Social Influences on Children and Youth Food Intake and Activities

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Social Context

Family and communities
- Availability of foods, modeling of food selection and portion size
- Parenting styles
- Modeling /reinforcing active leisure activities

Schools
- Availability of foods (e.g., cafeteria, vending machines)
- Physical activity education & recess

Peer and friends
- ... ?

Obesity

- 32 states have a prevalence of obesity ≥ than 25%.
- 6 of these states have a prevalence of obesity ≥ than 30%.
- 67% percent of adults are overweight or obese.

Childhood Obesity

- The prevalence of overweight among children has tripled in the last 40 years.
  - 18% of adolescents aged 12-19
  - 15% of children aged 6-11
  - 11% of children aged 2-5
- Childhood overweight contributes to type 2 diabetes, adult obesity, and heart disease, along with a series of psychosocial difficulties.

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Trends in Child and Adolescent Overweight

- 0-11 years
- 12-19 years
- 2-5 years

Note: Overweight is defined as BMI > gender- and age-specific 85th percentile from the 2000 CDC Growth Charts.
Social Isolation as a **CONSEQUENCE**

- **Obesity**
  - **Social Interactions** Avoidance of Social Settings
  - **Social Isolation**
    - **Stigma & Prejudice**
    - **Negative Social Interactions**
    - **Avoidance of Social Settings**

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**Peer Difficulties as a Consequence**

- Overweight children are often rejected, victimized and teased (Neumark-Sztainer, et al., 2002).
- Children are less inclined to seek their company (Bell & Morgan, 2000).
- Preschool Children already have negative attitudes (Cramer & Steinwert, 1998).
- Less desirable than having a physical handicap (Sigelman et al., 1986).
- Overweight children themselves hold negative attitudes toward obesity (Staffieri, 1967).

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**Peer Difficulties as a **CAUSE**

- **Energy Intake** and stigmatization decreases the value of physical activity (e.g., Faith et al, 2002).
- **Social Isolation** increases the value of solitary activities (e.g., Hayden-Wade et al., 2005) such as eating and sedentary behaviors.
- **Assortative friendship** in obesigenic factors reinforce unhealthy trajectories (e.g., Poulin & Boivin, 2000).

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**Children’s Physical Activity**

- Relationship between physical activity and social context in youth.
- 10 boys and 10 girls between 12-14 years of age.
- 12 participants between the 15th and the 85th BMI percentile and 8 youth were at or above the 85th BMI percentile.
- Experience sampling methodology

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**Social Context & Physical Activity**

- Salvy et al. (2007) Journal of Pediatric Psychology
**Social Context & Physical Activity**

- Relationship between physical activity and social context in youth using **objective measurement** of physical activity.
- 9 boys and 8 girls between 12-14 years of age
- 9 non-overweight participants and 8 overweight or at risk.
- Experience sampling with accelerometry

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**Motivation to be Physically Active**

- **Objective:** Assess the effect of peers and friends on youth’s motivation to be physically active.
- **Methods:** 44 non-overweight and 44 overweight youth between 12-14 years of age were tested once alone and once with a peer or a friend.
  - One session tested the reinforcing value of biking relative to playing video games alone.
  - The other session tested the reinforcing value of biking either (1) with a friend or (2) with a peer relative to playing video games alone.

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**Do friends increase the motivation to be physically active?**
Reinforcing value (RRV)

- Operationally defined as the amount of work an individual will perform to obtain a reinforcer.
- Ubiquitous among species.
- The reinforcing value of food and activity are reliable predictors of eating and physical activity (Epstein & Goldfield, 1999; Epstein, et al., 1999; Temple et al., 2009).
- Similar tasks have been used to test the reinforcing value of many commodities, such as nicotine, drugs of abuse, food, physical activity, alcohol, caffeine, etc.

Humans can behave just like rats!

- Participants press the mouse button to earn points for the reinforcer (food/physical activity).
- Every 5 points earns a reinforcer (100 kcal of food or 2 minutes of physical activity).
- After each reinforcer is earned, it gets progressively more difficult to earn the next one.
- Schedule of reinforcement can be changed.
Peers & Friends on Physical Activity: Summary

- The presence of peers and friends is related to increased physical activity intensity relative to being alone or with family members.
- The presence of peers and friends increases youth's motivation to be physically active.

Social Context on Eating

- Parents vs. friends
- Siblings vs. peers
- Aloneness vs. peers
- Friends vs. peers

Social Context on Food Intake

- **Objective**: Assess the effect of being alone vs. peers on overweight and non-overweight youth's food intake using a behavioral choice methodology.
- **Methods**: 17 overweight and 15 non-overweight children between the ages of 6 and 10 years were tested alone and in groups.
- Youth had free access to pizza and several games as alternatives.
Social Context on Food Selection

- **Objective**: Assess the effect of peers on overweight and non-overweight youth’s food selection.
- **Methods**: 18 overweight and 21 non-overweight youth (10 to 12-year-old) were tested alone and in dyads.
- Youth had free access to high- and low-energy dense foods and video games as alternatives.


![Graph showing energy intake (Kcal) for alone and dyad conditions for overweight and lean youth.]

Peer Rejection and Motivation to Eat

- **Objective**: Assess the impact of peer rejection on youth’s motivation to eat relative to peer interaction in overweight and non-overweight youth.
- **Methods**: 20 non-overweight and 20 overweight youth between 12-14 years of age.
- Youth were first exposed to either peer rejection or peer acceptance and relative reinforcing value for food vs. social interaction was assessed.

Cyberball

- Cyberball is used to produce a brief episode of ostracism.
- By mouse-clicking on the alleged player’s icon, the participant can pass the ball to others.
- In the ostracism (rejection) condition, the target participant received the ball twice, and thereafter, never receives it again. In the inclusion condition, the target participant receives the ball approximately 33% of the time.

![Diagram of Cyberball game.]

Do social activities substitute for food in youth?

- Time spent with friends is a powerful reinforcer which may possibly substitute for eating.
- Conversely, when barriers are imposed on social activities, youth may substitute a solitary, comforting and safe activity (i.e., eating) for social activities.
Do social activities substitute for food in youth?

**Objective:** Test the substitutability of food and social interactions with peers and friends using behavioral economic methods.

**Method:** 21 overweight and 33 non-overweight youth (aged 9 to 11 year-old) worked to have access to food or social activity points.

![Figure 2. Youth substituted food for social activities when the cost of social time with a peer increased (p < 0.05), and substituted food for social activities with a peer when the cost of food increased (p < 0.05).](image)

![Figure 3. When interacting with a friend was the alternative, participants did not substitute food for social interactions.](image)

**Aloneness on Food Intake: Summary**

- Overweight youth eat more when alone than when in the presence of peers.
- Peer rejection increases the value of food relative to social interaction.
- Overweight youth might be more at risk of overeating as a result of isolation and rejection.

**Assortative Friendship**

- 70-80% of children have a mutual best friend.
- Children become friends with peers who are behaviorally and psychologically similar (Poulin & Boivin, 2000; Poulin, Cillessen, Hubbard, Cole, Dodge, & Schwartz, 1997).
- Children tend to be liked by peers who are similar and disliked by peers who are dissimilar (Nangle, Erdley, & Gold, 1996; Rubin, Lynch, Coplan, Rose-Krasnor, & Booth, 1994).
- Friendships function protectively when children are similar to their friends in terms of prosocial tendencies and as a risk factor when there are behavioral concordances in negative traits ( Dishion, Andrews, & Crosby, 1995).

**Social Influences on Eating: Effects of Weight Status**

- **Objective:** Assess the effect of partners’ weight status on pre-adolescent females’ food intake.
- **Methods:** 23 overweight and 23 non-overweight youth (8 to 12-year-old) play a sorting task in dyads, while having free access to Oreo cookies.
- **Dyads’ Weight Composition:**
  - Weight *discordant* (9 dyads)
  - Weight *concordant* (14 dyads)

Salvy et al. (2007), Appetite.
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ssalvy, 11/29/2009
Video Confederate on Snack Intake

- **Objective:** Informational conformity vs. normative conformity
- **Methods:** 22 overweight and 22 non-overweight participants (8 to 12-year-old) were incidentally exposed to a video confederate who modeled eating a large (225g) vs. small (30g) serving of cookies.

Friends Influence on Food Intake

- **Objective:** Examined how overweight and non-overweight youth adjust their level of eating as a function of their familiarity with their eating partner.
- **Methods:** 23 overweight and 42 non-overweight youth had the opportunity to play a variety of games and eat with a friend (n = 26) or with an unfamiliar peer (n = 39).

Assortative Friendship: Summary

- Friendship may be uniquely relevant and influential to children’s eating behavior.
- Youth examine the behavior of their friends to determine whether to engage in behaviors such as smoking or drinking alcohol and we contend that youth’s eating behavior is also largely determined by the normative influence of their friends and peers.
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