Evaluation of Spillovers from Behavioral Interventions in Food, Energy, and Water Conservation: A Systems Perspective

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Defining Spillover

- Different names:
- Spillover-Effect of an intervention on subsequent behaviors not targeted by the intervention (Truelove et al, 2014)
- Behavioral Spillover- Observable and causal effect that a change in one behavior (behavior 1) has on a different, subsequent behavior (behavior 2) (Gallizzi & Whitmarsh, 2019)

Causal Relationships in Spillover

Why Important

- Failure to account for all possible spillovers –
- Leaves out valuable information
- Results in biased and over/underestimates
- Across disciplines - Economics, Marketing, Health, Law, Physical and Social sciences
- Broadly categorized as positive or negative

Issues and Challenges

- Most studies conducted to assess spillover effects-
  - Explore the nature and direction of causal relationships between behaviors
  - Relate on estimation of gross effects
  - One-time behavioral intervention for conservation of food, energy, or water sectors in isolation
- Assessing impact on climate change involves aleatory situations in which uncertainty itself is uncertain (Bridges, A. Felder, McKelvey, & Niyogi, 2014)

Research Questions

- How to design testable evaluation framework for behavioral interventions for food, energy, and water consumption activities?
- How to evaluate spillovers from behavioral interventions in a noisy real-world setting?

Systems Approach in Evaluation

Proposed Framework

1. System boundaries, context, and interactions:
   - Residential household as a unit with food, energy, and water conservation behaviors as targeted behaviors

2. Identifying evaluation criteria (OECD, 2019)-Relevancy, Effectiveness, Efficiency, Impact, Sustainability, and Coherence
4. Net effects to capture interactions involving positive and negative spillovers (Tiefenbeck, Stroake, Roth, & Sachs, 2013)
5. Lifecycle assessment of impacts on GHG emissions
6. Limitations and Constraints

Fig. 1- Systems Puzzle

Fig. 2-Schematic representation of Evaluating Spillover from Systems perspective

Shwom (2015)

- Interconnections
- Multiple perspectives,
- Boundaries judgments

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