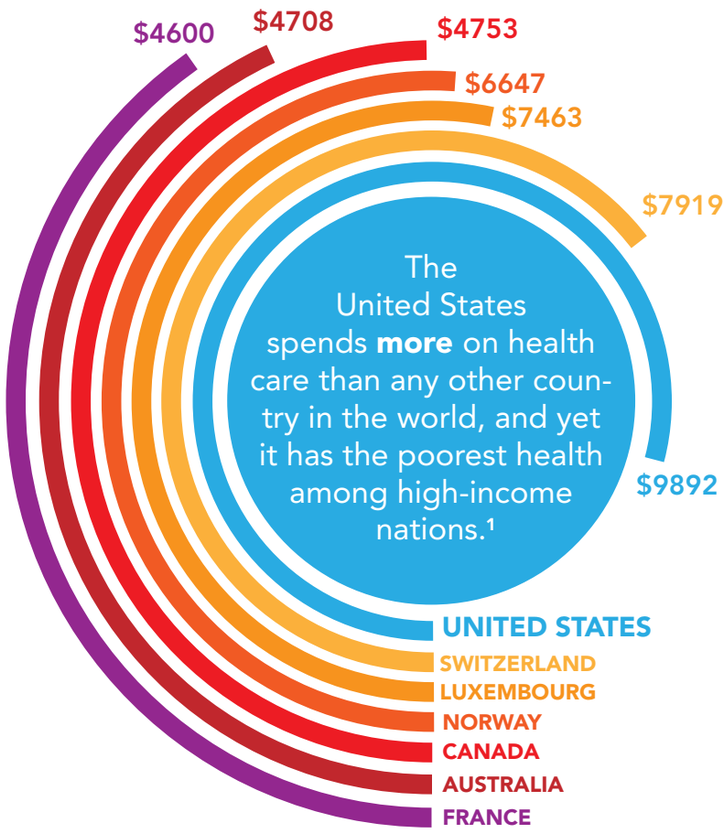
Science Of Behavior Change (SOBC) aims to improve our understanding of human behavior change across a broad range of health-related behaviors.

SOBC supports research that integrates basic and translational science and cuts across many disciplines including, cognitive and affective neuroscience, neuroeconomics, behavioral genetics, and behavioral economics. SOBC establishes the groundwork for a unified science of behavior change that capitalizes on both the emerging basic science and the progress already made.

WHY NOW?



Spending in **2017**[2]
(Per person average)

Chronic diseases contribute to 7 out of 10 deaths in the U.S.
Treatment of these diseases accounts for over 85% of U.S. health costs.[3]
Many of these chronic diseases are preventable.

Human behavior **RISK**

accounts for almost 40% of the risk associated with preventable premature deaths in the U.S.[4]

U.S. health policy has largely ignored the effects of behaviors on health, but the costs of this approach are now being acknowledged.[5]

The importance of engaging in healthy behaviors has been touted recently in major news outlets, including the New York Times. Recent articles have emphasized the important role that health behaviors play in diseases like cancer but noted how people often fail to appreciate their significance.[6]

1 Robbins A. The World Health Report 2000: health systems. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497333/pdf/pubhealthrep011600300268.pdf. Accessed September 15, 2016.
2 OECD Health Statistics, 2017. http://www.oecd.org/els/health-systems/health-data.htm. Accessed April, 2018.
3 The Power of Prevention: Chronic Disease...The Public Health Challenge of the 21st Century. Atlanta, GA: Centers for Disease Control and Prevention; 2009.
4 Yoon PW, Bastian B, Anderson RN, Collins JL, Jaffe HW. Potentially preventable deaths from the five leading causes of death—United States, 2008–2010. Morbidity and Mortality Weekly Report 2014; 63(17): 369-74.
5 Adler N, Cutler D, Fielding J, et al. Vital Directions for Health: Addressing Health Disparities and Social Determinants of Health. Washington, DC: National Academy of Medicine; 2016.
6 Carroll AE. Small Lifestyle Changes Can Sharply Cut Cancer Risk. The New York Times. July 5, 2016:A3.

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The SOBC Research Network

will focus on three broad classes of intervention targets to understand the mechanisms of behavior change.

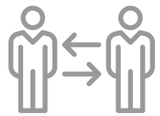
Self-regulation

Self-regulation is the ability to monitor and control our own behavior, emotions, or thoughts, altering them in accordance with the demands of the situation.

Stress Reactivity & Stress Resilience

Stress reactivity is the capacity or tendency to respond to a stressor. It is a disposition that underlies individual differences in responses to stressors and is assumed to be a vulnerability factor for the development of diseases.

Stress Resilience is an individual's ability to successfully adapt to life tasks in the face of social disadvantage or highly adverse conditions.



Interpersonal & Social Processes

Interpersonal & Social Processes are those activities, actions, and operations that involve the interaction between people.

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A digital destination

scienceofbehaviorchange.org

where **scientists from around the world** can go to understand our program, view our method framework, access and download assays, and share their own insights.

where **the general public** can go to gain insight into the world of behavioral science and find reliable, easy-to-understand, scientific information about behavioral research.

where **our own SOBC network of scientists and researchers** can go to engage in dialogue, post new data, keep up-to-date with SOBC initiatives, and stay connected.

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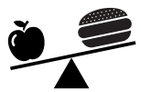
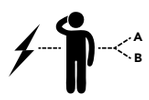
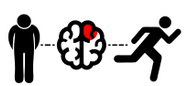
PROJECTS SUMMARY

Self-regulation

Stress Reactivity
Stress Resilience

Interpersonal &
Social Processes

UH2 Team	Mechanism		Intervention(s)	Outcome
Loucks, Britton, King **Mindfulness Influences on Self-Regulation: Mental and Physical Health Implications**	Attention control, emotion regulation, self-awareness		Mindfulness-based interventions (yoga, meditation)	Blood pressure Healthy eating Physical activity Medical regimen adherence
Heyman, Slep **Targeting Corrosive Couple Conflict and Parent-Child Coercion to Impact Health Behaviors and Regimen Adherence**	Coercive conflict in couples/parent-child dyads		Cognitive intervention (reframing or reattributing causes of behavior) Behavioral intervention (implementation intentions)	Healthy eating Tooth brushing Self-care
Miller **Targeting Self-Regulation to Promote Adherence and Health Behaviors in Children**	Emotion regulation, executive function, food bias, future orientation		"Brain games" interventions (relaxing rhythms, executive function training, food cue bias, episodic future thinking)	Healthy eating
Epstein, Bickel **Delay Discounting as a Target for Self-regulation in Prediabetes**	Delay discounting		Episodic future thinking intervention	Healthy eating Physical activity Medical regimen adherence Glycemic control
Haushofer **How Does Stress Affect Health Behaviors: Preferences, Beliefs, or Constraints?**	Temporal discounting, self-efficacy, executive control		Behavioral interventions (e.g., computerized games, videos associated with writing/speaking exercises, in-person training)	Healthy behavior Medical regimen adherence (antenatal and postnatal care visits among mothers) Chlorination of water
Poldrack, Marsch **Applying Novel Technologies and Methods to Inform the Ontology of Self-regulation**	Psychological, behavioral, and neural indicators of multiple self-regulation processes (e.g., behavior suppression, emotion regulation, inhibiting)		4-week interventions implemented via mobile behavioral assessment/intervention platform	Physical activity Medical regimen adherence Smoking
Ma, Williams **Engaging Self-regulation Targets to Understand the Mechanisms of Behavior Change and Improve Mood and Weight Outcomes**	Emotion regulation, cognition control, self-reflection		RAINBOW I-CARE intervention (includes strategies for problem solving, goal setting, self-monitoring, action planning, and social support, and antidepressant medication recommendation)	Healthy Eating Physical activity Problem solving
Almeida, Smyth **Everyday Stress Response Targets in the Science of Behavior Change**	Everyday stress responses (stress reactivity, stress recovery, stress pile-up)		Adaptive, just-in-time interventions to reduce stress	Physical activity Sleep

The expanded network

13 projects (R21) have been funded in the SOBC Research Network, which take advantage of the resources being developed by the SOBC Program. **These projects will work to utilize the instruments in the SOBC Measures Repository** to study of the mechanisms of behavior change either with an ongoing clinical trial or as a new exploratory research project.

POSITIVE AFFECT PROMOTION TO EMPOWER OPTIMAL ADHERENCE TO HIV THERAPY

Principle Investgator
Tracey Wilson

SUNY Downstate Medical Center. School of Public Health. Department of Community Health Sciences. Brooklyn, NY

INVESTIGATING FEAR OF RECURRENCE AS A MODIFIABLE MECHANISM OF BEHAVIOR CHANGE TO IMPROVE MEDICATION ADHERENCE IN ACUTE CORONARY SYNDROME PATIENTS

Principle Investgator
Jeffrey Birk

Columbia University Medical Center. Center for Behavioral Cardiovascular Health, New York, NY

TARGETING WORRY TO IMPROVE SLEEP

Principle Investgators
Judson Brewer
Elizabeth Hoge

Brown University. Providence, RI.

IS LONG-TERM MAINTENANCE WORTH THE WAIT? USING REAL TIME DATA CAPTURE TO EXAMINE DELAYED DISCOUNTING AS A PUTATIVE TARGET OF PHYSICAL ACTIVITY ADHERENCE IN WEIGHT LOSS MAINTENANCE INTERVENTIONS

Principle Investgators
Amy Gorin
Tricia Leahey

University of Connecticut, Storrs, CT.

PARENT-ADOLESCENT INTERPERSONAL PROCESSES IN THE SCIENCE OF BEHAVIOR CHANGE

Principle Investgator
Allison Harvey

University of California Berkeley, Berkeley, CA.

SCIENCE OF BEHAVIOR CHANGE IN AFRICAN AMERICAN BREAST CANCER SURVIVORS

Principle Investgator
Chanita Hughes-Halbert

Medical University of South Carolina, Charleston, SC.

MECHANISMS OF ACTION OF MBCT-PD: A PILOT STUDY

Principle Investgator
Kristen Mackiewicz Seghete

Oregon Health & Science University, Portland, OR.

BEHAVIORAL STRATEGIES TO REDUCE STRESS REACTIVITY IN OPIOID USE DISORDER

Principle Investgator
Rebecca Kathryn McHugh

McLean Hospital, Department of Psychiatry, Belmont, MA.

ENGAGING WORKING MEMORY AND DISTRESS TOLERANCE TO AID SMOKING CESSATION

Principle Investgator
Michael Otto

Boston University, Boston, MA.

NEUROBIOLOGICAL MEDIATORS OF SELF-REGULATORY AND REWARD-BASED MOTIVATIONAL PREDICTORS OF EXERCISE MAINTENANCE IN CHRONIC PAIN AND PTSD

Principle Investgator
Erica Rose Scioli

Boston University Medical Campus, Boston, MA.

A REMOTELY DELIVERED EPISODIC FUTURE THINKING INTERVENTION TO IMPROVE MANAGEMENT OF TYPE 2 DIABETES

Principle Investgator
Jeffrey Scott Stein

Virginia Tech Carilion Research Institute, VTCRI Center for Transformative Research on Health Behaviors. Roanoke, VA.

COMPARISON OF WEIGHT LOSS INDUCED BY INTERMITTENT FASTING VERSUS DAILY CALORIC RESTRICTION IN INDIVIDUALS WITH OBESITY: A 1-YEAR RANDOMIZED TRIAL

Principle Investgator
Victoria Catenacci

University of Colorado Denver School of Medicine, Denver, CO.

CULTURALLY ADAPTED COGNITIVE BEHAVIORAL STRESS AND SELF-MANAGEMENT (C-CBSM) INTERVENTION FOR PC

Principle Investgator
Frank Penedo

Northwestern University at Chicago, Chicago, IL.

Who we are

SOBC | Science Of Behavior Change

RESOURCE AND COORDINATING CENTER (RCC)

The Resource and Coordinating Center (RCC) aims to provide strategic leadership, efficient coordination, inspired support, and pioneering dissemination of the innovative experimental medicine approaches that SOBC consortium scientists adopt to identify and validate measures, and engage novel behavior change targets.

scienceofbehaviorchange.org

NIH National Institutes of Health

The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the nation's medical research agency — making important discoveries that improve health and save lives. NIH's mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

nih.gov

The SOBC Network Participating Institutions

Brown University, Providence, RI
Dartmouth College, Hanover, NH
New York University, New York, NY
University of Illinois at Chicago, Chicago, IL
University of Michigan, Ann Arbor, MI
Pennsylvania State University–University Park, State College, PA
Princeton University, Princeton, NJ
Stanford University, Stanford, CA
State University of New York at Buffalo, Buffalo, NY
University of Colorado Denver, Denver, CO.
University of Connecticut, Storrs, CT.
University of California Berkeley, Berkeley, CA.
Medical University of South Carolina, Charleston, SC.
Oregon Health & Sciences University, Portland, OR.
Harvard University McLean Hospital, Belmont, MA.
Boston University, Boston, MA.
University of Miami, Miami, FL.
Boston University Medicial Center, Boston, MA.
Virginia Tech Carilion Research Institute, Roanoke, VA.
SUNY Downstate Medical Center, Brooklyn, NY.

COLUMBIA

COLUMBIA UNIVERSITY
IRVING MEDICAL CENTER

CBCH
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Behavioral
Cardiovascular
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Northwell
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