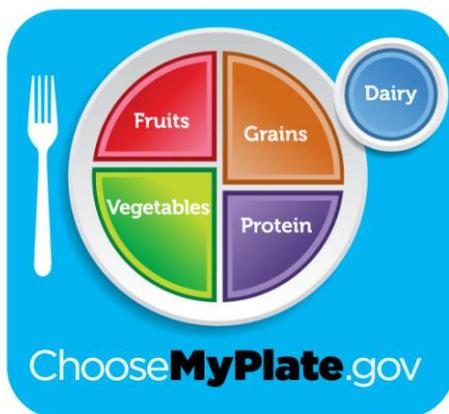


What is the Healthy Eating Index?

The Healthy Eating Index (HEI) measures how well a person's diet conforms to the U.S. Department of Agriculture's recommended servings of the five major food groups as well as the total fat/saturated fat consumption, sodium, and cholesterol intake.

Revised in 2005, the HEI is comprised of 12 components: total fruit, whole fruit (not juice), total vegetables, dark green and orange vegetables and legumes, total grains, whole grains, milk (all milk/soy products), meat, poultry, fish, eggs oils (vegetable oils and oils in fish, nuts, and seeds), saturated fat, sodium, and calories from solid fats and added sugars.



Recommended Food Plate
Source: U.S. Department of Agriculture

www.choosemyplate.gov/

Early Childhood Policy Focus: Healthy Eating and Physical Activity

By David Murphey, Bonnie Mackintosh and Marci McCoy-Roth

The importance of good nutrition and exercise is well known, and parents have long worried about their children's diets and envied their high energy levels. Like so many life style habits, patterns of nutrition and exercise behaviors are typically established in early childhood. Poor diet and lack of exercise contribute to obesity, which has been associated with higher rates of many diseases (e.g. diabetes and heart disease).¹ These diseases account for a major share of total health care costs and threaten to reverse the recent gains in life-expectancy in the United States. Though we typically think of young children as naturally getting lots of physical exercise, recent studies suggest this may not be the case. Poor nutrition and lack of exercise are jeopardizing our young children's abilities to do well in school and to stay in good health.

A number of factors affect the nutrition and exercise habits of young children, including personal choices by parents and children, financial constraints (such as the availability, accessibility, and cost of healthy options), and public policies. Research on these factors offers insights into ways to encourage the development of healthy eating and physical fitness habits in early childhood and beyond.

WHAT YOUNG CHILDREN EAT: HOW GOOD (OR BAD) ARE THEIR DIETS?

According to the most recent Healthy Eating Index, children (ages 2-5) scored an average of 60 (of 100) points for healthy eating. Children's diets were reported as healthiest in terms of their consumption of total fruits, total grains, and milk; they were worst in terms of dark green and orange vegetables and legumes, whole grains, and saturated fat.² These findings suggest that children need to increase their consumption of vitamin-rich foods, nutrient-dense foods (those low in fat and that do not contain added sugars) and decrease their intake of sodium, saturated fat and high calorie foods.

Income Effects on Food Insecurity

Household income can significantly affect children’s diets.

Children in households with incomes below the poverty line are six times more likely to have low food security than their counterparts in households with incomes at 185 percent of poverty or higher; and they are fourteen times more likely to experience very low food security.

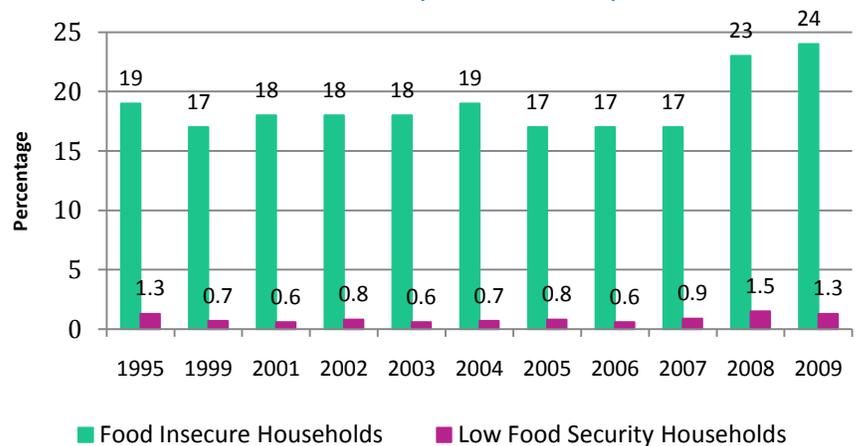
Though households with higher incomes spend more money on food than lower income households, this represents a smaller proportion of their income. In food-insecure households, families tend to spend less on food than do families in food-secure households⁵ suggesting that when resources are tight, families may buy less food and/or less expensive foods.

Children who are Hispanic, black, or living with a single parent are also much more likely to be food-insecure than are children who are white or living in married-couple families.⁵

Impact of Insufficient Diets on Young Children’s Health and Well-Being

Insufficient diets can jeopardize children’s development, threaten their readiness for school, and have lifelong effects on adult productivity. Adequate consumption of important nutrients (notably vitamins A, C, D, and E, and phosphorus and magnesium) is critical for normal growth and development and learning.³ Young children who do not get enough vitamins and nutrients may be negatively impacted in terms of how well and how much they can learn.⁴

Figure 1. Percentage of all children (0 to 17) in US living in Food-Insecure Households, Selected Years, 1995-2009



Source: [Child Trends DataBank](#)¹³

More than 9.6 million U.S. children (ages 0-6) live in “food insecure” households, in which consistently getting enough food to eat is a struggle.⁵ Children who have been identified as “food insecure” are reported to have higher rates of hospitalization, iron-deficiency anemia, and other chronic health conditions. In very young children (3 years old), studies have associated food insecurity with higher rates of behavioral problems. Paradoxically, child food insecurity is also associated with a greater risk for being overweight. In part, this is because food insecurity can result in a lower-quality diet with less variety, which can contribute to being overweight. The unpredictable availability of food can also lead to overeating, especially among children.⁶ In addition, there have been reports of increased psychosocial deficits, as well as higher rates of anxiety and depression. Food-insecure children also experience smaller gains in math and reading achievement between kindergarten and third grade, and (for 6-11 year olds) have a higher likelihood of repeating a grade.⁶



Risk Factors for Being Overweight/Obese

Being overweight is widespread among young children, a condition which is particularly prevalent among children from lower-income families. An estimated 17 percent of all children (ages 2-19 years) are overweight, reflecting an alarming increase over the past 20 years.³³

Specifically, about one in ten infants and toddlers is considered overweight (having a BMI at or above the 95th percentile).³¹ By age five, nearly one in four (24%) is considered overweight (BMI at or above the 85th percentile).³² Overweight infants, toddlers, and preschoolers are more likely to become overweight as adolescents and adults. One study found that children who were overweight as preschoolers were more than five times as likely as their peers to be overweight at age 12.³⁴

In contrast to trends among other age-groups, the increase in overweight among the youngest children has stabilized in recent years.³⁴ These data suggest there may be an important window where interventions can promote healthy eating that may have lasting effects. See Figure 2.

When and Where Children Eat Matters

In a recent representative sample, U.S. families reported that most daily family meals (73 percent) are eaten at home, though experts suggest families may over-consume poor-quality or “convenience” pre-packaged foods, which are often high in sodium and fat.⁷ On average, families reported eating out less than once a week.⁸ While these reports are encouraging, they may not represent the full story. A recent USDA study showed that, on average, one-third of children’s calorie intake is “away-from-home” food. Food from fast-food and other restaurants has been associated with increased caloric intake and lower diet quality, while consumption of sweetened beverages (e.g., non-diet soda, fruit juice) accounts for about 35 percent of the calories associated with “away-from-home” food.⁹

Skipping meals and snacking can also result in weight gain and nutritional deficiencies. More than one in eight children report rarely or never eating breakfast, and one in four skip dinner at least some of the time.¹⁰ Skipping meals (especially breakfast) has serious negative effects on learning, particularly if children are already nutritionally at risk.¹¹ Snacking is associated with nutrient-poor calories, because the snack foods children report eating tend to offer little in the way of vitamins, minerals, and protein, and are relatively high in sugar and fat. In a nationally representative, random sample, children reported that they frequently snack while doing other activities (e.g., while doing homework, watching television), which may contribute to a greater amount of calories consumed. About one-fourth of children reported eating while watching TV, and about 25 percent of the children reported they typically snack after dinner.¹²





**What Works?
Research-Based Approaches to
Promoting Eating and Physical
Activity**

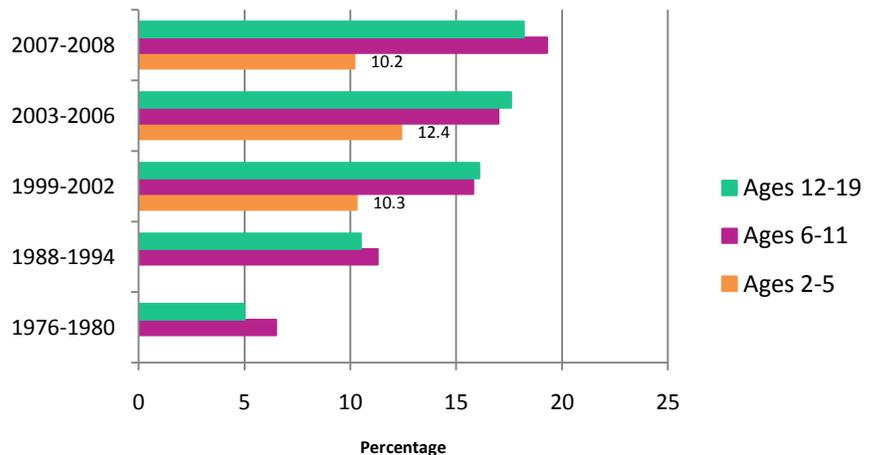
Research has shown that programs that successfully promote healthy lifestyles emphasize teaching children how to incorporate exercise into their daily routines and making physical activity fun. Best results were found when programs were implemented for more than 6 months.³⁵

Programs that focus on only one aspect (nutrition, physical activity, or weight loss) tend to be more successful than those that simultaneously focus on all three outcome categories, suggesting that each outcome needs to be targeted in a highly specified manner rather than a “one size fits all” approach.³⁶

Both family- and school-based settings can be effective for impacting child nutrition, physical activity, and weight loss. Young children often respond to modeling from those around them and behavioral prompts (e.g. telling a child that “drinking milk will make you strong”).³⁷

Since many children’s meals are prepared by others, some effective strategies include improving school breakfast and lunch menus, to incorporate more fresh fruit and vegetables, as well as educating families about ways to incorporate healthier eating into family routines.³⁸

Figure 2. Percent of Overweight Children Ages 2-19 by Age, Selected Years 1976-2008



Source: Child Trends DataBank¹³

**Physical Activity and Screen Time:
Are young children getting enough exercise?**

The wide availability and variety of passive entertainment media (television, video games, computers, etc.) may also be negatively affecting the level of children’s physical activity. The American Academy of Pediatrics (AAP) recommends that screen-media with very young children (younger than 2 years) should be avoided.¹⁴ For children ages 2 years and older, the AAP recommends watching no more than 1-2 hours of “quality programming” per day,¹⁵ and that children should not have televisions in their bedrooms.¹⁶ Despite these recommendations, a recent Oregon study of 2-year-olds found that nearly one in five (20 percent) spent more than two hours of a typical day watching television or videos, and one in six (18 percent) had a television in their bedroom, which has been associated with increased media use.¹⁷ According to a stratified randomized study, each incremental hour of watching television at age two was associated with corresponding *declines* in school engagement, math achievement, and weekend physical activity, and with *increases* in bullying by classmates, consumption of soft drinks and snacks, and BMI at age 10.¹⁸

Among young children (birth through six years old), two-thirds live in homes where the television is on at least half of the time, and one-third where the TV is on “always” or “most of the time.” Children in these settings are more likely to watch TV every day and to watch for



longer time periods than other children. They are also less likely to read every day (59 vs. 68 percent), and when they do read or are read to, it is for a shorter amount of time than for children in non-heavy-TV households.¹⁹ Though parents reported they were more likely to engage in physical activities with their children than in years past, they also reported an increase in the time they spent together in sedentary activities (e.g. watching TV, playing video games) during that same time period.²⁰ In another study, parents reported that children (ages 0-6 years) spend about the same amount of time using screen media as they spend playing outside (about two hours per day). These findings are particularly concerning since this media use is nearly three times the amount of time that families report reading to their children (about 39 minutes).²¹

Although neither television nor computers are categorically “bad” for children, their heavy use can be associated with disruptions in important family routines, such as eating meals together and getting adequate sleep at night. A recent large, nationally representative study found that young children whose families reported limiting “screen time,” regularly eating dinner together, and ensuring their children got adequate sleep were significantly less likely to be obese.²² Each of these household routines was associated with a significantly lower prevalence of preschool obesity, suggesting there may be effective ways to support families in their efforts to adopt healthy lifestyles.

“Screen time” also exposes young children to powerful advertising messages that tend to encourage an unhealthy diet. While young children’s exposure to advertisements for sugary foods, such as candy and sweetened drinks, has declined in recent years, their exposure to fast-food advertising has increased.²³ Some of this marketing is targeted directly to preschoolers, using characters familiar to them from television programming, which may influence the food choices of young children. A randomized study of ethnically diverse 3- to 4-year-olds showed that children were more likely to prefer the taste of snacks and more likely to choose snacks when a licensed character appeared on the package. This was particularly the case for nutrient-poor snacks (e.g., gummy fruit snacks), which may negatively influence children’s eating habits and may lead children to consume more of these foods with low nutritional value.²⁴




ABOUT THE EARLY CHILDHOOD HIGHLIGHTS SERIES...

The **Early Childhood Highlights** series is intended to provide a snapshot of the latest research on early childhood released by Child Trends and other leading researchers working on young children’s issues. Child Trends is a national nonprofit, nonpartisan research center that studies children at all stages of development. Our mission is to improve outcomes for children by providing research, data, and analysis to the people and institutions whose decisions and actions affect children, including program providers, the policy community, researchers and educators, and the media. Each brief summarizes a particular area of research based on longer academic paper(s). More detailed information and additional resources are available from Child Trends.

© Copyright 2011 Child Trends

Child Trends is a nonprofit, nonpartisan research center.

4301 Connecticut Avenue, NW, Suite 350, Washington, DC 20008

Tel (202) 572-6000 Fax (202) 362-8420

www.childtrends.org

Pub. #2011-20

CONCLUSIONS

Accumulating data suggest there is a critical need to address the issues of nutrition, exercise, and obesity among young children. Research also identifies some effective strategies and programs that improve nutrition and exercise outcomes for young children. Through a better understanding of the existing resources and service gaps, policies can improve access to healthy, affordable food, and encourage more physical activity for young children.

State and Local Policy Implications

Nutrition assistance programs are important resources for low-income households. The three largest federal food and nutrition assistance programs—the Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps), the National School Lunch Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)—are administered by each state. A recent analysis of households that participated in these programs (generally, those with annual incomes below 185 percent of the poverty line), revealed that 55 percent of SNAP recipients, 52 percent free or reduced meal recipients, and 49 percent of WIC recipients were still described as “food insecure” at times. These findings suggest that there may be critical, yet varying, time periods during which families need additional assistance in securing adequate food.²⁵ A more recent analysis of similar low-income families found that the prevalence of food insecurity decreased during the same time period that participation in SNAP increased. Typical food expenditures by these low-income families also increased, suggesting that appropriate, increased funding of these supplemental resources can help families meet their food needs.²⁶ States may opt to set eligibility requirements above federal minimums, simplify enrollment and administration, and increase outreach efforts.

State-level policies on housing and food assistance directly affect food insecurity. An analysis of state-to-state variation in food security determined that only about half of the variability could be explained by demographic characteristics of households; the remainder could be attributed to state-level policies, programs, and economic climate.²⁷ Specifically, states can implement programs that address the broader challenges families face that threaten their economic and food security, such as increasing the supply of affordable housing for low-income households, and promoting the use of governmental and community food assistance programs to reduce the prevalence of food insecurity.





Improve access to healthier foods in state and federally funded food programs. Nutritional standards for the range of such food programs (e.g. WIC, SNAP) should be aligned with existing USDA requirements to promote healthier eating. Temporary revisions were made to WIC to provide participants with increased monthly allocations to purchase essential, yet more costly fresh fruits and vegetables, though final determination is anticipated in 2011.²⁸ The Child and Adult Care Food Program (CACFP) serves infants, preschool children, and children younger than 12 years in child care settings (as well as older at-risk children in afterschool programs and adults in adult day care centers). After a recent evaluation, the National Academy of Sciences recommended increasing the variety of fruits and vegetables and the proportion of whole grains, while decreasing the amount of fats, added sugars, and sodium for all children (ages 1 year and older) receiving reimbursable meals. Additional recommendations included prohibiting foods such as soft drinks, fruit drinks, and candy in these programs.²⁹ Another analysis of states' regulations governing child care centers and family day care homes shows many states have already adopted rules to promote healthier eating among preschoolers. For example, 13 states have policies prohibiting or limiting serving foods of low nutritional value; nine stipulate that children older than age two should be served reduced-fat milk.³⁰

Improve neighborhood access to healthier food choices and safe, affordable options for physical exercise. Community grocery stores should, but often fail to, offer a variety of affordable fresh produce and other choices for healthier eating. In a recent study, low-income Latino mothers reported they often shop at local "mini-markets" due to child care and transportation constraints, even though this limited the amount and variety of foods they could purchase. In the same study, safety concerns (e.g. violence, drug sales) and inclement weather were cited as barriers to regularly exercising outdoors.³¹ Improving neighborhood safety and installing sidewalks, parks, and indoor recreation centers encourages families with young children to get regular exercise as part of a healthy lifestyle.³²

About the Authors and Acknowledgments

David Murphey is a senior research scientist, Child Trends; Bonnie Macintosh is a consultant, and Marci McCoy-Roth is Senior Director of Public Policy and Communications, Child Trends. This brief was developed with contributions from Hope Cooper, Paula Daneri, and Megan Fletcher of Child Trends.





ENDNOTES

- ¹ Levi, J., Vinter, S., St. Laurent, R., & Segal, L. M. (2010). *F as in Fat: How Obesity Threatens America's Future 2010*. Washington, DC: Trust for America's Health and Robert Wood Johnson Foundation. Retrieved from www.healthyamericans.org
- ² Fungwe T., Guenther P., Juan W.Y., Hiza, H.A., Lino, M. (2009). *The Quality of Children's Diets in 2003-04 as Measured by the Healthy Eating Index-2005*. Nutrition Insight 43, Center for Nutrition Policy and Promotion 2009.
- ³ American Dietetic Association. (2010). *State of family nutrition and physical activity: Are we making progress?* Retrieved from www.eatright.org
- ⁴ American Dietetic Association. (2010). *Op. cit.*
- ⁵ Nord, M., Coleman-Jensen, A., Andrews, M., and Carlson, S. (2010). *Household food security in the United States, 2009*. (ERR-108). Washington, DC: U. S. Department of Agriculture, Economic Research Service. Retrieved from <http://www.ers.usda.gov/Publications/Err108/>
- ⁶ Child Trends DataBank. (2009). *Food insecurity*. Retrieved from: <http://childtrendsdatabank.org/t?q=node/363>
- ⁷ American Dietetic Association. (2010). *Key findings: 2010 Family Nutrition and Physical Activity Survey*. Retrieved from <http://www.eatright.org>
- ⁸ American Dietetic Association. (2010). *Op. Cit.*
- ⁹ Mancino, L., Todd, J., Guthrie, J., & Biing-Hwan Lin, B-H. (2010). *How Food Away From Home Affects Children's Diet Quality*. (ERR-104). Washington, DC: U.S. Department of Agriculture, Economic Research Service. Retrieved from: <http://www.ers.usda.gov>
- ¹⁰ American Dietetic Association. (2010). *Op. cit.*
- ¹¹ National Anti-Hunger Organizations. (2009). *Roadmap to end childhood hunger in America by 2015*. Retrieved from <http://www.alliancetoendhunger.org/>
- ¹² American Dietetic Association. (2010). *Op. cit.*
- ¹³ Child Trends DataBank. (2010). *Overweight children and youth*. Retrieved from: <http://www.childtrendsdatabank.org/?q=node/70>
- ¹⁴ American Academy of Pediatrics Committee on Public Education. (1999). Media Education. *Pediatrics*, 104, 341-343.
- ¹⁵ American Academy of Pediatrics. (2010). Policy statement—Media education. *Pediatrics*, 126(5), 1012-1017.
- ¹⁶ American Academy of Pediatrics. (2010). Policy statement—Children, Adolescents, Obesity, and the Media. *Pediatrics*, 126(5), 1012-1017. Accessed: <http://pediatrics.aappublications.org/content/early/2011/06/23/peds.2011-1066>
- ¹⁷ Television and Video Viewing Time Among Children Aged 2 Years (2010). Morbidity and Mortality Weekly Report (MMWR) Accessed on July 15, 2011 at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5927a1.htm>
- ¹⁸ Pagani, L. S., Fitzpatrick, C., Barnett, T. A., & Dubow, E. (2010). Prospective associations between early childhood television exposure and academic, psychosocial, and physical well-being by middle childhood. *Archives of Adolescent & Pediatric Medicine*, 164(5), 425-431.
- ¹⁹ Rideout, V. J., Vandewater, E. A., & Wartella, E. A. (2003). *Zero to six: Electronic media in the lives of infants, toddlers and preschoolers*. (3378). Menlo Park, CA: Kaiser Family Foundation. Retrieved from <http://www.kff.org/>
- ²⁰ American Dietetic Association. (2010). *Op. cit.*
- ²¹ Rideout, V. J., Vandewater, E. A., & Wartella, E. A. (2003). *Op. cit.*
- ²² Anderson, S. E. & Whitaker, R. C. (2010). Household routines and obesity in U.S. preschool children. *Pediatrics*, 125(3), 420-428.
- ²³ Powell, L. M., Szczypka, G., & Chaloupka, F. J. (2010). Trends in exposure to television food advertisements among children and adolescents in the United States. *Archives of Adolescent & Pediatric Medicine*, 164(9), 794-802.
- ²⁴ Roberto, C. A., Baik, J., Harris, J. L., & Brownell, K. D. (2010). Influence of licensed characters on children's taste and snack preferences. *Pediatrics*, 126(1), 89-93.





- ¹⁹ Nord, M., Coleman-Jensen, A., Andrews, M., & Carlson, S. (2010). [Op. Cit.](#)
- ²⁵ Nord, M., Coleman-Jensen, A., Andrews, M., & Carlson, S. (2010). [Op cit.](#)
- ²⁶ Nord, M., & Prell, M. (2011). *Food security improved following the 2009 ARRA increase in SNAP benefits.* (ERR-116). Washington, DC: U.S. Department of Agriculture, Economic Research Service. Retrieved from: <http://www.ers.usda.gov/Publications/ERR116/>
- ²⁷ Bartfeld, J., Dunifon, R., Nord, M., & Carlson, S. (2006). *What factors account for state-to-state differences in food security?* (Economic Information Bulletin 20). Washington, DC: Food and Nutrition Services, U.S. Department of Agriculture.
- ²⁸ USDA Food & Nutrition Service. (2011). *WIC Food Packages.* Retrieved from: <http://www.fns.usda.gov/wic/benefitsandservices/foodpkg.HTM>
- ²⁹ Institute of Medicine. (2011). *Child and Adult Care Food Program: Aligning Dietary Guidance for All.* Washington, DC: The National Academies Press. Retrieved from: <http://www.fns.usda.gov/ora/MENU/Published/CNP/cnp.htm>
- ³⁰ Levi, J., Vinter, S., St. Laurent, R., & Segal, L. M. (2010). [Op cit.](#) P. 34.
- ³¹ Lindsay, A.C., Sussner, K.M., Greaney, M.L., & Peterson, K.E. (2009). Influence of social context on eating, physical activity, and sedentary behaviors of Latina mothers and their preschool-age children. *Health Education Behavior*, 36(1), 81-96.
- ³² White House Task Force on Childhood Obesity. (2010). *Solving the problem of childhood obesity within a generation.* Retrieved from http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce_on_Childhood_Obesity_May2010_FullReport.pdf
- ³⁰ Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). High body mass index for age among U.S. children and adolescents, 2003-2006. *Journal of the American Medical Association*, 299(20), 2401-2405.
- ³¹ National Center for Health Statistics. (2007). *Prevalence of overweight, infants and children less than 2 years of age: United States, 2003-2004.* Atlanta, GA: Centers for Disease Control and Prevention. Retrieved from http://www.cdc.gov/nchs/data/hestat/overweight/overweight_child_under02.htm
- ³² Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). [Op. Cit.](#)
- ³³ Child Trends DataBank. (2010). *Overweight children and youth.* Retrieved from <http://childtrendsdatabank.org/t?q=node/249>
- ³⁴ Nader, P. R., O'Brien, M., Houts, R., Bradley, R., Belsky, J., Crosnoe, R., Friedman, S., Mei, Z., and Susman, E. J. (2006). Identifying risk for obesity in early childhood *Pediatrics*, 118(3), e594-e601.
- ³⁵ Hadley, A.M., Hair, E.C. & Dreisbach, D. (2010). *What works for the prevention and treatment of obesity among children: Lessons from experimental evaluations of programs and interventions.* Washington, DC: Child Trends. Retrieved from <http://www.childtrends.org>
- ³⁶ Hadley, A.M., Hair, E.C., & Dreisbach, D. (2010). [Op cit.](#)
- ³⁷ U.S. Department of Agriculture. (2008). *Maximizing the message: Helping moms and kids make healthier food choices.* (FNS-409). Retrieved from: <http://www.fns.usda.gov/>
- ³⁸ Hadley, A.M., Hair, E.C., & Dreisbach, D. (2010). [Op cit.](#)

