

Session 2 – Influencing Systems Obesity-Related Opportunities for Systems Change: Community change

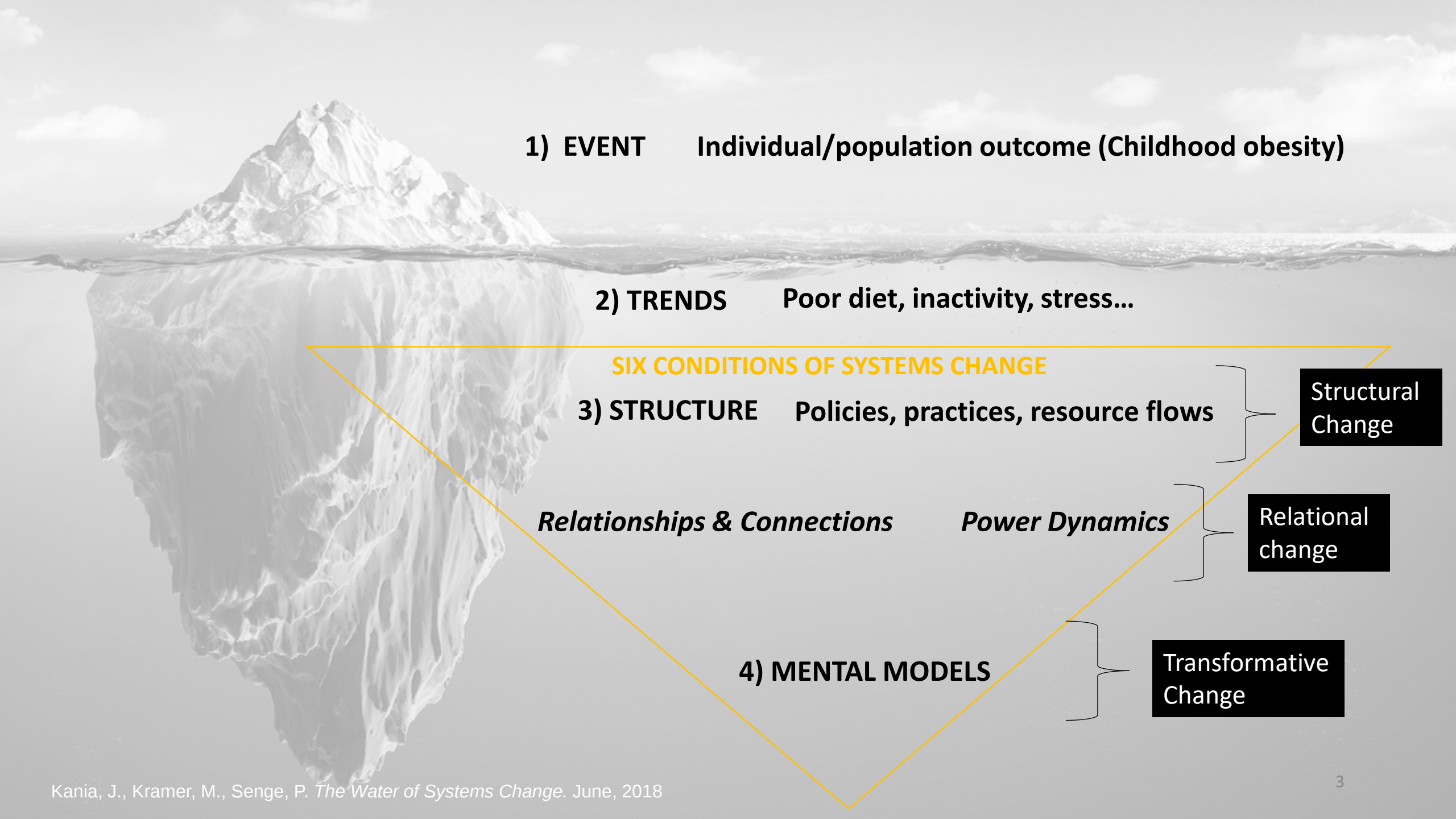
Erin Hennessy, PhD, MPH
Assistant Professor
ChildObesity180
Friedman School of Nutrition Science and Policy
Tufts University

No conflicts of interest

Nutrition scientist

Student of systems
science

Disclosures

An iceberg floating in the ocean, with the waterline representing the visible part of the problem and the submerged part representing the underlying system. The iceberg is divided into four horizontal sections. The top section is above the waterline and is labeled '1) EVENT'. The next two sections are below the waterline and are grouped together by a bracket on the right, labeled 'Structural Change'. The bottom section is also below the waterline and is labeled 'Transformative Change'.

1) EVENT Individual/population outcome (Childhood obesity)

2) TRENDS Poor diet, inactivity, stress...

SIX CONDITIONS OF SYSTEMS CHANGE

3) STRUCTURE Policies, practices, resource flows

Structural
Change

Relationships & Connections

Power Dynamics

Relational
change

4) MENTAL MODELS

Transformative
Change

Obesity-Related Opportunities for Systems Change: Community change

Structural &
Relational &
Transformative
Change

Opportunity #1

Whole-of-community interventions

- Multilevel, multifaceted, and implemented holistically throughout an entire community
- Targets multiple levels of influence and behaviors through policy, practice and resource flows
- Effective and equitable when focused on structural components, when intervention strategies target a variety of contexts, and when there is engagement with the community.

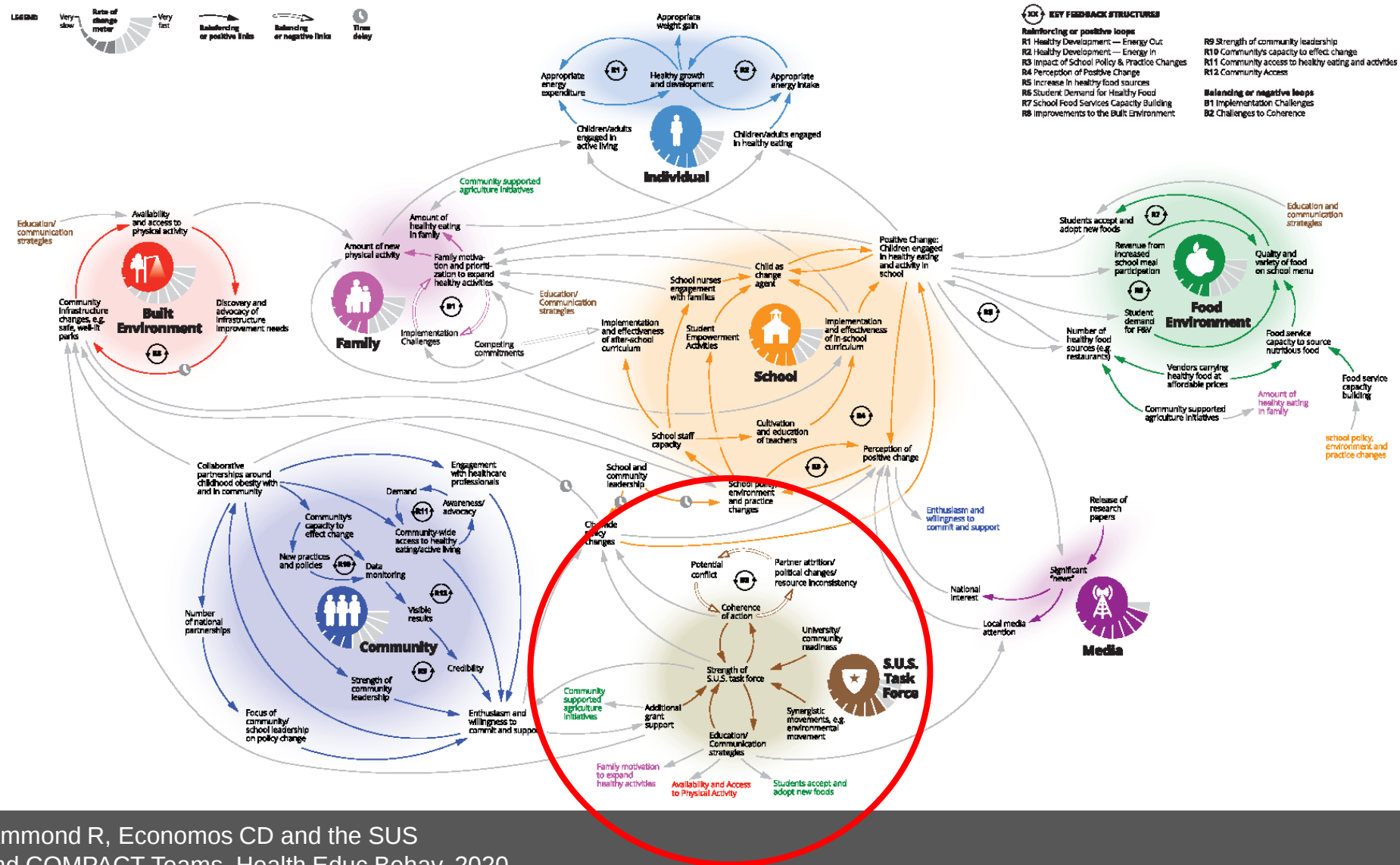
Opportunity #2

Leveraging community coalitions

- Groups of leaders and stakeholders from diverse organizations, settings, and sectors working collectively on a common objective are recommended as a strategic entity to amplify public health prevention efforts
- Observed ability to collaborate, build relationships and community capacity, plan tailored interventions, and diffuse interventions throughout a community
- Allow for sharing of critical information and resources specific to local contexts

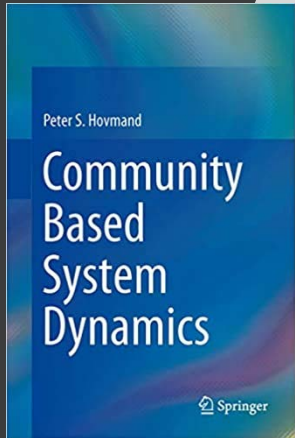
Shape Up Somerville Systems Map

Mapping the Dynamics of Community Change

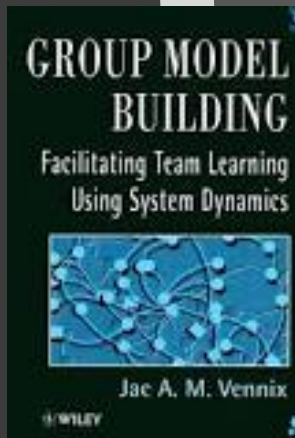


Opportunity #3

Sharing and shifting mental models



- Community-based Systems Dynamics (CBSD): participatory method for involving communities in the process of understanding and changing systems
 - Allows members to better understand complex systems that influence problems of interest, and to take effective actions to address those problems
 - Helps to equalize power among group members, enabling input from all participants and promoting group cohesion
- Group model building (GMB): participatory methods grounded in CBSD
 - Trained facilitators follow scripted, group activities related to conversations about the structures of systems that yield patterns of behavior over time
 - Allows a group to:
 - Visualize a complex & dynamic system
 - Develop & prioritize action steps
 - Build connections across time & scale
 - Create a community-specific systems model
 - Allows for both qualitative and quantitative modeling



**Ongoing research
with 5 coalitions
across the U.S.**

Opportunity #4

Integrating systems science tools

- Systems mapping
 - drove initial hypothesis, expanded into a full mechanistic theory and operationalized using Agent-based Modeling (ABM)
 - gave initial insights into the potential role of social networks
- CBSD/GMB
 - engage coalition stakeholders to elicit and shift their mental models
 - build relationships and connections; equalize power dynamics
 - drive the creation and diffusion of policies, practices and resource flows
- ABM
 - “agents” as community stakeholders
 - situated within a social network that possess attributes such as knowledge (K), engagement (E), and network position (among other attributes)
 - outputs allow for a comparison in real-world trends in K&E over time
- SNA
 - central part of hypothesis – represents the pathway by which K&E diffuse

1) EVENT Individual/population outcome (Childhood obesity)

2) TRENDS Poor diet, inactivity, stress...

SIX CONDITIONS OF SYSTEMS CHANGE

3) STRUCTURE Policies, practices, resource flows

Social network analysis

Relationships & Connections *Power Dynamics*

Structural Change

Relational change

Group model building

4) MENTAL MODELS

Transformative Change

Key
Takeaways

Six conditions of systems change must be addressed

- Obesity research and practice has predominantly focused on only 3 conditions: policies, practices and resource flows
- Research and practice must advance to focus on relationships & connections, power dynamics and mental models

Preventing obesity at the community level demands comprehensive, whole-of-community transformation

- Whole-of-community interventions offer promise especially those that utilize participatory engagement with coalitions

Specific systems modeling techniques are adept at eliciting mental models and building community capacity

- CBSD and GMB bring together cross-sector stakeholders in structured activities that surface diverse perspectives, build consensus, diffuse evidence, and drive coordinated, comprehensive action

Integrating complex systems techniques can yield novel insights

- Blending qualitative and quantitative complex systems methodologies offers novel insights above traditional epidemiological or health promotion approaches
- Allows for rigorous evaluation of the six conditions of systems change



National Heart, Lung,
and Blood Institute

(R01HL115485)

Tufts

CTSI

Tufts Clinical and
Translational Science Institute

(UL1TR002544)



new balance
FOUNDATION



BNORC
Boston Nutrition Obesity Research Center



Saint
Luke's
Foundation

Funding & Project Support



Thank you

- The communities that have been and continue to be partners in this work
- The research collaborators from across the globe who have informed and shaped this work
- The staff and students at ChildObesity180 and the Friedman School of Nutrition at Tufts who make this work possible
- The Roundtable on Obesity Solutions and Meeting Attendees for their time and attention to this topic