

Healthy home food environment

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Conflict of Interest Disclosure

This presentation was funded in part by Danone Institute International. There is no conflict of interest for the research presented in this presentation.

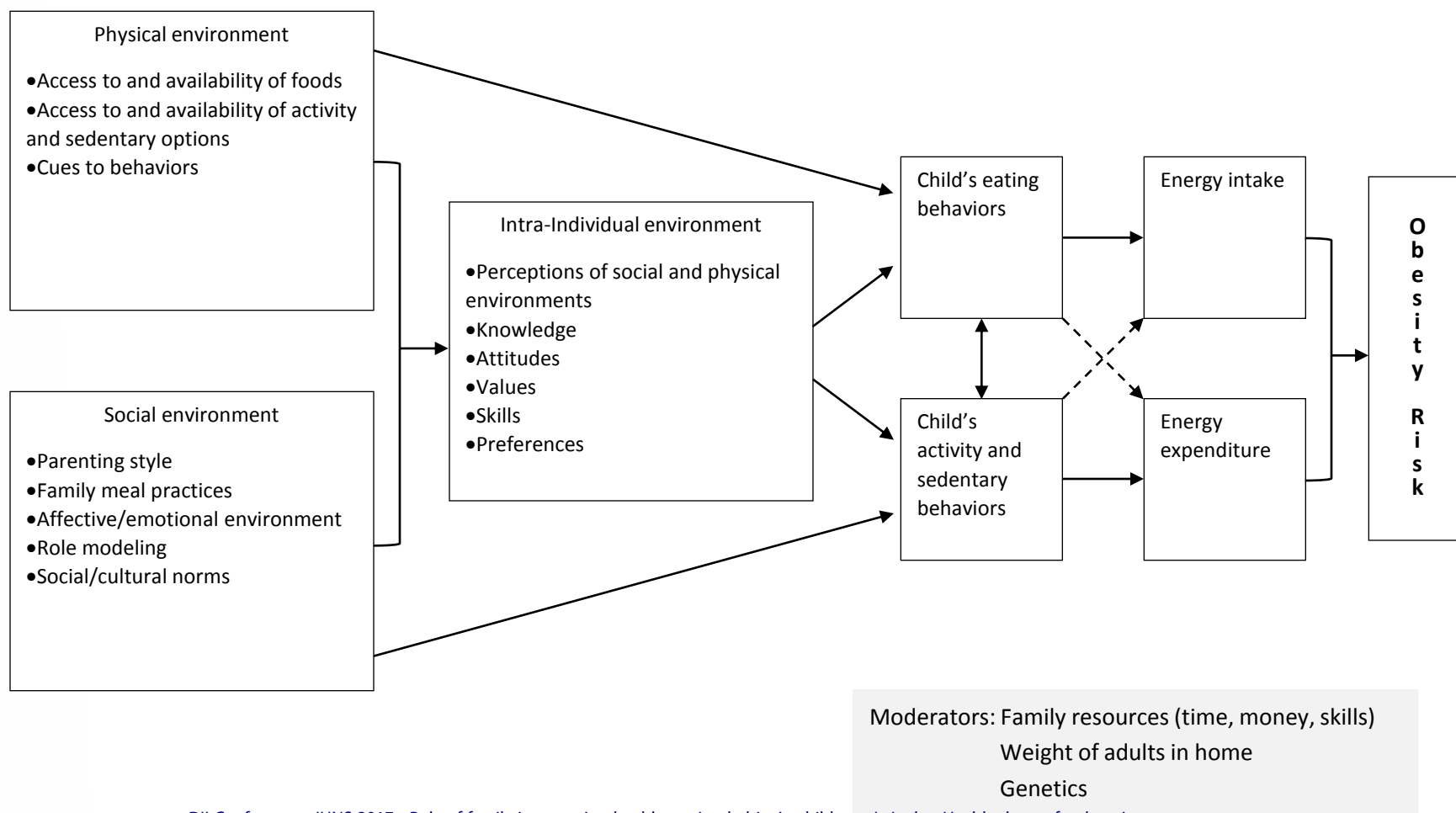
Goals of presentation

- A conceptual model of the role of home and family in childhood obesity risk.
- The role of the home environment
- What do we know about home-based childhood obesity prevention programs?
- Future directions

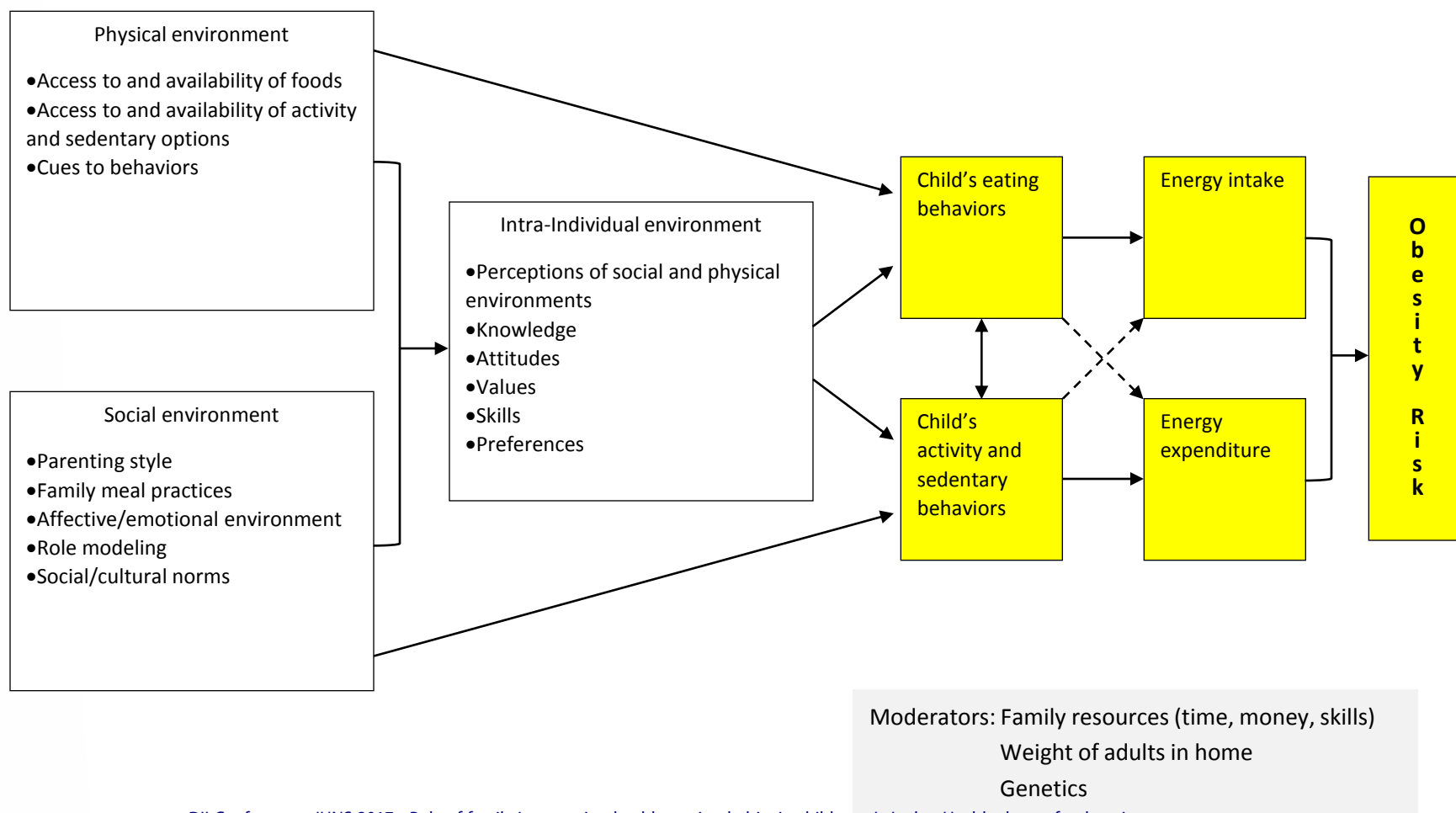
Family and the home environment are especially important:

- 65-72% of children's daily calories are consumed in the home (Smith et al, 2013)
- Home represents the physical environment where children spend the majority of their time
- Families make up the primary social environment where children learn about how, what, where and when to eat
- Children's knowledge, attitudes, values and behavioral preferences are formed at an early age

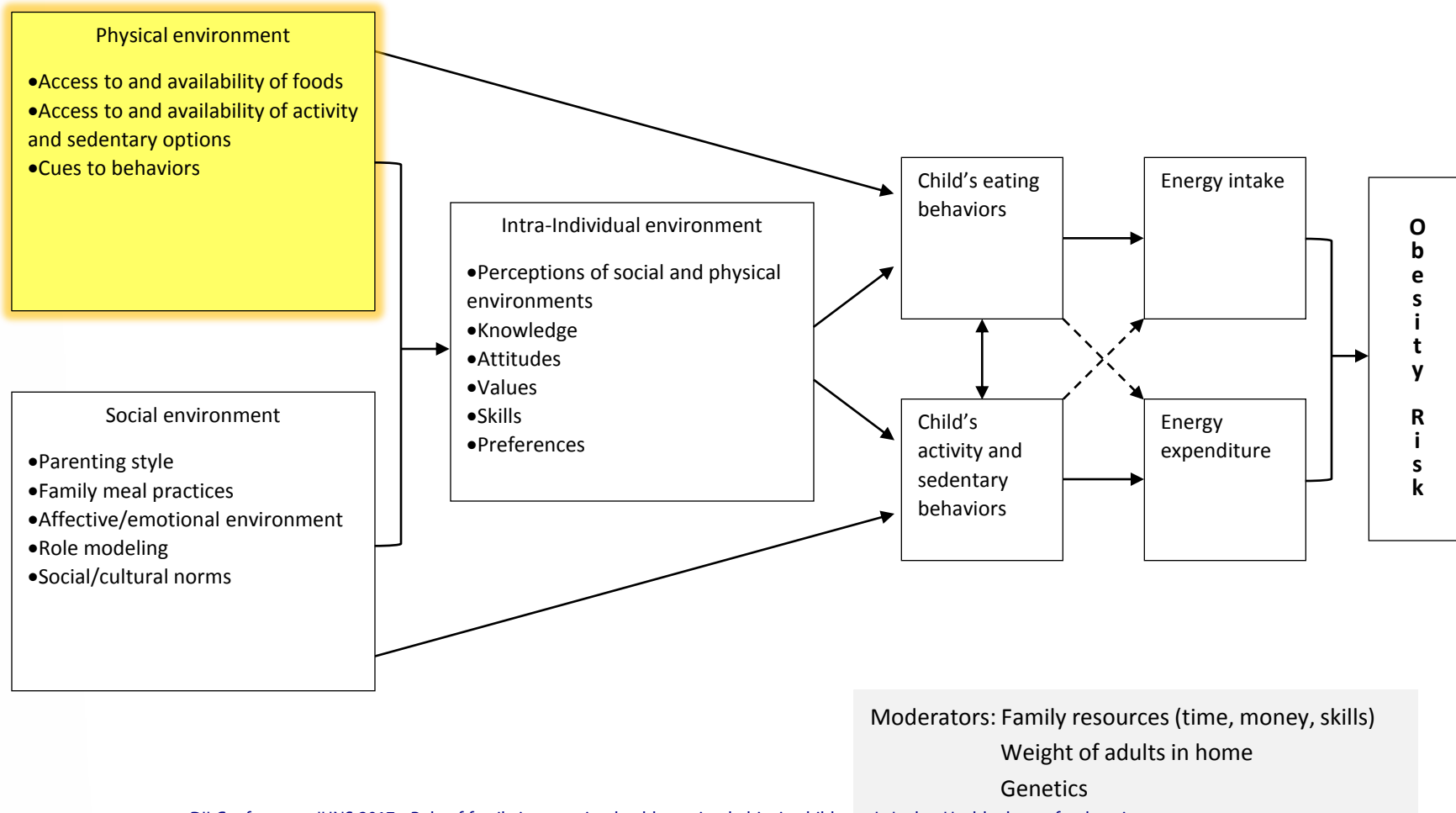
Conceptual model of environmental factors related to childhood obesity risk



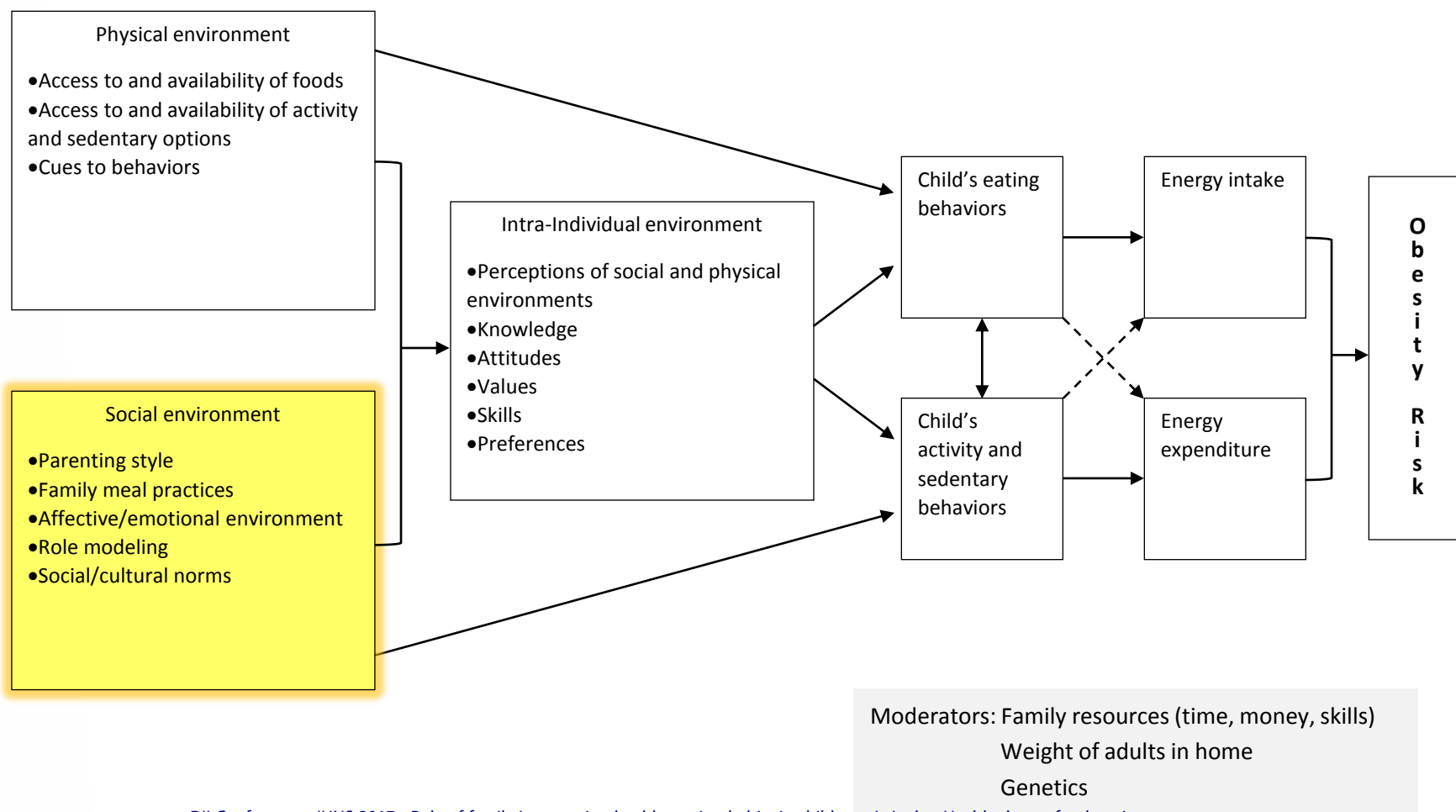
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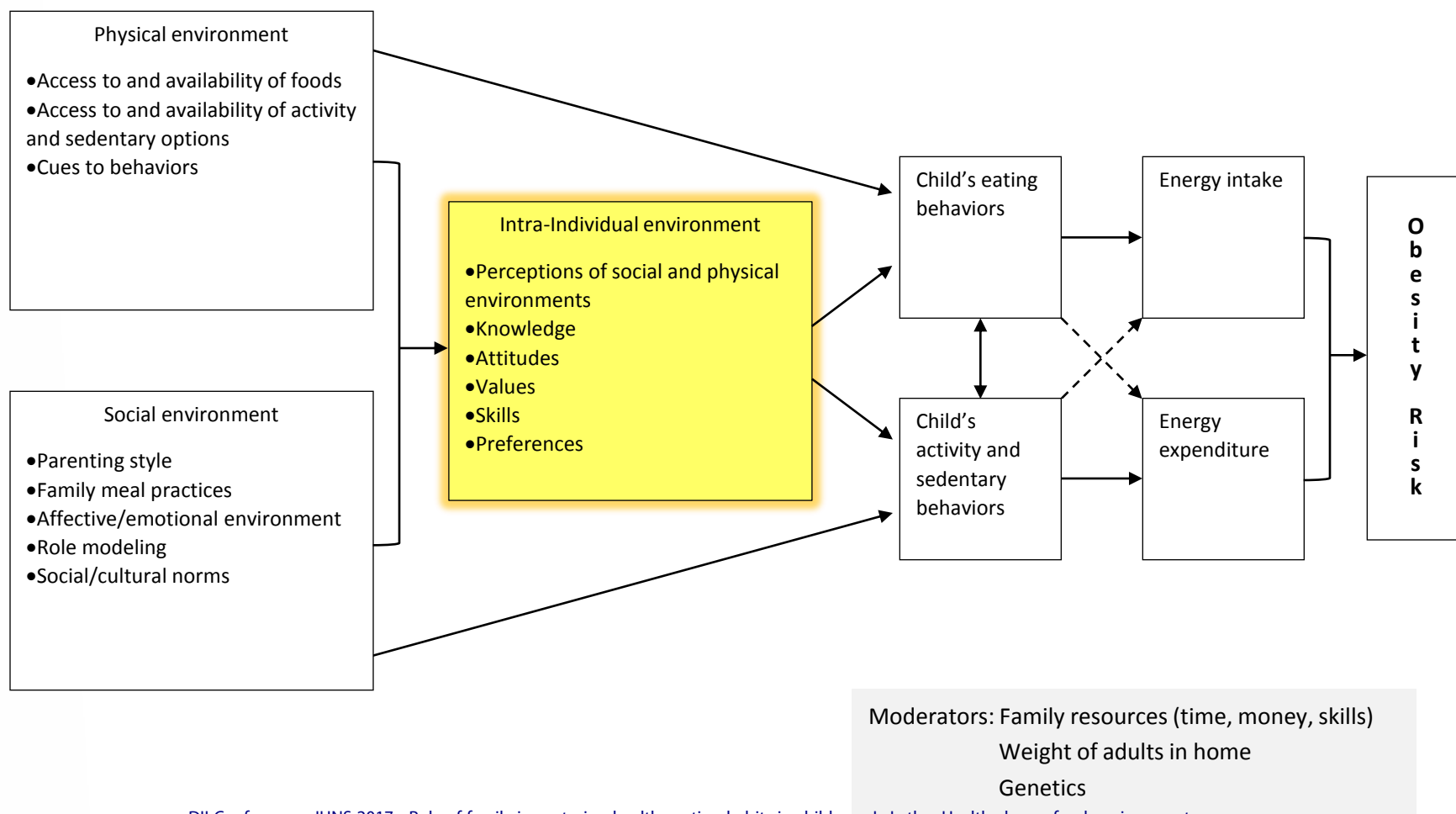
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Conceptual model of environmental factors related to childhood obesity risk



Elements of the home environment that impact children's eating and activity-related behaviors:

- Availability of foods, activity and sedentary options in the home
- Accessibility of foods, activity and sedentary options in the home
- Cues to eating, being active and being sedentary
- Resources available to the family

Examining availability and accessibility: IDEA and ECHO studies

- Purpose of the study: Examining factors related to the etiology of obesity (Lytle, 2009)
- Two longitudinal cohort studies including 727 parent and child dyads (funding from NCI and NHLBI)
- Children/adolescents ages 10-17
- Data collected included: anthropometrics, dietary intake, physical activity and sedentary behaviors, attitudes, assessments of the home, school and neighborhood environments

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Availability of foods in the home

- Children's intake of fruits and vegetables is related to the availability of healthy foods in the home (Ding, 2012)
- Children's intake of high calorie and high sugar snacks and beverages are related to the availability of less healthy foods in the home (Campbell, 2007)
- The physical home food environment can be obesogenic or health-protective

Examining availability and accessibility: IDEA and ECHO studies

- Developed and tested a Home Food Inventory (HFI) (Fulkerson et al, 2008)
- Instrument included 190 food items; check list format
- Instrument asked about children's access to foods in the kitchen and in the refrigerator

Home Food Inventory

30

Date: / /

Look in areas in your home where your household stores food, including the refrigerator, freezer, pantries, cupboards, and other storage areas (list follows in that order). Please check "yes" or "no" to each of the food product/item/category below. Check "yes" to a food product/item/category if it is present anywhere in your home (opened or unopened) as you are completing this form. Check "no" to a food product/item/category if it is not present anywhere in your home as you are completing this form.

Lower fat products will be labeled as "reduced-fat," "low-fat," "light," "nonfat," or "skim" on product and can be interchangeable.

1. Cheese

Yes No

- | | | | |
|--------------------------|--------------------------|--|----|
| <input type="checkbox"/> | <input type="checkbox"/> | a. Shredded or block regular cheese (example: American, cheddar) | 36 |
| <input type="checkbox"/> | <input type="checkbox"/> | b. Sliced regular cheese (example: American, cheddar) | |
| <input type="checkbox"/> | <input type="checkbox"/> | c. Shredded or block of reduced-fat cheese (example: low fat cheddar) | |
| <input type="checkbox"/> | <input type="checkbox"/> | d. Sliced reduced-fat cheese (example: low fat cheddar, low fat swiss) | |
| <input type="checkbox"/> | <input type="checkbox"/> | e. String cheese | 41 |
| <input type="checkbox"/> | <input type="checkbox"/> | f. Mozzarella cheese | 43 |
| <input type="checkbox"/> | <input type="checkbox"/> | g. Regular ricotta or cottage cheese (minimum of 4% fat) | |
| <input type="checkbox"/> | <input type="checkbox"/> | h. Reduced-fat ricotta or cottage cheese (2% or low fat on label) | |
| <input type="checkbox"/> | <input type="checkbox"/> | i. Regular cream cheese | |
| <input type="checkbox"/> | <input type="checkbox"/> | j. Reduced-fat cream cheese or neufchatel | 47 |
| <input type="checkbox"/> | <input type="checkbox"/> | k. Cheez Whiz, Velveeta, canned cheese or other similar cheese | |

Other type of cheese, please specify:

☐ ☐ l.

☐ ☐ m.

42 skip

HFI: Obesogenic food availability score (range 0-71)

Regular fat dairy

Frozen and prepared desserts

Candy

Savory snacks

Sugar sweetened beverages

Processed meats

High fat microwavable foods

Added fats

Access to unhealthy food in the kitchen and refrigerator

The relationships between foods in the home and nutrient and energy intake of parents and children

HFI food category	Dietary intake	Correlation child/parent*
# Dairy products	Calcium intake	0.13/0.16
# Fruits	Vit C intake	0.13/0.30
# Vegetables	Vit A intake	0.13/0.26
Obesogenic score	Energy intake	0.13/0.16

*all significant at $p < 0.05$



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- Cues to eating include
 - Foods left out on counters
 - Exposure to food and beverage advertisements on television
 - Eating behaviors of other family members

What do we know about the effectiveness of home or family-based obesity prevention programs?

What do we know about home-based childhood obesity prevention programs?

- Childhood obesity Prevention Programs: Comparative Effectiveness Review and Meta-analysis (Wang et al 2013)
- Intervention studies that aimed to improve diet, physical activity or both and were conducted in schools, homes, primary care clinics, childcare settings, the community or combinations of these settings in high income countries
- RCTs, children ages 2-18, follow-up of at least 6 months
- Identified 131 articles describing 124 intervention studies

What do we know about home-based childhood obesity prevention programs?

- The vast majority (84%) of the research has occurred in schools
- Only four of the studies (3%) evaluated interventions occurring only in the home
- Focus of the interventions was on nutrition education and all but one relied on the parent to deliver the intervention
- None of the studies detected a significant difference in BMI or other weight-related outcomes

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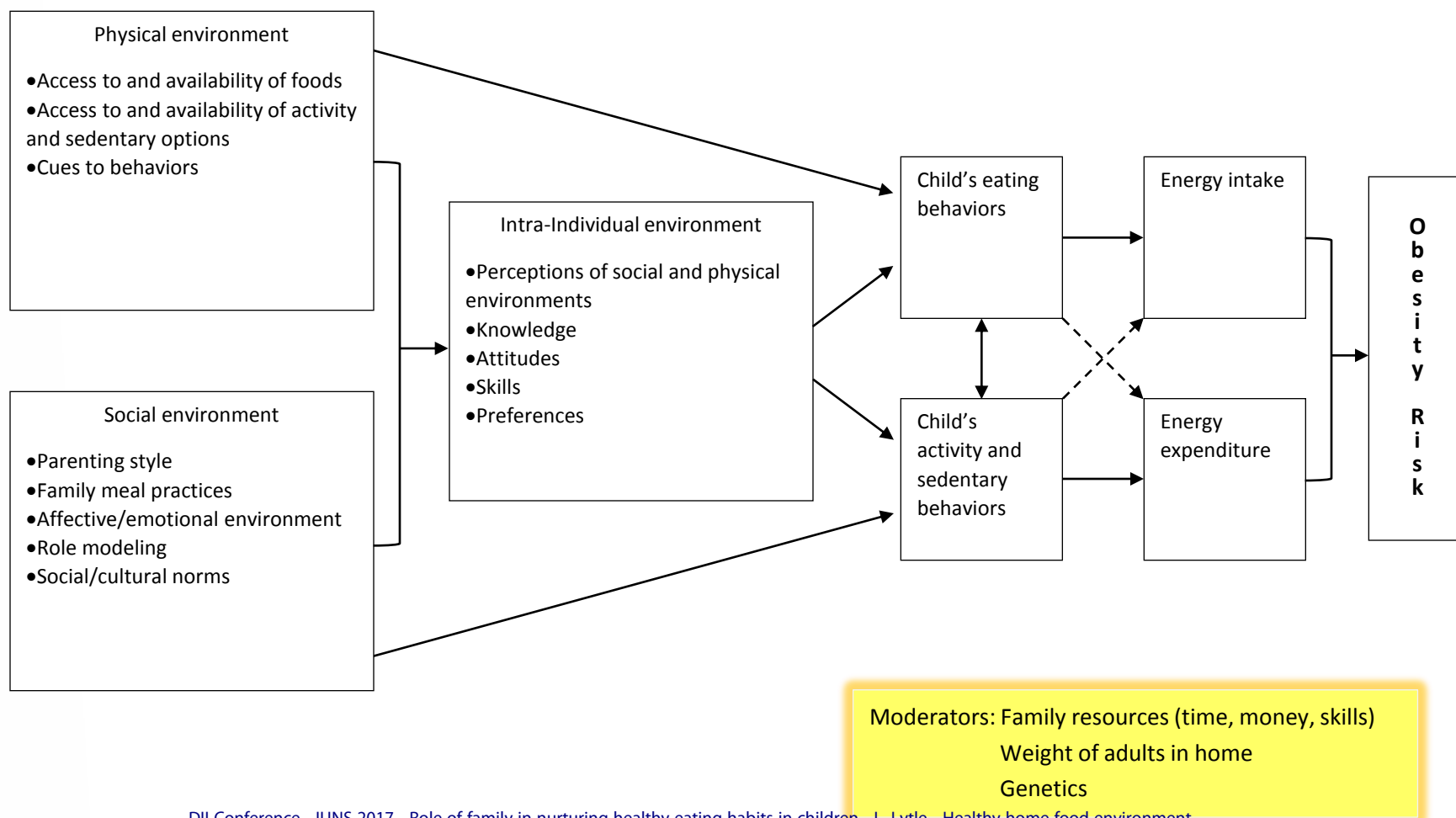
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Home-based obesity prevention interventions:

- Likely limited in number because homes are private environments
- Need to move beyond nutrition education and intra-individual environmental approaches
- Need to examine innovative ways to reach and interact with families
- Need to pay attention to mediators and moderators

Conceptual model of environmental factors related to childhood obesity risk



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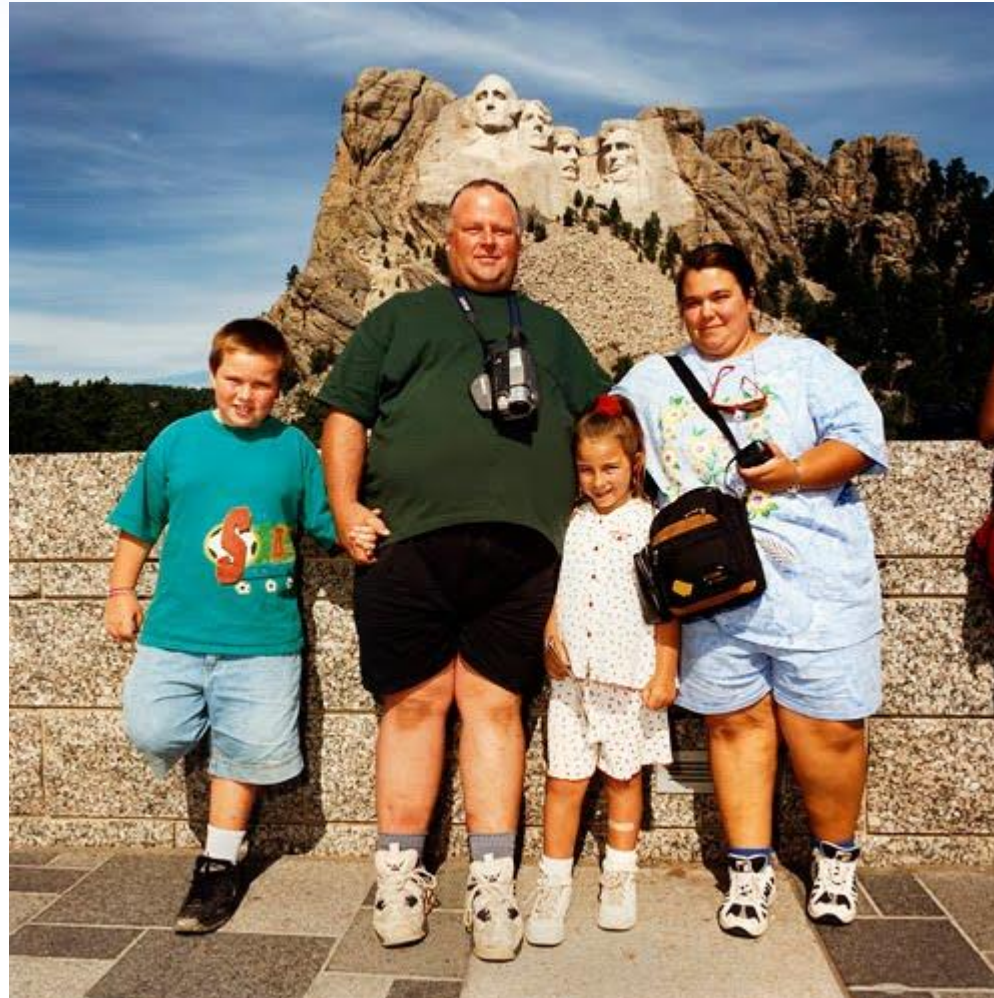
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Parental weight status likely influences:

- Foods that are in the home
- Taste preferences of children
- How children learn satiety cues
- Use of food as a way to reward, reduce stress, relieve boredom, etc.
- Parenting style around food-related issues
- Parental role modeling of eating, activity and sedentary behaviors

Parental Weight Status and Girls' Television Viewing, Snacking, and Body Mass Indexes

Lori A. Francis, Yoonna Lee, and Leann L. Birch

Abstract

FRANCIS, LORI A., YOONNA LEE, AND LEANN L. BIRCH. Parental weight status and girls' television viewing, snacking, and body mass indexes. *Obes Res.* 2003; 11:143-151.

Objective: The purpose of this study was to examine whether television viewing (TVV) provides a context for patterns of snacking fostering overweight in young girls from overweight and non-overweight families.

Research Methods and Procedures: Participants were 173 non-Hispanic white girls and their parents from central Pennsylvania, assessed longitudinally when girls were 5, 7, and 9 years old. Path analysis was used to test patterns of relationships among girls' TVV, snacking while watching television, snacking frequency, fat intake from energy-dense snack food, and girls' increase in body mass index (BMI) from age 5 to 9.

Results: In both overweight and non-overweight families, girls who watched more television consumed more snacks in front of the television. In families where neither parent was overweight, television viewing was the only significant predictor of girls' increase in BMI. In families where one or both parents were overweight, girls who watched more television snacked more frequently, and girls who snacked more frequently had higher intakes of fat from energy-dense snacks, which predicted their increase in BMI from age 5 to 9. TVV did not directly predict girls' increase in BMI in girls from overweight families.

Discussion: The results of this study support and extend previous findings that have shown that excessive television viewing and snacking patterns are risk factors for the development of overweight in children; however, pat-

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ARTICLE

Parental Weight Status as a Moderator of the Relationship Between Television Viewing and Childhood Overweight

Elizabeth A. Vandewater, PhD; Xuan Huang, MA

Objective: To examine whether and to what extent the relationship between television viewing and childhood weight status differs according to parental weight status.

Design: Population-level survey including in-home and telephone interview components.

Setting: United States.

Participants: Representative sample of children aged 6 to 19 years in 2002 (n=1483).

Main Exposure: Hours of television viewing.

Main Outcome Measures: Child weight status (normal weight, at risk for overweight, overweight) as defined by current Centers for Disease Control and Prevention standards.

Results: Parental obesity increased the risk of childhood overweight for all of the children except boys aged

THE PREVALENCE of overweight and obesity in American youth has reached epidemic proportions. Current estimates indicate that approximately 31% of children aged 6 to 11 years are overweight and 16% are obese. Current estimates also indicate that time spent watching television is a significant risk factor for childhood overweight and obesity. Children who watch television for more than 2 hours per day are at a higher risk of being overweight or obese than children who watch television for less than 2 hours per day.

Author Affiliations: Population Research Center (Dr Vandewater), Human Development and Family Studies (Drs Vandewater and Huang), Center for Research on

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ORIGINAL ARTICLE

Examining the Relationships Between Family Meal Practices, Family Stressors, and the Weight of Youth in the Family

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Abstract

Background Research is limited on how the social environment of the home is related to childhood obesity.

Purpose The purpose of this research was to examine the relationships between positive family meal practices, family stressors, and the weight of youth and to examine parental weight status as a moderator of these relationships.

Methods The study enrolled 368 parent/child dyads from a Minnesota sample. We used mediation analysis to examine the associations.

Results Families represented by an overweight parent reported fewer positive family meal practices ($p<0.001$), higher levels of depression ($p=0.01$), and fewer family rules ($p=0.02$) as compared to families represented by a healthy weight parent. For overweight parents, positive

family meal practices mediated the relationship between some family stressors and child weight.

Conclusions This research suggests that the home environment may affect the weight of children in the family, and the effect is more pronounced in families with at least one overweight parent.

Keywords Family meal practices · Family stressors · Youth weight

Introduction

A potential contributor to the epidemic of childhood obesity is the changing face of families. In the past 30 years, the proportion of dual-income households has increased from 17% to 39% as parents strive to provide for their families and as women's role in the workplace has evolved [1]. This societal shift has meant that aspects of the home environment that may affect eating behaviors and weight outcomes of family members have changed including the frequency

Examining the social environment of homes: IDEA and ECHO studies

- What is the relationship between family stressors, positive family meal practices and youth BMI? Are the relationships moderated by having at least one overweight parent? (Lytle et al, 2011)
- Asked parents to report on usual meal time activity
- Asked parents to report on family stressors
- Measured height and weight of parents and children

Stressors examined included:

- Time demands: “I feel too busy with work or other demands.” (Cronbach alpha: 0.81)
- Family rules: “We have family rules about what/when children eat.” (Cronbach alpha: 0.62)
- Rule enforcement: “When I feel like I’ve disappointed my child, I’m more likely to give into requests for treats.” (Cronbach alpha: 0.81)
- Depression: “How often in the last 12 months have you felt unhappy, sad or depressed.” (Cronbach alpha: 0.82)
- Stress: “How often in the past month have you felt unable to control the important things in your life?” (Cronbach alpha: 0.78)

Positive family meal practices:

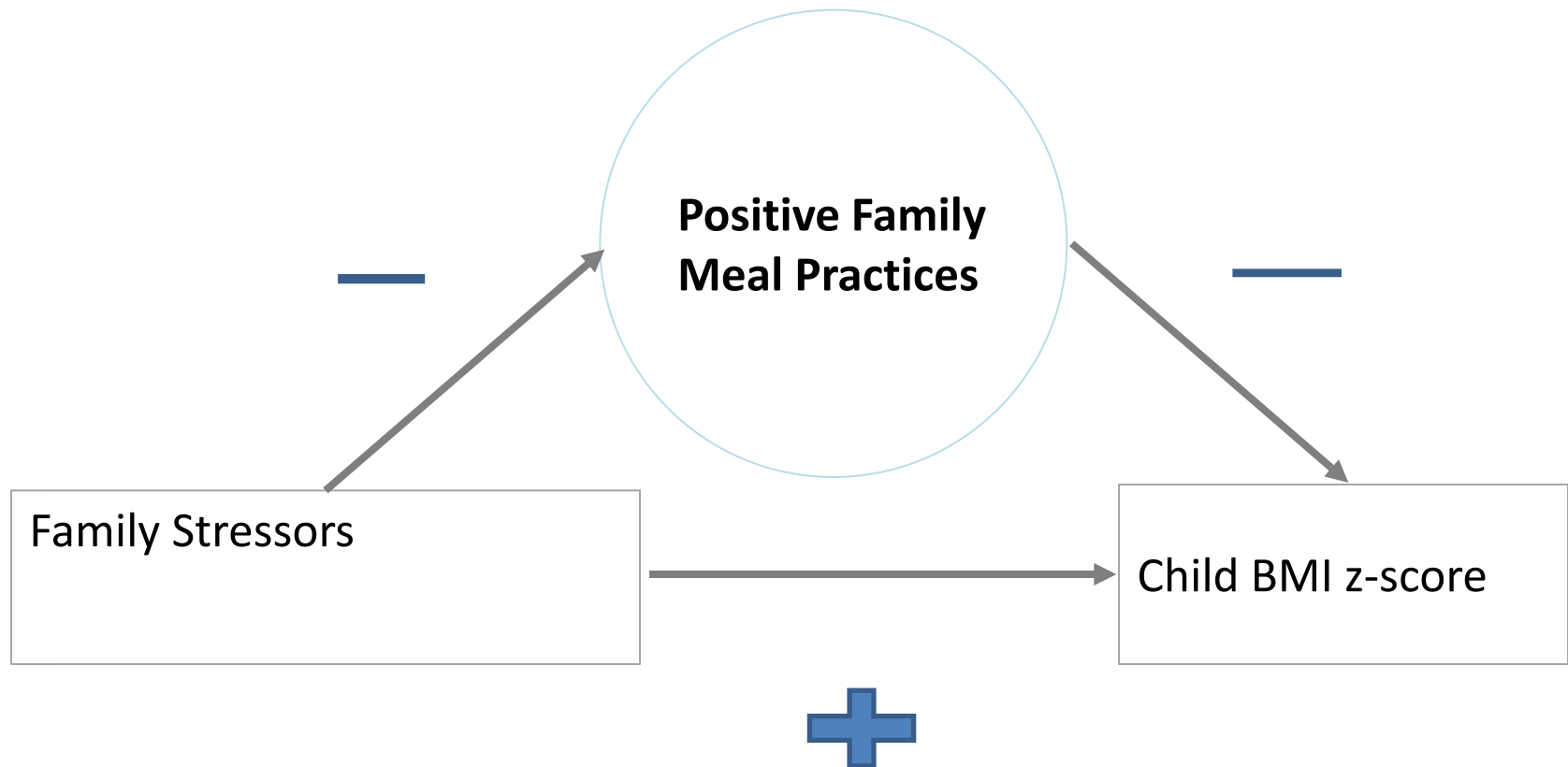
- Eating dinner and breakfast together
- Parents present at the evening meal
- Fruit, vegetables, milk served at evening meal
- Evening meal purchased from fast food (-)
- Soft drinks served at evening meal (-)
- TV or phone use during evening meal (-)
- Eating meals in the car (-)

Parent survey data (mean, SD)	Healthy weight parent (n=151)	Overweight/obese parent (n=217)
Positive family meal practices ** (range = 0–11)	6.8 (2.06)	5.55 (2.47)
Depression * (range=10–30)	15.10 (4.01)	16.27 (4.69)
Stress * (range=4–19)	7.70 (2.74)	8.32 (2.99)
Time demands * (range=9–32)	20.38 (3.27)	21.22 (4.12)
Lack of family rules* (range=4–16)	9.31 (1.96)	9.81 (2.16)
Difficulty with rule enforcement (range=6–22)	12.33 (2.72)	12.69 (3.02)

*p<0.05; ** p<.001)

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What is the relationship between stressors, meal practices and BMI and is the relationship the same in all families?



Results of the Positive Family Meal Practices question:

- The weight status of the parent moderated the relationship between family stressors, family meal practices and child's BMI
- In families where at least one parent was overweight or obese, family stressors affect child BMI both directly AND by having a negative impact on what happens at family meals
- An overweight parent added to the challenges of ensuring a positive family meal environment

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Compared to their higher SES counterparts, children from lower SES families...

- Eat fewer family meals
- Are more likely to be food insecure
- Are more likely to skip breakfast
- Have less availability of fruits and vegetables in the home
- Are more likely to be overweight
- Are more likely to become overweight as adults

Adapted from Rosenkranz and Dzewaltowski (2014)

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- We cannot ignore that an estimated 900 million people world wide live on less than \$1.90/day (World Bank Group, 2016)
- ‘Energy density-cost’ framework: having less money to spend on foods leads to more energy dense diets that are higher in added sugars and fats and lower in vegetables and fruit (Drewnowski, 2004).
- “...the ability to adopt healthier diets may have less to do with psychosocial factors, self-efficacy, or readiness to change than with household economic resources and purchasing power.” (Drewnowski, 2004, page 161)

Conclusion

- Holistic and interdisciplinary approaches are needed
- Obesity programs need to focus on the family as a whole
- Effective approaches will likely need to impact the social and physical environments; how we eat is as important as what we eat
- Use more innovative ways to increase the reach of programs including reaching lower income families
- Advocate for increasing economic equity globally

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