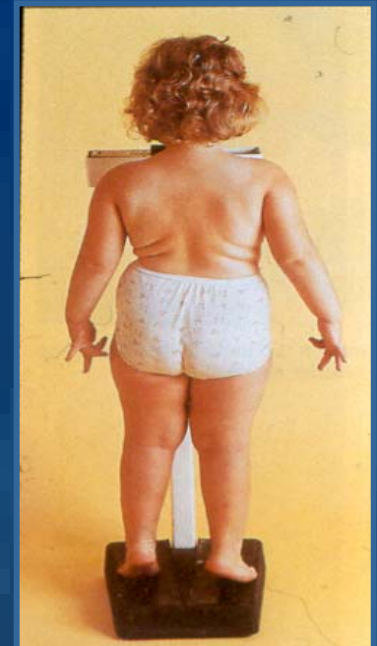


Measures of determinants of overweight in children: Family and social environment



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Overview of opportunities, challenges in conducting research on family, social determinants of childhood overweight

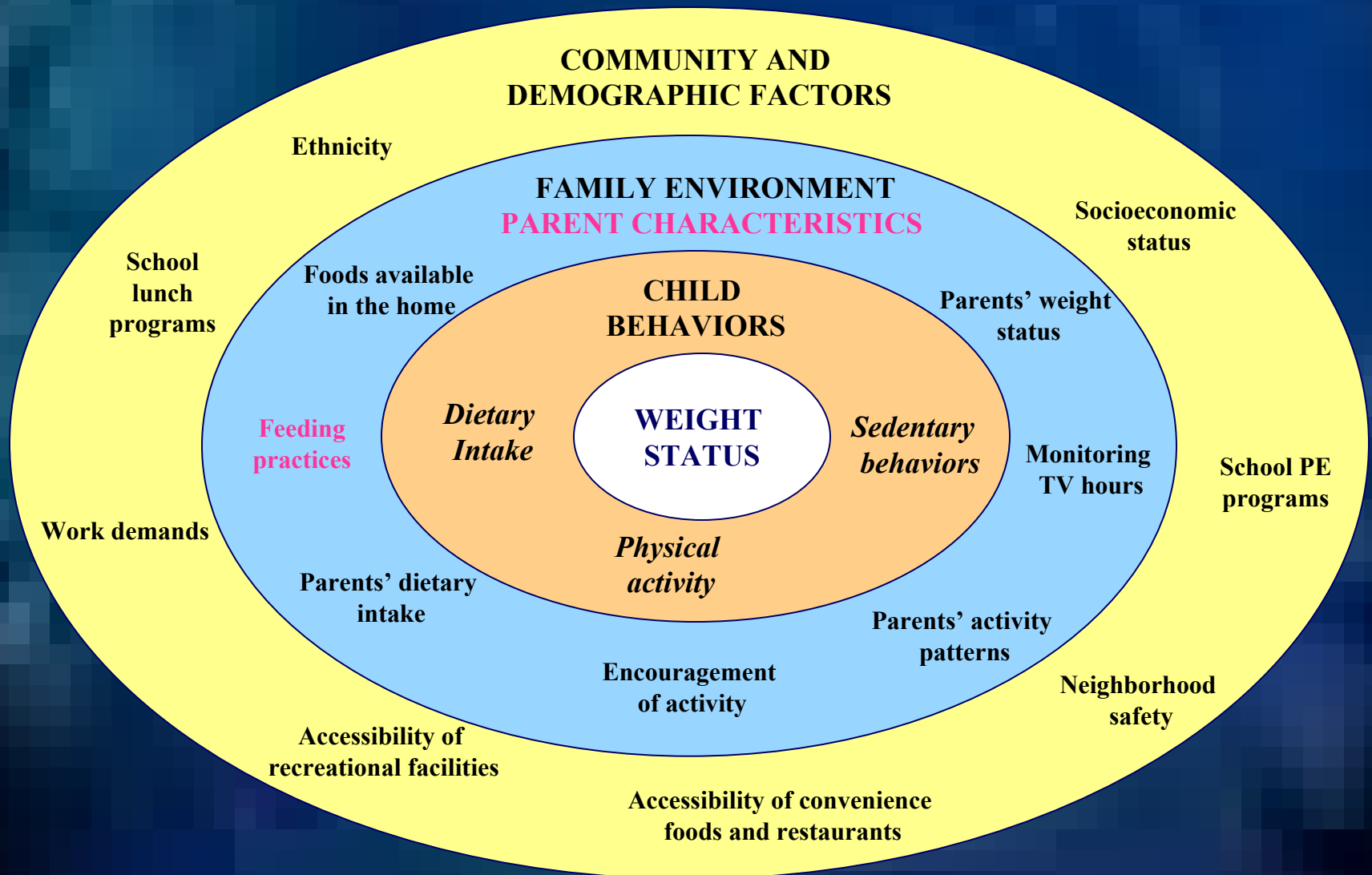
- the challenge: where to start:
 - models, constructs, measurement, methods
- an example, warts and all
- next steps

Measures of social, family determinants: A bibliography

- see our bibliography of measures available in the back of the room or via email*:
 - by social and family influence: parents, peers, coaches, teachers, etc.
 - type of measure (observational, self report), focus (behavior, attitudes), etc.
 - description of measure, citations, areas where measures are needed
 - psychometrics if available

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Ecological Model of Childhood Obesity



Family and Social Environmental Influences on Childhood Obesity

- parents
- siblings
- peers
- teachers, coaches
- health professionals
- media

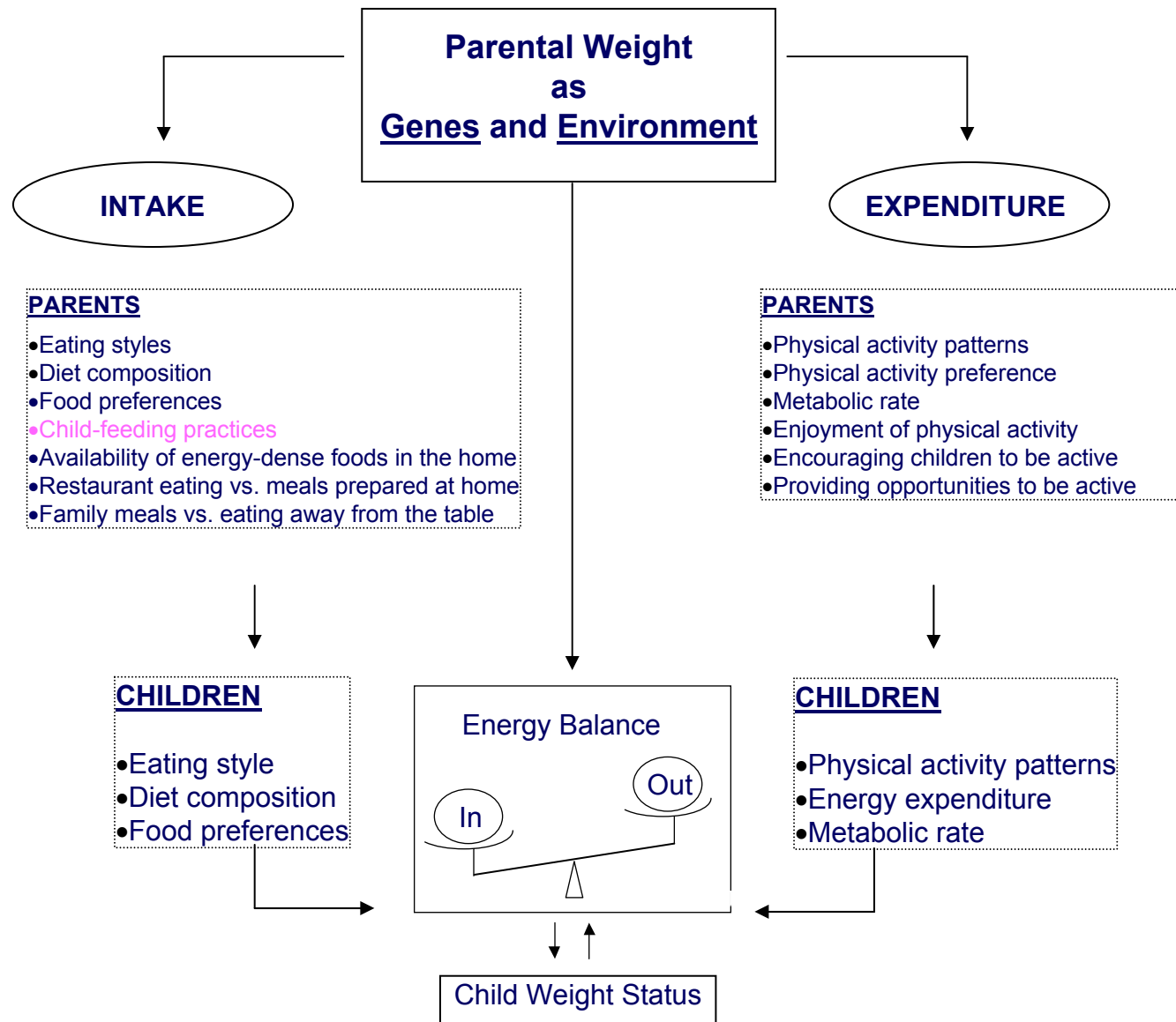
Focus on parents....

How do parents promote/protect re CO?

Family/social influence: Why parents?

- family resemblances in weight status
- parents provide genes and early environments
- parents influence children's development
- family environment is especially influential early
- surprisingly little research on family environments
- heritability studies estimate but do not measure environmental effects
- complications:
 - non-shared environments
 - P-C bi-directional influence

Parental Influence on Children's Weight Status



What are the best ways to identify important family, social determinants of childhood obesity?

- determinants only of interest if they are also part of the solution...
- models needed, informed by
 - epidemiological data on associations
 - relevant theory on family dynamics, parenting
- define constructs, specify relationships
- develop reliable, valid, multiple measures
- test the model
- most current interventions not helpful

Associations between determinants & CO that are influenced by parenting, and weight status

- frequency of snacking related to weight status*
- portion sizes related to energy intake, weight status**
- soft drink intake related to obesity***
- parent-child similarities in intake, weight status****

*Jahns, et al; **McConahy, et al;

Ludwig, et al;* Fisher, et al.

Parenting: A set of regulatory acts aimed at helping children adapt to their environments*

- **sustenance**: providing food, protection from environmental threats
- stimulation
- support
- **structure**: organizing C eating environments
- **surveillance**: monitoring and control over eating

Parents shape children's eating environments: Sustenance, structure, surveillance

■ sustenance & structure:

- formula or breast feeding?
- which foods, drinks, energy density?
- portion sizes?
- frequency of meals, snacks?
- where does eating occur?

■ surveillance

- child feeding practices



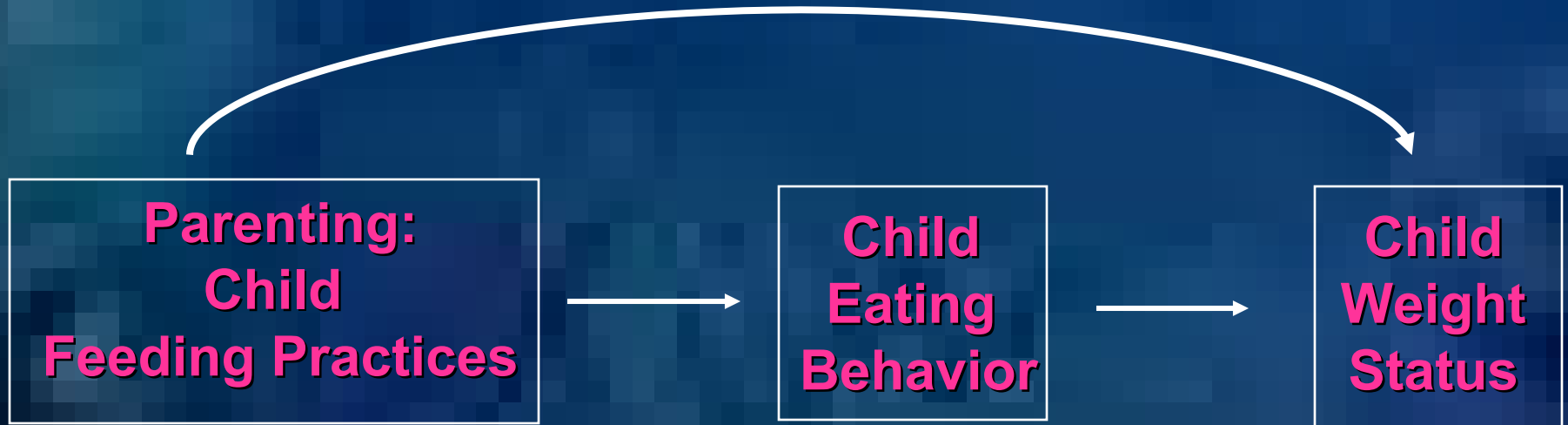
Conceptual challenges:

- CO has a complex etiology, with multiple
 - constructs, pathways, interactions
- a single construct will account for only a small portion of variance in outcome
- relationships between parenting, child outcomes moderated by background characteristics:
 - ethnicity, race, income food insecurity, etc.
- social influence does not operate directly on CO
 - rather, mediated via child eating, activity

A very simple model of social determinants of children's weight status: Parenting has direct effects on children's weight status



A mediation model: Parenting effects on weight status are mediated via eating behavior



Methodological challenges

- to assess *causal* influence requires designs:
 - longitudinal
 - Experimental designs
- parent-child influence bidirectional
- small imbalance in EI, EE, 100 kcal/day can produce CO over time
 - measurement challenges, lack of precision DV and IV
 - links between eating behavior, weight status weak, difficult to detect

Methodological challenges, con't

- measurement of social influence, child outcomes:
 - measurement error, reporting bias
 - heavy reliance on self report data, other approaches needed
 - little research on measures of food environments
 - non-shared environmental effects: differ across siblings, based on individual characteristics, e.g., weight status

Parenting practices: Addressing environmental threats promoting successful adaptation

- in contexts where food scarcity a major threat
 - overweight child = successful parenting
- currently, too much food a major threat
 - overweight child = health problem

Parenting practices: Addressing environmental threats to children's successful adaptation to the environment*

- threats have changed, but parenting practices change more slowly
- parenting practices to address under-nutrition may promote overeating and obesity (pressure to eat)
- parenting practices intended to counter over-nutrition may also promote overeating (restriction)



What are the effects of restricting children's access to foods on children's intake?

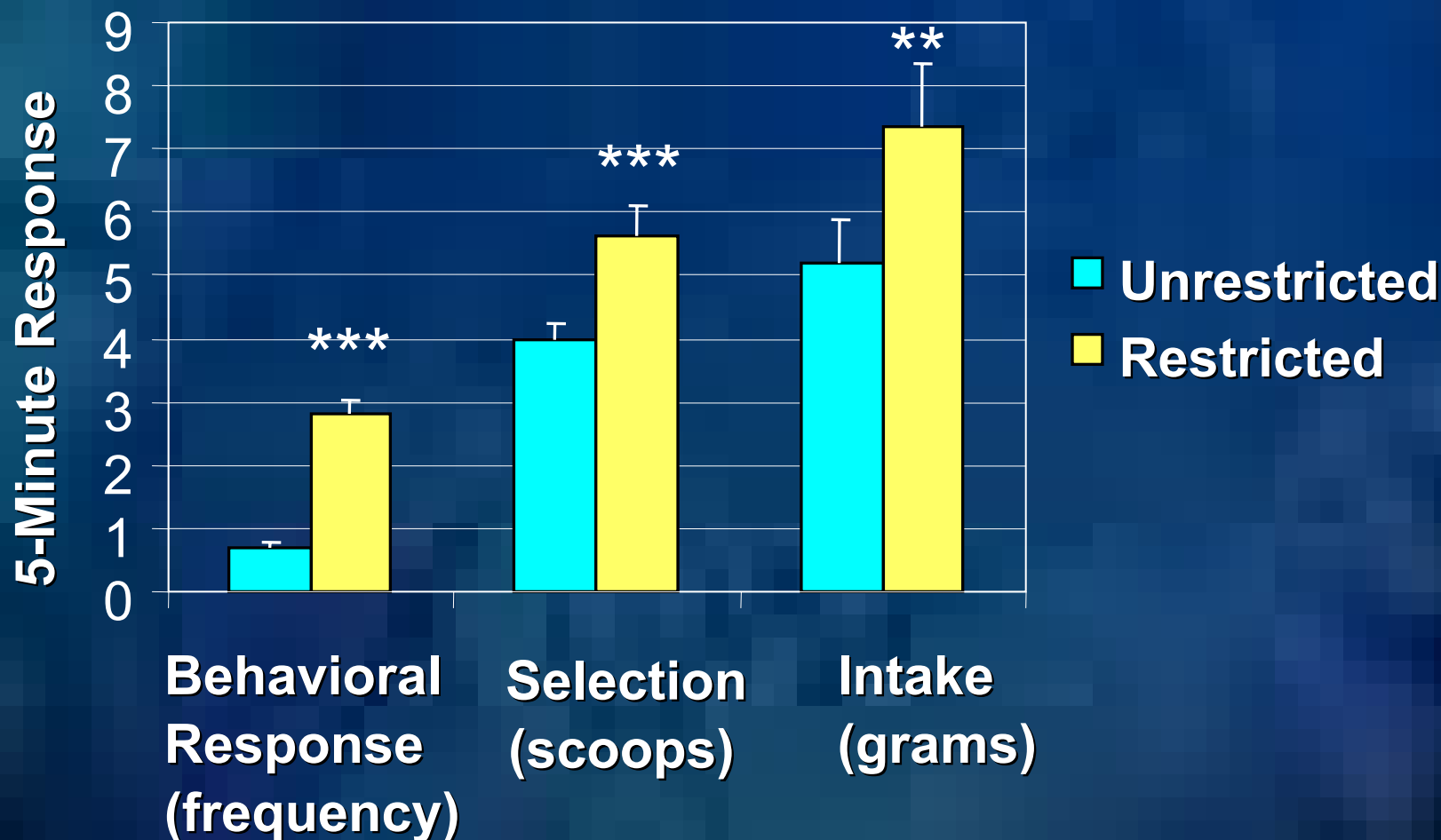
Is this an effective strategy for fostering healthier diets, health weight status among children?

No...



Fisher, et al *JADA* 2000;
Fisher & Birch, *AJCN*, 1999

Preschool children's responses to restriction*



Experimental, within subjects design; restriction manipulated within classrooms.
See Fisher & Birch, AJCN, 1999

Child Feeding Questionnaire*: A self report measure of parental beliefs, attitudes, practices

- 7 factors, including:
 - perceived child weight
 - concern about child weight
 - **restriction**
 - pressure to eat
 - monitoring
 - parent responsibility for feeding
 - perception of parent weight

Does maternal restriction promote overeating and overweight?

- mothers completed CFQ, maternal restriction, when daughters were 5-year-olds
- “eating in the absence of hunger” measured at 5, 7 and 9 years
- child weight status obtained at 5, 7 and 9 years

To assess the effects of maternal use of restriction on daughters' eating and weight from 5 to 9 years

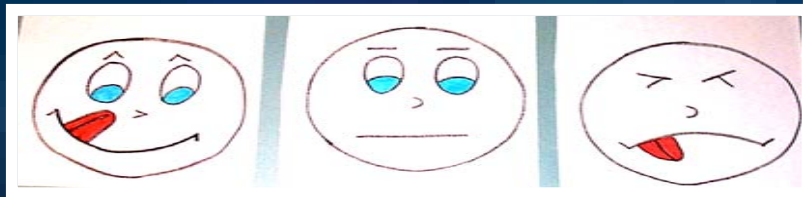
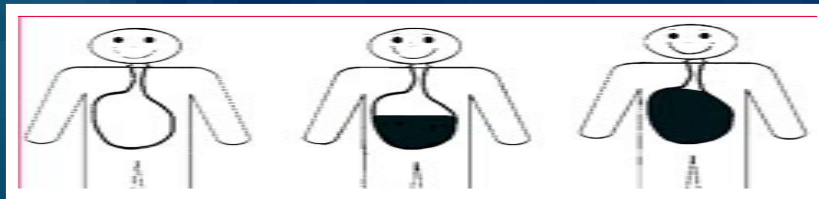
- 2 x 2 design with groups formed, based on:
 - high or low maternal restriction when daughters were age 5
 - daughters' weight status at risk or not at risk for overweight at 5
- eating in the absence of hunger measured when daughters were 5, 7, and 9 years

“Eating in the absence of hunger”

- a behavioral measure of individual differences in eating in response to the presence of palatable food, in the absence of hunger
- captures some of the characteristics of binge eating, including:
 - consumption of a relatively large amount of food in a short time
 - “out of control”, negative self evaluation

Measuring eating in the absence of hunger

Standard Lunch



10 min free access to a variety of palatable foods

What are the effects of restricting children's access to foods?

Short term:

- enhanced preference
- increased attention
- Increased intake

Long term:

- increased intake
- increased eating in the absence of hunger
- negative self evaluation
- greater wt gain from 5 to 11



Fisher, et al JADA in press;
Fisher & Birch, 1999a,b
Birch, Davison & Fisher, AJCN, 2003

Parental feeding style, child energy intake, relative weight: A literature review

Aim

- to review the literature examining the relationship between parental feeding style and child energy intake / relative weight.
- 22 studies retrieved (through Nov 2003).

Faith, et al., (submitted).

Conclusions of Literature Review

“Parental feeding restriction, but no other feeding practice, was associated with increased child eating and weight status”

“Longitudinal studies are needed to test underlying causal pathways ... and to substantiate findings in the presence of other obesity risk factors”

Conclusion

- best evidence exists for an association between parental restriction of child eating and child eating / weight status
- causal pathways suggest bi-directional pathways
- family vulnerability and ethnicity/culture deserve more study

Where do we go from here? Shift emphasis from etiology to developing a research base for prevention, intervention

- use research on etiology, epidemiological data, developmental theory to select promising intervention constructs, components
- focus measurement development on these components
- use sequential experimentation*to systematically screen potential intervention components

Conclusions: Family and social determinants of childhood overweight

- potentially important familial, social determinants have received little investigation:
 - parents as models—portion size, food selection, dieting, frequency of snacking, eating out, in front of TV etc.
 - P-C similarities in the epi data could be revealing
- little research on other social determinants : peers, siblings, coaches, media

Conclusions: Family and social determinants of childhood overweight

- family, social determinants of childhood obesity: Some promising candidates; few clear “winners”
- ethnic and income differences in perceptions of perceived threats: differences in parenting and moderation of parenting effects
- focus should be shifted from etiology to investigating the potential of family and social determinants for prevention, intervention