

kayla de la haye

february 21 2022

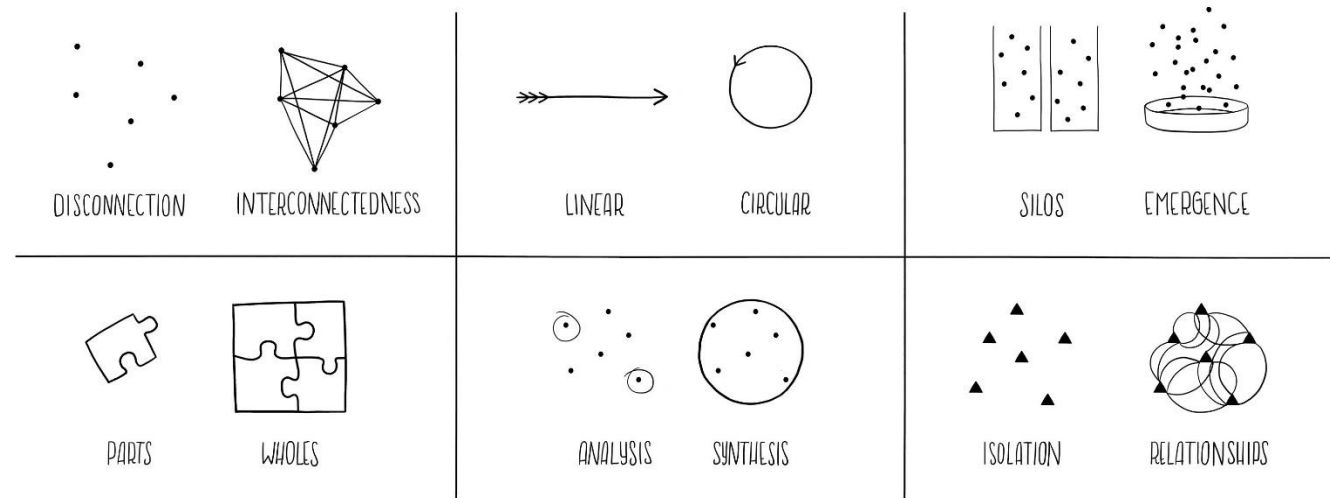
network & systems approaches
for obesity prevention
in disadvantaged communities



? **when** and **why** are network & systems approaches useful for addressing health issues and disparities?

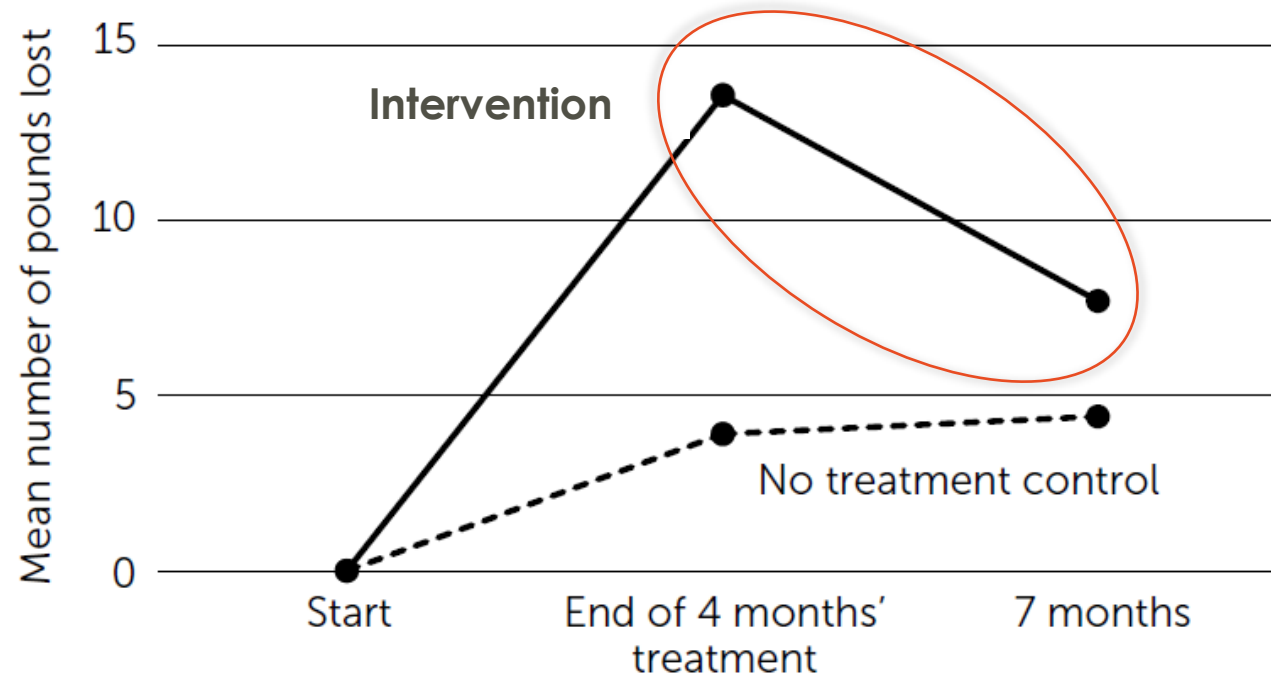
? how can we **apply these tools** in health interventions?

TOOLS OF A SYSTEM THINKER



sustainable behavior change

Figure 1. The triangular relapse pattern in health behavior change over time

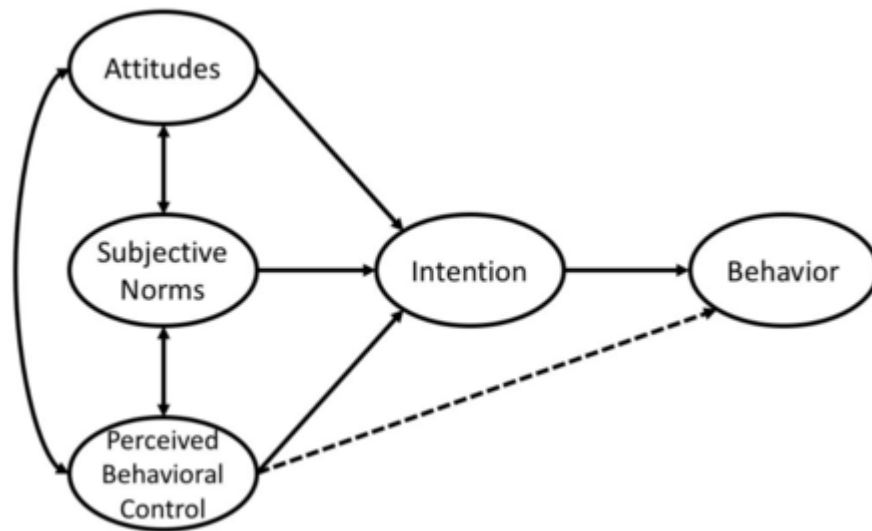


Wood & Neal, 2016

health behavior theory

Eating and exercise behaviors are influenced by:

- **internal cues** (beliefs, emotions) & rational choices



Theory of Planned Behavior

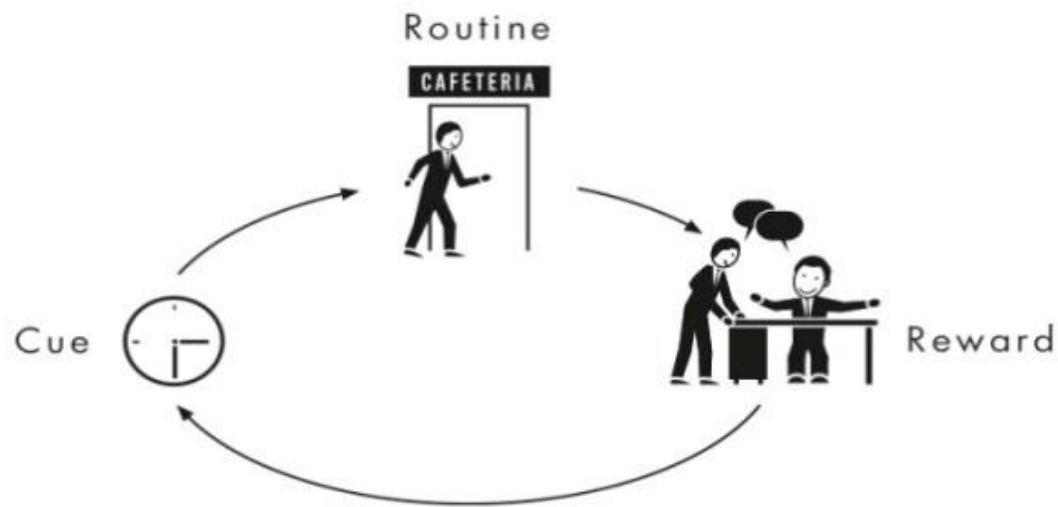
GUIDE TO WEIGHT LOSS

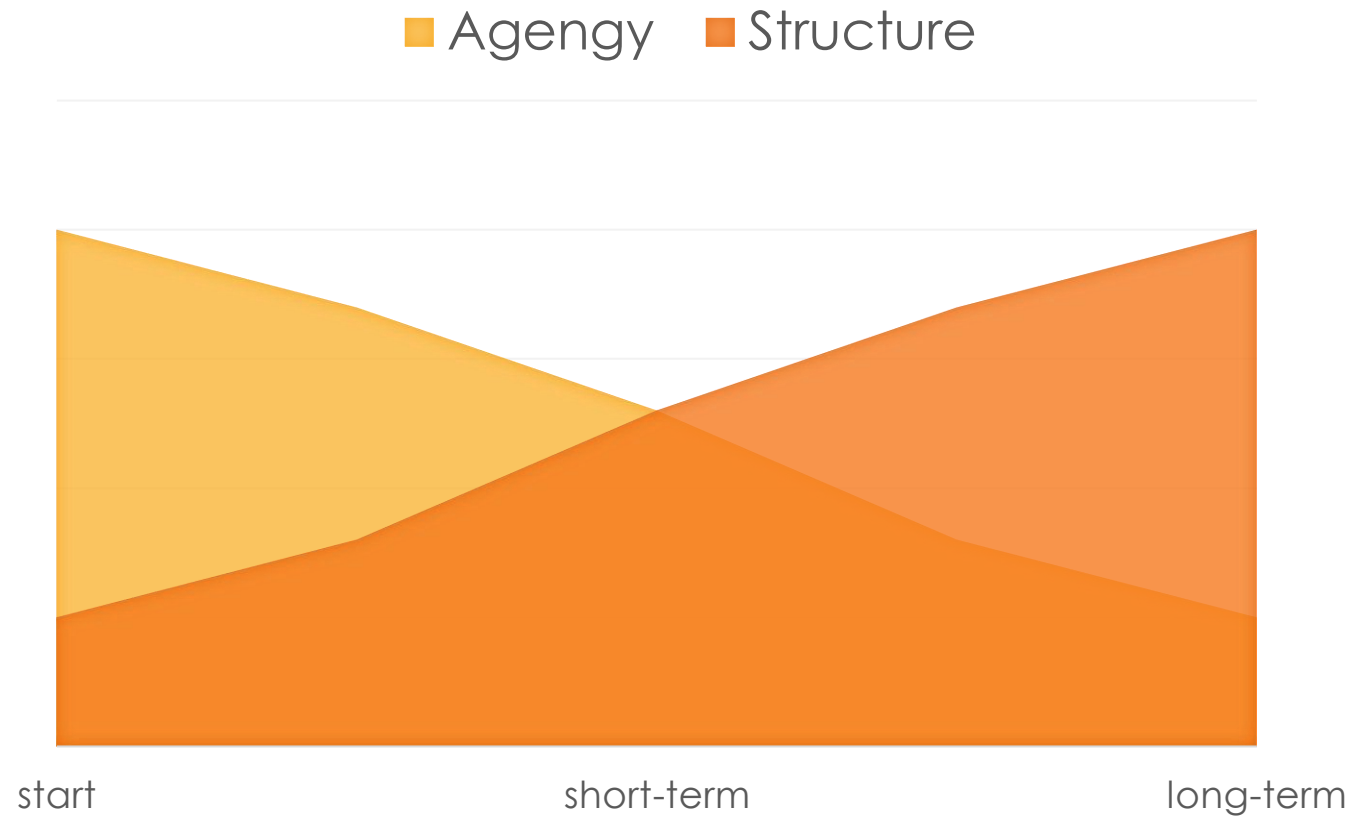
- BURN MORE CALORIES THAN YOU EAT**
A combination of eating fewer calories with an increase of physical activity is the most effective and healthy approach to losing weight. Dieting alone, is a short-term tactic without permanent long-term results.
- INCREASE THE AMOUNT OF PHYSICAL ACTIVITY YOU GET**
Increasing physical activity is the key to losing weight and keeping it off. The more physical activity you get, the more calories you burn and weight you lose. Exercising for 30 minutes or more of moderate activity on most, if not all days of the week, will produce significant weight loss and health benefits. If you haven't been physically active or 30 minutes is too much, then build up gradually.
- GRADUAL WEIGHT LOSS**
Instead of trying quick fix diets, use a long-term approach. A slow, gradual, and the long weight loss program is the only way to ensure the weight you work so hard to lose stays lost.
- READ FOOD LABELS**
Make it a habit to become an avid label reader. Pay careful attention to the number of calories per serving size, calories from fat, and sugar. This allows you to choose foods low in fat, low in sugar, and lower in calories.
- SET REALISTIC GOALS**
Losing 1/2 to 1 pound a week is a realistic and healthy goal. Any more is too severe and unsafe. Keep in mind that it takes a reduction of 3500 calories to lose 1 pound of body weight.
- CUT DOWN ON SODAS**
Cutting back on the amount of soft drinks and juices you consume can save 100-200 calories for each 12oz. drink. Soft drinks and juices typically have large amounts of sugar and therefore, large number of calories.
- EAT FEWER CALORIES**
Cutting back on fat is an easy, and healthy, way to lower the calories you consume. Learn to eat lean meats, fish, low fat dairy foods and go easy on dressings, sauces and spreads.
- CONTROL PORTION SIZES**
Keeping control of portion size is very important for weight loss. Your portions shouldn't be too big or too small. When you over do it and portions are too big you, can easily add a large number of calories that are difficult to burn off.
- EAT PLENTY OF GRAINS, VEGETABLES, AND FRUITS**
Grain products, veg-ables, and fruits are low in fat and high in fiber. These foods can satisfy your appetite without many calories and lower your risk of disease.
- KEEP A DIARY**
A food and physical activity diary is an important tool of your weight loss plan. Write down the amount, kinds of food, beverages, and calories you eat of every meal each day. Record the type of physical activity, the time of day, length of exercise, and the approx. calories burned. Keeping these records allows you to take a close and honest look of your eating and exercise habits. You can then identify areas you might need to change.

health behavior theory

Eating and exercise behaviors are influenced by :

- **internal cues** (beliefs, emotions) & rational choices
- habits, done routinely and automatically in response to **cues**

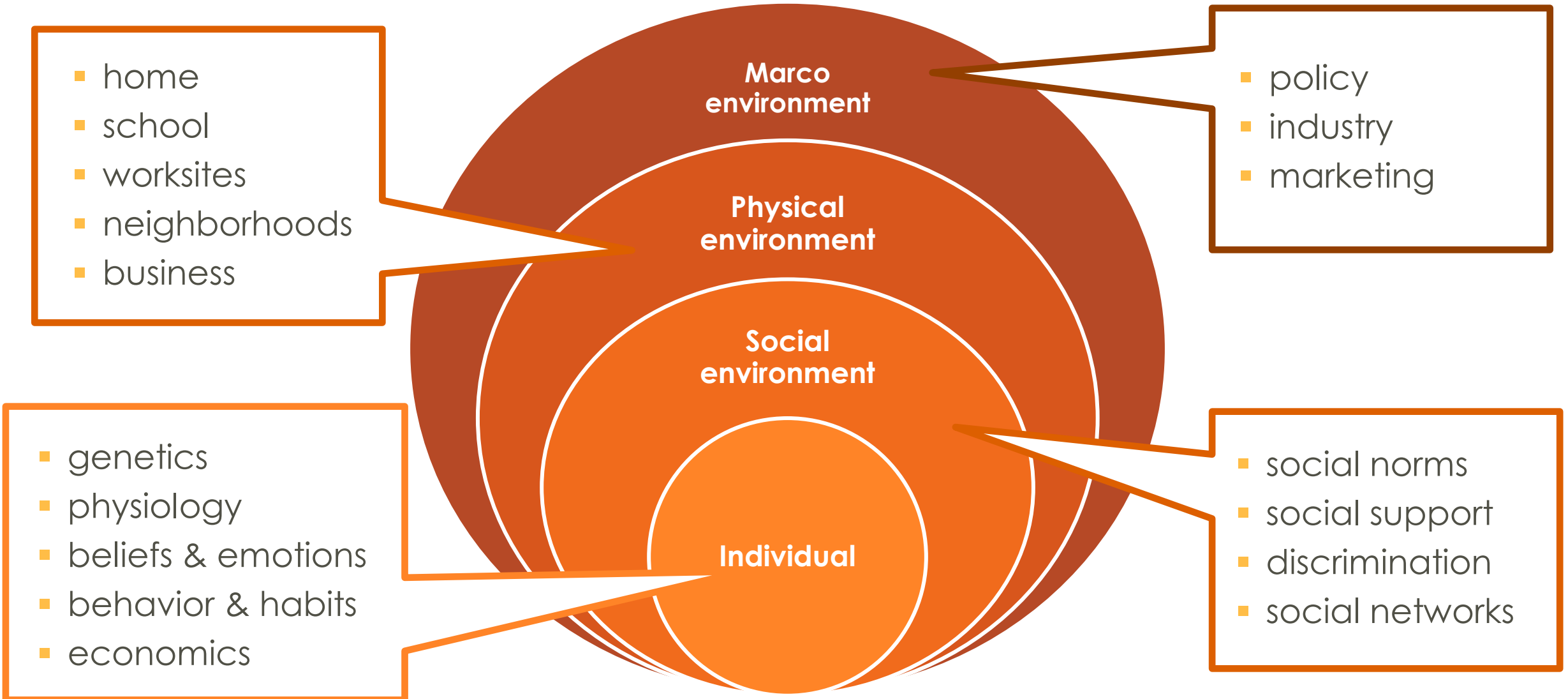




short-term change: individual agency & choice

long-term change: structural (social ecological) influences

ecological influences on eating & activity



Adapted from: Story, Kaphingst, Robinson-O'Brien, Glanz. (2008). Creating healthy food and eating environments: policy and environmental approaches. *Annu. Rev. Public Health, 29*, 253-272.

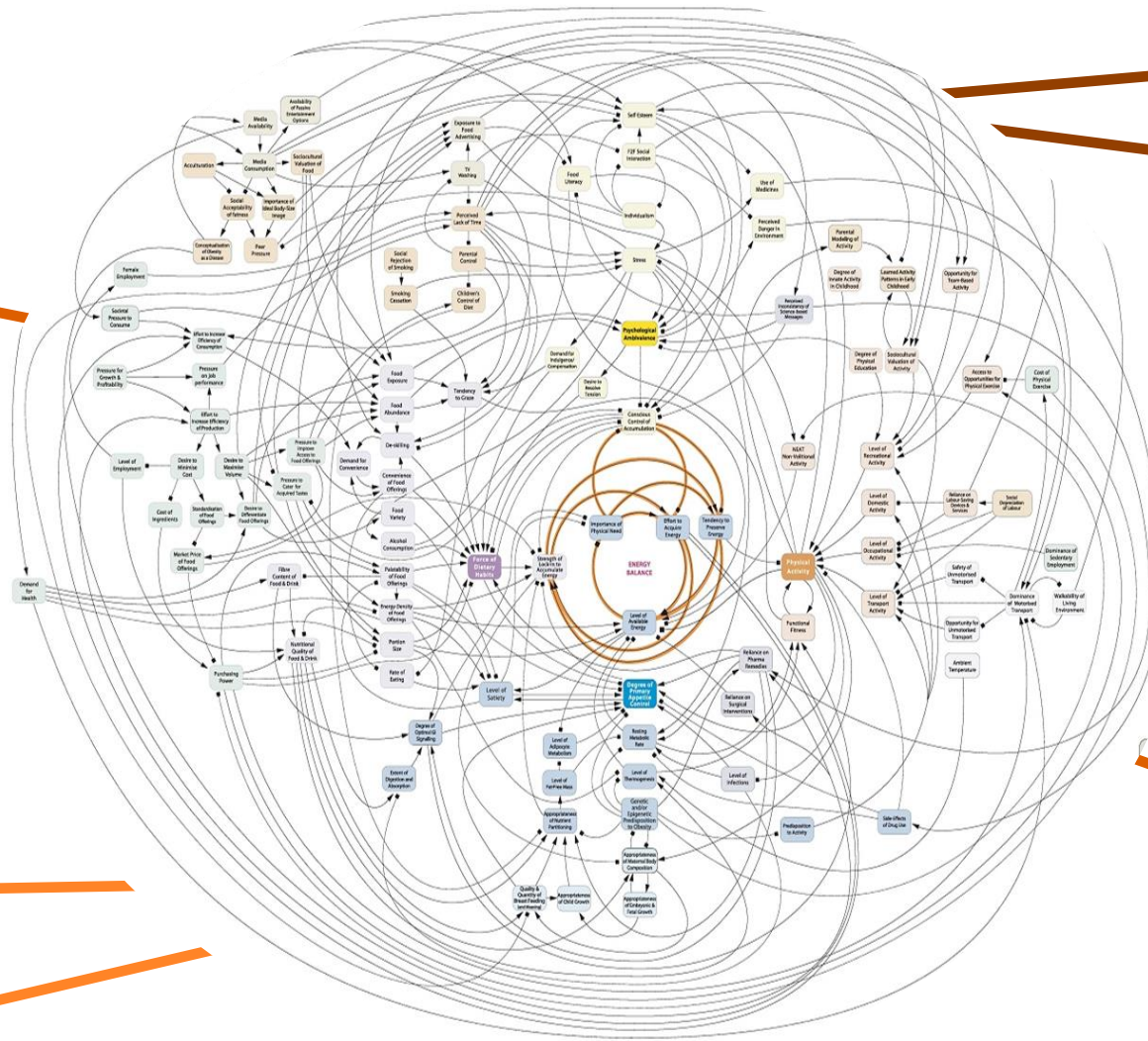
system models of obesity

- home
- school
- worksites
- neighborhoods
- business

- policy
- industry
- marketing

- genetics
- physiology
- beliefs & emotions
- behavior & habits
- economics

- social norms
- social support
- discrimination
- social networks



Eating is a **social practice**.¹

“...social rules and resources enable or constrain food choices...”

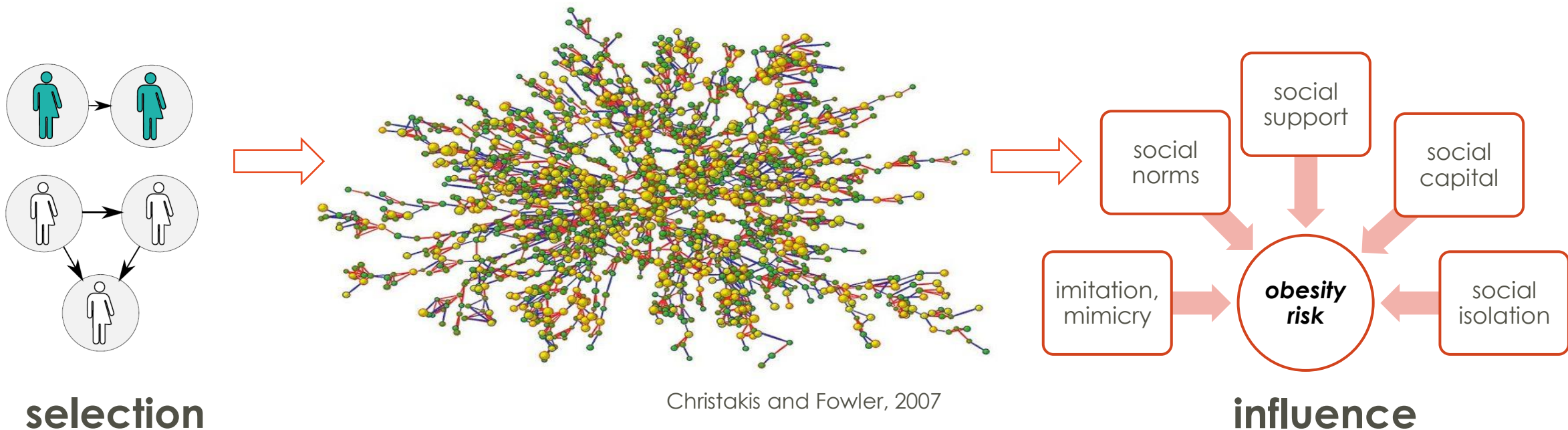


Health Matters. *Obesity and the food environment.*

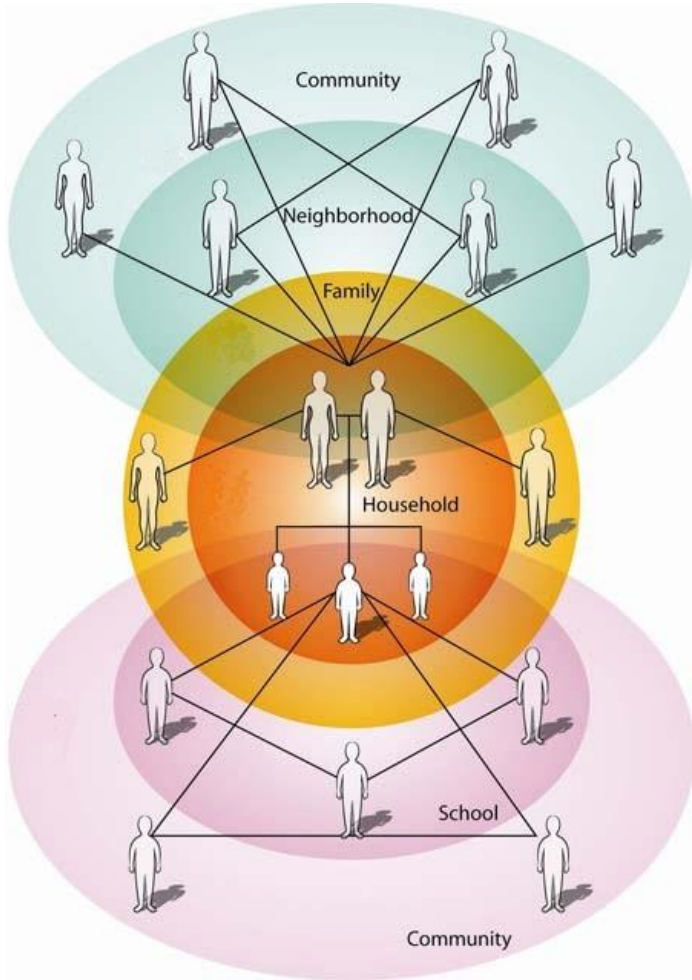
¹ Delormier, Frohlich, Potvin (2009). Food and eating as social practice – understanding eating patterns as social phenomena and implications for public health. *Sociology of Health & Illness*, 31, 215-228.

Obesity & social networks: an interdependent system

- people **'select'** social ties with similar health risks (Centola 2011; de la Haye 2011; Schaefer et al. 2015; Valente 2009)
- social ties **influence** lifestyle behaviors and obesity risk (Aral & Nicolaides, 2017; Christakis & Fowler, 2007; de la Haye 2011; Hammond 2012; Simpkins 2011; Trogden 2008; Valente 2009; Zhang, de la Haye et al, 2018)



social network dynamics



social
network



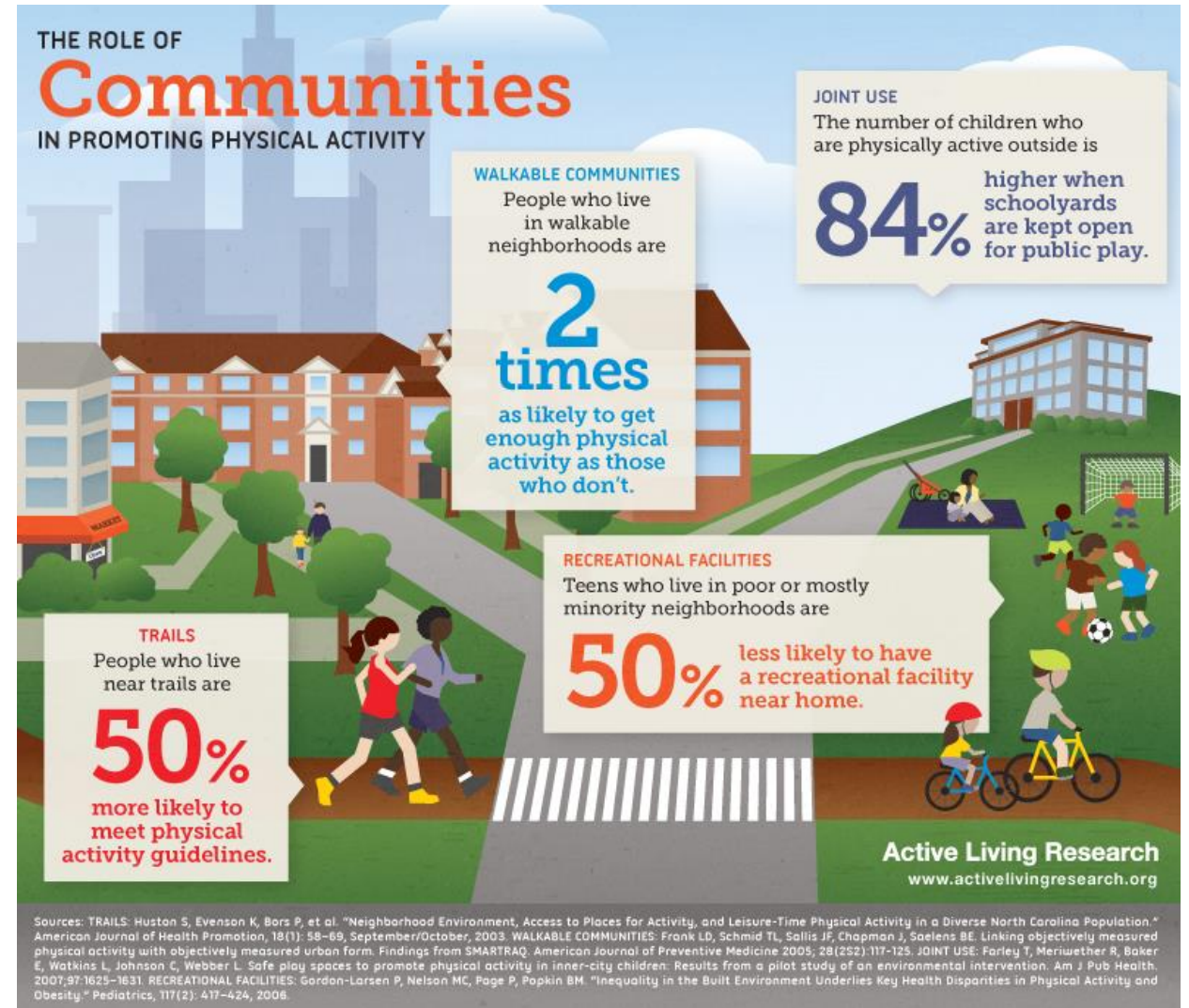
obesity
risk



built environments

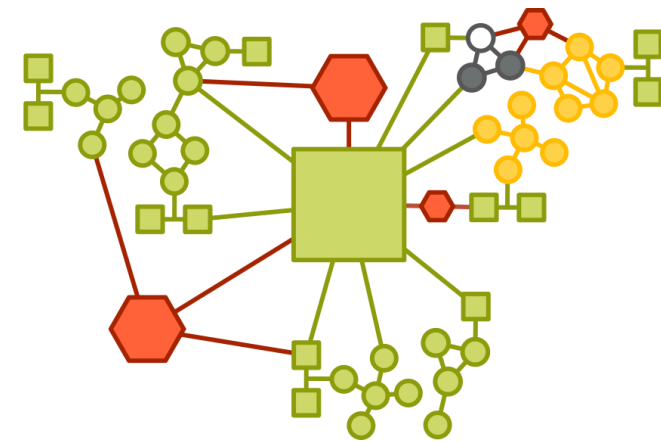


Grid Magazine, 2009



addressing networks & systems

for obesity prevention





Study aims:

- **healthy habits** and weight for low-income mothers & infants
- change in **home environment**
- change in **mothers' social networks**

Goal

Promote child health by changing families' habits, home environment, and social networks.

Healthy Habits

More fruits
& veggies

Limit sugary
drinks

Limit fried
food

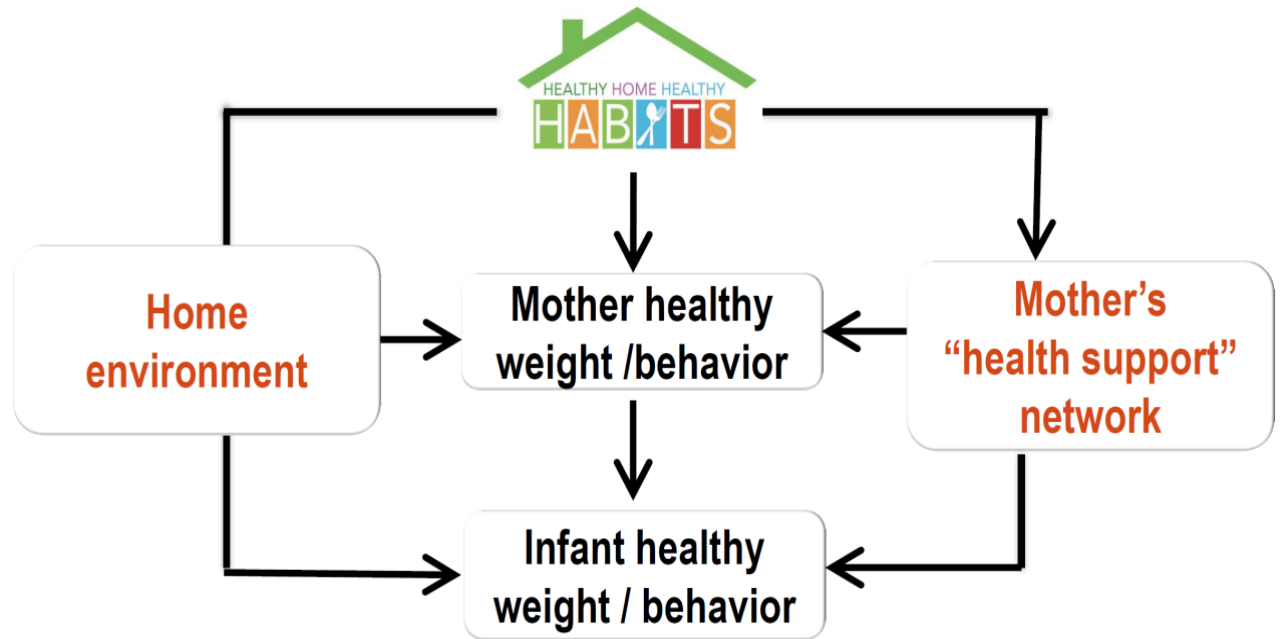
Move
every day

network interventions



Study aims:

- **healthy habits** and weight for low-income mothers & infants
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- change in **mothers' social networks**














Pick it!



Cue it!



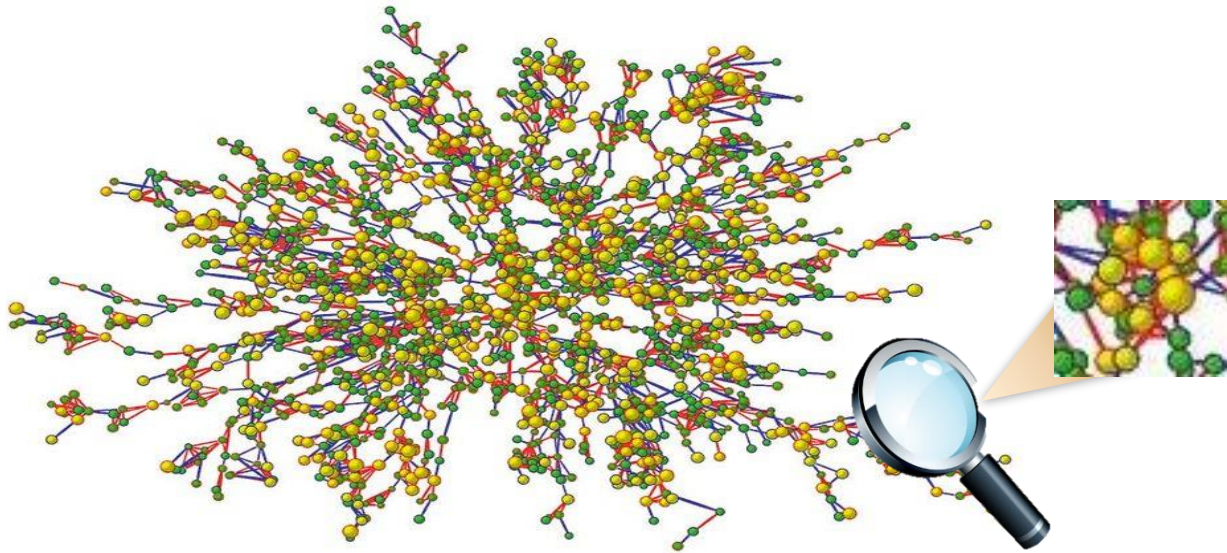
Check it!

MY CHILD'S HABITS!							
My Habits	Mon	Tue	Wed	Thu	Fri	Sat	Sun
 _____ _____ _____							
 I feed vegetables to my daughter at every dinner							
							
							

network intervention strategies

Segmentation:

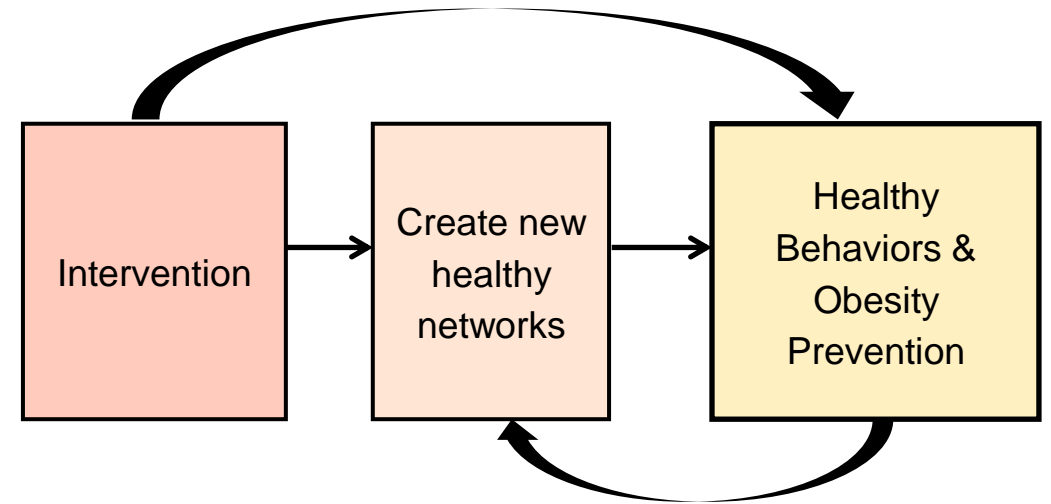
focus on at-risk social groups



Christakis and Fowler, 2007

Alteration:

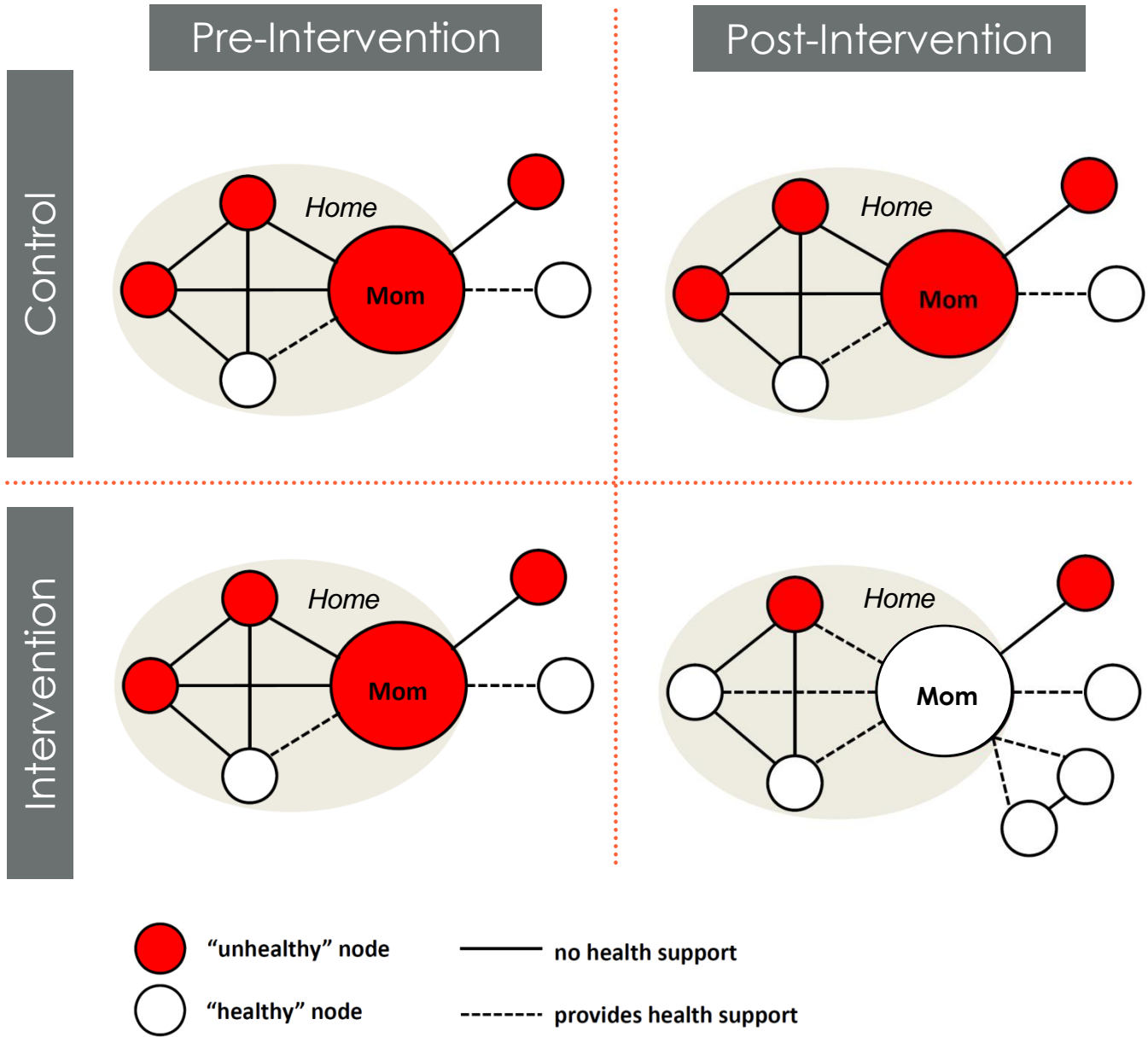
promote “healthy” social selection



healthy social networks

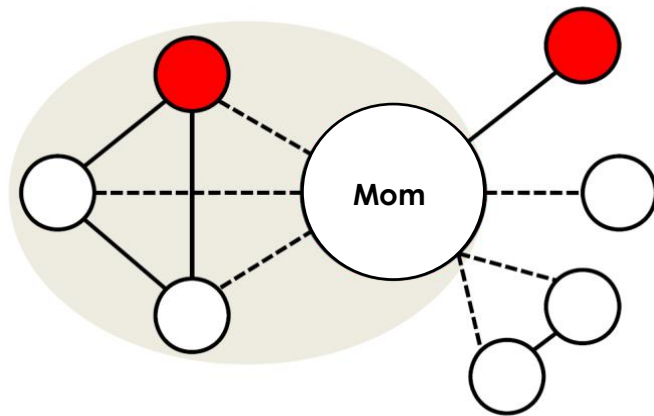
Change mothers' networks

- A.** Existing family system
 - collective behavior change
- B.** Healthy social selection
 - new ties with healthy cues & support



network interventions

Increase **social cues** and **social support** for healthy habits across **home** and **community** settings.



system interventions

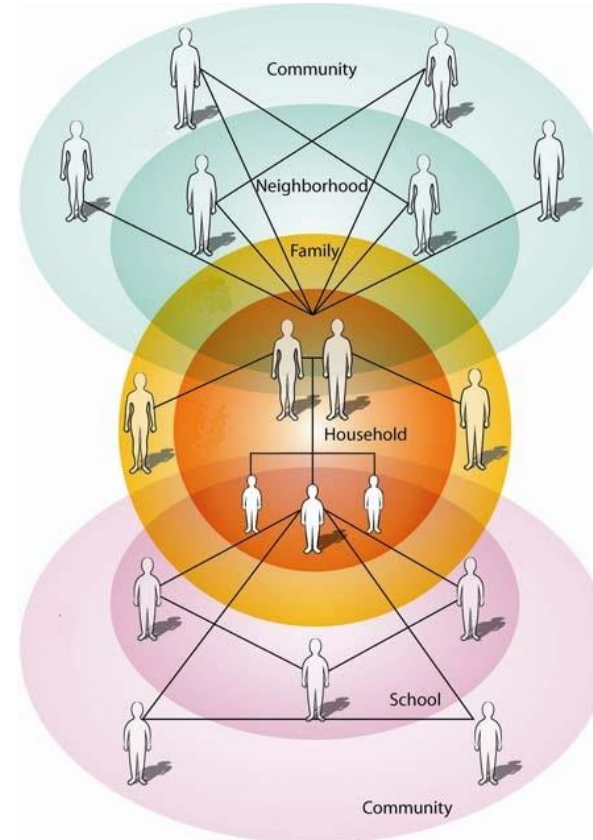
Individual change

Environmental change

- regulation, tax, access
- *choice architecture*

Social change

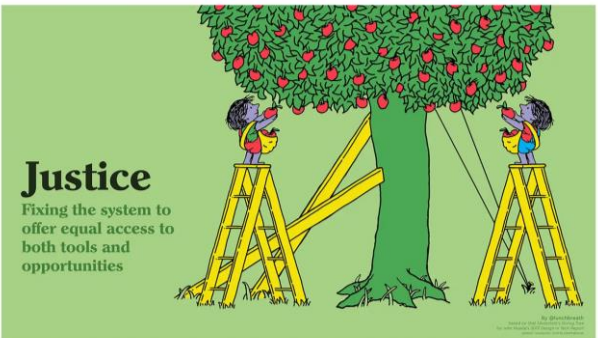
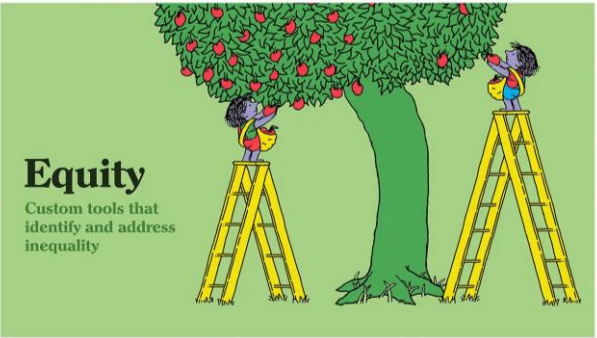
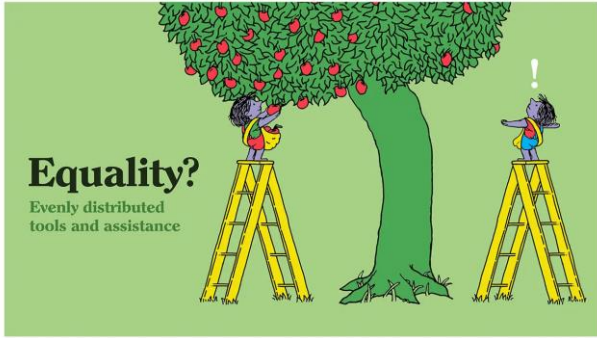
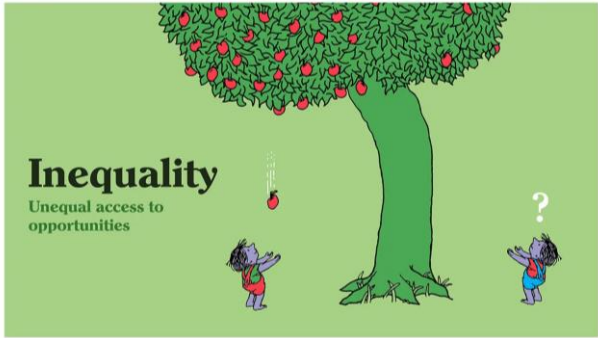
- change/harness social systems
- *social architecture* (Centola, 2018)



Koehly & Loscalzo, 2009



system interventions



Tony Ruth, 2019

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Medicine of **USC**

Department of Population and
Public Health Sciences

Thank you.

WHO STOPS

(Whole of Systems
Trial of Prevention
Strategies for)

Childhood Obesity

- ✓ Health environment change requires **community action**
- ✓ Target **local community leaders** to enact healthy policies and change
- ✓ Step-wedge trial in 12 communities in Australia



NHMRC Partnership Project Grant. PI: S Allender



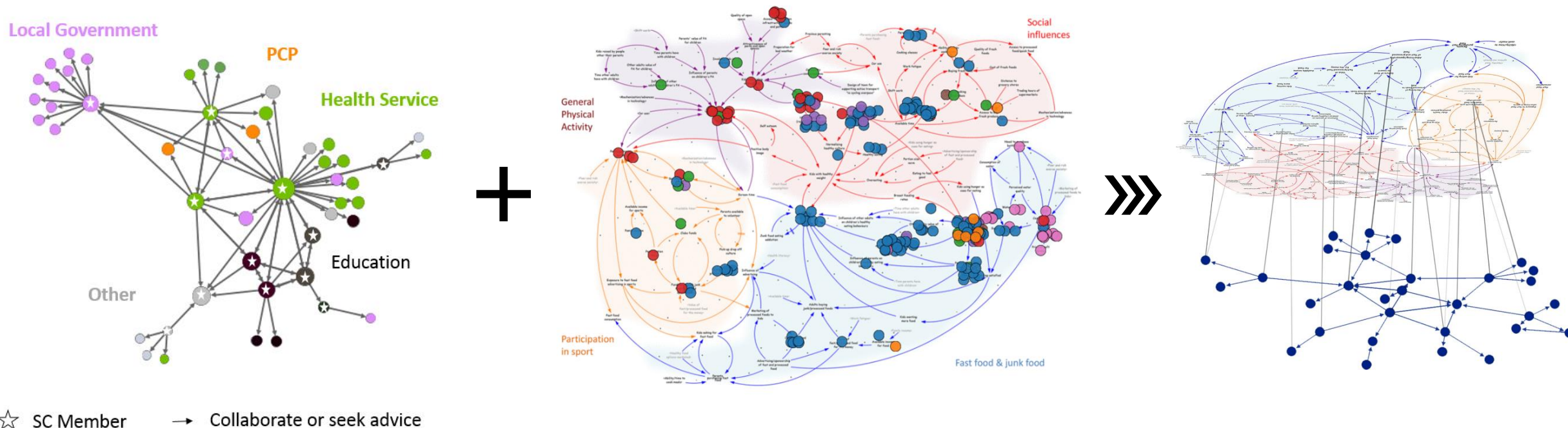
WHO Collaborating Centre
for Obesity Prevention

- Build committee of local leaders



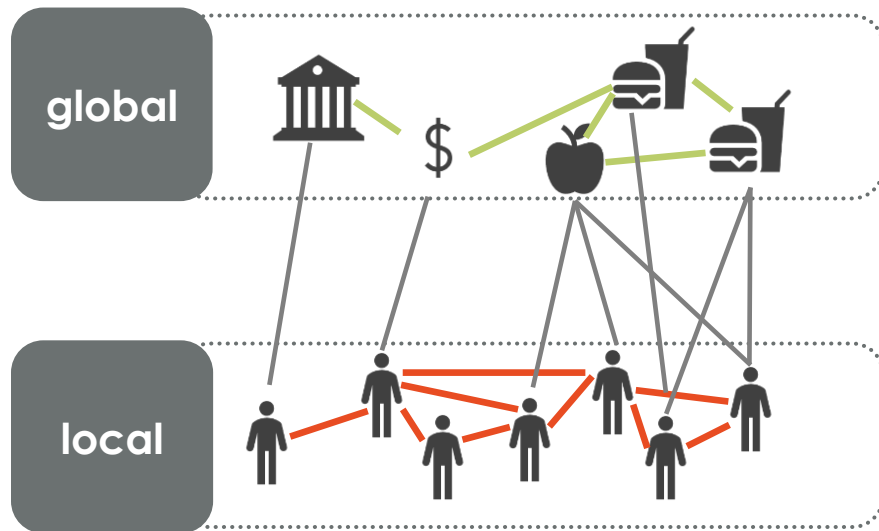
approach

- Build committee of local leaders
- Group Model Building to identify community risk factors
- Foster collaborative networks of leaders to enact change



system intervention

- Leveraged social networks to impact environments, policy, and systems



Impact on child health

- ✓ Reduced BMI in first 2 years
- ✓ Reduced intake of takeaway food
- ✓ Benefits to HRQoL

system interventions

