A Review and Comparison of Frameworks used in Behavioral Intervention Development Research

Susan M. Czajkowski, Ph.D.
Chief, Health Behaviors Research Branch
Behavioral Research Program
Division of Cancer Control & Population Sciences
National Cancer Institute

Duke University School of Medicine
Roybal Center webinar
June 11, 2020
Changing unhealthy behaviors is the “single greatest opportunity to reduce premature deaths...”


The Challenge: How can we design more effective health-related behavior change interventions?

In biomedical research, a well-defined translational process exists that guides the development of new basic biological discoveries into efficacious therapies.

Building better behavioral interventions depends on defining a similar process to accelerate the translation of basic behavioral science research into more effective behavioral interventions.
The translational research spectrum applied to health behavior change research

**T1 Translation**
Basic science discoveries used to develop new treatments

**T2 Translation**
Testing use of proven therapies in clinical practice & community settings

**bBSSR**
Basic Research
Discovery
Mechanisms
Associations

**Behavioral Interventions**
Intervention Development
Efficacy Trials

**Public Health**
The whole point of the research enterprise

Dissemination & Implementation
The drug development process

- **Preclinical Testing**
  - Subjects: Laboratory and animal studies
  - Purpose: Assess safety & biological activity
  - Time Course: Year 1-2
  - New Drugs Passed: 100%

- **Phase 1**
  - Subjects: 20-100 Healthy volunteers
  - Purpose: Determine safety & dosage
  - Time Course: Year 3
  - New Drugs Passed: 70% of INDs

- **Phase 2**
  - Subjects: 100-300 Patient volunteers
  - Purpose: Evaluate effectiveness & side effects
  - Time Course: Year 4-5
  - New Drugs Passed: 33% of INDs

- **Phase 3**
  - Subjects: 1,000-3,000 Patient volunteers
  - Purpose: Verify effectiveness & monitor adverse long-term use
  - Time Course: Year 6-8
  - New Drugs Passed: 27% of INDs

Medscape ©
http://www.medscape.com
Many behavioural interventions designed according to the ISLAGIATT principle

It Seemed Like A Good Idea At The Time

Patient has changed their behaviour!
Intervention worked!

But how did it work?
Can we do it again?
Can we train others to do the same?
Using a framework to guide behavioral intervention development:

- Encourages a more progressive, systematic and unified approach to developing & testing behavioral interventions, as opposed to the more fragmented, “one-fell-swoop” approach we have now.

- Promotes the “bridging” of basic and applied behavioral research, potentially leading to new & innovative approaches to changing behavior & improving health.

- Encourages the development of behavioral interventions that are well-characterized, appropriately tested & optimized prior to testing in larger, more expensive Phase III trials.

- Leads to identification of “failures” earlier in the process, allowing for refinement of interventions and reducing premature testing of “weak” behavioral interventions in Phase III trials.
"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."
NIH Stage Model
How successful is behavioral science at producing behavioral interventions that are used in the real world?

- Basic science
  - Poorly connected to applied science (e.g., efficacy + effectiveness trials)

- Applied science
  - Efficacy poorly connected to effectiveness
  - Often, efficacy does not translate to effectiveness

- Bottom Line: Efficacious interventions may never be implemented
Intervention Development + Translation: Partnering Basic Science w/ Clinical Science

Varda Shoham + Daniel Wegman:
- Bringing basic research on paradoxical processes into intervention development

Michael Otto + Mark Bouton + Michael Davis:
- Bringing basic research on extinction into intervention development

Greg Siegle:
- Linking cognitive + affective neuroscience to intervention development
Efficacy → Effectiveness

Solution #1: Change the Delivery System
Solution #2: Change the Interventions

“But we cannot change behavioral interventions to be more effective until we know what the essential elements of a treatment are.”
Elements of Efficacious Intervention

- Seems important, Does nothing
- Critical. Won’t work without this
- Does almost nothing
- Does almost nothing alone, but helps boost effects of other elements
- Only works with purple
- Does nothing
- Only works with green
- Seems unimportant
- Contributes greatly
- Contributes a small amount
Solution #2: Change the Interventions

Mechanism of Action, Essential Elements + Translation

Mechanism of action (MOA) research involves elucidating the processes underlying the effects of an intervention. This is an inherently translational (T1) research process that brings basic science ideas, theories, paradigms and findings into applied/clinical studies.

Understanding MOA + determining essential elements of interventions will help:
-- Boost intervention effects (by knowing what to emphasize)
-- Streamline interventions (by knowing what to drop + emphasize)

This will help make evidence-based interventions into equally or more potent, and more usable, less costly, more community-friendly behavior change interventions – facilitating translation (T2) into real world settings.
Implementation of potent interventions is the ultimate goal.

Basic research occurs in every Stage.
Stage Model:
Stage I (Intervention Generation/Refinement)

Key Features & Goals

(1) Intervention standardization/Creation of intervention manual

(2) Development of new intervention

(3) Modification/Refinement/Adaptation of existing intervention to:
   - Boost treatment effects
   - Make more community-friendly
   - Adapt for particular populations
   - Develop or improve therapist training intervention

(4) Pilot testing of intervention

Focus on Mechanism of Action (applies to all Stages)
Science of Behavior Change (SOBC)
Experimental Medicine Approach
The NIH Common Fund's Science of Behavior Change (SOBC) Program

http://commonfund.nih.gov/behaviorchange/
https://scienceofbehaviorchange.org/

• Supports:
  
  • basic research to improve our understanding of the psychological & social *mechanisms* underlying behavior change across multiple diseases and conditions
  
  • translational research to use this knowledge to develop more effective and economical behavioral interventions
An Experimental Medicine Approach to Behavior Change seeks to answer the question:

“What are the processes/mechanisms that drive behavior change?”

Requires:
-- Identifying targets (processes/mechanisms) that drive behavior change
-- Experimental methods for engaging the target
-- Valid measures of target engagement
Example: Mechanisms of Self-Regulation

- Impulsivity
- Conscientiousness
- Will-power
- Self-monitoring
- Self-control
- Delay discounting
- Reward sensitivity
- Inhibition
- Executive attention
- Effortful control
- Emotion regulation
- Self-regulation
Delay Discounting is a way to quantify delay of gratification: choice of a larger delayed reward vs. smaller immediate reward indicates greater valuation of future rewards. The more you discount future rewards, the more impulsive you are.
Implications for Intervention Development:
Tests hypotheses for how an intervention causes behavior change

Identifying Hypothesized Mechanisms

Target engaged?

Target valid?

Intervention

Traditional efficacy test

Outcome: Behavior Change

Delay Discounting

Impulsivity
Implications for Measures Development:
Ensure valid measurement of target engagement

Developing Tools: Measures and Manipulations

- Behavioral measure/assay
- Neuroimaging measure/assay
- Self-report measure/assay
- Biological measure/assay

Putative Target

Target engaged?  
Target valid?

Intervention  ➔  Behavior Change
Science of Behavior Change (SOBC) Approach

Key Features & Goals

- Emphasis on
  - Identifying the processes/mechanisms that drive behavior change & can serve as appropriate targets of behavior change interventions
  - Identifying the most appropriate assessments and manipulations of targets in each of these domains for behavior change science

- Provides a series of steps for identifying and validating treatment targets:
  1. identify a set of putative targets within a psychological or behavioral domain that is implicated in health behavior;
  2. leverage existing or developing new experimental or intervention approaches to engage the targets;
  3. identify or develop appropriate assays (measures) to permit verification of target engagement; and
  4. test the degree to which engaging the targets produces a desired change in health behaviors associated with clinical outcomes
Medical Research Council (MRC) Framework for the Development and Evaluation of Complex Interventions to Improve Health
Behavioral interventions to improve health are typically **complex rather than uni-dimensional**

Yet few intervention development & evaluation frameworks acknowledge &/or incorporate complexity

The MRC framework is intended to provide guidance for **developing, evaluating & implementing “complex” behavioral interventions**

It does not describe in detail or prescribe specific study designs, methods or analyses to be used but rather **describes issues & questions to be addressed** across 4 stages of behavioral intervention development, evaluation & implementation

It does provide a **series of case studies** that illustrate approaches that can be taken at each stage of the framework
Box 2 What makes an intervention complex?

Some dimensions of complexity

- Number of and interactions between components within the experimental and control interventions
- Number and difficulty of behaviours required by those delivering or receiving the intervention
- Number of groups or organisational levels targeted by the intervention
- Number and variability of outcomes
- Degree of flexibility or tailoring of the intervention permitted

Implications for development and evaluation

- A good theoretical understanding is needed of how the intervention causes change, so that weak links in the causal chain can be identified and strengthened
- Lack of impact may reflect implementation failure (or teething problems) rather than genuine ineffectiveness; a thorough process evaluation is needed to identify implementation problems.
- Variability in individual level outcomes may reflect higher level processes; sample sizes may need to be larger to take account of the extra variability, and cluster- rather than individually-randomized designs considered.
- Identifying a single primary outcome may not make best use of the data; a range of measures will be needed, and unintended consequences picked up where possible.
- Ensuring strict fidelity to a protocol may be inappropriate; the intervention may work better if adaptation to local setting is allowed.
Developing and evaluating complex interventions: the new Medical Research Council guidance

Peter Craig, programme manager,1 Paul Dieppe, professor,2 Sally Macintyre, director,3 Susan Michie, professor,4 Irwin Nazareth, director,5 and Mark Petticrew, professor6

Author information ➤ Article notes ➤ Copyright and License information ➤
Developing an intervention

Questions to ask yourself include: Are you clear about what you are trying to do: what outcome you are aiming for, and how you will bring about change? Does your intervention have a coherent theoretical basis? Have you used this theory systematically to develop the intervention? Can you describe the intervention fully, so that it can be implemented properly for the purposes of your evaluation, and replicated by others? Does the existing evidence – ideally collated in a systematic review – suggest that it is likely to be effective or cost effective? Can it be implemented in a research setting, and is it likely to be widely implementable if the results are favourable?

If you are unclear about the answers to these questions, further development work is needed before you begin your evaluation. If you are evaluating a policy or a service change as it is being implemented, rather than carrying out an experimental intervention study, you still need to be clear about the rationale for the change and the likely size and type of effects, in order to design the evaluation appropriately.

Piloting and feasibility

Questions to ask yourself include: Have you done enough piloting and feasibility work to be confident that the intervention can be delivered as intended? Can you make safe assumptions about effect sizes and variability, and rates of recruitment and retention in the main evaluation study?
The Behaviour Change Wheel & the
The Capability Opportunity
Motivation – Behaviour (COM-B) Model
Problems with behaviour change interventions

- Poor definition of interventions
  - Limited ability to develop science/theory
  - Limited ability to generalise findings

- No understanding of mechanisms of change
  - If effective, unclear why it worked, can’t replicate...
  - If ineffective, not sure why...

We need to:

- Build a taxonomy to define & standardize behaviour change techniques
- Articulate & test causal mechanisms of change
Need for a common language

Biomedicine vs Behavioural Science

**Varenicline (JAMA 2006)**
- **Intervention content**
  - Varenicline titrated to 1 mg twice daily (n = 344) or bupropion SR titrated to 150 mg twice daily (n = 342) or placebo (n = 341) for 12 weeks
- **Mechanism of action**
  - Activity at a subtype of the nicotinic receptor where its binding produces agonistic activity while

**Behaviour counselling (Cochrane 2005)**
- **Intervention content**
  - Review smoking history & motivation to quit
  - Help identify high risk situations
  - Generate problem-solving strategies
  - Non-specific support & encouragement
- **Mechanism of action**
  - None mentioned

Which of these would you find easier to replicate?

Which of these could you explain to someone else?
Identifying Behaviour Change Techniques

**Behaviour Change Technique (BCT)**

“An observable, replicable, and irreducible component of an intervention designed to alter or redirect causal processes that regulate behaviour”

→ Active ingredients of behaviour change interventions

(Abraham & Michie, 2008)

Provides a common standardized vocabulary to define behaviour change intervention components
The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

Published online: 20 March 2013
© The Society of Behavioral Medicine 2013

Consensus study with experts
Evidence-based Approach to Behaviour Change: The Behaviour Change Wheel

Key Aspects
Specify your target behaviour clearly
Understand why behaviour is not currently happening
Use evidence-based techniques to change behaviour

The Behaviour Change Wheel

**6 Sources of behaviour:**
- What are the drivers of the specific behaviours?
- What needs to change to change the behaviour?

**Systematic Review:**
- 19 frameworks
- Combined into the BCW
The Capability Opportunity Motivation – Behaviour (COM-B) Model

Changing any behaviour involves identifying what needs to change in terms of: Capability, Motivation, Opportunity.
The COM-B Model

**Capability**
- Ability to engage in behaviour
  - **Physical capability (e.g. skills)**
  - Physical skill, strength, or stamina
  - **Psychological capability (e.g. knowledge)**
  - Knowledge or psychological skills, strength or stamina to engage in the necessary mental processes

**Motivation**
- Brain processes that energize and direct behaviour:
  - **Automatic (e.g. habits)**
  - Automatic processes involving emotional reactions, wants and needs, impulses, and reflex responses
  - **Reflective (e.g. goals)**
  - Reflective processes involving plans (self-conscious intentions) and evaluations

**Opportunity**
- Environments that enable the behaviour:
  - **Social opportunity (e.g. social norms)**
  - Interpersonal influences, social cues and cultural norms that influence the way we think about things
  - **Physical opportunity (e.g. affordability)**
  - Opportunity afforded by the environment involving time, resources, locations, cues, physical ‘affordance’
9 Intervention functions:

Broad categories through which an intervention can change behaviour
<table>
<thead>
<tr>
<th>Intervention function</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Increasing knowledge or understanding</td>
</tr>
<tr>
<td>Persuasion</td>
<td>Using communication to induce a positive or negative feelings or stimulate action</td>
</tr>
<tr>
<td>Incentivisation</td>
<td>Create expectation of reward</td>
</tr>
<tr>
<td>Coercion</td>
<td>Create expectation of punishment or cost</td>
</tr>
<tr>
<td>Training</td>
<td>Imparting skills</td>
</tr>
<tr>
<td>Restriction</td>
<td>Using rules that limit engagement in the target behaviour or competing or supporting behaviour</td>
</tr>
<tr>
<td>Environmental restructuring</td>
<td>Changing the physical or social context</td>
</tr>
<tr>
<td>Modelling</td>
<td>Provide an example for people to aspire to or imitate</td>
</tr>
<tr>
<td>Enablement</td>
<td>Increasing means/reducing barriers to increase capability or opportunity</td>
</tr>
</tbody>
</table>
Identify Behaviour Change Techniques linked to intervention functions

| Environmental restructuring | Most frequently used BCTs:  
|                            | - Adding objects to the environment  
|                            | - Prompts/cues  
|                            | - Restructuring the physical environment  
| Less frequently used BCTs: | - Cue signalling reward  
|                            | - Remove access to the reward  
|                            | - Remove aversive stimulus  
|                            | - Satiation  
|                            | - Exposure  
|                            | - Associative learning  
|                            | - Reduce prompt/cue  
|                            | - Restructuring the social environment  |
Key features of Behaviour Change Wheel & COM-B Model

1. Specify target behaviour precisely
2. Use behavioural theory to develop interventions systematically
3. Describe mechanisms through which these work
4. Specify behaviour change techniques, linking these to theory
5. Improve reporting, using standardised, shared terminology
6. Facilitate combining evidence in systematic reviews to inform practice
The ORBIT Model for Developing Behavioral Treatments for Chronic Diseases
Obesity Related Behavioral Intervention Trials (ORBIT) RFA program

- **Objective:** To translate findings from basic research on human behavior to develop more effective interventions to reduce obesity & improve obesity-related health behaviors

- **Mechanism:**
  - Trans-NIH U01 (Cooperative agreement)
  - Supported by NHLBI, NCI, NIDDK, NICHD, OBSSR
  - 7 ORBIT research sites & 1 Resource & Coordination Unit (RCU)

- Each research center supports interdisciplinary project teams of basic and applied biological, clinical, behavioral and social scientists who are developing novel obesity-related interventions through formative & experimental research, early phase trials & pilot studies
Translating Ideas into Interventions:
The Process of Developing Behavioral Interventions
NIH-sponsored Workshop
December 6-7, 2010

- What model or framework can we use to guide the behavioral intervention development process?

- Which study designs & methods are most appropriate for the development of behavioral interventions?

- How do we create environments that foster creativity & encourage the development of innovative behavioral interventions?
The ORBIT Model for Behavioral Intervention Development

The Revised ORBIT Model

The ORBIT Model

Czajkowski, Powell et al., *Health Psychology*, 2015;
SIGNIFICANT CLINICAL QUESTION

Objective is to articulate a health need or clinical question requiring a solution “with the precision of a basic science hypothesis” (Coller, 2008)

Begin with a health issue that poses a significant problem:

-- A disease that is increasing in numbers, severity, exclusively affects or is increasing in a subgroup

-- A health problem for which no treatment exists, or treatment is not very effective (could be optimized)

-- Requires a new approach to improve outcomes

-- Involves a novel risk factor or new approach to treatment
How can we identify the important *clinical* & *public health* questions that need to be answered?

- We can gain insights from clinicians in the field – what are the problems they identify & prioritize?

- Public health officials, community leaders & members can identify issues of critical need in their communities

- Evidence reviews (e.g., Cochrane), guideline panel recommendations, NIH Workshop findings & recommendations – all can be sources of “clinically significant” questions that are unresolved or lack sufficient evidence

- The clinical questions we ask also need to take the patient’s point of view into account – what are the important questions to patients and their families?
The ORBIT Model

What is basic behavioral science research?

- Seeks to answer the question: why do people behave as they do?

- Concerned with uncovering the fundamental principles and processes which govern how human beings:
  - perceive the environment
  - process information
  - make decisions
  - experience, express and regulate emotion
  - form and change attitudes, beliefs and values
  - become and remain motivated to change behavior
  - Interact with others & with their environments
The ORBIT Model

Phases of Behavioral Treatment Development: ORBIT Model

**Phase I: Design**

Phase Ia -- **Define** the scientific foundation & basic treatment elements
- Identify behavioral risk factor target & clinically significant milestones
- Provide basic behavioral & social science research basis for treatment components & targets
- Describe pathways through which treatment can affect outcomes
- Identify candidate intervention components

**Study Designs & Methods:**
- Systematic reviews to determine treatment targets & potential intervention elements
- Laboratory & field experiments to identify behavioral & biological mechanisms of action
- Observational studies to identify key intervention targets & points of “entry”
- Qualitative & mixed methods research to assess acceptability of proposed approach to end-users – “user-centered” research
SOBC’s experimental medicine approach + the ORBIT Model

Phases of Behavioral Treatment Development: ORBIT Model

Phase I: Design

Phase Ia -- Define the scientific foundation & basic treatment elements

- Identify behavioral risk factor target & clinically significant milestones
- Provide basic behavioral & social science research basis for treatment components & targets
- Describe pathways through which treatment can affect outcomes
- Identify candidate intervention components

Study Designs & Methods:

- Systematic reviews to determine treatment targets & potential intervention elements
- Laboratory & field experiments to identify behavioral & biological mechanisms of action
- Observational studies to identify key intervention targets & points of “entry”
- Qualitative & mixed methods research to assess acceptability of proposed approach to end-users – “user-centered” research
Identifying candidate intervention components: The Behaviour Change Wheel

Phases of Behavioral Treatment Development: ORBIT Model

Phase I: Design

Phase Ib – **Refine** the intervention for strength & efficiency
- Identify essential treatment components
- Determine aspects of delivery (mode, frequency, duration, dose, intensity)
- Determine need for tailoring (e.g., for subgroups)

Study Designs & Methods:

- Small-N, case series &/or experimental studies that test effects of varying an intervention’s content, timing, frequency, duration, intensity & mode of delivery; dose-finding studies
- Novel methods for developing, testing & refining behavioral interventions such as the Multiphase Optimization Strategy (MOST) & adaptive interventions (SMARTs)
Figure 2. Sequential Multiple Assignment Randomization Trial (SMART) design and participant flow. 5 families were removed from the study by the research team and are not included in the numbers shown. MIS = Motivational interviewing and skills (Phase 1); HB-MIS = Home-based motivational interviewing and skills; OB-MIS = Office-based motivational interviewing and skills; RP = Relapse Prevention; CS = Continued Skills; CM = Contingency Management.
The ORBIT Model

Czajkowski, Powell et al., *Health Psychology*, 2015;
Phase II: Preliminary Testing

Phase IIa – *Proof-of-Concept Studies* to determine if the intervention can achieve a *clinically significant signal* on the relevant behavioral risk factor
- Typically non-randomized, no control group, small-N

Phase IIb – *Feasibility & Pilot Testing* to determine:
- whether the intervention is feasible & acceptable
- numbers available for screening & recruitment
- estimates of yield (screening to enrollment ratio), drop-out rate, crossovers, adherence to treatment

Phase IIc – *Phase II Efficacy Trial* to determine:
- whether the intervention has an effect on a behavioral or intermediate outcome of interest
- outcome is typically in the mechanistic pathway &/or related to the ultimate clinical or physical health outcome of interest
Begin with the “end” in mind
- Emphasis on producing meaningful clinical &/or public health impact
- Process is guided by “significant clinical questions” from end users – patients, providers

Progression from basic research to more clinical/applied stages
- Many behavioral interventions are “stuck” in pre-efficacy phases – testing how to achieve small changes in behavior without moving to Phase III & IV RCTs with clinically important endpoints
- Pushes toward the efficacy trial & beyond
- Emphasizes the importance of developing a long-term, systematic program of intervention development, culminating in Phase III/IV trials

Each phase includes “clinically meaningful” milestones
- Need to specify a priori criteria for moving to next phase of the intervention development process
- Emphasis is on achieving “clinically significant” (not just statistically significant) change in behavioral targets

Flexibility in terms of:
- Number & types of studies within phases
- Duration of each phase
- Movement from one phase to the next (can “skip” a phase if necessary)

Flow is bi-directional
- Allows for “failure” & return to earlier phases as needed
- Encourages optimization of intervention before large-scale testing
Intervention development frameworks: Which to choose?
Behavioral Intervention Development Models: Common Elements

- Define a **systematic intervention development process** to link ideas, basic behavioral research findings & theory to clinical & public health applications

- Highlight importance of **identifying the processes/mechanisms that drive behavior change** & can serve as appropriate targets of behavior change interventions

- **Bi-directional, iterative movement** through phases – return to earlier phases if needed, de-stigmatizes ”failure”

- Emphasize importance of **transdisciplinary & team science approaches**

- **Frameworks are complementary** & can be integrated or used in combination -- e.g., ORBIT w/ SOBC experimental medicine approach + BCW/COM-B model
Behavioral Intervention Development Models: Defining Features

**Stage Model**
- Mechanistic/basic behavioral research should be embedded in ALL stages
- Goal is interventions that can be implemented in clinical/public health settings

**SOBC Experimental Medicine Approach**
- Identification of underlying mechanisms as potential targets of intervention
- Development of assays/measures of target change/engagement
- Test ability of intervention to change mechanistic target & health-related behavior
- Terminology mirrors early phases of drug/device development

**MRC Framework**
- Focus on complex (multilevel, multicomponent) interventions & policy/systems level interventions
- Use of theory, systematic reviews, modelling & ensuring implementability

**Behaviour Change Wheel & COM – B Model**
- Importance of developing & utilizing a precisely defined & standardized set of behavior change techniques
- Importance of linking theory to BCTs in behavior change research

**ORBIT Model**
- Emphasis on achieving “clinically significant” not just statistically significant behavior change
- Flexible & iterative but progressive – pushes forward toward efficacy trial
- Terminology mirrors drug development process (Phase I & II Clinical Trials)
Intervention development frameworks are like navigation systems.....

or architectural plans....

.... They are a vehicle to help you achieve your goals
<table>
<thead>
<tr>
<th>PAR-18-559: Cancer Prevention and Control Clinical Trials Grant Program (R01 Clinical Trial Required)</th>
<th>PAR-19-309: Stimulating Innovations in Behavioral Intervention Research for Cancer Prevention and Control (R21 Clinical Trial Optional)</th>
</tr>
</thead>
</table>
| **Supports** “Phase 0-IV clinical trials involving investigations in cancer prevention or control....includes development and testing of interventions” for cancer-related risk behaviors such as:  
- tobacco use  
- energy balance  
- sun exposure  
- vaccine uptake  
- screening behavior  
- treatment adherence  
- environmental modifications and policy changes aimed at altering cancer-related health behaviors  
Can be used to support early-phase translational research at any stage of the ORBIT model | **To provide support for research aimed at “developing and evaluating novel strategies to improve cancer-related health behaviors” including:**  
- Diet  
- Obesity  
- Smoking  
- Physical activity & sedentary behavior  
- Sleep & circadian dysfunction  
- Alcohol use  
- Adherence to cancer-related medical regimens  
Can be used to support “early-phase (basic-to-clinical) behavioral translation studies (e.g., Phase I or Phase II studies, as defined by the ORBIT model for behavioral treatment development”  
| Contact: Susan Czajkowski | Contact: Tanya Agurs-Collins |
NEW NIH Funding Opportunity Announcement!

Notice of Special Interest (NOSI): Development and Preliminary Testing of Health-related Behavioral Interventions

NOT-OD-20-106

**Purpose:** To highlight interest in the systematic development of novel health-related behavioral interventions that leverage new, emerging or understudied areas in basic behavioral and social sciences research (bBSSR).

**Issued by:**

Office of Behavioral and Social Sciences Research
National Cancer Institute
National Institute on Aging
National Center for Complementary and Integrative Health
National Institute of Arthritis and Musculoskeletal and Skin Diseases
National Institute of Dental and Craniofacial Research
National Institute on Drug Abuse
National Institute of Mental Health
National Institute of Nursing Research
The “Nuts and Bolts” of Behavioral Intervention Development: Study Designs, Methods and Funding Opportunities
Presented by: Theories and Techniques of Behavior Change Interventions SIG

SBM 2019 Annual Meeting in Washington, D.C.
PRE-CONFERENCE WORKSHOP
Wednesday, March 6, 2019 8:30 a.m. – 2:15 p.m.
Register before February 6 for early bird rate: www.sbm.org/meetings/2019

This seminar will provide investigators an opportunity to:
(1) learn about the ORBIT model, a new framework for behavioral treatment development;
(2) learn about appropriate study designs and methods for early-phase behavioral intervention research;
(3) apply the ORBIT model and knowledge about relevant methodologies to their own behavioral treatment development projects;
(4) identify early-phase translational research funding opportunities and develop grant applications to support intervention development research.

PRESENTERS
Susan Czajkowski, PhD, National Cancer Institute, NIH
Lynda Powell, PhD, Rush University Medical Center
Walter Dempsey, PhD, Harvard University
Kenneth Freedland, PhD, Washington University at St. Louis
Frank Perna, PhD, National Cancer Institute, NIH
Ty Ridenour, PhD, RTI International
Elizabeth K. Towner, PhD, Wayne State University
Special Issue: From Ideas to Efficacy in Health Psychology

A special issue on early-phase translational research in health psychology and behavioral medicine

Editors: Leonard Epstein, Ph.D., Susan Czajkowski, Ph.D. & Kenneth Freedland, Ph.D.

Will highlight research that translates concepts or findings from basic behavioral and social sciences research and/or other relevant scientific disciplines into interventions to improve one or more health-related behavioral or psychosocial risk factors.
Building early-phase behavioral translational research capacity by:

- Creating and growing a community of scientists interested in early-phase translational research to share ideas, collaborate on projects, network & learn from each other

- Promoting institutional and structural changes to support early-phase behavioral intervention research

- The goal: To establish a viable and *sustainable* “pipeline” for basic-to-clinical behavioral research
Thank You!
Questions?