Long-term effectiveness of behavior therapy for pediatric obesity

Colleen Kilanowski, M.S.

Leonard H. Epstein, Ph.D.

Departments of Pediatrics and Social and Preventive Medicine

University at Buffalo School of Medicine and Biomedical Sciences

Research on long-term (4 years or more) pediatric weight control

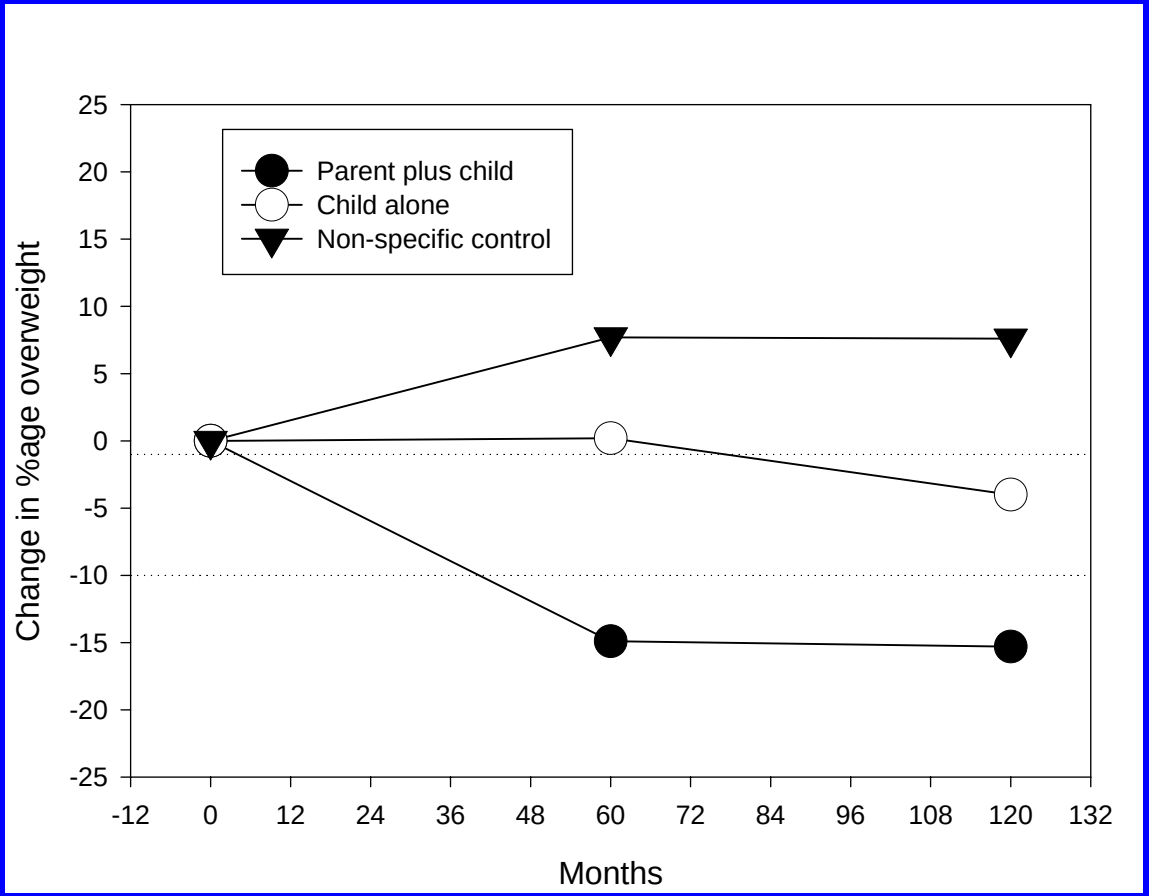
Who should be targeted for weight loss?

Design

76 families with obese 6-12 year-old children and obese parents randomized to one of three groups:

- Child and parent targeted for weight loss
- Child alone targeted for weight loss
- Non-specific target

Long-term effects of treating the parent + child



Epstein, Valoski, Wing & McCurley. (1994) Ten-year outcomes of behavioral family-based treatment for childhood obesity. Health Psychology, 13, 373-383.

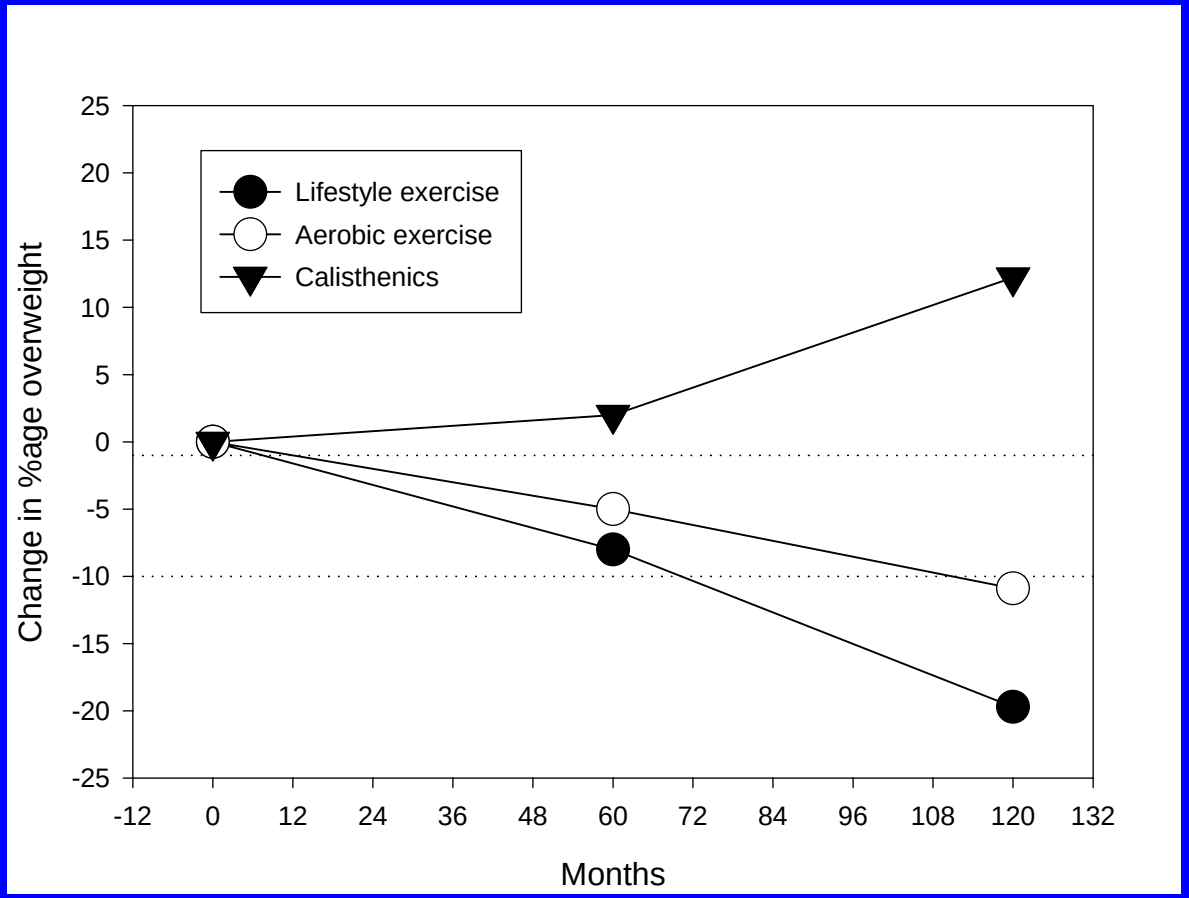
What type of activity is effective?

- Design

  41 families with obese 8-12 year-old children and obese parents were randomly assigned to one of three groups:

  – Diet and aerobic exercise
  – Diet and lifestyle exercise
  – Diet and calisthenics

Long-term effects of lifestyle exercise, aerobic exercise and calisthenics



Epstein, Valoski, Wing & McCurley. (1994) Ten-year outcomes of behavioral family-based treatment for childhood obesity. Health Psychology, 13, 373-383.

Does parent weight status effect treatment?

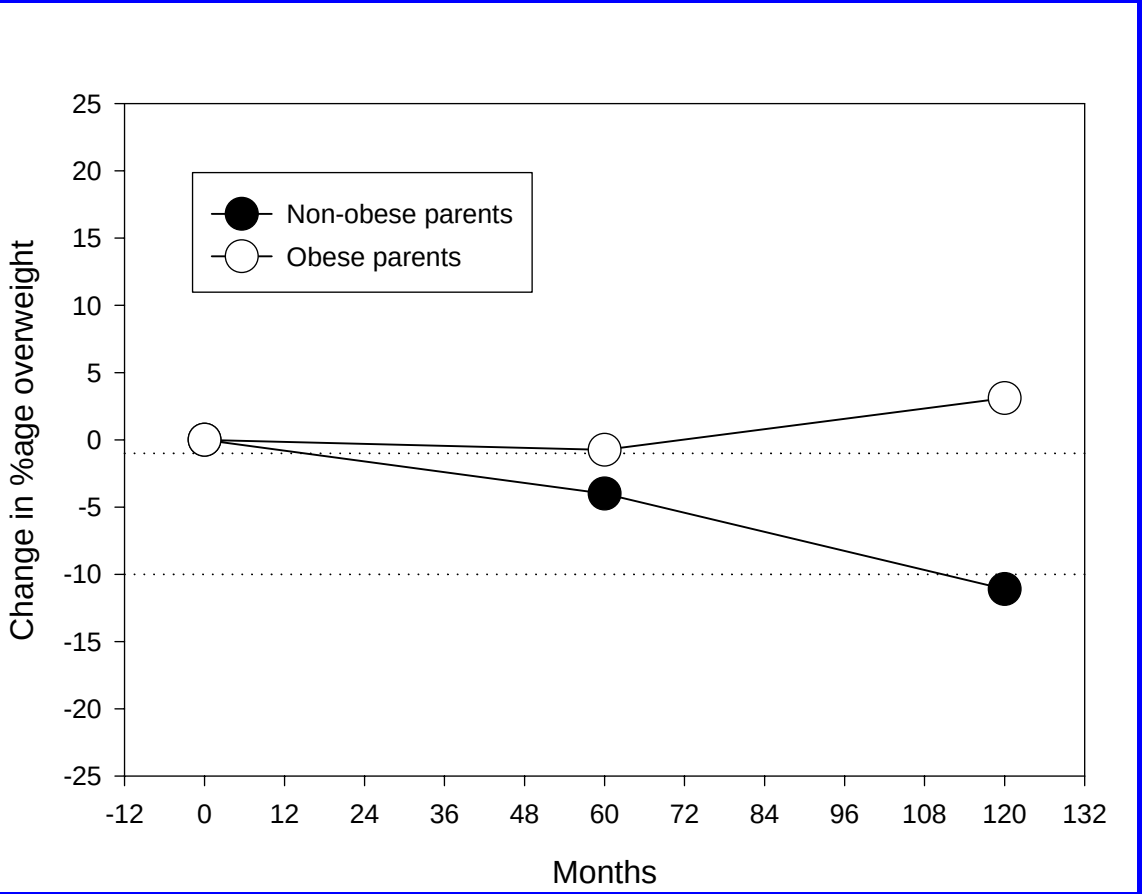
- Design

  42 families with obese children were provided treatment

  – Some families had two non-obese parents

  – Other families had at least one obese parent

Long-term effects of obese and non-obese parents



Epstein, Valoski, Wing & McCurley. (1994) Ten-year outcomes of behavioral family-based treatment for childhood obesity. Health Psychology, 13, 373-383.

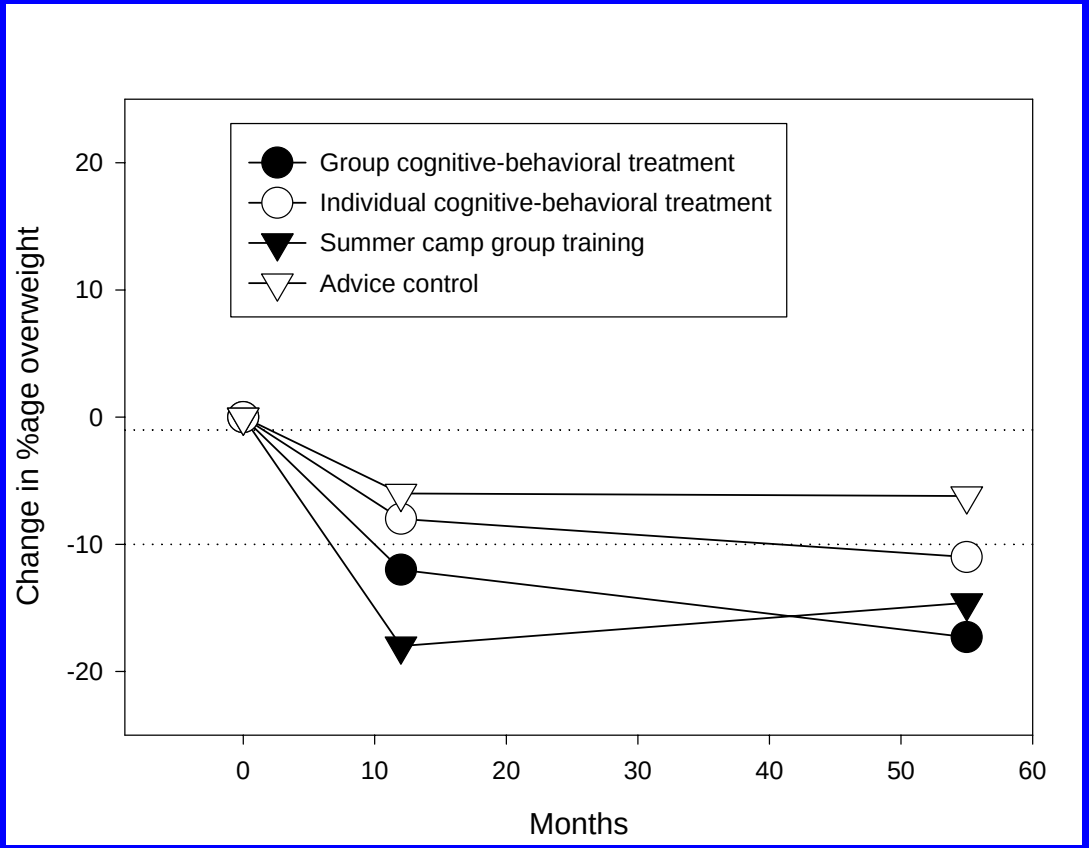
What is the most effective delivery of treatment?

- Design

  136 obese children between the ages of 7-17 were randomly assigned to:

  – Individual cognitive-behavioral therapy
  – Group cognitive-behavioral therapy
  – Summer camp training group
  – Non-randomized one session advice plus workbook group

Long-term effects of individual and group cognitive behavioral therapy

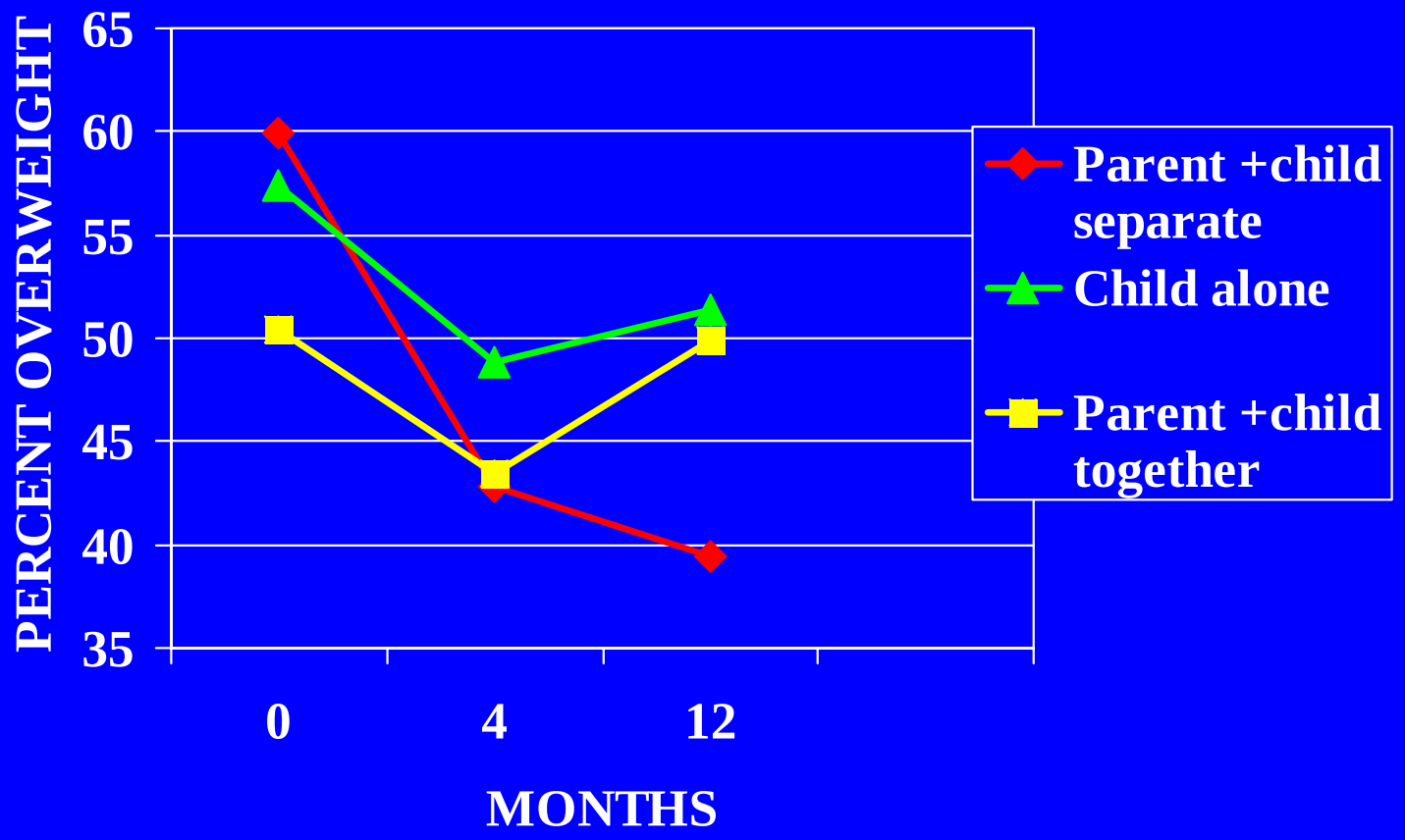


Braet & Van Winckel. (2000). Long-term follow-up of a cognitive behavioral treatment program for obese children. Behavior Therapy, 31, 55-74.

What is the relationship between parent and child weight change in family-based behavioral treatment for pediatric obesity?

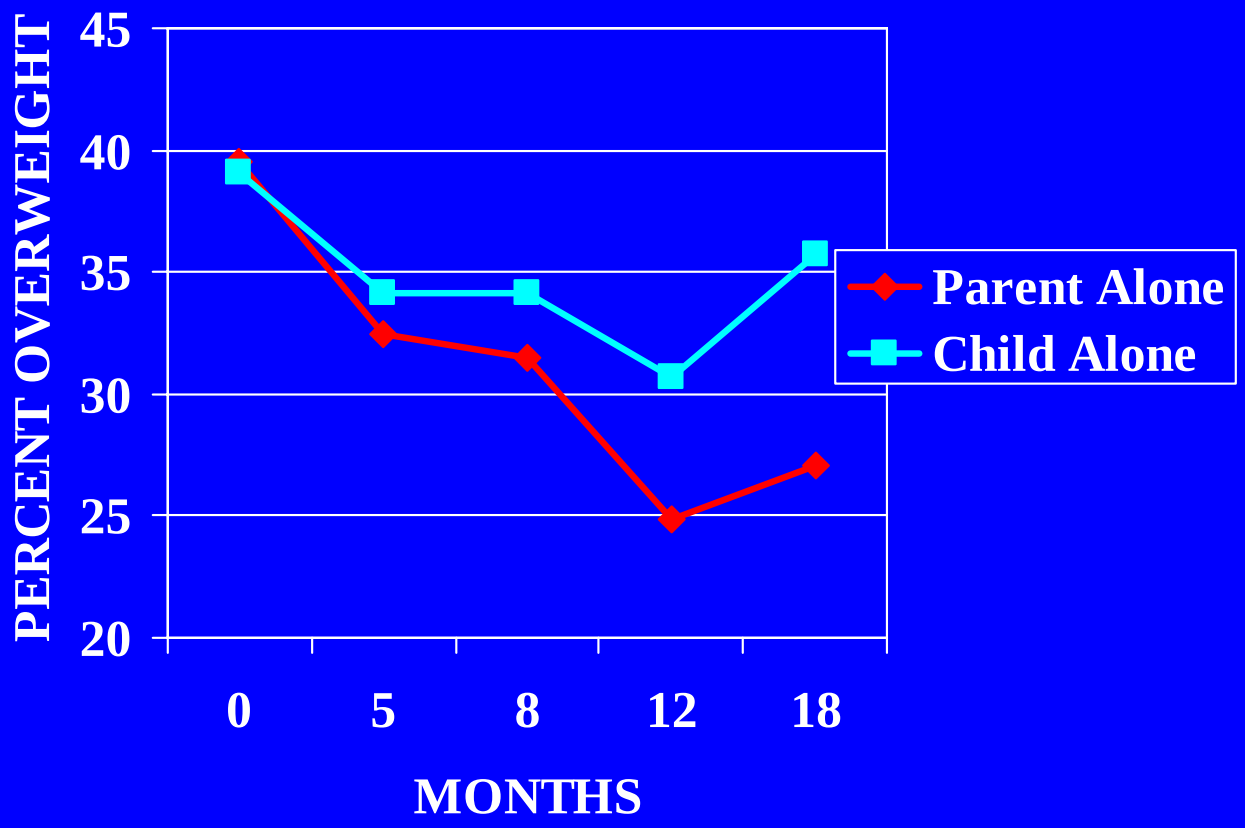
- Parents arrange the eating and activity environment for children
- Parents model eating and activity for their children
- What happens to parent weight loss in family-based behavioral interventions?
- If parents lose weight, they must rearrange the shared family environment for their own eating and activity changes
- Is there a relationship between parent and child weight change?

Treatment of obese children with and without their parents



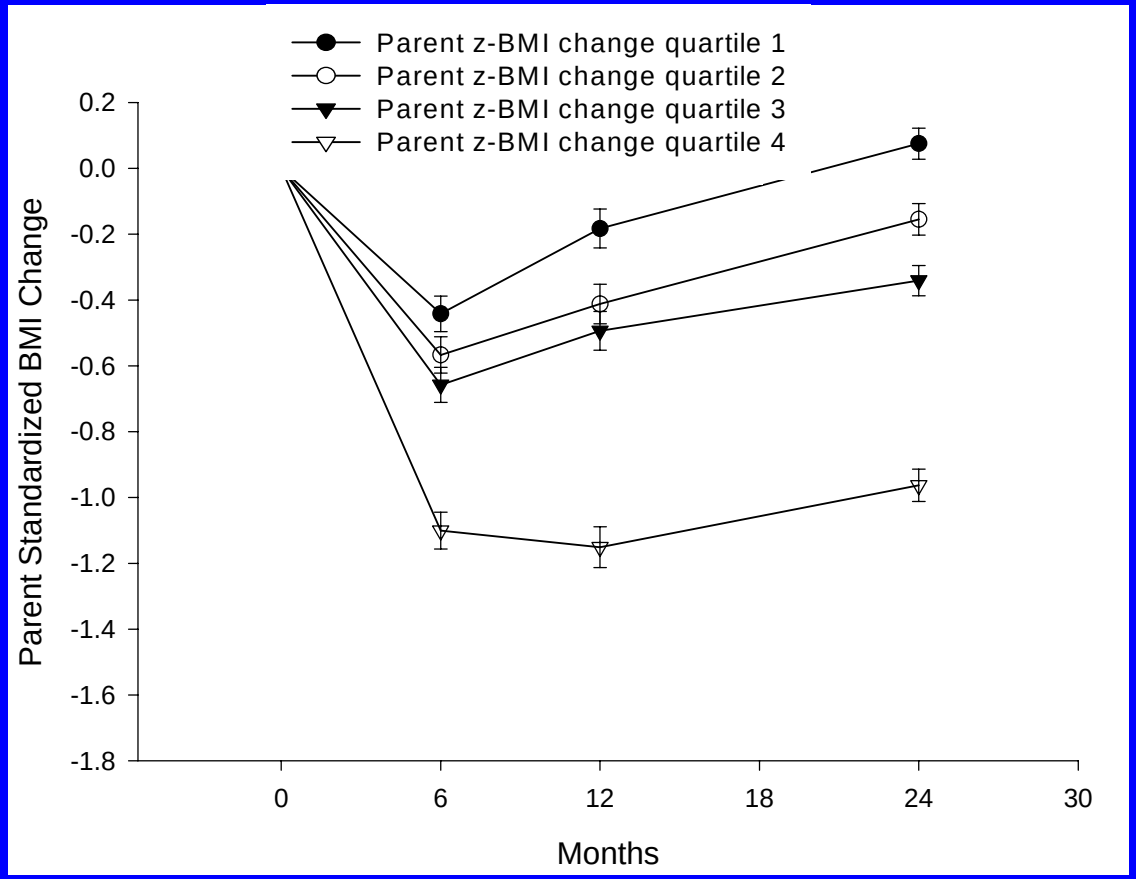
Brownell, Kelman & Stunkard (1983) Treatment of obese children with and without their parents. Pediatrics, 71, 515-523.

Treatment of childhood obesity with the parents as the exclusive agents of change



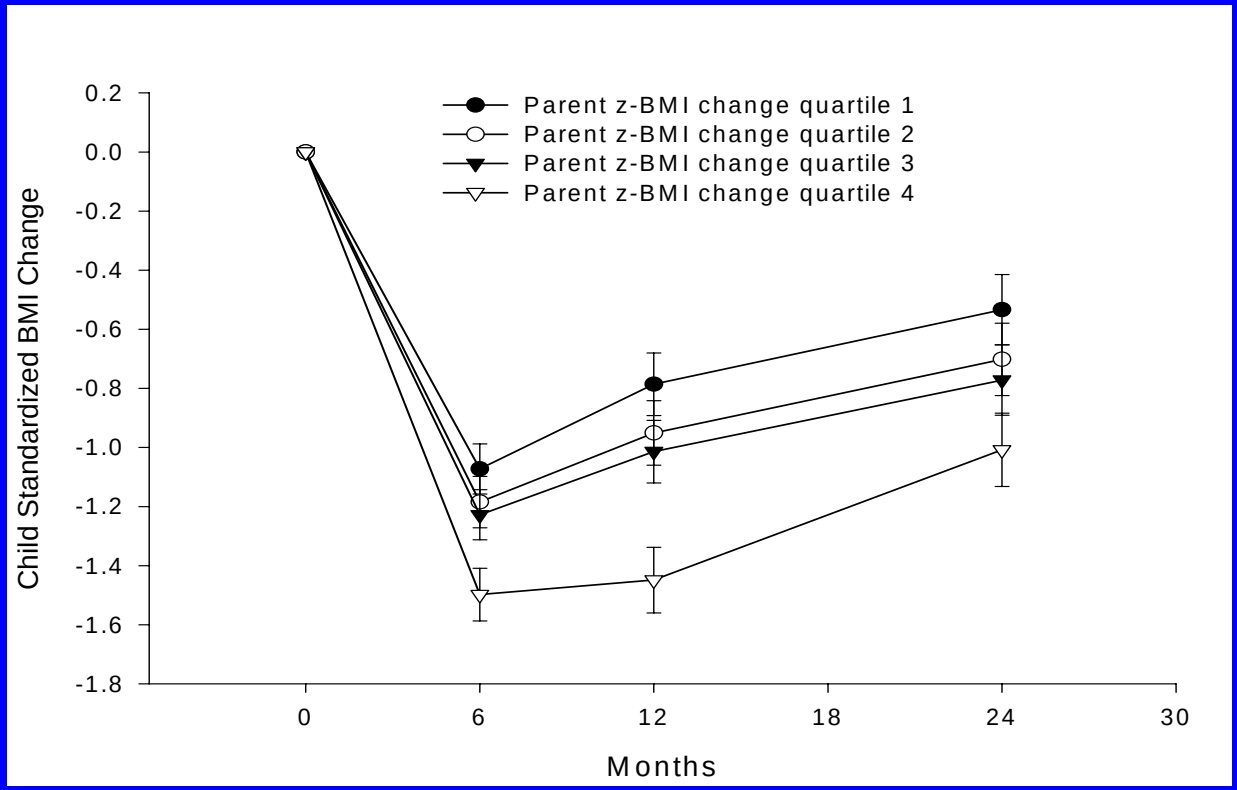
Golan, Weizman, Apter & Fainaru. (1998) Parents as exclusive agents of change in the treatment of childhood obesity. American Journal of Clinical Nutrition, 67, 1130-1135.

Parent z-BMI change by quartiles



Wrotniak BH, Epstein LH, Paluch, RA, Roemmich, JN. (2004) Parent weight change as a predictor of child weight change in family-based behavioral obesity treatment. Archives of Pediatrics & Adolescent Medicine, 158, 342-347.

Child z-BMI change as a function of parent z-BMI change



Wrotniak BH, Epstein LH, Paluch, RA, Roemmich, JN. (2004) Parent weight change as a predictor of child weight change in family-based behavioral obesity treatment. Archives of Pediatrics & Adolescent Medicine, 158, 342-347.

Hierarchical regression predicting child z-BMI change through treatment and 24 months of follow-up

- Knowledge of parental weight change adds to the variance accounted for:
  - R^2 of .12 at 6 months
  - R^2 of .04 at 24 months
  - R^2 of .07 at 60 months

Wrotniak BH, Epstein LH, Paluch, RA, Roemmich, JN. (2004) Parent weight change as a predictor of child weight change in family-based behavioral obesity treatment. Archives of Pediatrics & Adolescent Medicine, 158, 342-347.

Wrotniak BH, Epstein LH, Roemmich, J.N., Paluch, RA, (2006). The relationship between parent and child weight change through ten years in family base behavioral weight control treatment, Manuscript submitted for publication.

What is the relationship between parent modeling and parent and child weight change in family-based behavioral treatment for pediatric obesity?

- Modeling is one of the strongest ways of transmitting patterns of thought and behavior
- Observing parents is one way youth learn new behaviors
- Observing parents achieve desired outcomes can motivate children to reach similar benefits through comparable performance
- Parent modeling of healthy behaviors may be one factor to help explain both parent and child weight loss

Hierarchical regression model of parent modeling on child percent overweight change over 24 months

- Child behavioral predictors of child weight change:
  - Child weighing
  - Child preplanning
    - incremental $R^2 = .08$
- Parent behavioral predictors of child weight change:
  - Parent praising child
  - Parent modeling healthy eating habits
    - incremental $R^2 = .05$

Hierarchical regression model of parent modeling on **parent** percent overweight change over 24 months

- Child recording food in habit book
- Parent modeling healthy eating habits
  - incremental $R^2 = .14$

Benefits of Family-Based Behavioral Treatment?

- Demonstrated effectiveness for obese youth
- Provides concurrent treatment for obese parent
- More effective than treating each family member separately
- Family-based interventions could be used to treat:
  - Obesity in multiple family members
  - Obesity and comorbidities in multiple family members
    - Type 2 diabetes in parent, obesity in child
    - Type 2 diabetes in both parent and child
  - Obesity in the parent and prevention of obesity in youth

Challenges of Family-Based Treatment

- Despite treatment efforts, the incidence of obesity continues to be a concern
- Easy access and the reinforcing value of sedentary and unhealthy eating alternatives compete with healthy behaviors
- Public health policy and pediatricians may overlook the important role of the family in the treatment of pediatric obesity
- Obesity is a multifactorial chronic condition requiring lifelong management and lifestyle modification

How do treatments developed in the early 1980's work today?

- Children today are more obese than 25 years ago
  - Buffalo samples are 0.9 z-BMI units and 15.3% overweight greater than the Pittsburgh samples
- The environment is more obesiogenic
- Family structure has changed
  - More single parent families
  - More families in which two parents work

% children who met success criteria of <95th or <85th BMI percentile

	Studies			Studies		
	1-4	5-8	p	1-4	5-8	p
Months	<95th			<85th		
6	52.3	33.2	.004	27.5	9.6	<.001
12	38.2	28.1	.052	20.9	10.5	<.005
24	37.0	20.7	.056	22.9	8.8	.013
60	42.1			18.5		
120	47.5			22.2		

Epstein, L.H., Paluch, R.A., Roemmich, J.N., & Beecher, M.D. Family-based obesity treatment: Then and now. Twenty-five years of pediatric obesity treatment. Manuscript in review.

% children who met success criteria of change greater than .5 or 1.0 z-BMI units

	Studies			Studies		
	1-4	5-8	p	1-4	5-8	p
Months	> 0.5 z-BMI Units			> 1.0 z-BMI Units		
6	79.5	85.8	.01	48.5	65.3	.0007
12	65.2	75.5	.027	42.4	59.8	.0007
24	60.0	68.4	.32	40.0	43.6	.069
60	59.2			38.9		
120	66.7			48.4		

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How do treatments developed in the early 1980's work today?

- Though children are more obese, the environment is more obesiogenic and family structure has changed, current treatments are more efficacious
- The increased z-BMI changes are due in part to the greater degree of adiposity
- When initial z-BMI is controlled for, there are no differences in short or long-term changes between treatments introduced over 25 years ago and those implemented today

Components of cognitive-behavioral treatment of pediatric obesity

- Family participation
  - often with parent as active participant
- Diet
- Physical activity
- Parenting
- Behavior modification

Components of behavior therapy for treatment of pediatric obesity

- Behavior modification
  - self-monitoring
  - positive reinforcement
    - praise
    - contracts
    - feedback
  - goal setting
  - behavioral hygiene
    - not using food as a reinforcer
    - reduce variety of food

Components of behavior therapy for treatment of pediatric obesity: II

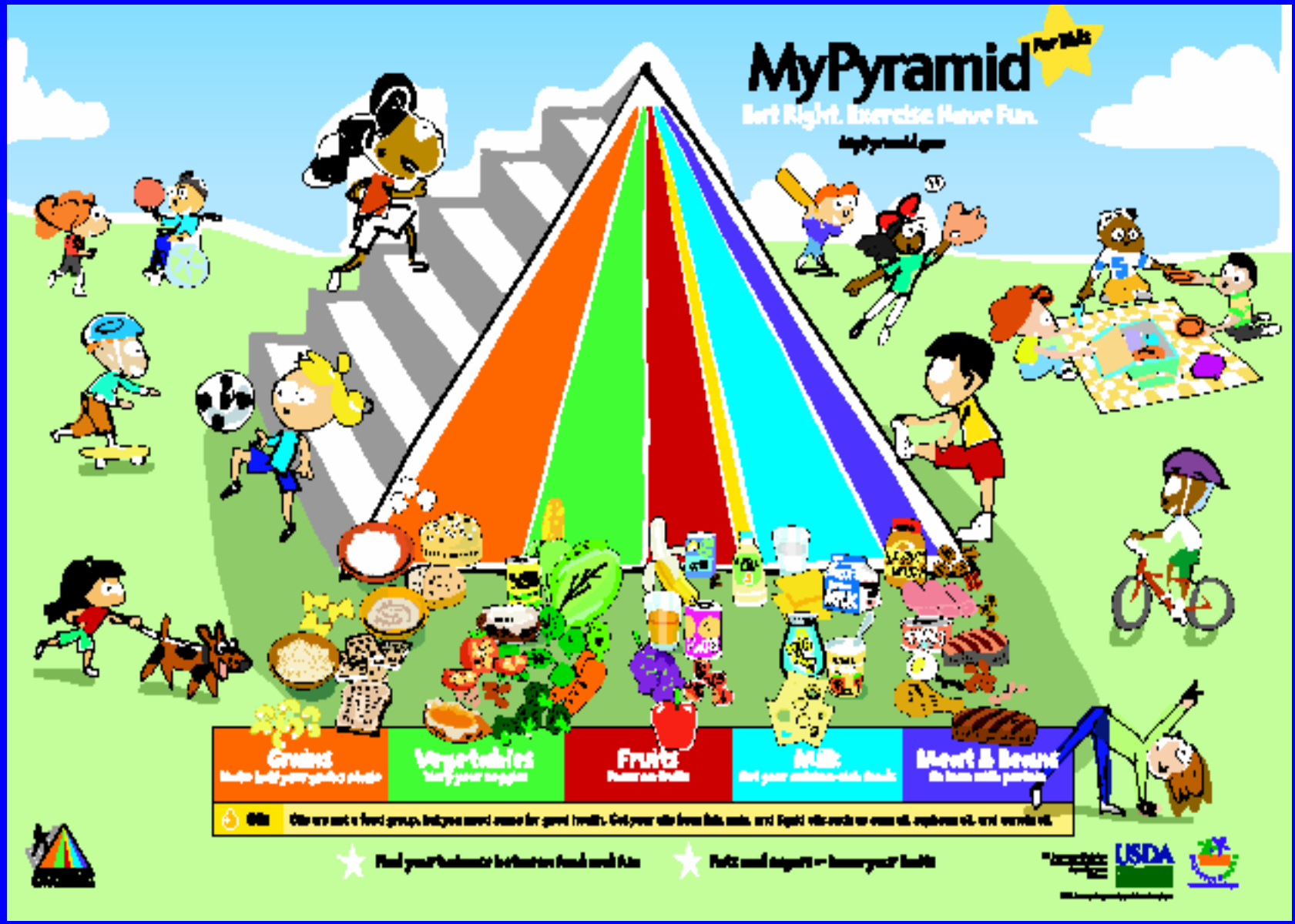
- Problem solving
- Preplanning
- Stimulus control
- Developing alternative behaviors to excess eating or a sedentary lifestyle

What are the elements of family-based behavioral interventions?

- Traffic light diet© to change eating behaviors
- Lifestyle physical activity program.
- Behavioral techniques for behavior change and positive parenting.

Eating and nutritional goals

- Reduce energy intake (1200-1500 kcals/day)
- Increase intake of healthy foods (5 servings of fruits and vegetables, 2 low-fat dairy/day)
- Consume a balanced diet that promotes growth
- Reduce portion sizes
- Reduce energy density and increase nutrient density
- Change eating habits and preferences so that healthy eating becomes a habit and healthy foods are preferred.


MyPyramid
for Kids
Eat Right. Exercise. Have Fun.
Grains
Vegetables
Fruits
Milk
Meat & Beans
USDA

What do the colors of the traffic light eating plan mean?

- GREEN means go! These are foods that are high in nutrient density and low in calories.
- YELLOW means caution. These foods can also be high in nutrient density but they also may be higher in calories or higher in carbohydrates than GREEN foods.

Colors of the Traffic Light Eating Plan Continued

- RED means stop and think! These foods are usually low in nutrient density and high in calories. You should stop and think before you eat RED foods.

Traffic Light Color Classifications

- RED: >5 grams of fat/serving or >25% sugar
- YELLOW: 2-5 grams of fat/serving, 10-25% sugar
- GREEN, 0-1 grams of fat/serving, <10% sugar

What about modified foods?

- Modified foods have artificial fats or sweeteners
- If a food is from the fat, oil, and sweets band of the pyramid food and RED, the modified version is still RED
  - Fat free, artificially sweetened cake is still a RED food
  - If it was not nutritious before, it still is not nutritious

What about modified foods from other parts of the pyramid?

- If a food is from other bands of the pyramid, and reduces fat or sugar, the color depends on the change
  - Changing full fat yogurt to skim milk yogurt changes color from RED to GREEN
  - Baking chicken instead of frying chicken changes its color from RED to YELLOW

If a food is modified to have fewer calories, why is it still a RED food?

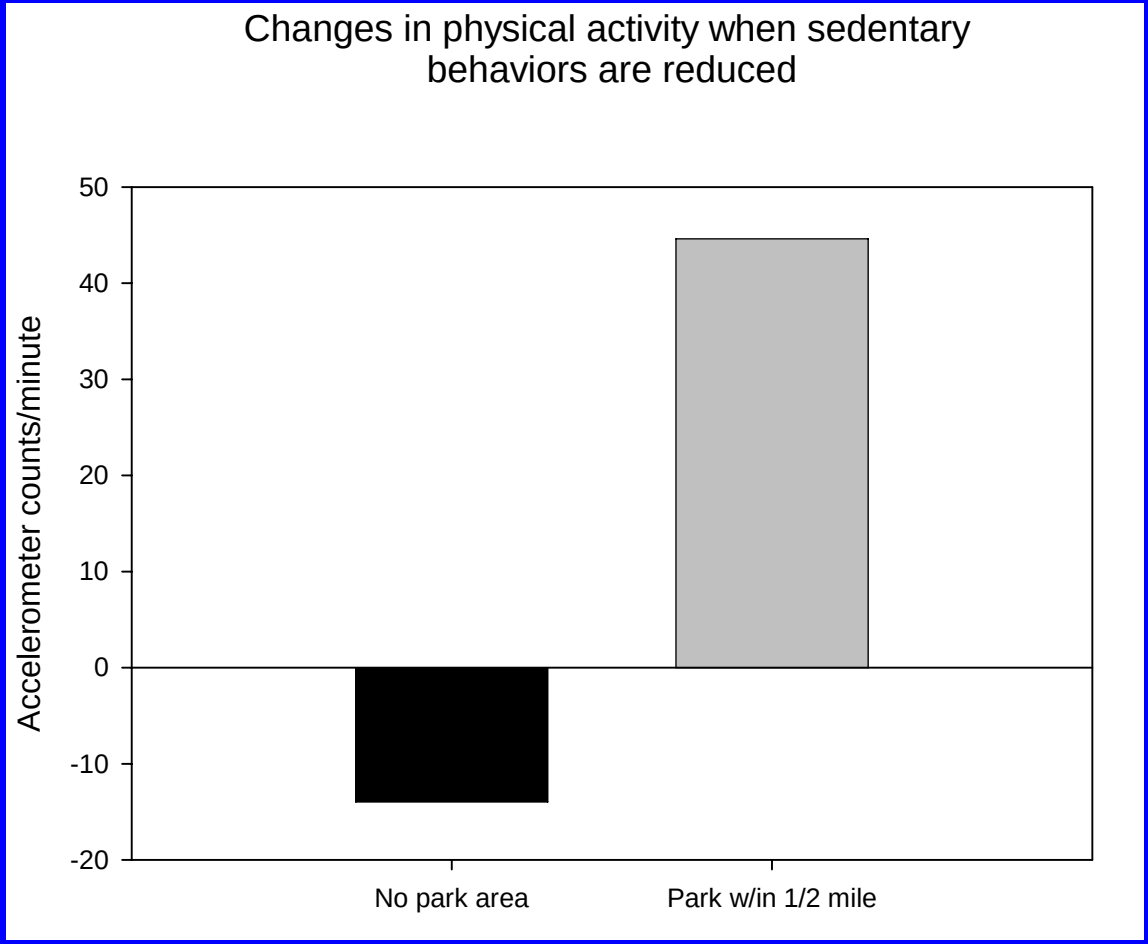
- Our goal is to help change eating habits for the long-term, not only lose weight
- Making lifestyle changes for the long term means changing food choice habits not just decreasing calories
- Does switching from a low-nutrient density food to a modified form of a low-nutrient density food help youth change food preferences and develop healthier eating habits?
- If a youth eats too many calories from a low-nutrient dense modified food, and they keep within the calorie goal, they will not be able to obtain needed nutrients for growth and development.

Is the goal to stop eating all RED foods?

- No. RED means *stop and think* not stop altogether.
- It is unrealistic to assume that youth or adults will never eat ice cream, cake, candy or other RED foods.
- Our goal is usually to eat no more than 2 or 3 RED foods a day and to stay within the calorie goal and get a balanced diet.

Activity goals

- Increase lifestyle physical activity by 60 minutes/day
  - Above current levels of physical activity
    - Should physical education or organized teams count
  - Bouts have to be at least 10 minutes in length
  - Children and parents can accumulate activity throughout the day
- Reduce sedentary behaviors to no more than 2 hours/day or 14 hours/week
  - Includes television watching, computer game use and DVD/video use
  - Goal is for children to substitute physical activity for targeted sedentary behaviors
  - Large individual differences in substitution
  - Youth substitute about 1/3 of time for physical activity
    - Heavier children less likely to substitute
    - Girls less less likely to substitute
    - Youth who live in close proximity to parks more likely to substitute



Epstein, L.H., Raja, S., Gold, S.S., Paluch, R.A., & Roemmich, J.N. (2005). The relationship between physical activity and the built environment in youth when sedentary behaviors are modified. Manuscript submitted for publication

Conclusions

- Substantial progress has been made in the development of treatments for childhood obesity.
- Incorporating new developments in diet, exercise, and behavior change into pediatric obesity treatment can result in further improvements in outcome and maintenance of treatment effects.