BUSCH® SYSTEMS

Let's Recycle Better, Together.

CHANGING BEHAVIOUR

CASE STUDIES & BEST PRACTICES TO INFLUENCE ZERO WASTE BEHAVIOUR

WEDNESDAY, SEPTEMBER 3RD, 2025

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Today's Panelists

Jennifer Tabanico
President

Action Research

Gretchen Engbring
Social Scientist,

Office of Sustainability

Stanford University

Join the Discussion

From your toolbar:

Share your experience & opinions

Look for links to resources

Type direct questions for panelists

Beyond Awareness

Sparking Recycling and Waste Reduction Behavior with Community-Based Social Marketing

September 3, 2025

Jennifer Tabanico
PRESIDENT
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action RESEARCH

Action Research

Applying behavioral and social science research to outreach programs that promote safe, healthy, and sustainable communities.

sparking behavior changes for good

Behavior Matters

Environmental Problems are Behavior Problems

- Sorting Behavior
- Waste Reduction

Behavior Matters

Solutions Involve Behavior

Technology

Infrastructure

Policy

Information-Intensive

Knowledge

- *If people know what to do, they will do it.*
- *Knowledge ≠ Behavior Change*

Attitude

- *If people believe, they will change.*
- *Attitude ≠ Behavior Change*


While knowledge and attitudes are important foundations, people do not act solely on what they know or believe.

Community-Based Social Marketing

Process not Tactic

- Origins in Social and Environmental Psychology
- Community-based
- Removes barriers
- Behavior-based

Community-Based Social Marketing

McKenzie-Mohr, D. (1999, 2011)

Residential Recycling

Step 1: Select Behaviors

- **Waste Characterization Study**
  - 415 Households
  - Mixed Paper in 87% of Garbage Carts
  - 8% of Weight

Residential Recycling

Step 2: Identify Barriers & Benefits

- **In-Person Surveys (N=261)**
- **Barriers**
  - Privacy concerns
  - Confusion about shiny paper, plastic windows
- **Benefits**
  - Environment
  - Right thing to do

Residential Recycling

Step 3: Develop Strategy

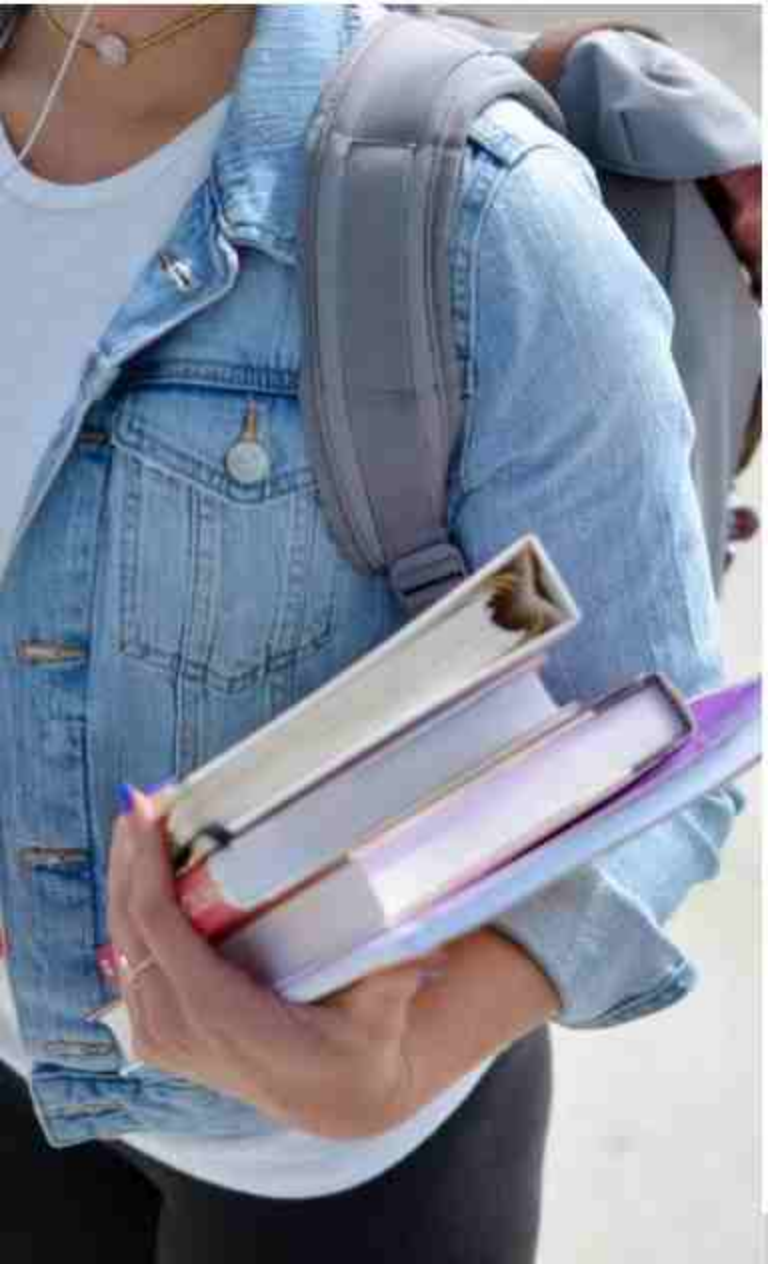
- **Social Norms**
  - *87% of Fort Worth residents stated that recycling at home was very important…*
- **Address Barriers**
  - *You can recycle…junk mail, envelopes with windows, magazines, and glossy paper.*
- **Prompt**
  - Black marker

Campus Recycling (Contamination)

Step 1: Select Behaviors

- **Campuswide Waste Audits**
  - Residence halls highest contamination
  - 95% of the student body

Swarthmore College, PA



Campus Recycling (Contamination)

Step 2: Identify Barriers & Benefits

- **Intercept Surveys**
- **Barriers**
  - Knowledge barriers tied to specific items
  - Competition with other signage
- **Benefits**
  - Motivated to be correct
  - Environment and community

Swarthmore College, PA

Campus Recycling (Contamination)

Step 3: Develop Strategy (Bin Signage)

- **Address Barriers**
  - Focus on “problem” items
- **Social Norms**
  - Most do the right thing
- **Prompt**
  - 3-D signage to stand out
- **Highlight Benefits**


SORT SMART
SPOTLIGHT
Swarthmore students are smart about sorting waste for our community and the environment, but some items can be confusing.
COMPOST
ME
Zero Waste
Working Group


SORT SMART
SPOTLIGHT
FIRE HAZARD
COMPOST
RECYCLE
TRASH
COMPOST
MIXED
RECYCLING
TRASH

Campus Recycling (Contamination)

Step 3: Develop Strategy (Sorting Game)

- **In-Person Communication**
- **Feedback**
  - *Info barriers*
  - *Practice new habits*
- **Commitment**
  - *Leverage self-perception*
  - *Enhance social norms*

Swarthmore College, PA

Community-Based Social Marketing

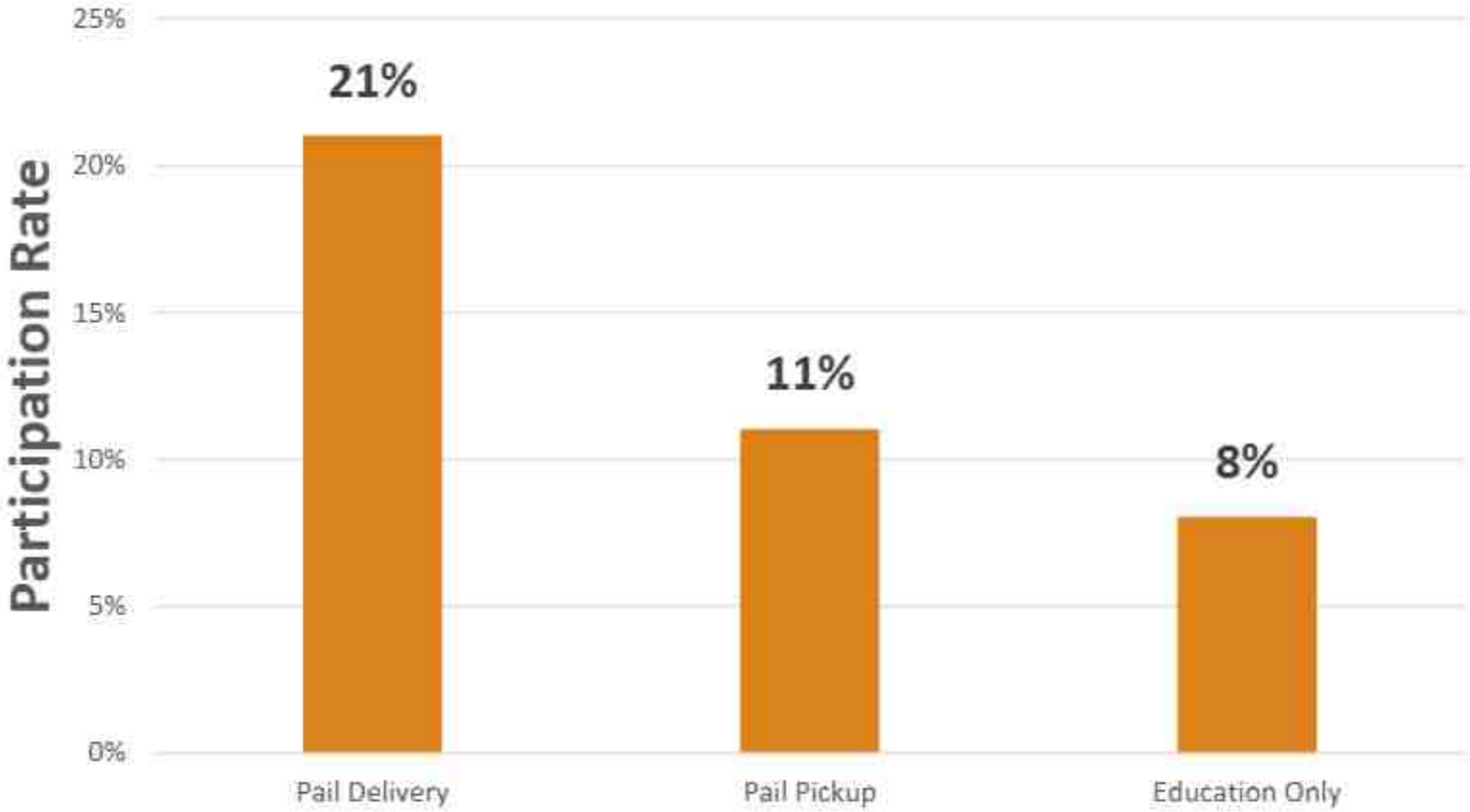
McKenzie-Mohr, D. (1999, 2011)

Residential Organics Collection

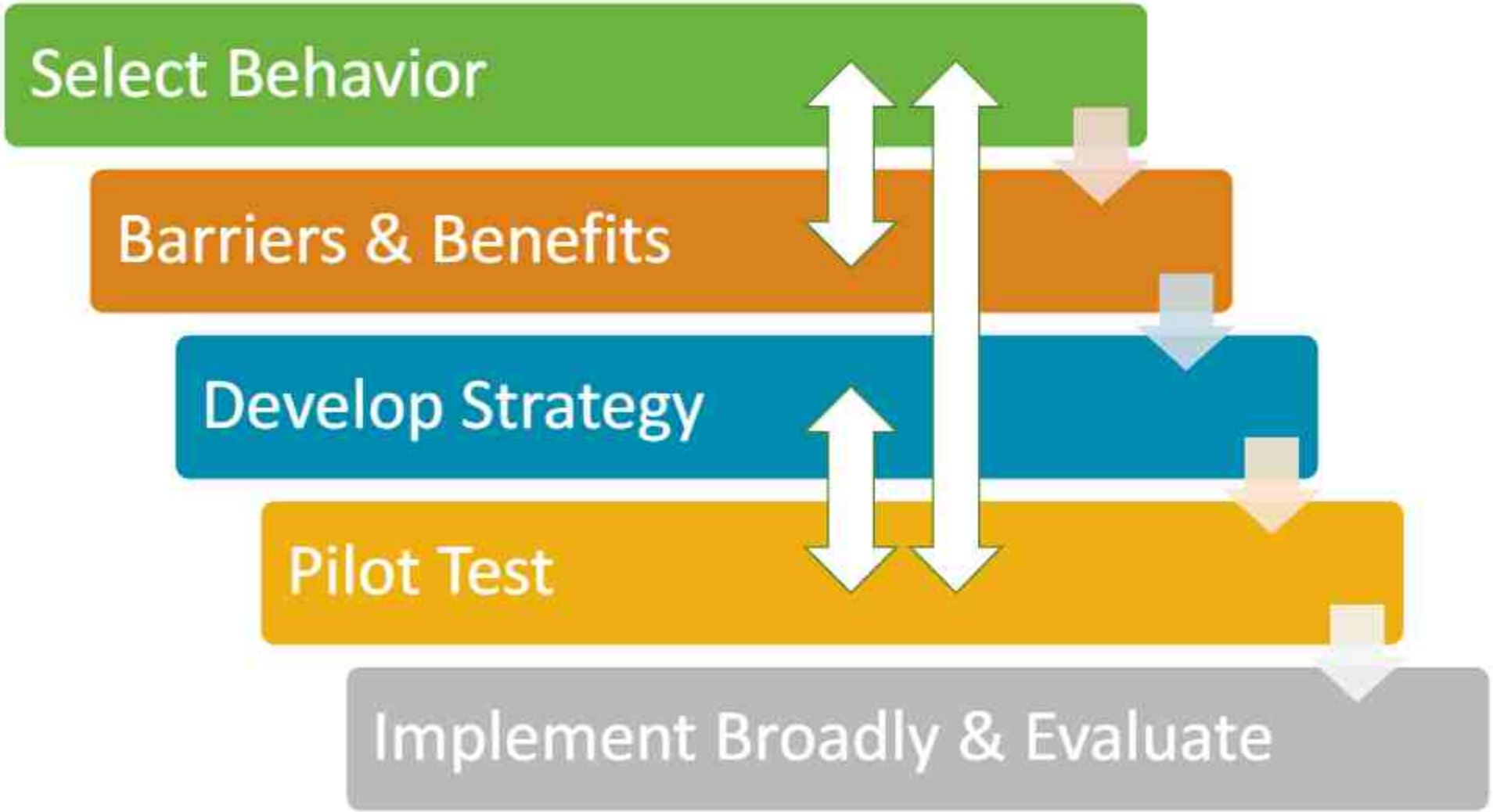
Testing Different Strategy Options

Residential Organics Collection

$ per behavior	$33.43	$71.45	$52.00



Community-Based Social Marketing



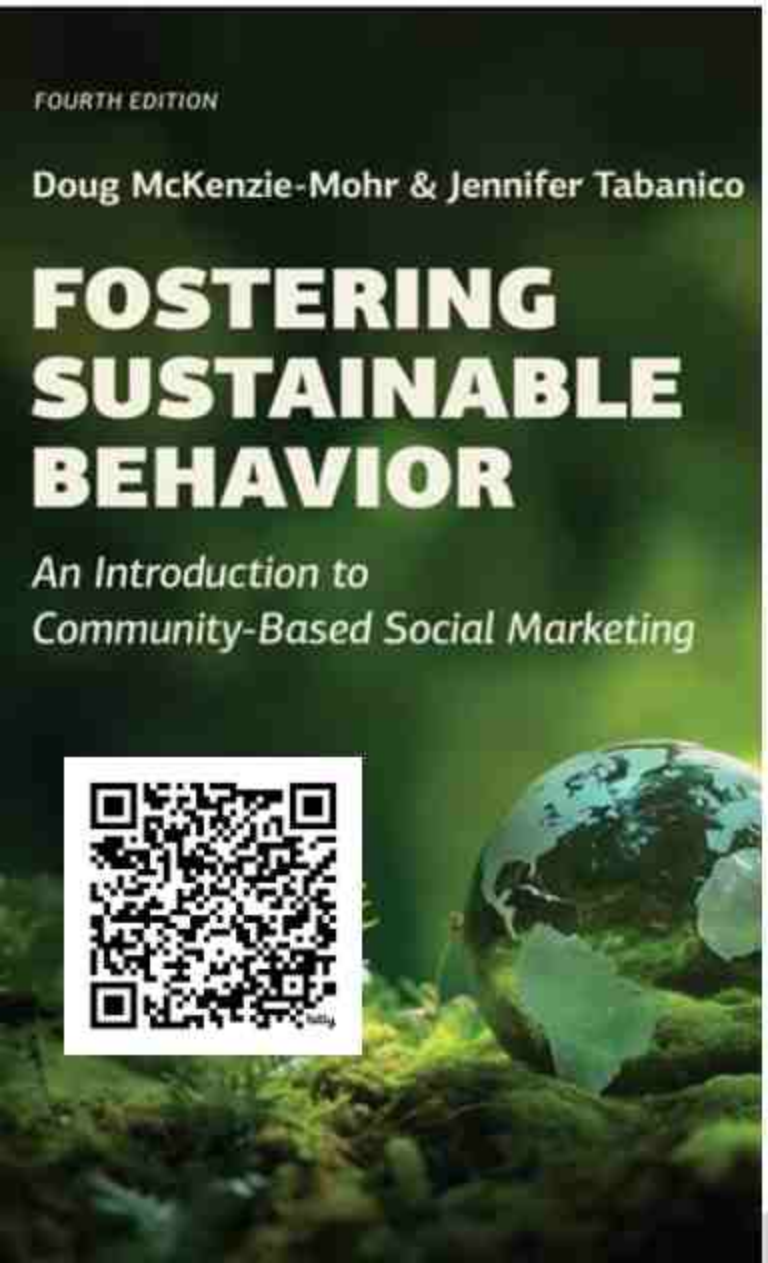
McKenzie-Mohr (1999, 2011)

McKenzie-Mohr & Tabanico (2025)

CBSM for Recycling & Waste Reduction

Key Messages

- Behavior matters.
- Barriers vary at the level of individual actions.
- CBSM provides a structured, data-driven framework for developing strategies.
- Scale up cost-effective strategies.



Thank you!

Learn More

- www.cbsm.com
- www.toolsofchange.com
- ***UCSD Extension**: Behavior Change Strategies for Sustainability*
- Fostering Sustainable Behavior, 4th edition (2025)

Contact

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action RESEARCH

Live Poll #1

Has your organization implemented a Behavior Change campaign(s)?

(Click all that apply)

- ○ Traditional "how-to" recycling education
- ○ Full CBSM-style campaign – Recycling focus
- ○ Full CBSM-style campaign – Food/ compost focus
- ○ Full CBSM-style campaign – Waste prevention focus
- ○ Less formal behavior change messaging

Share details in the chat

SUSTAINABLE STANFORD

Some Steps for Saving the World, One Behavior at a Time

(no pressure)

Dr. Gretchen Engbring | Sustainability Social Scientist
Stanford Office of Sustainability, LBRE

Note: This presentation is not an endorsement of any products or services

I support campus sustainability through social science

Research & analysis

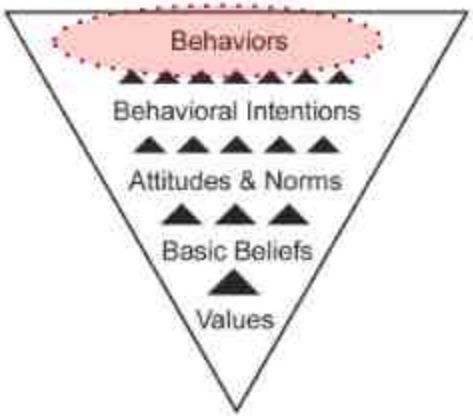
Methodological support

Incorporation of best practices into programs - including behavioral intervention design

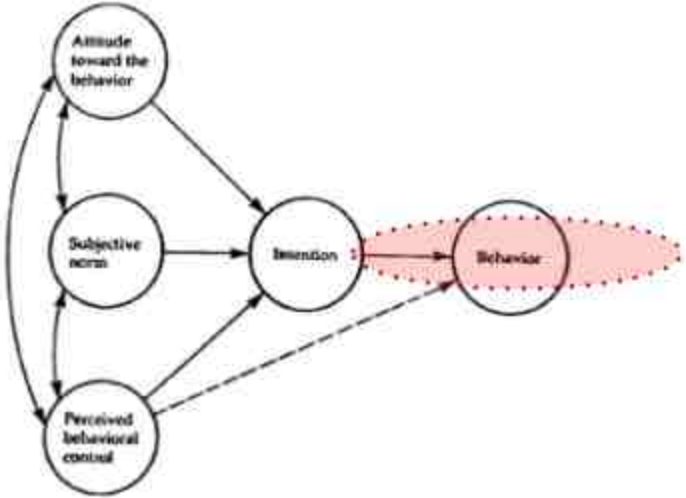
Knowledge sharing/training

Today, I'm focusing on the tip of the iceberg

Cognitive Hierarchy Model



The Theory of Planned Behavior



Building on CBSM...

An expanded checklist for behavioral interventions

1. Describe the problem
2. Diagnose the behavior
3. Define clear outcomes
4. Design the intervention
5. Develop the study design
6. Draft supporting materials
7. Pilot the intervention
8. Implement & monitor
9. Collect & analyze data
10. Evaluate & interpret results
11. Iterate & improve
12. Scale, disseminate, & sustain

Describe the problem

A. What is the issue you're trying to address?
→ *High levels of recyclable materials landfilled from campus labs*

A. How is the target behavior* contributing to this issue?
→ *Placement of recyclable items into lab landfill bins*

A. How would a change in this behavior address the issue?
→ *Sorting can increase diversion & decrease contamination*

A. Who is your target population?
→ *Laboratory personnel (students, staff, & faculty)*

A. What is the context in which they're performing the behavior?
→ *While conducting experiments in campus labs*

Diagnose the behavior

A. What discourages or encourages the target behavior?

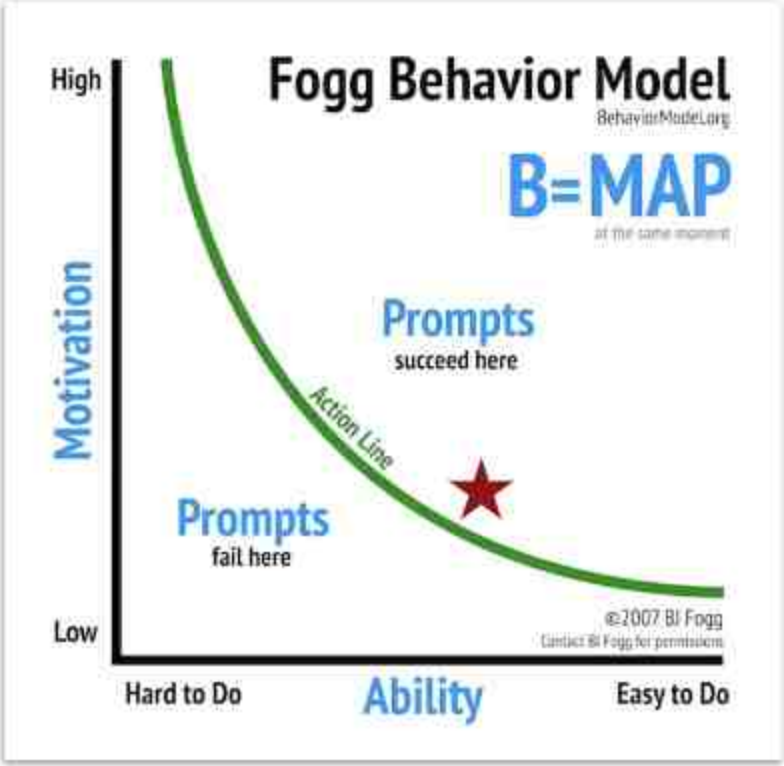
Barriers: *Waste sorting less salient in labs, lack of time, strong sorting norms or knowledge, inaccessible or full bins*

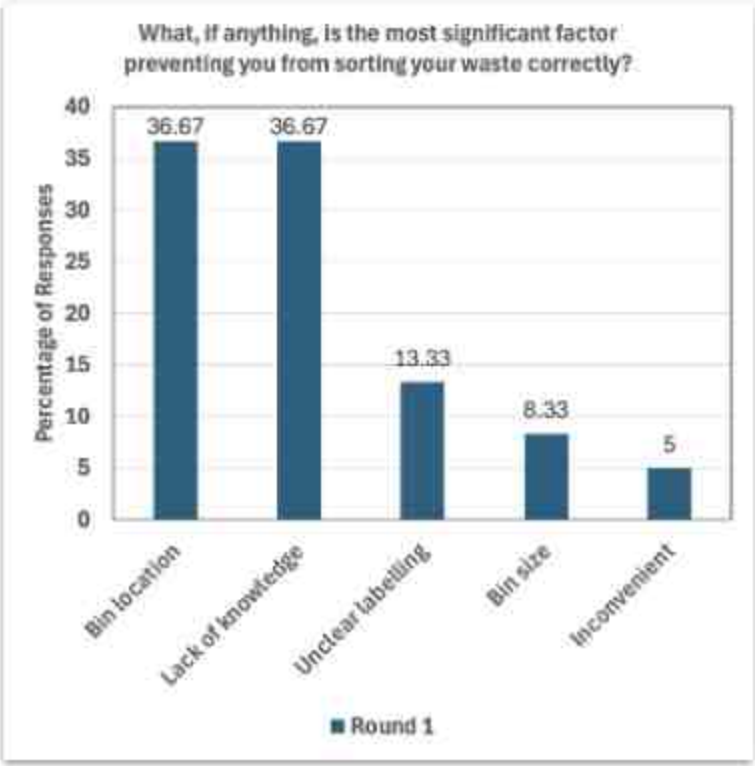
Facilitating factors: *Reminders, embedded cues, sorting norms, training, instructional signage, conveniently placed & serviced bins*

TIPS

Use literature reviews, observations, interviews, surveys, & focus groups, as well as established frameworks (e.g., FBM) & theories (e.g., TPB, NAM) to better understand target behaviors

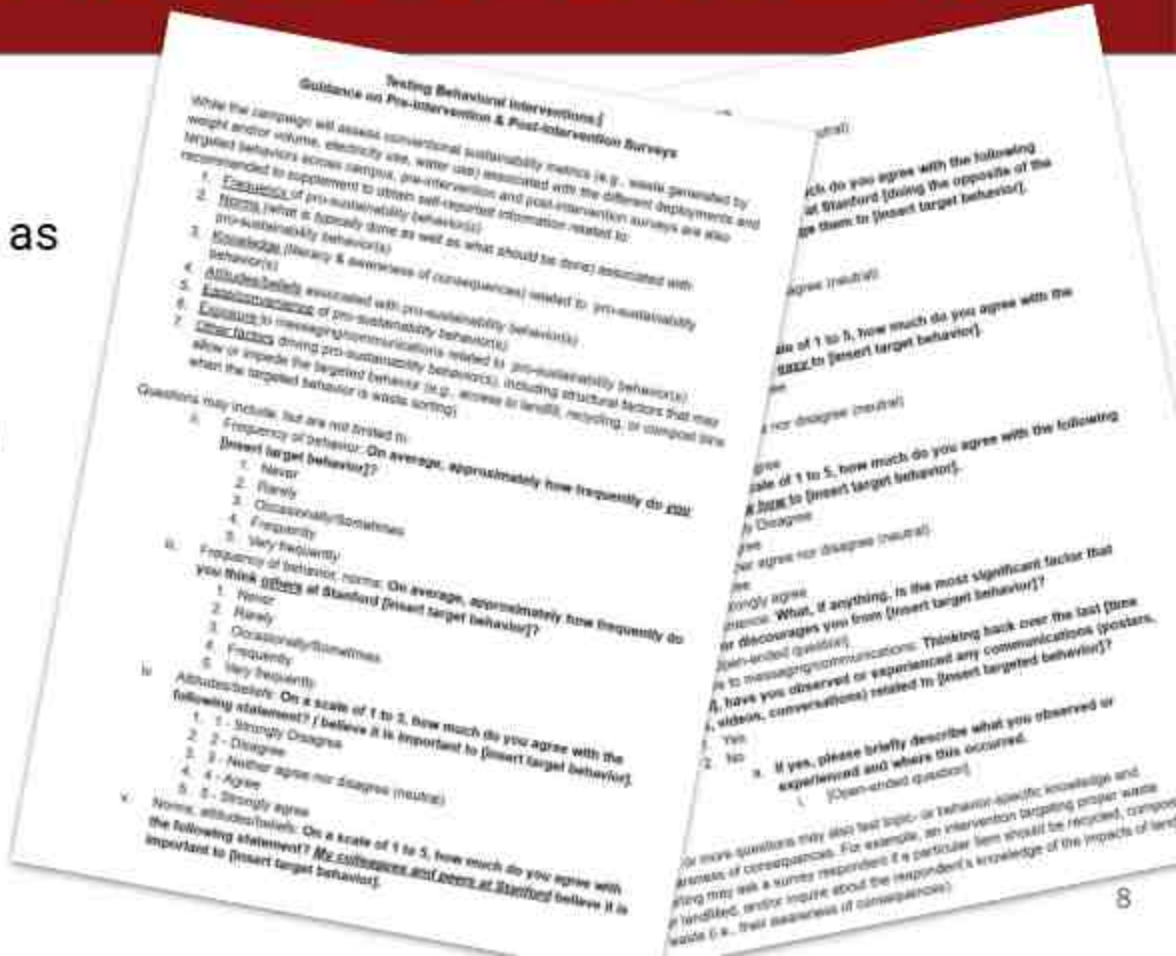
Use theories, surveys, & more to understand your audience





Surveys can help reveal hidden drivers of behavior

1. **Frequency**
2. **Norms** (what is *typically* done as well as what *should* be done)
3. **Knowledge** (literacy & awareness of consequences)
4. **Attitudes/beliefs**
5. **Exposure** to messaging/communications
6. **Ease/convenience**
7. **Other factors**



Testing Behavioral Interventions |
Guidance on Pre-intervention & Post-intervention Surveys

While the campaign will assess conventional sustainability metrics (e.g., waste generated by weight and/or volume, electricity use, water use) associated with the different deployments and targeted behaviors across campus, pre-intervention and post-intervention surveys are also recommended to supplement to obtain self-reported information related to:

1. Frequency of pro-sustainability behavior(s)
2. Norms (what is typically done as well as what should be done) associated with pro-sustainability behavior(s)
3. Knowledge (literacy & awareness of consequences) related to pro-sustainability behavior(s)
4. Attitudes/beliefs associated with pro-sustainability behavior(s)
5. Easy/convenience of pro-sustainability behavior(s)
6. Exposure to messaging/communications related to pro-sustainability behavior(s)
7. Other factors driving pro-sustainability behavior(s), including structural factors that may allow or impede the targeted behavior (e.g., access to landfill, recycling, or composting when the targeted behavior is waste sorting)

Questions may include, but are not limited to:

i. Frequency of behavior: **On average, approximately how frequently do you [insert target behavior]?**
   1. Never
   2. Rarely
   3. Occasionally/Sometimes
   4. Frequently
   5. Very frequently
ii. Frequency of behavior, norms: **On average, approximately how frequently do you think others at Stanford [insert target behavior]?**
   1. Never
   2. Rarely
   3. Occasionally/Sometimes
   4. Frequently
   5. Very frequently
iii. Attitudes/beliefs: **On a scale of 1 to 5, how much do you agree with the following statement? I believe it is important to [insert target behavior].**
   1. 1 - Strongly Disagree
   2. 2 - Disagree
   3. 3 - Neither agree nor disagree (neutral)
   4. 4 - Agree
   5. 5 - Strongly agree
v. Norms, attitudes/beliefs: **On a scale of 1 to 5, how much do you agree with the following statement? *My colleagues and peers at Stanford* believe it is important to [insert target behavior].**

...ch do you agree with the following
...at Stanford [doing the opposite of the
...te them to [insert target behavior].

...agree (neutral)

...le of 1 to 5, how much do you agree with the
...sssss to [insert target behavior].

...nor disagree (neutral)

...gree
...cale of 1 to 5, how much do you agree with the following
...e how to [insert target behavior].
...y Disagree
...ree
...ther agree nor disagree (neutral)
...ree
...trongly agree
...rtance: What, if anything, is the most significant factor that
...or discourages you from [insert target behavior]?
...(open-ended question)
...s to messaging/communications: Thinking back over the last [time
...], have you observed or experienced any communications (posters,
..., videos, conversations) related to [insert targeted behavior]?
1. Yes
2. No
   a. **If yes, please briefly describe what you observed or experienced and where this occurred.**
      (Open-ended question)

...or more questions may also test topic- or behavior-specific knowledge and ...areness of consequences. For example, an intervention targeting proper waste ...ting may ask a survey respondent if a particular item should be recycled, compos... ...r landfilled, and/or inquire about the respondent's knowledge of the impacts of land... ...waste (i.e., their awareness of consequences).

8

Limited understanding of the behavior = limited impact

Define clear outcomes

What is the **impact** you want your intervention to have on…

Watch for disconnects between the behavior & issue

A. The *issue* you're trying to address?
→ *Decrease in the amount of recyclable material landfilled from campus labs*

A. The *target behavior* you're trying to change?
→ *Decrease in the placement of recyclable items into laboratory landfill bins*

Sometimes it's the drivers behind the behavior that you may want to change

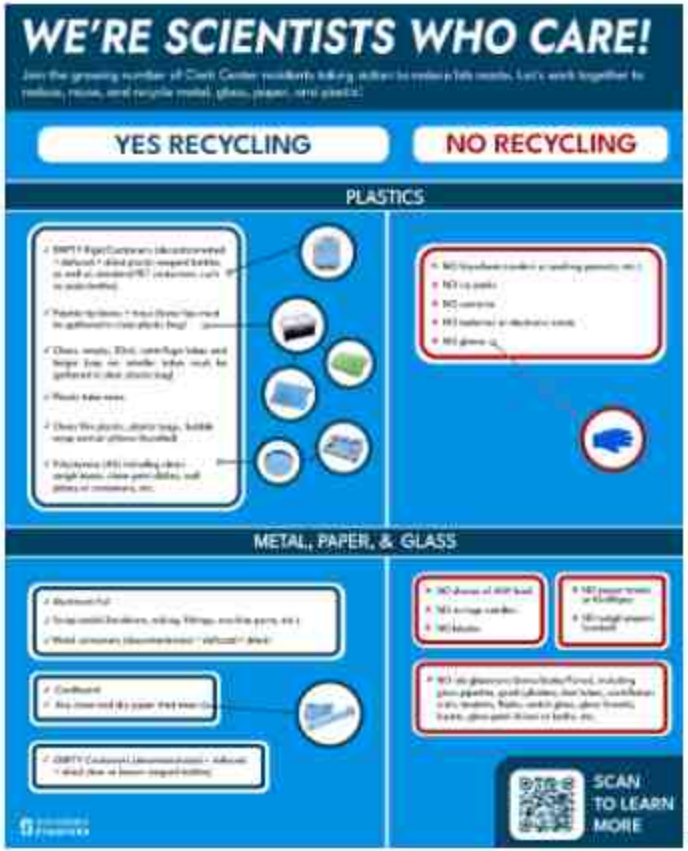
Design the intervention

Consider:

A. Feasibility
→ *High-risk research environment, limited space*

A. Delivery method
→ *Signage (cues)*

A. Behavior change techniques
→ *Normative messaging, information*



Interventions can take many forms

Events

Social media posts

Apps

In-person interactions

Scorecards/ feedback

Develop the study design

How are you going to measure the impact of your intervention?

A. Consider different research designs (e.g., RCT, pre/post)
B. Select data collection methods (e.g., surveys, interviews)
C. Evaluate ethical implications

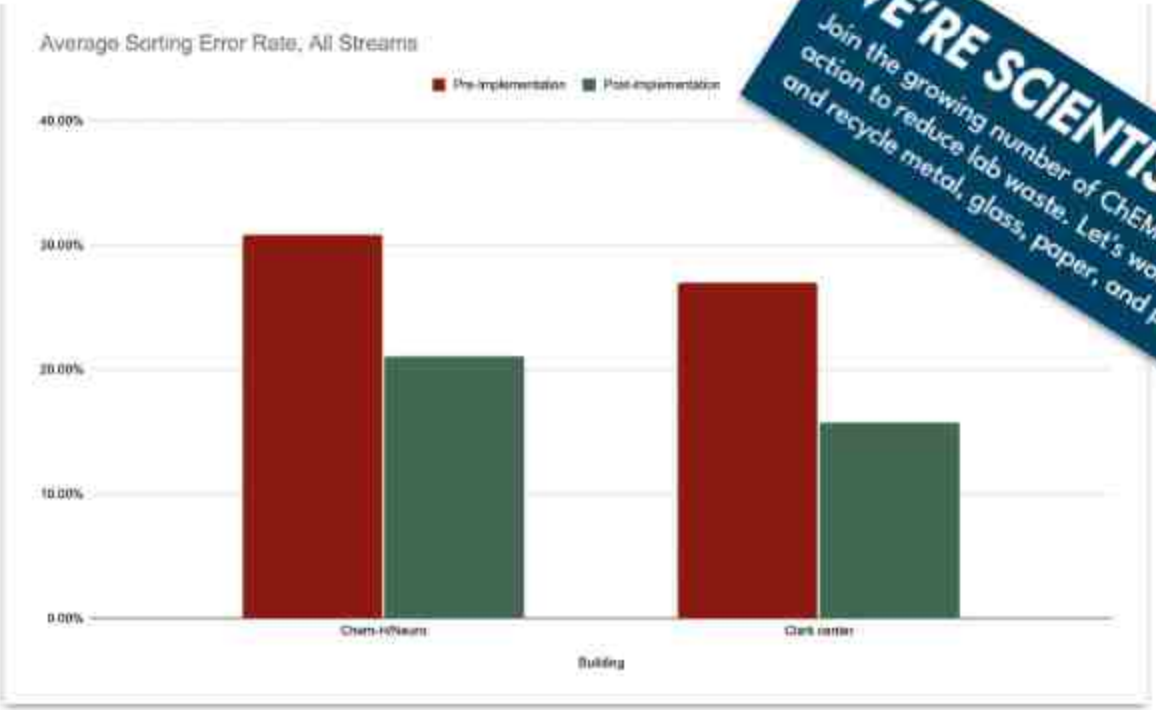
- → *"Simple" signs in Building A, "detailed" signs in Building B*
- → *Assess pre & post-intervention data*
- → *Collect data on waste generation & contamination through weighing building waste & conducting lab-level audits*
- → *Gather self-reported data from building occupants through surveys responses*

Time to shift from planning to doing

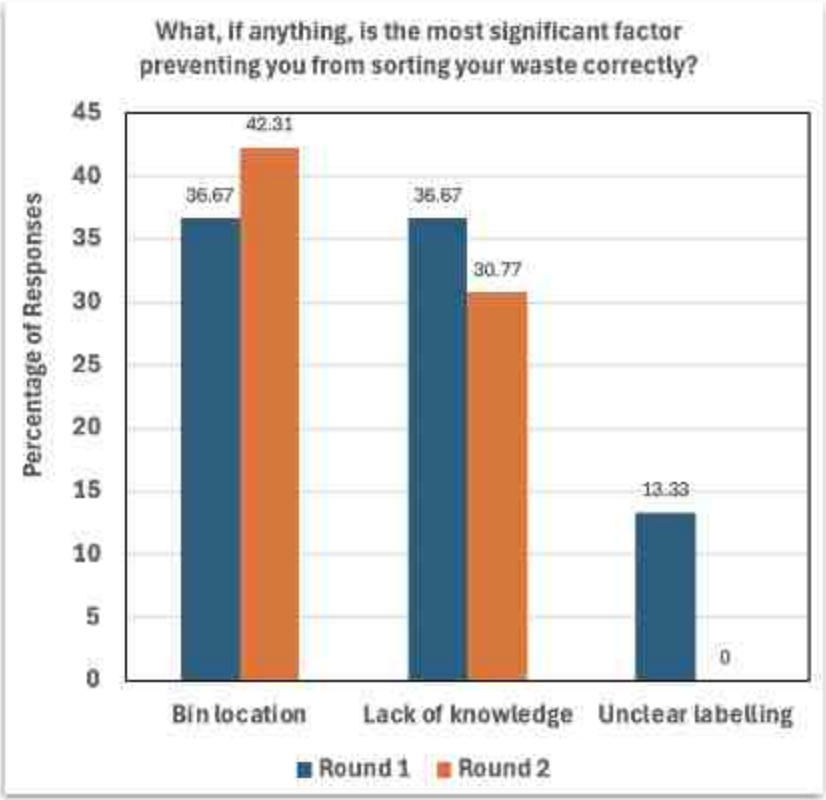
7. Pilot the intervention
8. Implement & monitor
9. Collect & analyze data
10. Evaluate & interpret results
11. Iterate & improve
12. Scale, disseminate, & sustain

6. Draft supporting materials

Both signs improved waste sorting at the same rate

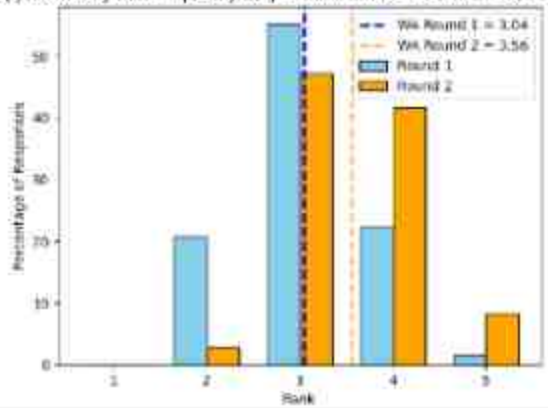


Signage decreased sorting confusion in both buildings

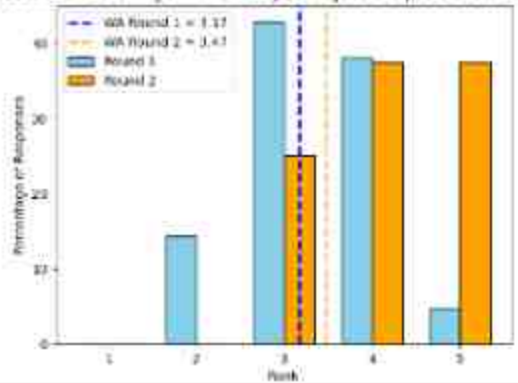


Signage established a stronger perception of sorting norms

On average, approximately how frequently do you think others at Stanford sort their waste properly?



On a scale of 1 to 5, how much do you agree with the following statement? My colleagues and peers at Stanford believe it is important to sort lab recyclables.

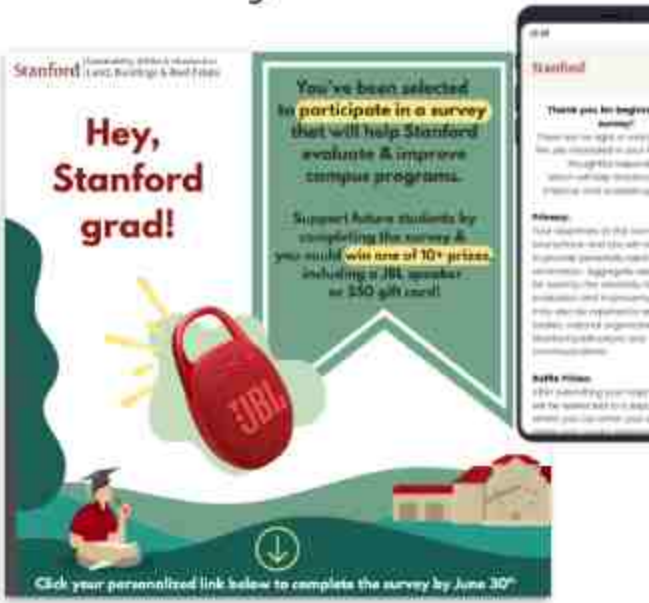


Three ways we're addressing what's behind the behavior

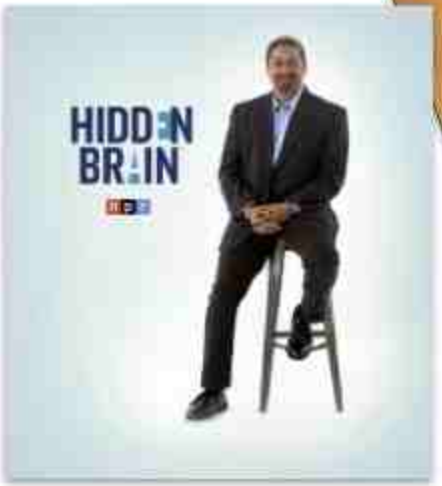
A *Public communication campaigns*

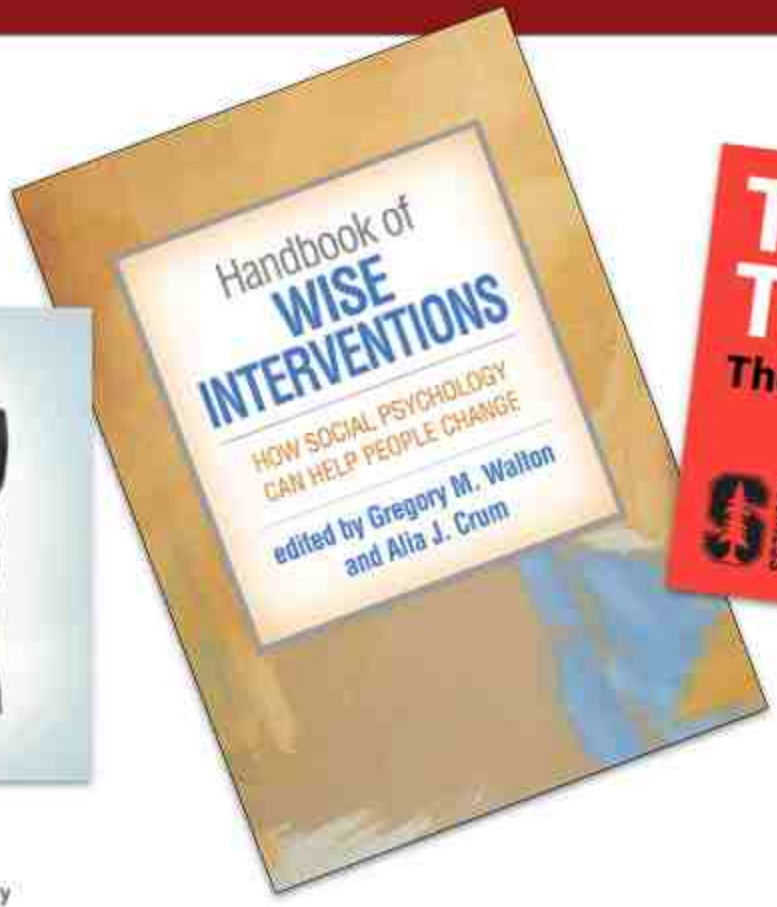
B *Sustainable community interns*

C *Sustainability culture & literacy assessment*



Additional resources to build your toolbox





SUSTAINABLE STANFORD

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Stanford Office of Sustainability, LBRE

Q&A

Jennifer Tabanico

Action Research

Gretchen Engbring

Stanford University

Today's Program Online

- Recording
- Presentation slides
- Resources
- Chatlog

Link will be emailed in coming days

Archive of Past Programs

BUSCH SYSTEMS
GREEN THINKING
WEBINAR SERIES

- Labels & Signage
- Rebuilding Confidence in Recycling
- Developing Bin Standards
- Reuse programs

+ More

Upcoming Conference Presentations

NMRC
NEW MEXICO RECYCLING COALITION

September 30
Santa Fe, NM

aashe 2025 conference & expo

October 23
Minneapolis, MN

Georgia Recycling Coalition INC.

October 29
Jekyll Island, GA

NYSAR
New York State Association for Reduction, Reuse and Recycling

November 13
Cooperstown, NY

Thank You to Our Panelists!

Jennifer Tabanico
President

Action Research

Gretchen Engbring
Social Scientist,

Office of Sustainability

Stanford University

Share Feedback with Presenters

Post-Webinar Survey:

- Prompt at end of program, or
- Look for Email tomorrow

Stick Around For….

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Product demo with:

Sarah Hawthorne

Business Development Manager