Objectives and posttest can be found on page 144.

Children at Play: An Innovative Method for Studying and Teaching Nutritional Behaviors

Meghan Lynch

Children under 6 years of age are one of the key groups for interventions establishing lifelong nutritional behaviors that will promote health and prevent obesity. Adults in young children's social environments play important roles in encouraging healthy nutritional behaviors. Parents, childcare providers, and teachers must teach children healthy eating behaviors in age-appropriate and applicable ways. Researchers need to determine as completely as possible how children learn nutritional behaviors. Current research methods and teaching approaches continue to challenge researchers and parents alike in achieving these important goals. This article details the need for developing new approaches to nutritional behavior development in children and describes the theoretical background and practical applications of one such novel approach: play-based settings. It explores the possibilities play-based settings offer for studying and developing healthy nutritional behaviors in young children. Following further refinement of this method, future research and practice in children's nutritional behavior development should benefit from this new approach.

Childhood obesity develops from an indeterminate combination of genetic and environmental factors (Lytle, 2005; Stunkard, Berkowitz, Stallings, & Schoeller, 1999; Wells & Ritz, 2001). One major contributing factor to obesity is the child's "nutritional behaviors," the term used to describe behaviors related to food and eating, such as food preferences, food choices, and mealtime behaviors (Brown & Ogden, 2004; Schwarz & Puhl, 2003; Wells & Ritz, 2001). Nutritional behaviors should be of much concern because healthy eating has been linked not only to healthy weight status but also to improved cognitive function, physical performance levels, and psychosocial health (O'Dea, 2003). Yet, despite the many demonstrated benefits of healthy nutritional behaviors, this subject remains insufficiently researched and understood (Paquette, 2005).

Early childhood – younger than 6 years of age – has been described as a period when development occurs at a rate faster than at any other (Shonkoff & Phillips, 2000) and is a critical time in children's lives for studying how early experiences condition long-term biases for certain behaviors, including nutritional behaviors (Faith & Kral, 2009). Although a preference for sweet and salty foods and a rejection of sour and bitter foods is innate, nearly all other children's food preferences are learned (Addessi, Galloway, Visalberghi, & Birch, 2005; Beauchamp, Cowart, Mennella, & Marsh, 1994; Birch, 1998; Patrick & Nicklas, 2005). Early childhood experiences play a major role in shaping children's preferences for certain foods (Hendy, 1999; Liem & Menella, 2002; Skinner, Carruth, Bounds, & Ziegler, 2002; Strauss & Knight, 1999), nutritional attitudes, and behaviors (Birch, 1998; Brown & Ogden, 2004; Faith, 2005; Schwartz & Puhl, 2003). After approximately 3 years of age, children model the nutritional behaviors of those in their environments, especially their parents' food preferences and attitudes (Brown & Ogden, 2004; Faith, Johnson, & Allison, 1997; Patrick & Nicklas, 2005; Shonkoff & Phillips, 2000; Whitaker, Wright, Pepe, Seibel, & Dietz, 1997). Thus, if children are to develop lifelong healthy nutritional behaviors, they must establish positive attitudes and habits early (Patrick & Nicklas, 2005; Veugelers & Fitzgerald, 2005; Wardle, Guthrie, Sanderson, Birch, & Plomin, 2001; Weiss & Amorose, 2008; Wells & Ritz, 2001).

Research confirms the influence of the social environment (parents, childcare providers, teachers, and peers) on the development of children's nutritional behaviors (Birch, 1998; Brown & Ogden, 2004; Faith, 2005; Liem & Menella, 2002). Determining how children perceive nutritional messages from their social environments is crucial when researching how and why children develop and maintain nutritional behaviors (Taylor, Evers, & McKenna, 2005). However, the majority of studies fail to take proper account of children's perspectives of their environments, focusing exclusively on parents' perspectives (Benton, 2003; Brown & Ogden, 2004; Evers, Arnold, Hamilton, & Midgett, 2007; Mata, Scheibehenne, & Todd, 2007). This lack of attention to children's perspectives may result from researchers' bias for such traditional research methods as questionnaires and interviews (Fewell & Glick, 1993), as well as from a reluctance to develop methods that might provide unexpected, unconventional data (Sontag, 1996). Consequently, children's interpretations and utilization of nutritional messages from their social environments remain mostly unknown. Without such knowledge, the teaching of healthy nutritional behaviors to young children is a challenge for their primary social influences (including parents and childcare providers) (Carruth, Ziegler, Gordon, & Barr, 2004; Lytle et al., 1997).

Meghan Lynch, MA, *is a Graduate Student, Dalla Lana School of Public Health Sciences, University of Toronto, Canada.*

Statements of Disclosure: *The author reported no actual or potential conflict of interest in relation to this continuing nursing education activity.*

The Pediatric Nursing *Editorial Board reported no actual or potential conflict of interest in relation to this continuing nursing education activity.*

Children are more likely to demonstrate behaviors taught through experiential, hands-on learning, such as through role playing with peers and adults, as opposed to formal instruction.

Studying Children at Play

Because preschool children have limited verbal skills, they are unable to describe their perspectives for traditional research methods, but children's perceptions of their environments can be observed through play (Fewell & Glick, 1993; Ginsburg & the Committee on Communications and the Committee on Psychosocial Aspects of Child and Family Health, 2007). Research has found through close examination of children's pretend play that they model typical behaviors, increasingly drawing on cultural roles, models, and conventions experienced in their environments, especially modeling the role of the parent(s) (Berk, Mann, & Ogan, 2006; Matheson, Spranger, & Saxe, 2002; Ortega, 2003; Singer & Singer, 1981; Smith, 2005, Tsao, 2002). During play, young children express their ideas, thoughts, and typical behaviors (National Association for the Education of Young Children [NAEYC], 2005).

Early childhood psychologists Vygotsky (1896-1934), Piaget (1896-1980), and Erikson (1902-1994) viewed children's pretend play as an important opportunity for researchers to learn about the development of children's behaviors (Smith, 2005). Smith (2005) outlined three main reasons that researchers should study play, particularly in children younger than 7 years of age: 1) play occupies a large amount of time in children's lives, particularly those in the preschool age group; 2) play shows a characteristic age progression, beginning at 2 years of age and peaking at 6 years of age; and 3) play, found in all cultures, contributes significantly to healthy brain development (Shonkoff & Phillips, 2000; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). Researchers can utilize pretend play, especially when studying the early childhood age group, to understand how children perceive their social environments (Ginsburg & the Committee on Communications and the Committee on Psychosocial Aspects of Child and Family Health, 2007).

Theoretical Foundation for Play-Settings in Nutrition Research

The utilization of play settings is based theoretically on several fundamental concepts of nutritional behavior development in young children. Two concepts are: 1) it is crucial to know how children perceive their environments, and 2) children are more likely to demonstrate behaviors taught through experiential, hands-on learning as opposed to formal instruction.

How Do Children Learn Nutritional Behaviors?

According to Bronfenbrenner (1979, 2005), the most influential aspects of the social environment in children's development are those that possess the most meaning for them. While children may be more likely to learn healthy nutritional behaviors in environments that contain social influences, such as parents and teachers who demonstrate healthy behaviors and who encourage others to do so as well, it may be more useful for researchers to have an understanding of how the children themselves perceive these positive influences.

Research conducted with older children already illustrates the importance of considering children's perspectives of food and eating. A study by Carper, Orlet Fisher, and Birch, (2000) found that parental accounts of how much control they exerted over their children's food intake showed only a limited-to-zero relationship when compared to the child's reports of parental control – and only the child's reports predicted dietary restraint or overeating tendencies. Similarly, Van Strien, Van Niekerk, and Ouwens (2009) examined parental food-controlling practices as perceived by their children and found that the children's perceptions of parent-control strategies were more important predictors than the parents' perceptions. Even for young children, Brewis and Gartin (2006) recommended research that would examine the active role children play in shaping their environments. One of the few studies to examine young children's perceptions of nutrition was by Lytle and colleagues (1997), who examined kindergarten-aged children's ability to explain in their own words the nutrition education messages from their environments. Results demonstrated that children in the kindergarten age group struggled to understand, explain, and apply abstract concepts, such as food groups, variety, and moderation. Likewise, Matheson and colleagues (2002) noted that the preschool children involved in their study were unable to apply abstract concepts (such as "grains" or "meat and alternatives") to group foods. Instead, when asked to classify foods, the children grouped them based on physical characteristics, such as color and shape.

How Best to Teach Healthy Nutritional Behaviors?

The second concept, both from Bronfenbrenner's Theory (1979, 2005) and more recent studies on the development of children's long-term nutritional behaviors, suggests that the traditional approach of formal instruction inadequately prepares children to develop healthy nutritional behaviors in their day-to-day lives (Lytle, 2005; Lytle et al., 1997; Matheson et al., 2002; Niehoff, 2009). Research shows that children in the preschool age group are unable to grasp abstract concepts of food groups and portion sizes, and in any case, that such rote learning is ineffective in developing healthy behaviors (Lytle et al., 1997; Matheson et al., 2002).

Taylor and colleagues (2005) have suggested that children are unable to translate healthy nutritional knowledge into behavioral responses because they repeat the correct "learned" response without the capability of understanding how to use that information to make healthy food choices generally. Children are more likely to demonstrate behaviors taught through experiential, hands-on learning, such as through role playing with peers and adults, as opposed to formal instruction (Bronfenbrenner, 1979, 2005; Taylor et al., 2005). Therefore, nutrition education should rely on settings and situations children already experience in their daily lives. Furthermore, the concept of "visual familiarity" holds that children will show a greater willingness to try new foods that they have been accustomed to seeing in

their environment (Aldridge, Dovey, & Halford, 2009). This last point is important because it implies that children's food preferences can be encouraged not only through repeated taste exposure but also through their merely *seeing* (and possibly interacting with) healthy foods on a regular basis (Story, Neumark-Sztainer, & French, 2002), and that repeated exposure to foods can overcome the initial refusal of them (Cooke, 2007). Thus, there is pressing need for new ways of conveying healthy nutritional information to children – ways that use these findings to develop long-lasting behaviors more reliably.

Nutritional Research Using Children's Play Settings

Although studying children at play is not yet a common approach in nutritional behavior research, preliminary research describes some interesting results. A pioneering study conducted by Matheson and colleagues (2002) examined young children's pretend nutritional behaviors while interacting with a researcher in a play kitchen located in their school to determine if children's nutritional knowledge is acquired through direct experience with food in their homes and observations of others' nutritional behaviors. Results showed the children's pretend play with food modeled behaviors they had engaged in or had seen adults engage in, such as modelling behaviors reflective of a rushed family dinner, which demonstrates that studying children in play settings could provide insights into children's understandings of their social environment with regard to food and nutrition.

Building on the research of Matheson and colleagues (2002), Lynch (2010) examined videos posted online by parents and children interacting in play kitchens and found that the play setting enabled children to model behaviors and attitudes, as well as the role of the parent. Children 5 to 6 years of age demonstrated behaviors that were the most representative of realistic cooking skills, such as setting the oven to a specific heat, covering foods before inserting them in the oven, and using pot-holders to remove dishes. However, realistic cooking skills were observed even in children as young as 3 years of age in their correct usage of utensils, such as spatulas and whisks, their stirring spoons in pots on stovetops, and their chopping and washing vegetables before cooking. Interestingly, behaviors were sometimes seen in children too young to respond verbally to their parents' prompts and questions.

Finally, a study by Johnson (2000) that taught self-regulation of food intake to young children also found support for the use of play-based settings. While play settings were not a planned part of Johnson's study, the researcher noted the children began to spontaneously relate the behaviors learned in the study to their play with dolls. In all three studies, play settings provided naturalistic environments for the children, enabling the researchers to determine the children's understandings of nutrition and food more reliably.

Though preliminary, these promising results indicate that through pretend interactions with food, children demonstrate their understanding of food practices learned from their real social environments (Matheson et al., 2002). Thus, play-based settings have much to offer in terms of research and teaching that will provide insights into what children are learning from their environments about food and eating (Lytle et al., 1997).

Future Research Directions

Because play-based research is a novel approach to studying nutritional behavior development, future research needs to replicate Matheson and colleagues' (2002) and Lynch's (2010) studies to refine this method further and establish its validity. One way this could be accomplished is by comparing a play-based assessment with observations of parents and children in similar, real-life settings, such as the home. Following such research, play-based settings could more reliably provide understanding of children's perspectives, proving itself to be a valuable new tool for studying child nutritional development. Faith and Kral's (2009) research on the development of obesity encourages the development of the research method proposed in the present article. They recommend that an unobtrusive method of capturing unhealthy eating behaviors in early childhood could provides a means of predicting an individual's weight development.

Future studies could investigate whether interacting with toy replicas of healthy foods promotes children's development of real food-preference. Research on the development of children's food preferences and the concept of visual familiarity indicates that it may be possible through a play-based setting to develop children's familiarity with healthy foods, and thus, improve their willingness to consume these foods (Story et al., 2002). The possibilities are promising because similar novel approaches, such as repeatedly exposing children to pictures of unfamiliar foods in a story book (Houston-Price, Butler, & Shiba, 2009), have yielded positive findings demonstrating that visual familiarity can increase toddlers' willingness to try new foods. Further research testing of play-based assessments could prove similarly productive.

Future Practice Directions

Not only could researchers benefit from using play-based settings as a methodological tool, but a play-based approach could also be beneficial for parents, teachers, and childcare providers in teaching children healthy nutritional behaviours. Given the evidence that young children are unable to apply such abstract concepts as food groups and portion sizes, researchers have been encouraging behavior-based preschool nutrition programs (Lytle et al., 1997; Matheson et al., 2002; Niehoff, 2009; Speroni, Tea, Earley, Niehoff, & Atherton, 2008; Taylor et al., 2005).

Play-based nutrition education programs represent a simple yet innovative behavior-based approach that could greatly benefit from the contribution of pediatric nurses. Nurses frequently work in settings – schools, childcare centers, and other community environments – where they interact with children at the very ages when they most need to learn healthy nutritional behaviours (Speroni et al., 2008). Pediatric nurses could encourage the use of food-themed play settings to foster healthy nutritional behaviors by ensuring that children interact with a variety of healthy toy food replicas (such as fruits and vegetables, grains, and dairy). Through sociodramatic play in toy kitchens, supermarkets, and restaurants, children could also be encouraged to pretend to cook and eat healthy foods. Importantly, nurses could ensure that children are interacting with a variety of healthy toy foods, engaging in healthy mealtime behaviors, and experiencing adults who model healthy behaviors.

Lynch (2010) and Matheson and colleagues (2002) found that children typically played with unhealthy toy foods, employed unhealthy food preparation methods, and experi-

enced parents who modeled these undesirable nutritional behaviors. In such ways, nurses could serve as liaisons between research and practice by educating parents, teachers, and childcare providers on the uses of play-based nutrition education. For example, nurses could describe the benefits of play-based nutrition programs, informing those concerned that increasing play-based instruction is in keeping with current recommendations to make play an important part of the preschool curriculum (Berk et al., 2006; NAEYC, 2005; Santrock, 2006).

Nurses could also stress that play settings provide a promising approach to familiarizing children with new foods complementary to current food familiarization techniques that rely on parents' willingness to offer new foods repeatedly. This concept of complementarity is pedagogically useful because there is always resistance to a new approach displacing a traditional one, even if research has found that parents are often unwilling or unable to provide their children the 10 to 20 exposures necessary to familiarize them with new foods (Carruth et al., 2004). Pediatric nurses are ideally situated to promote this promising method of play-based nutrition education to parents, providers, and teachers, thus contributing considerably to children's healthy nutritional behavior development.

Apart from its relevance to pediatric nursing, play-based settings offer two intertwined advantages for the research and practice of nutritional behavior development in young children. From a research perspective, understanding young children's perceptions of food and nutrition has been a perpetual challenge (Matheson et al., 2002). To form a more complete picture of the development of long-term nutritional behaviors, researchers need better tools for examining how children themselves process social influences regarding communications about food and nutrition (Mazzeo, Mitchell, Gerke, & Bulik, 2006; Orrell-Valente et al., 2007). From a pedagogical perspective, play settings offer benefits for children's learning, including the teacher's ability to direct messages about food and nutrition in more practical ways, ensuring that young students are able to translate nutrition messages into behavioral responses (Matheson et al., 2002; Taylor et al., 2005).

Conclusion

Through interactions with play food, which engage subjects in an experiential learning approach (Matheson et al., 2002; Taylor et al., 2005), children are enabled to demonstrate their understanding of nutrition practices learned in their real social environments. The method of play-based assessments should prove highly useful for researching children's perceptions and in teaching healthy nutrition with the goal of translating knowledge into behavior responses (Lytle et al., 1997; Matheson et al., 2002; Taylor et al., 2005). For these reasons, the use of play-based settings in the field of nutritional behavior development in young children clearly merits further exploration.

References

Addessi, E., Galloway, A.T., Visalberghi, E., & Birch, L.L. (2005). Specific social influences on the acceptance of novel foods in 2-5-year-old children. *Appetite, 45*(3), 264-271.

Aldridge, V., Dovey, T.M., & Halford, J.C.C. (2009). The role of familiarity in dietary development. *Developmental Review, 29*(1), 32-44.

Beauchamp, G.K., Cowart, B.J., Menella, J.A., & Marsh, R.R. (1994). Infant salt taste: Developmental methodology and contextual factors. *Developmental Psychobiology, 27*(6), 353-365.

Benton, D. (2003). Role of parents in the determination of the food preferences of children and the development of obesity. *International Journal of Obesity, 28*(1), 858-869.

Berk, L.E., Mann, T.D., & Ogan, A.T. (2006). Make-believe play: Wellspring for development of self-regulation. In D.G. Singer, R.M. Golinkoff, & K. Hirsh-Pasek (Eds.), *Play = learning* (pp. 74-101). New York: Oxford University Press.

Birch, L. L. (1998). Psychological influences on the childhood diet. *The Journal of Nutrition, 128*(2), 407-410.

Brewis, A., & Gartin, M. (2006). Biocultural construction of obesogenic ecologies of childhood: Parent-feeding versus child-eating strategies. *American Journal of Human Biology, 18*(2), 205-213.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (Ed.). (2005). *Making human beings human: Bioecological perspectives on human development.* Thousand Oaks, CA: Sage.

Brown, R., & Ogden, J. (2004). Children's eating behavior: A study of the modelling and control theories of parental influence. *Health Education Research, 19*(3), 261-271.

Carper, J.L., Orlet Fisher, J., & Birch, L.L. (2000). Young girls' emerging dietary restraint and disinhibition are related to parental control in child feeding. *Appetite, 35*(2), 121-129.

Carruth, B., Ziegler, P., Gordon, A., & Barr, S. (2004). Prevalence of picky eaters among infants and toddlers and their caregivers' decisions about offering a new food. *Journal of the American Dietetic Association, 104*(Suppl. 1), 57-64.

Cooke, L. (2007). The importance of exposure for healthy eating in childhood: A review. *The Journal of Human Nutrition and Dietetics, 20*(4), 294-301.

Evers, S., Arnold, R., Hamilton, T., & Midgett, C. (2007). Persistence of overweight among young children living in low income communities in Ontario. *Journal of the American College of Nutrition, 26*(3), 219-224.

Faith, M.S. (2005). Development and modification of child food preferences and eating patterns: Behavior genetics strategies. *International Journal of Obesity, 29*(6), 549-556.

Faith, M.S., Johnson, S.L., & Allison, D.B. (1997). Putting the behavior into the behavior genetics of obesity. *Behavior Genetics, 27*(4), 423-439.

Faith, M.S., & Kral, T.V. (2009). Social environmental and genetic influences on obesity and obesity-promoting behaviors: Fostering research integration. In *Genes, behavior, and the social environment* (pp. 236-280). Washington, DC: National Academies Press.

Fewell, R.R., & Glick, M.P. (1993). Observing play: An appropriate process for learning and development. *Infants and Young Children, 3*(4), 35-43.

Ginsburg, K.R. & the Committee on Communications and the Committee on Psychosocial Aspects of Child and Family Health (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics, 119*(1), 182-191.

Hendy, H.M. (1999). Comparison of five teacher actions to encourage children's new food acceptance. *Annals of Behavioral Medicine, 21*, 20-26.

Houston-Price, C., Butler, L., & Shiba, P. (2009). Visual exposure impacts on toddlers' willingness to taste fruits and vegetables. *Appetite, 53*(3), 450-453

Johnson, S.I. (2000). Improving preschoolers' self-regulation of energy intake. *Pediatrics, 106*(6), 1429-1435.

Liem, D.G., & Menella, J.A. (2002). Sweet and sour preferences during childhood: Role of early experience. *Developmental Psychobiology, 41*(4), 388-395.

Lynch, M. (2010). Playing with food: A novel approach to understanding nutritional behaviour development. *Appetite, 54*(3), 591-594.

Lytle, L.A. (2005). Nutrition education, behavioral theories, and the scientific method: Another viewpoint. *Journal of Nutrition Education and Behavior, 37*(2), 90-95.

Lytle, L.A., Eldredge, A.L., Kotz, K., Piper, J., Williams, S., & Kalina, B. (1997). Children's interpretation of nutrition messages. *Journal of Nutrition Education, 29*(3), 128-136.

Mata, J., Scheibehenne, B., & Todd, P.M. (2007). Predicting children's meal preferences: How much do parents know? *Appetite, 50*(2-3), 367-375.

Matheson, D., Spranger, K., & Saxe, A. (2002). Preschool children's perceptions of food and their food experiences. *Journal of Nutritional Education and Behavior, 34*(1), 85-92.

Mazzeo, J.E., Mitchell, K.S., Gerke, C.K., & Bulik, C.M. (2006). Parental feeding style and eating attitudes: Influences on children's eating behavior. *Current Nutrition and Food Science, 2*(3), 275-295.

National Association for the Education of Young Children (NAEYC). (2005). *Developmentally appropriate practice in early childhood programs serving children from birth to age 8.* Retrieved from http://www.naeyc.org/files/naeyc/file/positions/position%20statement%20Web.pdf

Niehoff, V. (2009). Childhood obesity: A call to action. *Bariatric Nursing and Surgical Patient Care, 4*(1), 17-23.

O'Dea, J.A. (2003). Why do kids eat healthful food? Perceived benefits of and barriers to healthful eating and physical activity among children and adolescents. *Journal of the American Dietetic Association, 103*(4), 497-501.

Orrell-Valente, J.K., Hill, L., Brechwald, W.A., Dodge, K.A., Pettit, G.S., & Bates, J.E. (2007). "Just three more bites": An observational analysis of parents' socialization of children's eating at mealtime. *Appetite, 48*(1), 37-45.

Ortega, R. (2003). Play, activity, and thought: Reflections on Piaget's and Vygotsky's theories. In D.E. Lytle (Ed.), *Play and educational theory and practice* (pp. 99-115), Westport, CT: Praeger.

Paquette, M.C. (2005). Perceptions of healthy eating: State of knowledge and research gaps. *Canadian Journal of Public Health, 96*(Suppl.), 15-19.

Patrick, H., & Nicklas, T.A. (2005). A review of family and social determinants of children's eating patterns and diet quality. *Journal of the American College of Nutrition, 24*(2), 83-92.

Santrock, J.V. (2006). *Life span development* (10th ed.). New York: McGraw-Hill.

Schwartz, M.B., & Puhl, R. (2003). Childhood obesity: A societal problem to solve. *Obesity Reviews, 4*(1), 57-71.

Shonkoff, J.P., & Phillips, D.A. (Eds.) (2000). *From neurons to neighborhoods: The science of early childhood development.* Washington, D.C.: National Academy Press.

Singer, J.L., & Singer, D.G. (1981). *Television, imagination, and aggression: A study of preschoolers.* Hillsdale, NJ: Erlbaum.

Skinner, J.D., Carruth, B.R., Bounds, W., & Ziegler, P.J. (2002). Children's food preferences: A longitudinal analysis. *Journal of the American Dietetic Association, 102*(11), 1638-1647.

Smith, P.K. (2005). Social and pretend play in children. In A.D. Pellegrini & P.K. Smith (Eds.) *The nature of play* (pp. 173-213). New York: Guilford Press.

Sontag, J.C. (1996). Toward a comprehensive theoretical framework for disability research: Bronfenbrenner revisited. *The Journal of Special Education, 30*(3), 319-344.

Speroni, K.G., Tea, C., Earley, C., Niehoff, V., & Atherton, M. (2008). Evaluation of a pilot hospital-based community program implementing fitness and nutrition education for overweight children. *Journal for Specialists in Pediatric Nursing, 13*(3), 144-153.

Story M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of American Dietetic Association, 102*(Suppl. 3), 40-51.

Strauss, R.S., & Knight, J. (1999). Influence of the home environment of the development of obesity in children. *Pediatrics, 103*(6), e85. Retrieved from http://pediatrics.aappublications.org/cgi/content/full/103/6/e85

Stunkard, A.J., Berkowitz, R.I., Stallings, V.A., & Schoeller, D.A. (1999). Energy intake, not energy output, is a determinant of body size in infants. *Journal of the American Academy of Child & Adolescent Psychiatry, 38*(10), 524-530.

Tamis-LeMonda, C.S., Shannon, J.D., Cabrera, N.J., & Lamb, M.E. (2004). Fathers and mothers at play with their 2- and 3-year-olds: Contributions to language and cognitive development. *Child Development, 75*(6), 1806-1820.

Taylor, J.P., Evers, S., & McKenna, M. (2005). Determinants of healthy eating in children and youth. *Canadian Journal of Public Health, 96*(Suppl.), 20-26.

Tsao, L. (2002). How much do we know about the importance of play in child development? *Childhood Education, 78*(4), 230-233.

Van Strien, T., Van Niekerk, R., & Ouwens, M.A. (2009). Perceived parental food controlling practices related to obesogenic or leptogenic child life style behaviors. *Appetite, 53*(1), 151-154.

Veugelers, P.J., & Fitzgerald, A.L. (2005). Effectiveness of school programs in preventing childhood obesity: A multilevel comparison. *American Journal of Public Health, 95*(3), 432-435.

Wardle, J., Guthrie, C., Sanderson, S., Birch, L., & Plomin, R. (2001). Food and activity preferences in children of lean and obese parents. *International Journal of Obesity, 25*(7), 971-977.

Weiss, M.R., & Amorose, A.J. (2008). Motivational orientations and sport behavior. In T.M. Horn (Ed.), *Advances in sport psychology* (3rd ed., pp. 115-155). Champaign, IL: Human Kinetics.

Wells, J.C., & Ritz, P. (2001). Physical activity at 9-12 months and fatness at 2 years of age. *American Journal of Human Biology, 13*(3), 384-389.

Whittaker, R.C., Wright, J.A., Pepe, M.S., Seidel, K.D., & Dietz, W.H. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine, 337*(13), 869-873.