

Fostering Healthy Lifestyles: Assessing the Need and Potential Intervention Strategies for Foster
Children

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ABSTRACT

According to recent estimates, approximately 423,773 children in the United States are in foster care (US Department of Health and Human Services, 2011). While research has documented that childhood obesity is high in foster children, the relationship between nutrition, physical activity, weight status of foster children and the foster home environment is unclear. Furthermore, there is a gap in the literature on the capacity of the child welfare system to address obesity among this population nor practical intervention strategies.

This dissertation consists of three studies, with the following purposes: 1) assess the current foster care landscape related to the promotion of healthy eating and physical activity through questionnaire based and objective data; 2) examine legislature and training programs that focus on nutrition and physical activity as it relates to foster families; and 3) utilize the Delphi method to begin the development of a potential healthy eating and physical activity intervention for foster care through the recommendation of intervention strategies that could be integrated into the foster care system. These purposes are achieved utilizing a systems-based approach. More specifically, research was conducted through collaboration with several local agencies throughout Virginia. The findings from Study 1 suggest that obesity is prevalent among foster children and foster parents in Virginia and that there are some indications that the foster home environment is related to lifestyle behaviors and weight status, though the relationships were small. Study 2 identified face-to-face trainings targeting foster parents and children (depending on the child's age) as an important and practical method to intervene through regular trainings. Study 3 indicated that there are few federal or local policies that explicitly address

physical activity, nutrition, and weight status. A number of recommendations are made for the structure, content, and process of integrating obesity prevention and treatment strategies within the foster care system.

Dedication

This document is dedicated to the loving memory of my grandparents (Luther and Clara Gibson, Alberta Bunton and Clara Parks), aunts (Sharon “Michelle” Bunton, Renee’ Blackman, and Bronzella Alexander), brother (De’quan Chambers), cousin (James Campbell), godmother (Ceiola Harvey), church family (Pearl Jones, Russell Pendleton, and Catherine Brown), and dear friend (William M. Brown, II) who left me within 10 years of my educational journey. Grandma Alberta, thank you for indirectly placing my mother and her sisters in the hands of Luther and Clara Gibson. Grandma and grandpa, thank you for raising my mother in the reverence of God and for dedicating your life to my cousins as well. My love for God and commitment to the foster care system was birthed through you and for that, I am forever grateful. Grandpa, you were my hero and I was your “role model.” Knowing that I could serve as a role model to someone more than 70 years my senior has propelled me forward. Aunt Michelle, thank you for your eternal love as well. Even though I will not be congratulated with one of your home-cooked meals and bread pudding upon my defense, I’ll be sure to cook a meal in your memory. To my “Dr.” Brown, your dream has always been to become a physical therapist. In spite of health challenges, you attained your bachelor’s degree and continued pressing forward. You departed this world a week before I was scheduled to call you and state that I successfully defended my dissertation. Regardless, may your family know that my degree is dedicated to you. Thank you for your never-ending support and for being my “Dr.” Brown.

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CHAPTER I

Introduction

In the United States, obesity has become a growing problem among all age groups. According to the latest published data from the National Health and Nutrition Examination Survey (NHANES), 31.9% of children and adolescents aged 2 to 19 are overweight or obese (>85th percentile) (Ogden, Carroll, & Flegal, 2008). Literature suggests that children diagnosed as overweight or obese tend to become obese adults (Singh, Mulder, Twisk, van Mechelen, & Chinapaw, 2008). This disease places individuals at risk for various chronic health conditions, such as diabetes, high cholesterol and high blood pressure (Malnick & Knobler, 2006). As a result, not only does obesity have the potential to be a personal burden but it is also a societal burden in terms of healthcare costs (Withrow & Alter, 2011). Therefore, the prevention and treatment of childhood obesity would have a positive impact on various systems.

To ensure that research focused on preventing and treating childhood obesity is generalizable, it is important to identify settings and populations that could benefit most from intervention. One group that could potentially benefit from obesity prevention strategies are children, in out-of-home care situations, who have been removed from their homes due to abuse and/or neglect. Children placed in out-of-home care are under the guardianship of the local government, and some of these children are placed in foster homes or are considered to be in foster care. Individuals in foster care could benefit from an investigation into the degree to which obesity is an issue and, if appropriate, they could also benefit from identifying and testing specific intervention strategies designed to be integrated within required foster care trainings. There is some preliminary evidence that foster care children may be more likely to be

overweight and obese when compared to other age and gender matched children (Hadfield & Preece, 2008; Steele & Buchi, 2008).

According to recent estimates, approximately 423,773 children in the United States are in foster care (US Department of Health and Human Services, 2011). The results of two recent studies reveal that approximately 35% of a sample of foster children can be classified as overweight or obese, a percentage comparable to that of the general population (Hadfield & Preece, 2008; Steele & Buchi, 2008). Even though these studies had several limitations, including self-reported data, statistics concerning our targeted area of research, Virginia, also suggests foster children as a population that could benefit from nutrition and physical activity interventions targeting obesity prevention and treatment. Aside from problems associated with obesity, foster children are often undernourished (Pasztor, Hollinger, Inkelas & Halfon, 2006). Both, undernourishment and being at risk for obesity are likely due to malnutrition experienced with foster children's biological parents. More specifically, malnutrition likely explains the prevalence of development delays found in foster children (Dicker, Gordon, & Knitzer, 2002). According to a publication by the National Center for Children in Poverty, more than fifty percent of the children in foster care experience developmental delays, which is four to five times that found in the general population (Dicker et al., 2002). Therefore, an intervention design to improve the healthy eating and physical activity habits of children, especially foster children may be needed for several reasons: to prevent and/or treat obesity, to improve the nourishment of young foster children and to ensure that children meet dietary and physical activity recommendations.

There is growing evidence of the effectiveness of a number of home-based healthful eating and physical activity interventions for children and the home-based approach could be

appropriate for a foster care setting (Bautista-Castano, Doreste, & Serra-Majem, 2004; Stroebele, Ogden, & Hill, 2009; Kain, Uauy, Albala, Cerda, & Leyton, 2004; Simon et al., 2008; Gortmaker et al., 1999). Some of these interventions focus specifically on parents to more effectively increase health behaviors and prevent or treat obesity through home environment changes (Campbell et al., 2008; Bautista-Castano et al., 2004; Gamache, Mirabell, & Avery, 2006; Golan & Crow, 2004; Golan, Kaufman, & Shahar, 2006). The information on available interventions, coupled with foster children being considered a vulnerable population, with an increased risk of being undernourished or at risk for obesity (Pasztor et al., 2006), highlights the importance of assessing the need for an educational intervention that targets the foster parents and would equip them with the knowledge and skills necessary to prevent or treat the worsening of these states. However, there is limited data examining the dietary and physical activity habits of foster children, the influence of foster parents, or on the home environment as it relates to these behaviors (Hadfield & Preece, 2008). Still, if a need does exist, the foster care system with regular trainings for parents allows for a systems-based approach that could reach all foster parents in a given region.

Several factors suggest the foster care system would be suitable for a healthful eating and physical activity intervention. Firstly, even though the goals of children in foster care include returning to their homes, adoption, placement with a relative, or placement in the Independent Living Program, the average stay of children in the local foster care system is 39 months, which is consistent with state averages (Virginia Department of Social Services). This suggests that foster children, on average, are in the foster home for a period of time that would be appropriate for intervention. Secondly and by policy, foster parents must receive annual training in order to

sustain certification. This provides a venue to integrate behavioral interventions targeting the home-environment within the system.

Systems approaches that have been used in other settings to design physical activity and healthful eating interventions are more likely to be implemented and sustained in typical community or clinical practice (Almeida, Shetterly, Smith-Ray, & Estabrooks, 2010; Estabrooks et al., 2011; Kim et al., 2008; Estabrooks, Bradshaw, Dzewaltowski, & Smith-Ray, 2008;). A participatory systems-based approach allows evidence-based strategies to be aligned with the workflow and mission of the potential delivery system (Estabrooks & Glasgow, 2006). A body of literature suggests that the inclusion of stakeholders during the design, implementation and evaluation phase of a community based intervention increases the likelihood of the intervention being effective, sustainable, and disseminated (Rogers, 2003).

Finally, while there are clear policies in place to guide the training of new and continuing foster parents, it is unclear if there are specific training policies related to healthful living. No policy research has been conducted to determine the degree to which foster care policies include criteria for eating or physical activity. While policy approaches have had positive effects in other behavioral domains (e.g., access to healthful foods; tobacco use), there have been no investigations into policy approaches within foster care (Levy, Ross, Powell, Bauer, & Lee, 2007; Mendoza, Watson, & Cullen, 2010; Trost, Ward, and Senso, 2010).

Purpose of the Dissertation

There is a gap in the literature concerning the nutrition and physical activity habits and weight status of foster children, potential strategies that could lead to healthful eating and regular physical activity, and possible policies to support these behaviors in this population. There are two phases associated with three purposes of this dissertation that are intended to fill a number of

gaps in the literature. The first phase assessed the current foster care landscape related to the promotion of healthy eating and physical activity and included the following purposes: 1) to assess the need for nutrition and physical activity interventions that will ultimately prevent and/or treat obesity among foster children in Virginia, and 2) examine legislature and training programs that focus on nutrition and physical activity as it relates to foster families. The second phase began the development of a potential healthy eating and physical activity intervention for foster care and has the purpose to design intervention strategies that could be integrated into the foster care system.

References

- Almeida, F. A., Shetterly, S., Smith-Ray, R. L., Estabrooks, P. A. (2010). Reach and effectiveness of a weight loss intervention in patients with prediabetes in Colorado. *Preventing Chronic Disease, 7*. http://www.cdc.gov/pcd/issues/2010/sep/09_0204.htm
- Bautista-Castano, I., Doreste, J., & Serra-Majem, L. (2004). Effectiveness of interventions in the prevention of childhood obesity. *European Journal of Epidemiology, 19*, 617-622.
doi: 10.1023/B:EJEP.0000036890.72029.7c
- Child Welfare Information Gateway. (2011). *Foster care statistics, 2009*. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau.
- Dicker, S., Gordon, E., Knitzer, J. (2002). Improving the odds for the healthy development of young children in foster care. *National Center for Children in Poverty, 2001*.
- Estabrooks, P. A., Almeida, F. A., Hill, J. L., Smith-Ray, R. L., Schriener, P., van den Burg, R., & Gonzales, M. (2011). Move more: translating efficacious physical activity intervention principles into effective clinical practice. *International Journal of Sport and Exercise Psychology, 9*, 4-18.
- Estabrooks, P. A., Bradshaw, M., Dzewaltowski, D. A., & Smith-Ray, R. L. (2008). Determining the impact of Walk Kansas: applying a team-building approach to community physical activity promotion. *Annals of Behavioral Medicine, 36*, 1-12.
doi: 10.1007/s12160-008-9040-0
- Gamache, S., Mirabell, D., & Avery, L. (2006). Early childhood developmental and nutritional training for foster parents. *Child and Adolescent Social Work Journal, 23*, 501-511.
doi: 10.1007/s10560-006-0053-x

- Golan, M., & Crow, S. (2004). Parents are key players in the prevention and treatment of weight-related problems. *Nutrition Reviews*, *62*, 39-50. doi: 10.1301/nr.2004.jan.39-50
- Golan, M., Kaufman, V., & Shahar, D. R. (2006). Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*, *95*, 1008-1015. doi: 10.1079/BJN20061757
- Hadfield, S. C., & Preece, P.M. (2008). Obesity in looked after children: is foster care protective from the dangers of obesity? *Child Care Health Dev*, *34*, 710-712. doi: 10.1111/j.1365-2214.2008.00874.x
- Kim, K. H., Linnan, L., Campbell, M. K., Brooks, C., Koenig, H. G., & Wiesen C. (2008). The WORD (Wholeness, Oneness, Righteousness, Deliverance): A faith-based weight-loss program utilizing a community-based participatory research approach. *Health Education & Behavior*, *35*, 634-650. doi: 10.1177/1090198106291985
- Levy, D. T., Ross, H., Powell, L., Bauer, J. E., & Lee H. (2007). The role of public policies in reducing smoking prevalence and deaths caused by smoking in Arizona: results from the Arizona tobacco simulation model. *Journal of Public Health Management and Practice*, *13*, 59-67.
- Malnick, S. D. H. & Knobler, H. (2006). The medical complications of obesity. *QJM: An International Journal of Medicine*, *99*, 565-579. doi: 10.1093/qjmed/hcl085
- Mendoza, J. A., Watson, K., & Cullen, K. W. (2010). Change in dietary energy density after implementation of the Texas Public School Nutrition Policy. *Journal of the American Dietetic Association*, *110*, 434-440. doi: 10.1016/j.jada.2009.11.021

- Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). High body mass index for age among US children and adolescents, 2003-2006. *Journal of American Medical Association*, 299, 2401-2405. doi: 10.1001/jama.299.20.2401
- Pasztor, E. M., Hollinger, D. S., Inkelas, M., & Halfon, N. (2006). Health and mental health services for children in foster care: The central role of foster parents. *Child Welfare*, 85, 33-57.
- Rogers, E. M. (2003). *Diffusion Networks*. In *Diffusion of Innovations (5th ed)*. New York: Free Press.
- Singh, A. S., Mulder, C., Twisk, J. W. R., van Mechelen, W., Chinapaw, M. J. M. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews*, 9, 474-488. doi: 10.1111/j.1467-789X.2008.00475.x
- Steele J. S., & Buchi, K. F. (2008). Medical and mental health of children entering the Utah foster care system. *Pediatrics*, 122, E703-E709. doi: 10.1542/peds.2008-0360
- Stroebele, N., Ogden, L.G., & Hill, J.O. (2009). Do calorie-controlled portion sizes of snacks reduce energy intake. *Appetite*, 52, 793-796. doi: 10.1016/j.appet.2009.02.015
- Trost, S. G., Ward, D. S., & Senso, M. (2010). Effects of child care policy and environment on physical activity. *Medicine & Science in Sports & Science*, 42, 520-525.
doi: 10.1249/MSS.0b013e3181cea3ef
- Withrow, D. & Alter, D. A. (2011). The economic burden of obesity worldwide: a systematic review of the direct costs of obesity. *Obesity Reviews*, 22, 131-141.
doi: 10.1111/j.1467-789X.2009.00712.x

CHAPTER II

Literature Review

Foster Children

Children in the foster care system are a disadvantaged group for several reasons. A vast amount of research indicates that foster children have higher levels of emotional, developmental, behavioral, and mental problems as compared to the general population (Clausen, Landsverk, Ganger, Chadwick, & Litrownik, 1998; Courtney and Dworky, 2006; Sawyer, Carbone, Searle, & Robinson, 2007; Shin, 2005; Steele & Buchi, 2008). Since foster children's behavioral problems create challenges for foster parents and is a major reason for failed foster parent placement (Brown & Bednar, 2006; Holland & Gorey, 2004; James, 2004; Price, Chamberlain, Landsverk, Reid, Leve, & Laurent, 2008), interventions focusing on this population often focus on improving behavioral problems (Price, Chamberlain, Landsverk, & Reid, 2009). However, literature also suggests that children entering the foster care system have poor health, experience chronic medical health problems, and display clinically significant signs of aberrant eating problems (Altshuler & Poertner, 2008; Tarren-Sweeney, 2006). There is also literature demonstrating that a sample of women who were products of the foster care system were more likely to be obese than the general population (Schneider et al., 2009). This coupled with the health conditions of children while they are in the system suggests the importance of collecting additional data to determine the need for an intervention that could potentially indirectly help improve their physical health outcomes, which may ultimately impact their behavior problems.

Childhood Obesity

It is well known that certain environments, also known as an obesogenic environment, promote weight gain. These types of environments promote sedentary behavior, consumption of

sugar-sweetened beverages and limit access to healthy foods and physical activity (van der Horst et al., 2007). Most of the research pertaining to the prevention and treatment of childhood obesity occurs in school settings, an environment that allows manipulation of key variables (Doak, Visscher, Renders, & Seldell, 2006; Flynn et al., 2006; Summerbell et al., 2005). These studies seek to alter participants' obesogenic environments by targeting physical education classes, access to vending machine access, and foods available in the cafeterias. Even though many of these studies are successful in slowing the increase in risk of overweight and obesity, intervention effects are usually short-term only (Doak et al., 2006), which may be due to the lack of intervention follow-ups. Furthermore, many interventions target children between the ages of 8 and 12, with few targeting those below and above this age range. Interventions that have focused on adolescents have shown limited success (Sharma, 2006). More importantly, due to the short term success of these interventions, as well as obesity treatment effects diminishing over time, (Epstein, Myers, Raynor, & Saelens, 1998) much attention should be focused on preventing weight gain versus treating obesity (Dietz, 2006). It is important to design interventions that include multiple follow-ups, target individuals with a wider age range, and target multiple aspects of the obesogenic environment and determine whether similar and/or additional effects would be seen among an understudied population, such as foster children.

Behaviors Contributing to Childhood Obesity

Nutrition

The current dietary guidelines promote the consumption of a diet consisting of fruits and vegetables, nutrient dense foods, breakfast, and the limiting of foods high in cholesterol and fat, sugar-sweetened beverages and foods, as well as those high in sodium (US Department of Agriculture and US Department of Health and Human Services, 2010). However, research

indicates that children and adolescents are not meeting these recommendations (Epstein et al., 2001; Zapata, Bryant, McDermott, & Hefelfinger, 2008). Rather, the data shows that they are exceeding the dietary recommendations for the intake of fat, added sugars, and sodium.

A diet that provides an adequate amount of fruits and vegetables is important in preventing obesity and achieving healthy outcomes. More specifically, fruit and vegetable consumption has been shown to reduce the risk of high blood pressure, stroke, and coronary heart disease (Van Duyn & Pivonka, 2000). There have been several interventions focusing on improving diet intake among children and adolescents in hopes of preventing and/or treating obesity. However, these interventions have only been moderately successful in increasing fruit and vegetable intake (Pomerleau, Lock, Knai, & McKee, 2004).

Another area of focus in preventing and treating childhood obesity is targeting changes in portion size. Not only has there been an increase in the prevalence of obesity, but there has also been an increase in portion sizes available in America as well as other countries (Nielsen & Popkin, 2003). Increases in portion sizes present a challenge to prevention efforts because in both adults (Diliberti, Bordi, Conklin, Roe, & Rolls, 2004) and children (Fisher, 2007), food availability is related to consumption. Since children are often unaware of the concept of large portion sizes (Fisher, 2007), the use of strategies such as parental plating of food and modeling of appropriate portion sizes are promising. Specifically, there is evidence that providing smaller portion sizes results in less dietary intake (Stroebele et al., 2009).

Lastly, over the past decade, there has been a simultaneous increase in the consumption of sugar-sweetened beverages and the prevalence of obesity rates (Rennie, Johnson, & Jebb, 2005). Literature is inconsistent regarding the strength and existence of the relationship between sugar-sweetened beverage intake and obesity, with some studies indicating no relationship and

others stating that one exists (Berkey, Rockett, Field, Gillman, & Colditz, 2004; Giammattei, Blix, Marshak, Wollitzer, & Pettitt, 2003; Ludwig, Peterson, & Gortmaker, 2009). For instance, a quantitative meta-analysis conducted by Forshee and colleagues concluded that the association between the consumption of sugar-sweetened beverage consumption and body mass amongst several types of population was near zero (2008). However, a more recent study, conducted among an underserved population of young children, showed a significant relationship between consumption and BMI z-scores. These inconsistent results may be due to the varying definitions of sugar-sweetened beverages, different outcome measures and varying intervention lengths. Despite the inconsistencies, the American Heart Association has issued a statement recommending the intake of beverages with added sugars be limited (Johnson et al., 2009).

Physical Activity

From an energy expenditure standpoint, childhood obesity interventions have primarily targeted increasing physical activity while decreasing screen time and sedentary behaviors. It is well documented that engagement in physical activity protects against various chronic diseases (US Department of Health and Human Services, 2008). Furthermore, it is an essential aspect of the energy balance, in that engagement in physical activity in addition to a healthy diet protects against the incidence of obesity (Janssen et al., 2005; Kimm et al., 2005). Interventions that strive to improve physical activity among children are critical as the amount of physical activity usually decreases as children age (Kimm et al., 2005). School based interventions have proven effective, partly due to the opportunity to mandate an increase in the amount of physical activity which has resulted in an increase in subjects' physical fitness (Kain et al., 2004) and lowering the increase in body mass index over time (Simon et al., 2008). Sedentary behaviors, such as watching television, computer use and playing electronic games have also been associated with

unhealthy nutrition and physical activity behaviors. Several interventions among normal weight and overweight populations have effectively produced reductions in sedentary behaviors (Gortmaker et al., 1999; Robinson, 1999) and have demonstrated relationships between sedentary behaviors and reductions in energy and fat intake (Epstein, Roemmich, Paluch, & Raynor, 2005), along with BMI z-scores (Epstein et al., 2008). Some researchers hypothesize that limiting sedentary behaviors may produce some of these outcomes through the reduced exposure to television advertisements (Taveras et al., 2006), and the amount of snacking that usually occurs while performing sedentary behaviors.

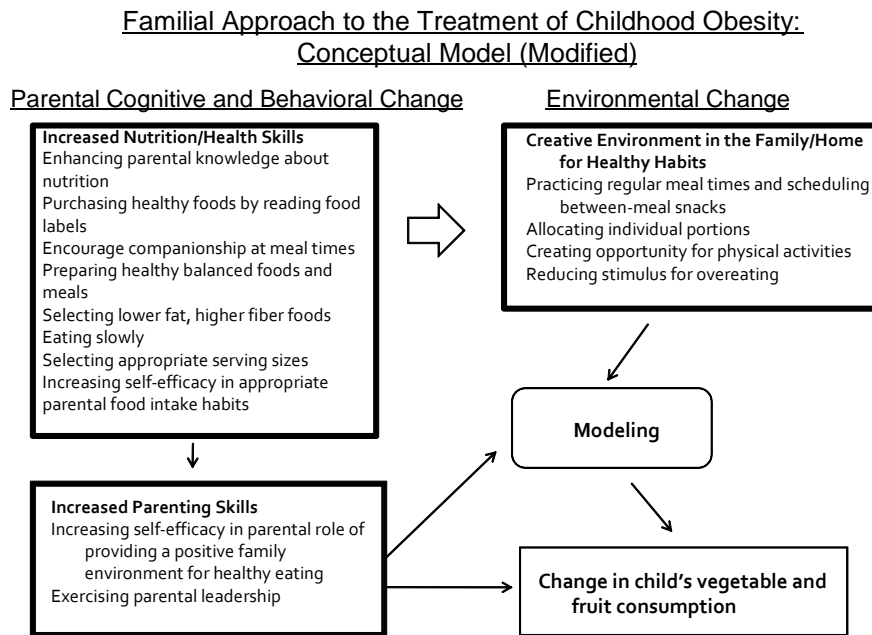
Theoretical Frameworks

Obesity prevention and treatment efforts built upon theories focusing solely on the individual have not proven successful at ending the obesity epidemic (Kumanyika, Jeffery, Morabia, Ritenbaugh, & Antipatis, 2002). Because of this, several researchers have proposed the use of the social ecological theory as a framework for designing interventions to prevent obesity (Egger & Swinburn, 1997; Kumanyika et al., 2002). This theory recognizes the importance of the individual within the behavior change process, but also addresses targeting other societal and environmental factors and influences (e.g. intrapersonal, organizational, community and public policy). Within this context, the home may be a principal environment for influencing the eating and physical activity behaviors of children. The physical home environment refers to the presence of 'active-play' toys, televisions, video and computer equipment, and food availability and accessibility. The social home environment refers to parenting styles, practices, modeling, patterns, and skills (Golan, Weizman, & Fainaru, 1999). Aspects of the home environment that have shown significant relationships with eating habits and physical activity include: the availability of outdoor play equipment (Spurrier, Magarey, Golley, Curnow, & Sawyer, 2008),

play space, toys and exercise equipment, accessibility of “ready to eat” foods, the accessibility of fruits and vegetables (Cullen et al., 2003), and parent modeling (Hopper et al., 1996; Spurrier et al., 2008).

Recent research also promotes targeting parents in the effort to address obesity in children (Campbell et al., 2008; Golan & Crow, 2004; Golan et al., 2006). Golan and colleagues proposed a home-based model founded upon social ecological theory and family systems theory (See figure 1). This approach focuses on improving parental practices in order to increase the effectiveness of modeling as well as to encourage effective parenting strategies (Golan et al., 1999). Epstein and colleagues have developed several family based obesity treatment interventions that incorporate behavior models and have resulted in success (Epstein, 1996; Golan et al., 2006). Earlier studies conducted by Epstein and colleagues demonstrated how parenting techniques, such as praise and stimulus control, were influential in reducing the percentage of overweight individuals (Epstein, Wing, Steranchak, Dickson, & Michelson, 1980). Home-based models have been successful in reducing weight status in samples of overweight and obese children between the ages of 6 and 14 (Epstein, 1996; Garipagaoglu et al., 2009; Golan & Crow 2004b). Indeed, several studies have shown that targeting parents exclusively produces significantly better results than targeting children and parents along with children (Golan et al., 2006). These interventions include educational components stressing the importance of increasing fruit and vegetable intake, decreasing the consumption of foods high in sugar and fat, and increasing physical activity. This is due, in part, to the parent’s increase in knowledge, control over the home environment, and modeling (Gibson, Wardle, & Watts, 1998; Golan & Crow, 2004a). This is an especially important concept when considering intervention with children from vulnerable populations—such as those who receive foster care.

Figure 1. Familial Approach to the Treatment of Childhood Obesity: Conceptual Model – Adapted Version (adapted from Golan & Weizman, 2001)



Therefore, it is hypothesized that an effective intervention for improving eating and physical activity habits of foster children should target foster parents. Foster parents have been cited as the critical element in the successful delivery of adequate health care services to foster children (Hochstadt, Jaudes, Zimo, & Schachter, 1987). Just as parents of biological children, they are responsible for the well-being of the children in their care, including proper nutrition and physical activity. According to the Foster Care Independent Act of 1999, foster parents should receive adequate educational training in the skills and knowledge to meet the needs of their foster children (Grimm, 2003). It is the foster care agency’s responsibility to provide the necessary support services that will enable the foster parent to meet the needs of the child (Virginia Department of Social Services, 2012). Foster parents in the state of Virginia are also required to complete at least 10 hours of in-service training each year to increase his or her skills

or parenting abilities (Virginia Department of Social Services, 2012). Due to these responsibilities of foster parents, several interventions have targeted foster parents via foster parent training in an attempt to alter the behavior of foster children. Whereas, some of them have shown effects at the level of the children, others have only displayed significant improvements at the parent level (Gamache et al., 2006). Furthermore, studies looking at the effectiveness of foster parent training often focus on initial (or pre-service) training versus in-service training and most lack follow-up studies (Dorsey et al., 2008). These studies suggest that the ideal setting for an intervention aimed at improving eating habits and physical activity of foster children is a foster care agency providing educational training to foster parents that will count towards their required in-service hours and one that tracks the maintenance or continuation of the behavior changes. However, due to the lack of existing data supporting the need of an educational training, researchers should first determine the perceptions of individuals in the foster care system related to a foster parent-based approach to improving the dietary and physical activity habits of foster children.

Sample Intervention Delivery Channels

In addition to determining an appropriate underlying theoretical framework for intervention development, it is also important to consider the structure of an intervention. Most theoretically-based strategies can be delivered through a wide range of delivery channels (e.g., face-to-face versus online training). Decisions on intervention structure are often based on pragmatic information related to system resources and the alignment of obesity prevention and treatment with organizational structure and mission (Estabrooks & Glasgow, 2006).

Many intervention channels have been developed to support healthful eating and physical activity interventions through school settings, homes, communities, and workplaces. Similarly,

many of these approaches focus on in-person interventions, which are delivered to individual parent dyads or in small group sessions. The duration of these successful interventions is typically greater than 20 hours delivered over a period of two to six months (Epstein et al., 1995; Golan, Fainaru, & Weizman, 1998; Golan et al., 2006; Klohe-Lehman et al., 2007; Lytle et al., 2006; Ransdell et al., 2003). Intervention components often include informational manuals, behavior logs, expert advice, group support, and opportunities for individual attention. Typically these intensive interventions result in significant improvements in the targeted outcomes, such as percentage overweight (Epstein et al., 1995; Golan & Crow, 2004b; Golan et al., 1998; Golan et al., 2006), food home environment (Golan et al., 1998; Golan et al., 2006; Klohe-Lehman et al., 2007), changes in eating habits (Golan et al., 1998), and improvement in aerobic fitness, muscular strength, and flexibility (Ransdell et al., 2003).

In-person

While foster care systems require regular training for foster parents (20 mandatory hours per year in Roanoke, VA), it is impractical to suggest that interventions as intensive as those delivered through clinical settings (Epstein et al., 2001; Epstein et al., 2005; Epstein et al., 1995; Golan et al., 1999) could be implemented in 20 hours or less—especially in light of the other training needs of foster parents. That is, within the mandatory training schedule there are a number of topics that need to be addressed in addition to obesity prevention/treatment (i.e., not all of the 20 required training hours could be used for a childhood obesity intervention). Finally, it is also unlikely that, within their busy schedules, foster parents would attend additional training sessions beyond what is mandated. As such, it is important to examine different channels to deliver important intervention content that can be time saving and reduce the need for lengthy one-on-one counseling sessions for foster parents. Thus, there is a need to provide intervention

strategies using different methods to contact foster parents and to reduce the overall duration of intervention activities.

Internet-based

Internet-based interventions have resulted in some promising changes in physical activity, eating, and weight control behaviors (Harvey-Berino et al., 2010; Harvey-Berino et al., 2004; Tate, Wing, & Winett, 2001; Winett, Tate, Anderson, Wojcik, & Winett, 2005). The Internet is attractive because it makes the intervention material available irrespective of a person's physical availability and provides a way to personalize intervention material. The length of obesity-related interventions delivered over the Internet is similar to those delivered in-person--anywhere from 16 weeks to a year—however, the total time spent in the sessions is greatly reduced (An, Hayman, Park, Dusaj, & Ayres, 2009). Doyle and colleagues provide a good example of the use of the Internet effectively decreasing BMI z-scores in children who used the intervention (2008). Another benefit of using the Internet stems from the asynchronous method of communication; that is, the interventionist and the participant can interact without having the barrier to meet at the same place at the same time.

Telephone Counseling

In an effort to be more inclusive of participants, the delivery of interventions via telephone-based counseling has shown promising results in improving physical activity outcomes, fruit and vegetable consumption, dietary fat intake, and weight (Castro & King, 2002). Utilizing telephone-based counseling increases the convenience from the researcher and subject aspect, in terms of time efficiency, availability, access, and provides the opportunity to tailor (Castro & King, 2002). In a recent study conducted by Estabrooks and colleagues, using a social-ecological approach with parents as the agents of home environmental changes,

participants who received 6 or more automated telephone counseling calls in concert with 2 small group sessions successfully decreased child BMI z-scores and sustained the reduction 6 months after the intervention was complete (2009). Clearly, the use of different delivery channels in concert with in-person training represents a viable approach to addressing childhood obesity within a foster care system.

Issues of Translation and Sustainability

The translation of childhood obesity interventions into typical community or clinical practice has been problematic (Klesges, Dzewaltowski, & Glasgow RE, 2008). Further, as noted above there is a large body of research evidence associated with healthful eating, physical activity, weight control, and parent-based interventions as they relate to childhood obesity. According to Roger's diffusions of innovations model, the probability that an intervention will be adopted in different settings depends on characteristics of the intervention (e.g., relative advantage, compatibility, complexity) and characteristics of the adopting organization (e.g., organizational buy-in and readiness) (2003). However, it is difficult for researchers to develop an intervention that is evidence-based and adapted to the fit of the intended delivery organization. It has been suggested that effective and sustainable behavioral interventions, like those that target childhood obesity, can be developed using systems-based approaches. Systems approaches typically integrate theory, professional experience, and local knowledge of the values, mission, and resources of organizations key in the implementation of a given intervention (Pronk & Boucher, 1999). Systems approaches are based in social-ecological theory and allow research and practice professionals to collaboratively develop childhood obesity interventions that will: (1) match the resources and skill levels of available staff (Cargo & Mercer, 2008), (2)

include evidence-based principles and systematic communication strategies, and (3) enhance the likelihood of sustainability and effectiveness (Estabrooks & Glasgow, 2006).

References

- Altshuler, S. J., & Poertner, J. (2003) Assessing child well-being in non-relative foster care with a new outcome measurement tool. *Journal of Family Social Work, 7*, 73–85.
Doi: 10.1300/J039v07n02_06
- An, J., Hayman, L. L., Park, Y., Dusaj, T. K., & Ayres, C. G. (2009). Web-based weight management programs for children and adolescents: a systematic review of randomized controlled trial studies. *Advances in Nursing Science, 32*, 222-240.
- Berkey, C. S., Rockett, H. R. H., Field, A. E., Gillman, M. W., & Colditz, G. A. (2004). Sugar-added beverages and adolescent weight change. *Obesity Research, 12*, 778-788.
Doi: 10.1038/oby.2004.94
- Brown, J.D., & Bednar, L.M. (2006). Foster parent perceptions of placement breakdown. *Children and Youth Services Review, 28*, 1497-1511.
doi: 10.1016/j.childyouth.2006.03.004
- Campbell, K., Hesketh, K., Crawford, D., Salmon, J., Ball, K., & McCallum, Z. (2008). The infant feeding activity and nutrition trial (INFANT) an early intervention to prevent childhood obesity: cluster-randomized controlled trial. *BMC Public Health, 8*, 103-111.
Doi: 10.1186/1471-2458-8-103
- Cargo, M., & Mercer, S. L. (2008). The value and challenge of participatory research: strengthening its practice. *Annual Review of Public Health, 29*, 325-350.
Doi: 10.1146/annurev.publhealth.29.091307.083824
- Castro, C. M., & King, A. C. (2002). Telephone-assisted counseling for physical activity. *Exercise and Sport Sciences Reviews, 30*, 64-68.
Doi: 10.1097/00003677-200204000-00004

- Clausen, J.M., Landsverk, J., Ganger, W., Chadwick, D., & Litrownik, A. (1998). Mental health problems of children in foster care. *Journal of Child and Family Services, 7*, 283-296.
doi: 10.1023/A:1022989411119
- Courtney, M. E., & Dworsky, A. (2006). Early outcomes for young adults transitioning from out-of-home care in the USA. *Child & Family Social Work, 11*, 209-219.
doi: 10.1111/j.1365-2206.2006.00433.x
- Cullen, K. W., Baranowski, T., Owens, E., Marsh, T., Rittenberry, L., & de Moor, C. (2003). Availability, accessibility, and preferences for 100% fruit juice, and vegetables influence children's dietary behavior. *Health Education & Behavior, 30*, 615-626.
Doi: 10.1177/1090198103257254
- Dietz, W. H. (2006). Sugar-sweetened beverages, milk intake, and obesity in children and adolescents. *Journal of Pediatrics, 248*, 152-154. Doi: 10.1016/j.jpeds.2005.12.045
- Diliberti, N., Bordi, P. L., Conklin, M. T., Roe, L. S., & Rolls, B. J. (2004). Increased portion size leads to increased energy intake in a restaurant meal. *Obesity Research, 12*, 562-568.
doi: 10.1038/oby.2004.64
- Doak, C. M., Visscher, L. S., Renders, C. M., & Seldell, J. C. (2006). The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes. *Obesity Reviews, 7*, 111-136. Doi: 10.1111/j.1467-789X.2006.00234.x
doi: 10.1007/s10560-006-0053-x
- Dorsey, S., Farmer, E. M. Z., Barth, R. P., Greene, K. M., Reid, J., & Landsverk, J. (2008). Current status and evidence base of training for foster and treatment foster parents. *Child and Youth Services Review, 30*, 1403-1416. Doi: 10.1016/j.childyouth.2008.04.008

- Doyle, A. C., Goldschmidt, A., Huang, C., Winzelberg, A. J., Taylor, C. B., & Wilfley, D. E. (2008). Reduction of overweight and eating disorder symptoms via the Internet in adolescents: a randomized controlled trial. *Journal of Adolescent Health, 73*:172-179. Doi: 10.1016/j.jadohealth.2008.01.01
- Egger G., & Swinburn, B. (1997). An ecological approach to the obesity epidemic. *BMJ, 315*, 477-480.
- Epstein, L. H. (1996). Family based behavioural intervention for obese children. *International Journal of Obesity, 20*, S14-S21.
- Epstein, L. H., Gordy, C. G., Raynor, H. A., Beddome, M., Kilanowski, C. K. & Paluch, R. (2001). Increasing fruit and vegetable intake and decreasing fat and sugar intake in families for childhood obesity. *Obesity Research, 9*, 171–178. Doi: 10.1038/oby.2001.18
- Epstein, L. H., Myers, M. D., Raynor, H. A. & Saelens, B.E. (1998). Treatment of pediatric obesity. *Pediatrics, 101*, S554-570.
- Epstein, L. H., Roemmich, J. N., Paluch, R. A., & Raynor, H. A. (2005). The influence of changes in sedentary behavior on energy and macronutrient intake in youth. *American Journal of Clinical Nutrition, 81*, 361-366.
- Epstein, L. H., Roemmich, J. N., Robinson, J. L., Paluch, R. A., Winiewicz, D. D., & Fuerch, J. H. (2008). A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children. *Archives of Pediatric & Adolescent Medicine, 162*, 239-245. Doi: 10.1001/archpediatrics.2007.45
- Epstein, L. H., Valoski, A. M., Vara, L. S., McCurley, J., Wisniewski, L., Kalarchianm, M. A...Shrager, L. (1995). Effects of decreasing sedentary behavior and increasing activity on weight change in obese children. *Health Psychology, 14*:109-115.

Doi: 10.1037//0278-6133.14.2.109

Epstein, L. H., Wing, R. R., Steranchak, L., Dickson, B., & Michelson, J. (1980). Comparison of family-based behavior modification and nutrition education for childhood obesity.

Journal of Pediatric Psychology, 5, 25-36. Doi: 10.1093/jpepsy/5.1.25

Estabrooks, P. A., & Glasgow, R. E. (2006). Translating effective clinic-based physical activity interventions into practice. *American Journal of Preventive Medicine*, 31, 45-56.

Doi: 10.1016/j.amepre.2006.06.019

Estabrooks, P. A., Shoup, J. A., Gattshall, M., Dandamudi, P., Shetterly, S., & Xu, S. (2009).

Automated telephone counseling for parents of overweight children: a randomized controlled trial. *American Journal of Preventive Medicine*, 36, 35-42.

Doi: 10.1016/j.amepre.2008.09.024

Fisher, J. O. (2007). Effects of age on children's intake of large and self-selected food portions.

Obesity, 15, 403-412. doi: 10.1038/oby.2007.549

Flynn, M. A., McNeil, D. A., Maloff, B., Mutasingwa, D., Wu, M., Ford, C., & Tough, S. C.

(2006). Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations. *Obesity Reviews*, 7, 7-66.

Doi: 10.1111/j.1467-789X.2006.00242.x

Forshee, R. A., Anderson, P. A., & Storey, M. L. (2008). Sugar-sweetened beverages and body mass index in children and adolescents: a meta-analysis. *American Journal of Clinical Nutrition*,

87, 1662-1671.

Gamache, S., Mirabell, D., & Avery, L. (2006). Early childhood developmental and nutritional

training for foster parents. *Child and Adolescent Social Work Journal*, 23, 501-511.

- Garipagaoglu, M., Sahip, Y., Darendeliler, F., Akdikmen, O., Kopuz, S., & Sut, N. (2009). Family-based group treatment versus individual treatment in the management of childhood obesity: randomized, prospective clinical trial. *European Journal of Pediatrics*, *168*, 1091-1099. Doi: 10.1007/s00431-008-0894-8
- Giammattei, J., Blix, G., Marshak, G. H., Wollitzer, A. O., & Pettitt, D. J. (2003). Television watching and soft drink consumption: associations with obesity in 11- to 13-year-old schoolchildren. *Archives of Pediatrics and Adolescent Medicine*, *157*, 882-886. Doi: 10.1001/archpedi.157.9.882
- Gibson, E. L., Wardle, J., & Watts, C. J. (1998). Fruit and vegetable consumption, nutritional knowledge, and beliefs in mothers and children. *Appetite*, *31*, 205-228. Doi: 10.1006/appe.1998.0180
- Golan, M., & Crow, S. (2004a). Parents are key players in the prevention and treatment of weight-related problems. *Nutrition Reviews*, *62*, 39-50. doi: 10.1301/nr.2004.jan.39-50
- Golan, M., & Crow, S. (2004b). Targeting parents exclusively in the treatment of childhood obesity: long-term results. *Obesity Research*, *12*, 357-361. Doi: 10.1038/oby.2004.45
- Golan, M., & Weizman, A. (2001). Familial Approach to the Treatment of Childhood Obesity: Conceptual Model. *Journal of Nutrition Education*, *33*, 102-107. Doi: 10.1016/S1499-4046(06)60173-5
- Golan, M., Fainaru, M., & Weizman, A. (1998). Role of behavior modification in the treatment of childhood obesity with the parents as the exclusive agents of change. *International Journal of Obesity*, *22*, 1217-1224.
- Golan, M., Kaufman, V., & Shahar, D. R. (2006). Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*, *95*, 1008-1015.

doi: 10.1079/BJN20061757

Golan, M., Weizman, A., & Fainaru, M. (1999). Impact of treatment for childhood obesity on parental risk factors for cardiovascular disease. *Preventive Medicine, 29*, 519-526.

Doi: 10.1006/pmed.1999.0584

Gortmaker, S. L., Peterson, K., Wiecha, J., Sobol, A. M., Dixit, S., Fox, M. K., & Laird, N. (1999). Reducing obesity via a school-based interdisciplinary intervention among youth - Planet health. *Archives of Pediatrics & Adolescent Medicine, 153*, 409-418.

Grimm, B. (2003). Child and family services reviews: Part II in a series. Foster parent training: What the CFS reviews do and don't tell us. Youth Law News: Journal of the National Center for Youth Law. April-June 2003. *Foster Care Manual*. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/manual.cgi> Updated August 2009 . Accessed December 6, 2010.

Harvey-Berino, J., Pintauro, S., Buzzell, P., & Gold, E. C. (2004). Effect of internet support on the long-term maintenance of weight loss. *Obesity Research, 12*, 320-329.

Doi: 10.1038/oby.2004.40

Harvey-Berino, J., West, D., Krukowski, R., Prewitt, E., VanBiervliet, A., Ashikaga, T., & Skelly, J. Internet delivered behavioral obesity treatment. *Preventive Medicine.*

2010;51:123-128. Doi: 10.1016/j.ypmed.2010.04.018

Hochstadt, N. J., Jaudes, P. K., Zimo, D. A., & Schachter, J. (1987). The medical and psychosocial needs of children entering foster care. *Child Abuse & Neglect, 11*, 53-62.

Doi: 10.1016/0145-2134(87)90033-0

- Holland, P., & Gorey, K. M. (2004). Historical, Developmental, and Behavioral Factors Associated with Foster Care Challenges. *Child and Adolescent Social Work Journal, 21*, 117-135. Doi: 10.1023/B:CASW.0000022727.40123.95
- Hopper, C. A., Munoz, K. D., Gruber, M. B., MacConnie, S., Schonfeldt, B., & Shunk, T. (1996). A school-based cardiovascular exercise and nutrition program with parent participation: An evaluation study. *Child Health Care, 1996, 25*, 221-235. Doi: 10.1207/s15326888chc2503_5
- James, S. (2004). Why do foster care placements disrupt? An investigation of reasons for placement change in foster care. *The Social Service Review, 78*, 601-627. Doi: 10.1086/424546
- Janssen, I., Katzmarzyk, P. T., Boyce, W. F., Vereecken, C., Mulvihill, C., Roberts, C., & Pickett, W. (2005). Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. *Obesity Reviews, 6*, 123-132. Doi: 10.1111/j.1467-789X.2005.00176.x
- Johnson, R. K., Appel, L. J., Brands, M., Howard, B. V., Lefevre, M., Lustig, R. H...Wylie Rosett, J. (2009). Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. *Circulation, 120*, 1011-1020. Doi: 10.1161/CIRCULATIONAHA.109.192627
- Kain, J., Uauy, R., Albala, V. F., Cerda, R., & Leyton, B. (2004). School-based obesity prevention in Chilean primary schoolchildren: methodology and evaluation of a controlled study. *International Journal of Obesity, 28*, 483-493. Doi: 10.1038/sj.ijo.0802611

- Kimm, S., Glynn, N., Obarzanek, E., Kriska, A., Daniels, S., Barton, B., & Liu, K. (2005). Relation between the changes in physical activity and body-mass index during adolescence: a multicentre longitudinal study. *Lancet*, *366*, 301-307. Doi: 10.1016/S0140-6736(05)66837
- Klesges, L. M., Dzewaltowski, D. A., & Glasgow, R. E. (2008). Review of external validity reporting in childhood obesity prevention research. *American Journal of Preventive Medicine*, *34*, 216-223. Doi: 10.1016/j.amepre.2007.11.019
- Klohe-Lehman, D. M., Freeland-Graves, J., Clarke, K. K., Cai, G., Voruganti, V. S., Milani, T. J., & Bohman, T. M. (2007). Low-income, overweight and obese mothers as agents of change to improve food choices, fat habits, and physical activity in their 1-to-3-year-old children. *Journal of the American College of Nutrition*, *26*, 196-208.
- Kumanyika S., Jeffery R. W., Morabia A., Ritenbaugh C., & Antipatis V. J. (2002). Obesity prevention: the case for action. *International Journal of Obesity*, *26*, 425-436. Doi: 10.1038/sj/oji/0801938
- Ludwig, D. S., Peterson, K. E., & Gortmaker, S. L. (2009). Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet*, *357*, 505-508. Doi: 10.1016/S0140-6736(09)04041-1
- Lytle, L. A., Kubik, M. Y., Perry, C., Story, M., Birnbaum, A.S., & Murray, D. M. (2006). Influencing healthful food choices in school and home environments: results from the TEENS study. *Preventive Medicine*, *43*, 8-13. Doi: 10.1016/j.ypmed.2006.03.020
- Nielsen, S. J., & Popkin, B. M. (2003). Patterns and trends in food portion sizes, 1977-1998. *Journal of the American Medical Association*, *289*, 450-453.

- Pomerleau, J., Lock, K., Knai, C., & McKee, M. (2004). Effectiveness of interventions and programmes promoting fruit and vegetable intake. [electronic resource]. *Background paper for the joint FAO/WHO Workshop on Fruit and Vegetables for Health*, 1–3 September Kobe, Japan.
- Price, J. M., Chamberlain, P., Landsverk, J., & Reid, J. (2009). KEEP foster-parent training intervention: model description and effectiveness. *Child & Family Social Work*, *14*, 233-242. Doi: 10.1111/j.1365-2206.2009.00627.x
- Price, J. M., Chamberlain, P., Landsverk, J., Reid, J. B., Leve, L. D., & Laurent, H. (2008). Effects of a foster parent training intervention on placement changes of children in foster care. *Child Maltreatment*, *13*, 64-75. Doi: 10.1177/1077559507310612
- Pronk, N. P., & Boucher, J. (1999). Systems approach to childhood and adolescent obesity prevention and treatment in a managed care organization. *International Journal of Obesity*, *23* (suppl 2):38-42. Doi: 10.1038/sj/ijo/0800858
- Ransdell, L. B., Taylor, A., Oakland, D., Schmidt, J., Moyer-Mileur, L., & Shultz, B. (2003). Daughters and mothers exercising together: effects of home- and community-based programs. *Medicine and Science in Sports and Exercise*, *35*, 286-296. Doi: 10.1249/01.MSS.0000048836.67270.1F
- Rennie, K. L., Johnson, L., & Jebb, S. A. (2005). Behavioral determinants of obesity. *Best Practice & Research Clinical Endocrinology*, *19*, 343-358. Doi: 10.1016/j.beem.2005.04.003
- Robinson, T.N. (1999). Behavioural treatment of childhood and adolescent obesity. *International Journal of Obesity*, *23*, S52-S57. Doi: 10.1038/sj/ijo/0800860

- Rogers, E. M. (2003). *Diffusion Networks. In Diffusion of Innovations (5th ed)*. New York: Free Press.
- Sawyer, M. G., Carbone, J. A., Searle, A. K., & Robinson, P. (2007). The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia*. 2007, 186, 181-184.
- Schneider R, Baumrind N, Pavao J, Stockdale G, Castelli P, Goodman GS, & Kimerling R. (2009). What happens to youth removed from parental care: health and economic outcomes for women with a history of out-of-home placement. *Children and Youth Services Reviews*, 31, 440-444. Doi: 10.1016/j.chidyouth.2008.09.011
- Sharma, M. (2006). School-based interventions for childhood and adolescent obesity. *Obesity Reviews*, 7, 261-269. Doi: 10.1111/j.1467-789X.2006.00227.x
- Shin, S. H. (2005). Need for and actual use of mental health service by adolescents in the child welfare system. *Children and Youth Services Review*, 27, 1071-1083.
Doi: 10.1016/j.chidyouth.2004.12.027
- Simon, C., Schweitzer, B., Oujaa, M., Wagner, A., Arveiler, D., Tribby, E.,...Platat, C. (2008). Successful overweight prevention in adolescents by increasing physical activity: a 4-year randomized controlled intervention. *International Journal of Obesity*, 32, 1489-1498.
Doi: 10.1038/ijo.2008.99
- Spurrier, N. J, Magarey, A. A, Golley, R, Curnow, F, & Sawyer, M. G. (2008). Relationships between the home environment and physical activity and dietary patterns of preschool children: a cross-sectional study. *International Journal of Behavioral Nutrition & Physical Activity*, 5, 31-43. Doi: 10.1186/1479-5868-5-31

- Steele J. S., & Buchi, K. F. (2008). Medical and mental health of children entering the Utah foster care system. *Pediatrics*, *122*, E703-E709. doi: 10.1542/peds.2008-0360
- Stroebele, N., Ogden, L.G., & Hill, J.O. (2009). Do calorie-controlled portion sizes of snacks reduce energy intake. *Appetite*, *52*, 793-796. Doi: 10.1016/j.appet.2009.02.015
- Summerbell, C. D., Waters, E., Edmunds, L. D., Kelly, S., Brown, T., & Campbell, K. J. (2005). Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews*, *3*, 73. Doi: 10.1002/14651858.CD001871.pub3
- Tarren-Sweeny. (2006). Patterns of aberrant eating among pre-adolescent children in foster care. *Journal of Abnormal Child Psychology*, *34*, 623-634. Doi: 10.1007/s10802-006-9045-8
- Tate, D. F., Wing, R. R., & Winett, R. A. (2001). Using Internet technology to deliver a behavioral weight loss program. *Journal of the American Medical Association*, *285*, 1172-1177. Doi: 10.1001/jama.285.9.1172
- Taveras, E. M., Sandora, T. J., Shih, M., Ross-Degnan, D., Goldmann, D. A., & Gillman, M. W. (2006). The association of television and video viewing with fast food intake by preschool-age children. *Obesity*, *14*, 2034–2041. Doi: 10.1038/oby.2006.238
- U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.
- U.S. Department of Health and Human Services. Physical Activity Guidelines Advisory Committee report. Washington, DC: U.S. Department of Health and Human Services, 2008.

- van der Horst, K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., van Lenthe, F., & Brug, J. (2007). A systematic review of environmental correlates of obesity-related dietary behaviors in youth. *Health Education Research*, 22, 203-226. Doi: 10.1093/her/cyl069
- Van Duyn, M. A., & Pivonka, E. (2000). Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: selected literature. *Journal of the American Dietetic Association*, 100, 1511–1521. Doi: 10.1016/S0002-8223(00)00420-X
- Virginia Department of Social Services Child and Family Services Manual. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/index.cgi> Updated July 2012 . Accessed August 15, 2012.
- Winett, R. A., Tate, D. F., Anderson, E. S., Wojcik, J. R., & Winett, S. G. (2005). Long-term weight gain prevention: A theoretically based Internet approach. *Preventive Medicine*, 41, 629-641. Doi: 10.1016/j.ypmed.2004.12.005
- Zapata, L. B., Bryant, C. A., McDermott, R. J., & Hefelfinger, J.A. (2008). Dietary and physical activity behaviors of middle school youth: the youth physical activity and nutrition survey. *Journal of School Health*, 78, 9-18.

CHAPTER III

Manuscript 1 - Weight Status, Health Behaviors and Home Environment of Foster

Children and their Caregivers

ABSTRACT

While research has documented that childhood obesity is high in foster children, the relationship between nutrition, physical activity, weight status of foster children and the foster home environment is unclear. The purpose of this study is to assess the eating and physical activity habits and weight status of foster children and their care providers in a sample of cities in Virginia and to determine the relationship with the home environment. Data were collected from 116 foster children between the ages of 8 and 20 and 71 foster parents. Data collected from foster children and parents included demographic information, and nutrition and physical activity related behaviors. Foster parents also completed a validated home environment survey assessing the physical and social environment of the home. Statistical analyses included independent sample t-tests, simple correlational analyses, and bivariate pairwise correlations. Approximately 38% of foster youth were overweight or obese. Foster children did not meet recommendations for daily fruit and vegetable intake, engaged in low levels of physical activity, and exceeded the recommendations for sugar-sweetened beverage consumption. Most of the foster parents sampled were overweight or obese and had average or below average home physical activity and nutrition environments. Data suggests a small, but significant, relationship between the behaviors of foster children, caregivers, and their home environment. Social service agencies should evaluate potential policy and programmatic changes necessary to prevent additional obesity-related health burdens among this population.

Introduction

In the United States, obesity has become a growing problem among all age groups. According to the latest published data from National Health and Nutrition Examination Survey (NHANES), 31.9% of children and adolescents aged 2 to 19 are overweight or obese (>85th percentile) (Ogden, 2008). Literature suggests that children diagnosed as overweight or obese tend to become obese adults (Singh, Mulder, Twisk, van Mechelen, & Chinapaw, 2008). This disease places individuals at risk for various chronic health conditions, such as diabetes, high cholesterol and high blood pressure (Malnick, 2006). Behaviors often associated with obesity include low fruit and vegetable intake, physical inactivity, sugar-sweetened beverage intake, and screen time (van der Horst et al., 2007).

Ecological models of childhood obesity suggest that the home environment plays a significant role in influencing obesogenic behaviors, with studies targeting these factors demonstrating success (Golan et al., 2006). More specifically, recent validation studies of a comprehensive home environment measure suggests that children's engagement in physical activity, sedentary behavior, and eating behaviors were correlated with the respective physical and social environments (Gattshall et al., 2008; Pinard et al., 2012).

A recent systematic review examined the relationship between the home environment and eating/physical activity habits, across different family structures (Parks et al., In Preparation). Most studies that were identified targeting the home environment and obesity provided a description of interventions that were delivered in primary care facilities or university settings and targeted parents and children, together or separately. Most interventions targeted caregiver modeling, policies, and reinforcement related to food. However, few targeted the home physical activity environment, which encompasses the availability and accessibility of physical activity

and healthful eating opportunities. Targeting the nutrition physical environment was most often associated with significant weight related outcomes among children, with the number of environmental domains targeted being associated with positive significant nutrition related findings. Even though a relationship has been observed between the home environment and improving behavioral outcomes, reviews have demonstrated that there are a lack of interventions that comprehensively address home environment domains, measure the home environment (Pinard et al., 2012), or examine mediation effects (Parks et al., In Preparation). Most relevant to this study, it is unclear whether the home environment is related to eating and activity behaviors and weight status when children are under the care of non-biological guardians such as foster parents.

This lack of research within the context of foster care is important given that children, who are placed in these homes, experience a change in their home environment and that environments that support healthy eating and physical activity could reduce the likelihood of obesity in this population. According to recent estimates, approximately 423,773 children in the United States are in foster care (US Department of Health and Human Services 2011). A vast amount of research indicates that foster children have higher levels of emotional, developmental, behavioral, and mental problems as compared to the general population (Clausen, Landsverk, Ganger, Chadwick, & Litrownik, 1998; Courtney and Dworksy, 2006; Sawyer, Carbone, Searle, & Robinson, 2007; Shin, 2005; Steele & Buchi, 2008). Since foster children's behavioral problems create challenges for foster parents and is a major reason for failed foster parent placement (Brown & Bednar, 2006; Holland & Gorey, 2004; James, 2004; Price et al., 2008), interventions focusing on this population often focus on improving behavioral problems (Leathers, Spielfogel, McMeel, & Atkins, 2011; Smith, Leve, & Chamberlain, 2011; Price,

Chamberlain, Landsverk, & Reid, 2009). These interventions evaluate the effectiveness of several training and therapy models with foster parents and/or foster children in order to improve internalizing (e.g. depression) and externalizing behaviors (e.g. aggression, delinquency). Interventionists at the Oregon Social Learning Center have developed the Keeping Foster Parents Trained and Supported (KEEP) foster-parent training and tested its effectiveness by targeting foster parents of children between the ages of 4 and 12 (Leathers et al., 2011, Price et al., 2008). Trainings consist of 16 90-minute weekly group sessions and target parenting skills, such as effectively praising and incentivizing children – which can be described as targeting the home social environment. The implementation of KEEP produced effective results with intervention children exhibiting fewer behavioral problems, which was significantly (Price et al., 2009) and partially mediated (Leathers et al., 2011) by parenting skills. The effectiveness of targeting foster parents via the home environment to improve child behaviors may also extend to other areas, such as eating and physical activity behaviors.

Literature suggests that children entering the foster care system have poor health, experience chronic medical health problems, and display clinically significant signs of aberrant eating problems (Altshuler & Poertner, 2008; Tarren-Sweeney, 2006). A few studies have documented the prevalence of obesity among foster children. A study of foster youth in Utah found that 35% were overweight or obese, with the incidence of obesity among adolescents being higher than that of the general population (Steele & Buchi, 2008). Similarly, Schneiderman and colleagues reviewed medical records of a sample of children under the age of 6 receiving services from Los Angeles County Department of Children and Family Services and noted that 36% were overweight or obese (2011). In a sample of 106 children, Hadfield and Preece also noted that while weight status was not related to entry into care or foster home stability, a trend

toward obesity developed as children remained in care (2008). Although there is increasing evidence documenting a potential issue with weight status among foster children, none of these studies have examined this relationship with the foster care home environment. The purpose of this study is to assess the current eating and physical activity habits of foster children and their care providers and to determine the relationship with the home environment.

Research suggests that children in social family structures, including non-biological guardians such as foster parents, exhibit worse health behaviors when compared to dual parent homes (Bramlett and Blumberg, 2007). Therefore, it was hypothesized that foster youth will engage in poorer eating and physical activity habits as compared to that of the general population.

Methods

Foster children are required to meet with social workers at least once a month (Virginia Department of Social Services, 2012). Therefore, when possible, data collection was arranged in concert with monthly home visits. In order to be included in the study, children had to be between the ages of 8 and 20 and reside in a foster home. Based on study inclusion criteria, agency representatives provided a list of foster children, along with the contact information of their social workers, foster parents, home address, geographical setting of their residence, and their age or date of birth. Utilizing this spreadsheet, the principal investigator scheduled data collection in concert with upcoming home visits. Foster families completed confidential questionnaires, and underwent anthropometric measures. Foster parents received a questionnaire at least three days prior to the home visit via postal mail or email and returned the questionnaire during the home visit or via mail. Few participants returned the questionnaire during the home visit, allowing the primary investigator to check for completion. Parents who returned the

questionnaire through postal mail did not fully complete the physical activity portion. The research team provided a detailed description of the project to social workers, who relayed the information to foster families, prior to the home visit. Information detailing the nature of the data collection was also provided at the beginning of the questionnaire distributed to parents and foster children. Furthermore, the primary researcher provided a verbal explanation and answered any questions during the home visits with the foster families. The study was approved by Virginia Tech Internal Review Board and Virginia Department of Social Services (VDSS) Internal Review Board. After an initial collaboration with a local social service agency, ten agencies were contacted to determine willingness to collaborate, four of which agreed.

Participants

Data was collected from 116 foster children, representing the four social service agencies throughout Virginia. Collectively, these agencies provided access to 188 foster children; however, some children were not approached due to mental illnesses hindering their ability to complete the survey ($n=8$), or no longer residing in a foster home upon data collection ($n=22$); three declined to participate for unknown reasons; and thirty-nine foster children were not included due to scheduling conflicts with social workers. Seventy-one out of 89 foster parents, with at least one eligible foster child participating in the study, completed the foster parent assessment. Reasons for nonparticipation among foster parents included discomfort with weight assessment or completing the questionnaire and lack of time. Social service agencies provided consent for foster children, who subsequently provided passive assent via completion of the measures. Foster parent consent was also inferred upon completion of the measures. Foster children were on average, 14 years of age ($SD\ 3.0$), 44% were identified as Black or African American by their foster parents, and approximately half of them were males (52%). Foster

parents who participated were primarily female (89%), Black or African American (54%), and ranged in age from 26 to 75 years old. See Table 1 for more descriptive statistics.

Measures

Measures for this study included validated surveys as well as questions designed by the study investigators and Roanoke City Department of Social Services key stakeholders. Data collected from foster children and parents included demographics, objective height and weight, race, income, fruit and vegetable intake, sugar-sweetened beverage intake, physical activity engagement, media and related behaviors.

Demographic Information

Children provided their age/date of birth, gender, and grade level. Foster parents provided race, ethnicity, physical medical conditions, and medication information on their foster child(ren), who was participating in the study. They also provided the following information for themselves: gender, race, ethnicity, highest education, height, weight, annual household income, occupation status, number of children residing in household, number of foster children, and the length of time the child(ren) has lived with them.

Weight Status

After removing shoes, foster children and foster parents were weighed and measured, in light clothing, at the beginning of each home visit. Height was measured in centimeters using a portable stadiometer (Charder HM200P Portstad Portable Stadiometer, QuickMedical, Issaquah, WA), while weight was measured in kilograms on the Lifesource UC-321 Precision Health Scale (QuickMedical, Issaquah, WA). Children's weight was categorized using the Centers for Disease Control and Prevention (CDC) age and gender specific growth charts (Kuczmarski et al., 2002). These categories include: underweight ($\leq 5^{\text{th}}$), healthy weight ($> 5^{\text{th}}$ to $< 85^{\text{th}}$), overweight (85^{th} to

<95th), and obese ($\geq 95^{\text{th}}$). Parent body mass index (BMI) was calculated and categorized into the following categories: healthy weight (18.5 to 24.9), overweight (25 to 29.9), and obese (≥ 30).

Fruits and Vegetables

The fruits and vegetables intake of children was assessed using the Virginia Childhood Obesity Research Survey (VCORS) (Appendix A; Virginia Foundation for Healthy Youth, 2010). Extracted questions provided information on the consumption of breakfast, lunch, and fatty snacks, as well as dining at fast food establishments. Fruit and vegetable consumption of parents was assessed using the 9-item validated National Cancer Institute's Food Frequency Questionnaire All Day Screener (Appendix B; Thompson et al., 2002). This questionnaire assesses the frequency and quantity of fruits and vegetables and enables the calculation of servings of fruits and vegetables per day.

Sugar-sweetened beverages

The consumption of sugar-sweetened beverages of children, adolescents, and parents was assessed using a validated and reliable short version of the beverage intake questionnaire (Appendix C; BEV-Q; Hendrick, Comber, Estabrooks, Savla, & Davy, 2010). This measure assesses the mean daily intake of 21 beverage categories by assessing the frequency and quantity of beverages. The BEV-Q provided to children and adolescents was altered to exclude questions regarding alcohol intake.

Physical Activity and Sedentary Behavior

General levels of physical activity was assessed with the 10-item validated Physical Activity Questionnaire for Children (PAQ-C; Appendix D) and Physical Activity Questionnaire for Adolescents (PAQ-A; Appendix E) (Janz, Lutuchy, Wenhe, & Levy, 2008). This measure is a 7-day recall assessing general levels of physical activity, and has demonstrated adequate

internal consistency ($\alpha=0.80-0.83$). Youth rate several activities on a scale of 1 (low activity) to 5 (high activity), which is then averaged for a summary activity score. Sedentary behavior in children was assessed using two questions from the VCORS (Appendix A; Virginia Foundation for Healthy Youth, 2010). These questions assess the child's amount of screen time per day. Physical activity and sedentary behavior in adults was assessed using a modified version of the validated Rapid Assessment of Physical Activity (RAPA) (Appendix F; Topoloski et al., 2006). This 10-item measure assessed the amount of moderate and vigorous physical activity per week, engagement in strength training, flexibility exercises, and time spent sitting per day.

Home environment

Characteristics of the home environment were assessed using the validated Comprehensive Home Environment Survey (CHES; Appendix G; Gattshall et al., 2008; Pinard et al., In Review). This 181-item measure consists of 18 dimensions assessing the availability, accessibility, and home policies of and related to fruits and vegetables, fats and sweets, physical activity and physical activity equipment, and media ($\alpha=0.74 - 0.92$). The measure also assesses role modeling and support provided by parents. The corresponding dimensions are as follows: growing fruits and vegetables, physical activity availability, physical activity accessibility, physical activity role modeling, gym attendance, parental policies to support physical activity, media availability, media role modeling/screen time, parental policies to monitor media, fruit, juice, and vegetable availability, fat and sweets availability, fruit and vegetable accessibility, fat and sweets accessibility, family meal time, food role modeling, parental policies to support healthy eating, and kitchen environment. The measure has also demonstrated high inter-rater and test re-test reliability (Gattshall et al., 2008; Pinard et al., In Review).

Data Analysis

Statistical analyses included descriptive statistics (mean, standard error of mean, frequencies) of demographic, physical, and environmental characteristics of the sample. Independent sample t-tests were used to compare sex differences, age differences, and simple correlational analyses used to determine associations between variables. Bivariate pairwise correlations (Pearson's Correlations r) were conducted to determine the relationship between child and parent behavior as well as child behaviors and home environment domains.

Results

Children behaviors and weight status

Most of the foster children sampled were of a healthy weight (60%), however, 38% were overweight or obese. Males had significantly higher BMI percentiles than females ($t(106) = 2.73, p < .01$). In terms of dietary behaviors, the average daily intake of fruits and vegetables was 2.5 ± 2.6 servings, with only 10% of the sample meeting fruit and vegetable recommendations of at least five servings of fruits and vegetables per day. Data also indicated that foster youth consumed 34 ounces of sugar-sweetened beverages daily, with only 24% meeting the recommendation of 8 ounces or less. As for physical activity, the average PAQ score was 2.5, suggesting that youth are engaging in low levels of physical activity, with males engaging in significantly more physical activity than females ($t(94) = -2.50, p < .05$). Lastly, 46% of the sample watched at least 3 hours of television on a weekday and 28% spent at least 3 hours using the computer for activities other than schoolwork or playing video games. Analyses for age differences were not significant.

Foster Parents' behavior and weight status

Most of the foster parents sampled were overweight or obese (see Table 2) and the average BMI was 34.9 ± 8.2 . Foster parents approached the fruit and vegetable recommendations, consuming 4.8 (± 4.9) servings daily, on average. However, their average consumption of sugar-sweetened beverages exceeded the recommendations of 8 ounces per day, with only 39% meeting the recommendations. Foster parents reported spending approximately 343 minutes (SD = 927.42) sitting on a weekday.

Weight status and child's behavior, parent's behavior, and home environment

Our results suggest that the longer children reside in a foster home, the lower their BMI percentile ($r = -.28, p < .05$), and subsequently their BMI status ($r = -.34, p < .05$). Surprisingly, children with higher weights had parents who modeled healthy eating habits ($r = .27, p < .05$) and lived in homes with less access to media ($r = .29, p < .05$). As expected, children's weight status was related to media availability ($r = .28, p < .05$) and more family mealtime ($r = -.25, p < .05$). On the other hand, parents' BMI and weight status was associated with fruit and vegetables consumed by their foster child ($r = -.30, p < .05$; $r = -.380, p < .01$, respectively). Similarly, children with heavier parents watched more television on school days ($r = .28, p < .05$) and engaged in more video and computer gaming ($r = .29, p < .05$). See Table 4 for additional correlation results.

Relationship between parent and child behavior

There were very few relationships between parent and child behaviors. Foster child and parent sedentary behavior ($r = -0.18, p > .05$), fruit and vegetable consumption ($r = 0.07, p > .05$), nor sugar sweetened beverage consumption ($r = -0.13, p > .05$) were significantly related.

Home environment

On average, the healthy home environment of foster youth was 0.58 out of 1.00 (SD .06), suggesting a moderately supportive environment (See Table 3). The availability of fruits and vegetables is also moderate (Fruit and Vegetable Availability score=.56±17), however those that are available are quite accessible (Fruit and Vegetable Accessibility score=.90±16). Similarly, foster parents report a moderately-high level of role modeling healthy eating behaviors (Food Role Modeling score=.71±14). For the physical activity environment, parents reported moderately low levels of providing opportunities to engage in physical activity (Physical Activity Availability score=.42±.17) but also report that those that are available are highly accessible (Physical Activity Accessibility score=.80±.22). In terms of the media environment, media was moderately available (Media Availability=.66±.16) and media policies were also moderate (Media Policies score=.50±.27). Parents reported that they do not engage in much screen time activity indicating a high level of role modeling in this area (Media Role Modeling score=.79±.12).

Home environment, child and parent behaviors

Dietary behaviors – As expected, children’s sugar-sweetened beverage intake showed a significant negative association with family mealtime in that higher sugar-sweetened beverage consumption was related to less consistent mealtimes ($r=-.27$, $p<.05$). However, dietary behaviors were not significantly associated with any other home environment domains or any of their foster parent’s obesity-related behaviors.

Physical activity and sedentary behaviors –Even though children’s physical activity was not associated with parents’ modeling of physical activity ($r=.12$, $p=.37$), it was associated with whether foster parents utilized gym facilities ($r=.27$, $p<.05$). Children who spent more time

playing video games or using the computer for purposes unrelated to schoolwork were older ($r=.38$, $p<.01$) and surprisingly, had more access to physical activity ($r=.28$, $p<.05$). More surprisingly, children's increased video game and computer game use was significantly related to higher fruit and vegetable consumption by parents ($r=.36$, $p<.01$).

Discussion

This is one of few studies examining the prevalence of overweight and obesity among foster children and the first to examine their obesity-related factors. Results are comparable to earlier studies (Schneiderman et al., 2011, Hadfield & Preece, 2008, Steele & Buchi, 2008) in that the prevalence of overweight and obesity (38%) of the foster youth sampled was higher than the national and state averages (Virginia Foundation for Healthy Youth; VFHY, 2010). Specifically, in 2010, VFHY sampled 2,501 Virginian youth between the ages of 10 and 17, assessing the prevalence of overweight and obesity, as well as dietary and physical activity habits. When comparing our data with other information from VFHY, foster children ate fewer standard lunch meals (e.g. fruit or vegetable, main dish, and milk) and engaged in more screen time behaviors. Foster children are also engaging in low levels of physical activity and consume four times the recommended amount of sugar-sweetened beverages daily.

Prior to this study, there was no data assessing the relationship between the foster home environment and obesity-related behaviors of foster children. However, previous studies have demonstrated a relationship between obesity-related behaviors and the physical (availability and accessibility of healthful foods and physical activity) and social (e.g. role modeling, policies) domains of the home environment in traditional families (Gattshall et al., 2008, Pinard et al., in review). Unlike the more consistent relationships between the home environment and children's behavior observed in the previous studies, our study found that there were fewer consistent

relationships between the foster-home environment and foster child eating and activity behaviors. Some of our findings were contrary to hypotheses such as the finding that as opportunities for physical activity increase, foster children's engagement in screen time also increases. Less surprising relationships included the negative relationships between fruit and vegetable consumption and foster parent's weight and policies supporting healthful eating (i.e., lower score reflects more supportive policies), and children's weight and the role modeling of healthful eating behaviors.

There are a number of other findings that also point towards the likelihood that the foster care home environment influences childhood obesity. For example, the relationships between increased family mealtime and decreased sugar-sweetened beverage intake among children, increased child physical activity levels and increased time spent in the gym by foster parents, and children's increased screen time activity and the weight status of their foster parents.

The length of time the child has resided with the foster family may explain the relationships observed in the study. Perhaps, the children sampled have not been residing with their foster parent long enough for the home environment to influence their behaviors. Our data supports this supposition in that the duration of placement was related to lower weight status in foster children. It is important to recall that this is a cross-sectional study and it could be that foster parents are more likely to try to provide opportunities for healthy eating and physical activity for foster children that enter the home when they are overweight or obese.

The primary limitations of this study are a small sample size and the cross-sectional nature of the investigation. Another limitation was the home visit in itself. Depending on the social worker schedule and that of the foster family, social workers spend approximately 30 minutes to an hour with foster families. Since the data collection was often scheduled to occur

during the beginning of the visit, at times, time constraints were pre-imposed, which affected the researcher's ability to review the child's responses to the questionnaires. Lastly, many foster parents returned their anonymous questionnaire via pre-paid postage envelopes. Upon receipt of the questionnaires, the researcher noticed incomplete data, and was not able to contact participants for completion.

A major strength of the study was the systems-based approach. Utilizing this approach, the researchers were able to build a trusting relationship with the system, gain access to the target community, and engage key stakeholders (Rogers, 2003). Furthermore, social workers are the champions within this system. Prior to data collection, social workers received a detailed description of the study and were able to ask any pertinent questions. This information session provided them with enough information to encourage their foster children to participate. Lastly, the study used validated and reliable measures for all study outcomes.

Future Directions

Additional research with larger sample sizes is needed. In order to gather additional data from foster care families, future research may (a) incentivize all participants, (b) align data collection with periodic social service meetings conducted at the local agency with foster families, and (c) create data collection days. On-site data collection for this study took approximately thirty minutes, with foster parents indicating that completing the parent questionnaire took them at least an hour. Since study participants were entered into a lottery incentive, only six participants received compensation. Research has shown that incentivizing participants unconditionally produces a greater response rate than lottery incentives (Halpern et al., 2011). As previously mentioned, a limitation of the study was scheduling conflicts with social workers. Aligning data collection with periodic meetings with several foster families

provides the opportunity for greater reach, and less monetary and time related cost associated with travel. Data collection alignment with pre-existing services or the establishment of data collection days also reduces the need for extending social workers home visits with families. Our results suggest that foster children and their foster parents are not meeting recommendations for fruits and vegetables, sugar-sweetened beverage consumption, nor physical activity, with the prevalence of overweight and obesity among foster children being higher than the general population. Recently, stories in the media have suggested the removal of extremely obese children from their homes. However, 90% of the foster parents participating in this study were overweight or obese, and had average or below average home environments.

These data highlight the need for additional research on an appropriate intervention that would improve home environments, including the health behaviors of foster parents. It also calls for the development of policy-based approaches that address the weight-related health needs of foster children, and institutionalizes effective intervention strategies are also necessary.

Table 1. Child Demographics

	Child	Parent
Age, n=116,67, Mean (SD)	14.6 (3.0)	50.7 (10.5)
Gender, n=116, 70		
Female, n (%)	56 (48.3)	62 (88.6)
Male, n (%)	60 (51.7)	8 (11.4)
Race, n=66, 68		
Black/African American, n (%)	29 (43.9)	37 (54.4)
White, n (%)	21 (31.8)	26 (38.2)
Asian/Mixed/Other, n (%)	14 (21.1)	5 (7.3)
Not sure, n (%)	2 (3.0)	0%
Physical medical conditions, n=64		
Yes, n (%)	14 (21.9)	N/A
No, n (%)	50 (78.1)	N/A
Weight related medications, n=27		
Yes, n (%)	23 (85.2)	N/A
No, n (%)	4 (14.8)	N/A
Length of time in foster home (months)	23.6 (24.7)	N/A
Number of foster children, n=67 Mean (SD)		2.5 (1.68)
Highest education, n=65		
Graduated HS/GED, n (%)	N/A	19 (29.2)
Some College, n (%)	N/A	19 (29.2)
Graduated 2-year college, n (%)	N/A	8 (12.3)
Graduated college, n (%)	N/A	10 (15.4)
Post graduate, n (%)	N/A	9 (13.8)
Annual household income, n=60		
<10,000, n (%)	N/A	4 (6.7)
10,000 - 19,000, n (%)	N/A	7 (11.7)
20,000 - 50,000, n (%)	N/A	25 (41.7)
50,000 - 100,000, n (%)	N/A	17 (28.3)
>100,000	N/A	7 (11.7)
Occupation status, n=63		
Full-time work outside the home	N/A	28 (44.4)
Part-time work outside the home	N/A	7 (11.1)
Work for wages from home	N/A	11 (17.5)
Stay at home mom/dad	N/A	17 (23.9)

Table 2. Participant Health-related Outcomes

Child	
BMI Percentile, n=108, <i>M</i> (SD)	69.8 (25.72)
BMI Status, n=112	
Underweight, n (%)	2 (1.8)
Healthy Weight, n (%)	67 (59.8)
Overweight, n (%)	41 (36.6)
Obese, n (%)	2 (1.7)
PAQ, n=96, <i>M</i> (SD)	2.5 (.89)
F&V Per Day, n=106, <i>M</i> (SD)	2.5 (2.60)
F&V Recommendations, n=106	
Yes, n (%)	11 (10.4)
No, n (%)	95 (89.6)
High Screen Time (at least 3 hours), n=116	
Yes, n (%)	39 (65.5)
No, n (%)	39 (34.5)
Sugar-sweetened Beverages (oz.)	34.2 (34.8)
Parent	
BMI, n=61, <i>M</i> (SD)	34.9 (8.15)
BMI Status, n=51	
Healthy Weight, n (%)	6 (9.8)
Overweight, n (%)	10 (16.4)
Obese, n (%)	45 (73.8)
MyPyramid Servings, n=67, <i>M</i> (SD)	4.8 (4.89)
Sugar-sweetened Beverages (oz.)	23.2 (40.9)
Sedentary behavior, n=61, <i>M</i> (SD)	343.5 (927.4)
CHES, n=19, <i>M</i> (SD)	.55 (.06)

Note. BMI = Body mass index; PAQ = Physical activity score; F&V = Fruits and vegetables; *M*=mean; SD= standard deviation; CHES = Comprehensive Healthy Environment Score

Table 3. Home Environment Scores

Home Environment Scale	Range	Mean (SD)
Grow Fruits and Vegetables	.20 - 1.00	.38 (.23)
Physical Activity Availability	.09 - .80	.42 (.17)
Physical Activity Accessibility	.20 - 1.00	.80 (.22)
Physical Activity Role Modeling	.17 - .88	.57 (.16)
Gym Attendance	.14 - .86	.30 (.22)
Parental Policies to Support Physical Activity	.07 - .89	.64 (.22)
Media Availability	.24 - .96	.66 (.16)
Media Role Modeling – Screen time	-.38 - 1.00	.79 (.12)
Parental Policies to Monitor Media	.14 - 1.00	.50 (.27)
Fruit, Juice, and Vegetable Availability	.13 - .94	.56 (.17)
Fruit and Vegetable Accessibility	.50 - 1.00	.90 (.16)
Fat and Sweets Availability	.02 - .88	.46 (.17)
Fat and Sweets Accessibility	.00 - 1.00	.48 (.37)
Family Meal Time	.14 - 1.00	.62 (.31)
Role Model Diet	.34 - .95	.71 (.14)
Parent Policies to Support Healthy Eating	.49 - .79	.69 (.06)
Kitchen Environment	.00 - .64	.52 (.08)
Comprehensive Healthy Environment Score	.47 - .70	.58 (.06)

Table 4. Correlation Matrix

	Child's F&V	Child SSBkcal	Child PA	TV	Cpu & Video	Child's BMI	Child's BMIStat
Child's Age	-.116	.176	-.202	.220	.382**	.030	.132
Child Medication	-.048	.258	.020	.054	.242	-.089	.005
Parent's Daily F&V	.074	-.017	-.179	-.103	.358**	-.056	.086
Parent's SSBkcal	-.183	-.129	.097	-.107	-.118	.185	.142
Parent's Sedentary	-.124	.128	-.180	-.150	-.095	.095	.171
Parent's BMI	-.298*	.014	.063	.310*	.213	-.051	-.053
Parent's BMI Status	-.380**	.219	-.026	.284*	.289*	.008	.012
Kitchen Environment	-.070	.129	-.019	.149	.139	.017	-.004
Food Policies	-.096	.077	-.107	-.234	-.107	.129	.026
FJV Availability	.040	.009	.025	.205	.141	-.060	-.014
FV Accessibility	-.040	.089	.060	.000	.048	-.153	-.082
F&S Access	.088	-.108	.242	.037	-.009	.083	.025
F&S Avail	.179	-.121	.124	-.102	.014	-.114	-.092
Family Meal Time	.150	-.274*	-.010	.051	-.026	-.167	-.251*
Diet RM	.225	-.036	-.022	-.129	.053	-.278*	-.171
Grow F&V	.158	-.077	.102	.178	-.242	.055	-.030
PA Avail	.146	.033	.104	-.083	.062	-.090	-.061
PA Access	-.035	.037	.130	-.007	.280*	.076	.153
PA Policies	.138	.195	.223	-.049	-.062	.018	.045
PA RM	-.046	-.048	.121	-.130	.052	.105	.144
Gym Attendance	-.108	.019	.279*	-.117	-.108	.027	.089
Media Availability	-.154	.255	-.045	.244	.203	.289*	.278*
Media RM	.015	.062	-.101	-.166	-.196	-.113	-.190
Media Policies	-.019	.203	.317	-.091	-.271	-.043	-.160
CHES	-.205	-.006	-.042	-.104	-.070	.051	.030

Note: SSBkcal – Sugar-sweetened beverages; TV – Television; Cpu – Computer; BMI – Body Mass Index; BMI Stat – Body Mass Index Status; FJV – Fruit, Juice, and Vegetable; FV – Fruit and Vegetable; RM – Role Modeling; F&V – Fruits and Vegetables; CHES – Comprehensive Healthy Environment Score; * - $p < .05$; ** - $p < .01$

References

- Altshuler, S. J., & Poertner, J. (2003) Assessing child well-being in non-relative foster care with a new outcome measurement tool. *Journal of Family Social Work, 7*, 73–85. Doi: 10.1300/J039v07n02_06
- Bramlett, M. D., & Blumberg, S. J. (2007). Family Structure and Children’s Physical and Mental Health. *Health Affairs, 26*, 549-558. Doi: 10.1377/hlthaff.26.2.549
- Brown, J.D., & Bednar, L.M. (2006). Foster parent perceptions of placement breakdown. *Children and Youth Services Review, 28*, 1497-1511.
doi: 10.1016/j.childyouth.2006.03.004
- Charder HM200P Portstad Portable Stadiometer, QuickMedical, Issaquah, WA
- Child Welfare Information Gateway. (2011). *Foster care statistics, 2009*. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau.
- Clausen, J.M., Landsverk, J., Ganger, W., Chadwick, D., & Litrownik, A. (1998). Mental health problems of children in foster care. *Journal of Child and Family Services, 7*, 283-296.
Doi: 10.1023/A:1022989411119
- Courtney, M. E., & Dworsky, A. (2006). Early outcomes for young adults transitioning from out of-home care in the USA. *Child & Family Social Work, 11*, 209-219.
Doi: 10.1111/j.1365-2206.2006.00433.x
- Gattshall, M. L., Shoup, J. A., Marshall, J. A., Crane, L. A., & Estabrooks, P. A. (2008). Validation of a survey instrument to assess home environments for physical activity and healthy eating in overweight children. *International Journal of Behavioral Nutrition and Physical Activity, 5*, 3-13. Doi: 10.1186/1479-5868-5-3

- Golan, M., Kaufman, V., & Shahar, D. R. (2006). Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*, *95*, 1008-1015.
doi: 10.1079/BJN20061757
- Hadfield, S. C., & Preece, P.M. (2008). Obesity in looked after children: is foster care protective from the dangers of obesity? *Child Care Health and Development*, *34*, 710-712.
doi: 10.1111/j.1365-2214.2008.00874.x
- Holland, P., & Gorey, K. M. (2004). Historical, Developmental, and Behavioral Factors Associated with Foster Care Challenges. *Child and Adolescent Social Work Journal*, *21*, 117-135. Doi: 10.1023/B:CASW.0000022727.40123.95
- James, S. (2004). Why do foster care placements disrupt? An investigation of reasons for placement change in foster care. *The Social Service Review*, *78*, 601-627.
Doi: 10.1086/424546
- Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Medicine and Science in Sports and Exercise*, *40*, 767-772. doi: 10.1249/MSS.0b013e3181620ed1
- Kuczmariski, R. J., Ogden, C. L., Guo, S. S., Grummer-Strawn, L. M., Flegal, K. M., Mei, Z., ... Johnson, C. L. (2002). 2000 CDC Growth Charts for the United States: methods and development. *Vital and Health Statistics*, *11*, 1-190.
- Leathers, S. J., Spielfogel, J. E., McMeel, L. S., & Atkins, M. S. (2011). Use of a parent management training intervention with urban foster parents: A pilot study. *Children and Youth Services Review*, *33*, 1270-1279. Doi: 10.1016/j.childyouth.2011.02.022
- Malnick, S. D. H. & Knobler, H. (2006). The medical complications of obesity. *QJM: An International Journal of Medicine*, *99*, 565-579. doi: 10.1093/qjmed/hcl085

- Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). High body mass index for age among US children and adolescents, 2003-2006. *Journal of American Medical Association*, 299, 2401-2405. doi: 10.1001/jama.299.20.2401
- Parks, S. L., Almeida, F. A., McFerren, M. M., Deater-Deckard, K., & Estabrooks, P. A. (In preparation). Associations between the home environment and children's eating and physical activity habits and weight status across different family dynamics: a systematic review.
- Pinard, C. A., Yaroch, A. L., Hart, M. H., Serrano, E. L., McFerren, M.M., & Estabrooks, P. A. (2012). Measures of the home environment related to childhood obesity: a systematic review. *Public Health Nutrition*, 15, 97 – 109. Doi: 10.1017/S1368980011002059
- Pinard, C. A., Hart, M. H., Serrano, E. L., McFerren, M. M., & Estabrooks, P. A. (In review). The validity and reliability of a measure of the Comprehensive Home Environment Survey.
- Price, J. M., Chamberlain, P., Landsverk, J., & Reid, J. (2009). KEEP foster-parent training intervention: model description and effectiveness. *Child & Family Social Work*, 14, 233-242.
- Price, J. M., Chamberlain, P., Landsverk, J., Reid, J. B., Leve, L. D., & Laurent, H. (2008). Effects of a foster parent training intervention on placement changes of children in foster care. *Child Maltreatment*, 13, 64-75.
- QuickMedical, Issaquah, WA
- Rogers, E. M. (2003). *Diffusion Networks*. In *Diffusion of Innovations (5th ed)*. New York: Free Press.
- Sawyer, M. G., Carbone, J. A., Searle, A. K., & Robinson, P. (2007). The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia*. 2007, 186, 181-184.

- Schneiderman, J.U., Leslie, L.K., Arnold Clark, J., McDaniel, D. & Xie, B. (2011) Pediatric health assessments of young children in child welfare by placements. *Child Abuse and Neglect*, 35, 29-39. doi: 10.1016/j.chiabu.2010.06.007
- Shin, S. H. (2005). Need for and actual use of mental health service by adolescents in the child welfare system. *Children and Youth Services Review*, 27, 1071-1083.
Doi: 10.1016/j.chilyouth.2004.12.027
- Singh, A. S., Mulder, C., Twisk, J. W. R., van Mechelen, W., Chinapaw, M. J. M. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews*, 9, 474-488. doi: 10.1111/j.1467-789X.2008.00475.x
- Smith, D. K., Leve, L. D., & Chamberlain, P. (2011). Preventing Internalizing and Externalizing Problems in Girls in Foster Care as They Enter Middle School: Impact of an Intervention. *Society for Prevention Research*, 12, 269-277. Doi: 10.1007/s11121-011-0211-z
- Steele J. S., & Buchi, K. F. (2008). Medical and mental health of children entering the Utah foster care system. *Pediatrics*, 122, E703-E709. doi: 10.1542/peds.2008-0360
- Tarren-Sweeny. (2006). Patterns of aberrant eating among pre-adolescent children in foster care. *Journal of Abnormal Child Psychology*, 34, 623-634. Doi: 10.1007/s10802-006-9045-8
- Thompson, F. E., Subar, A. F., Smith, A. F., Midthune, D., Radimer, K. L., Kahle, L. L., & Kipnis, V. (2002). Fruit and vegetable assessment: performance of 2 new short instruments and a food frequency questionnaire. *Journal of the American Dietetic Association*, 102, 1764-1772. Doi: 10.1016/S0002-8223(02)90379-2
- Topoloski, T. D., LoGerfo, J., Patrick, D. L., Williams, B., Walwick, J., & Patrick, M. B. (2006). The rapid assessment of physical activity among older adults. *Preventing Chronic Disease*. Available from: http://www.cdc.gov/pcd/issues/2006/oct/06_0001.

van der Horst, K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., van Lenthe, F., & Brug, J. (2007). A systematic review of environmental correlates of obesity-related dietary

behaviors in youth. *Health Education Research*, 22, 203-226. Doi: 10.1093/her/cyl069

Virginia Department of Social Services Child and Family Services Manual. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/index.cgi> Updated July 2012 . Accessed August 15, 2012.

Virginia Foundation for Healthy Youth. (2010). Obesity survey research report.

CHAPTER IV

Manuscript 2 - Integrating Healthful Eating and Physical Activity Skills into the Foster Care System: A Delphi Study

ABSTRACT

Approximately 423,773 children in the United States are in foster care. Recent studies suggest that this population has a higher incidence of overweight and obesity than the general population, do not meet recommendations for daily fruit and vegetable intake, engage in low levels of physical activity, and exceed the recommendations for sugar-sweetened beverage consumption. However, to date, no intervention strategies have been developed to address healthful eating and physical activity in this population of children. Thirty-eight experts representing foster parents, researchers, and social workers, participated in at least one round of a Delphi Study, for the purpose of designing a childhood obesity prevention and treatment program for foster children. Twenty-two experts completed both rounds. Experts provided feedback on importance and practicality of intervention target, delivery mode, strategies, components, resources, program duration, frequency, evaluation, and policy approaches. Experts across panels agreed that a childhood obesity prevention and training program should target fruit and vegetable consumption, physical activity, and the home environment primarily through face-to-face encounters. Experts also agreed that such an intervention should target the foster child, biological parent, and foster parent, depending on the foster child's age, and should be integrated into foster care training programs and procedures. Future research should test the effectiveness of an intervention designed to prevent and/or treat obesity among foster children, and should assess child welfare policies for content related to the nutrition, physical activity, and weight status of foster children.

Introduction

Approximately 423,773 children in the United States are in foster care (US Department of Health and Human Services 2011). Literature suggests that children entering the foster care system have poor health, experience chronic medical health problems, and display clinically significant signs of aberrant eating problems (Altshuler & Poertner, 2008; Tarren-Sweeney, 2006). A study of foster youth in Utah found that 35% were overweight or obese, with the incidence of obesity among adolescents being higher than that of the general population (Steele & Buchi, 2008). Similarly, Schneiderman and colleagues reviewed medical records of a sample of children under the age of 6 receiving services from Los Angeles County Department of Children and Family Services and noted that 36% were overweight or obese (2011). In a sample of 106 children, Hadfield and Preece also noted that while weight status was not related to entry into care or foster home stability, a trend toward obesity developed as children remained in care (2008). Although this suggests increasing evidence documenting a potential issue with weight status among foster children, to date, no intervention strategies have been developed to address healthful eating and physical activity in this population of children.

Since foster children's behavioral problems create challenges for foster parents and is a major reason for failed foster parent placement (Brown & Bednar, 2006; Holland & Gorey, 2004; James, 2004; Price et al., 2008), interventions focusing on this population often focus on improving behavioral problems (Price, Chamberlain, Landsverk, & Reid, 2009). These interventions evaluate the effectiveness of several training and therapy models with foster parents and/or foster children in order to improve internalizing (e.g. depression) and externalizing behaviors (e.g. aggression, delinquency). Interventionists at the Oregon Social Learning Center have developed the Keeping Foster Parents Trained and Supported (KEEP)

foster-parent training and tested its effectiveness by targeting foster parents of children between the ages of 4 and 12 (Leathers et al., 2011, Price et al., 2008). Trainings consist of 16 90-minute weekly group sessions and target parenting skills, such as effectively praising and incentivizing children – which can be described as targeting the foster home social environment. The implementation of KEEP resulted in intervention children exhibiting fewer behavioral problems. Further, changes in parenting skills significantly mediated changes in foster child behavior (Price et al., 2009; Leathers et al., 2011). The effectiveness of targeting foster parents via the home social environment to improve child behaviors may also extend to other areas, such as eating and physical activity behaviors.

There is growing evidence of the effectiveness of a number of home-based healthful eating and physical activity interventions for children and, based on the success of KEEP, such an approach may be appropriate for a foster care setting (Bautista-Castano, Doreste, & Serra-Majem, 2004; Stroebele, Ogden, & Hill, 2009; Kain, Uauy, Albala, Cerda, & Leyton, 2004; Simon et al., 2008; Gortmaker et al., 1999). Some of these interventions promote the inclusion of parents in order to more effectively increase health behaviors and prevent or treat obesity (Campbell et al., 2008; Bautista-Castano et al., 2004; Gamache, Mirabell, & Avery, 2006; Golan & Crow, 2004; Golan, Kaufman, & Shahar, 2006). However, there is limited data examining the influence of foster parents on dietary and physical activity habits of foster children (Hadfield & Preece, 2008). The information on available interventions coupled with foster children being considered a vulnerable population, with an increased risk of being undernourished or at risk for obesity (Pasztor et al., 2006), suggests that it is important to develop an intervention promoting healthful eating and physical activity for this population.

Due to the transient and time-sensitive nature of the foster care system, any intervention designed to deal with healthy eating and physical activity should utilize a systems approach with the participation of foster parents and those who work within the foster care system. Systems approaches have been used in other settings to design physical activity and healthful eating interventions that are more likely to be implemented and sustained in typical community or clinical practice (Almeida, Shetterly, Smith-Ray, & Estabrooks, 2010; Estabrooks et al., 2011; Kim et al., 2008; Estabrooks, Bradshaw, Dzewaltowski, & Smith-Ray, 2008;). A participatory systems-based approach allows the alignment of evidence-based strategies with the workflow and mission of the potential delivery system (Estabrooks & Glasgow, 2006). A body of literature suggests that the inclusion of stakeholders, across a system (e.g., practitioners, clients), during the design, implementation and evaluation phase of an intervention increases the likelihood of the intervention being effective, sustainable, and disseminated (Rogers, 2003).

The purpose of this study is to use a systems-based approach to design a childhood obesity prevention and treatment program for foster children, an understudied population. The program design will be based on the results of a Delphi study, a method that involves a panel of experts completing several rounds of questionnaires in order to attain a consensus. Based on the review of the literature, it was hypothesized that results would suggest an intervention targeting foster parents, as well as fruit and vegetable consumption, sugar-sweetened beverage intake, physical activity, sedentary behaviors, and the home environment. It was also hypothesized that panels would suggest targeting these behaviors using a combination of face-to-face encounters, web-based approaches, and telephone counseling.

Round 1 Methods

The first round of the Delphi study was conducted through a web-based survey. This method is an evidence-based approach that has shown to be effective and superior to other methods of data collection (e.g. interviews, focus groups) due to the following features: anonymity, iteration, controlled feedback, and statistical group response (Rowe & Wright, 2001). For the purposes of this Delphi study, investigators sought experts with knowledge of, and experience with, behavior change and/or special populations; such as the foster care system. More specifically, the research team recruited a panel of foster parents, social workers, and research scientists. Prior to distribution, the round one questionnaire was pretested to determine limitations in clarity and content by social services administrators and the research team (von der Gracht, 2008).

Procedures and participants

Experts were identified through convenience sampling, database searches, and examination of research article reference lists as well as through organizational referral in the Department of Social Services (DSS) (Gordon, 1994; van Stralen et al., 2008). All experts were contacted via telephone (Appendix I) and/or email to determine their willingness to participate in the study (Appendix J). During the initial contact, demographic and other information was gathered to determine the reach and representativeness of those who agreed to participate. Potential participants received a description of the project's purpose, the anticipated time commitment, promise of anonymity, and were asked to provide the names of any additional potential experts.

Seventy experts consisting of foster parents (n=21), social workers (n=16), and research scientists (n=33) representing various fields (physical activity, nutrition, social work, participatory research, underserved populations, foster care, and psychology) were contacted

over a three-month period to participate. Thirty-seven experts (10 foster parents, 14 social workers, and 13 research scientists) agreed to participate and completed the first round of the questionnaire. See Table 1 for expert characteristics. Participant names were replaced with subject identification numbers upon receipt of the surveys.

Questionnaire

During the initial round of the Delphi Study, participants received ten open-ended questions that assessed critical elements of an intervention designed to prevent and/or treat obesity among foster children (Appendix K). Participants received the following questions: (i) who should an intervention designed to prevent and/or treat childhood obesity among foster children target (e.g. child, parent, family, schools); (ii) what types of strategies do you think would work best to promote physical activity and healthful eating for foster children; (iii) what components and resources should be included in the intervention (e.g. healthy eating habits, family rules, handouts); (iv) what is an appropriate delivery method (telephone, internet, in-person) for this intervention; (v) how long should this type of program be (e.g., 4 weeks, 3 months) and how should sessions be spaced (e.g., weekly, biweekly, monthly); (vi) what are some potential barriers to delivering an intervention to prevent and/or treat obesity among this population; (vii) what are some strategies to overcome the barriers that you listed in question five; (viii) how should the intervention be evaluated to determine if it should be sustained; (ix) what are potential recruitment and retention strategies (e.g. flyers, incentives, etc.) that would be successful to attract foster parents and foster children; and (x) can you think of how, and what type of, policy approaches could be used to support this type of intervention.

Data analysis

Responses from the first round were analyzed using content analysis techniques (Hasson, Keeney, & McKenna, 2000), which included several steps. First, responses from each panel were grouped together. Next, the research team independently and collectively coded and synthesized statements, and removed duplicate responses. Remaining responses were then abridged for ease of reading, and notations were added to indicate the number of participants from each expert panel that mentioned the statement. Statements were placed into the following categories: primary target; potential groups involved in phases of the intervention; strategies to promote engagement; potential barriers; strategies to promote the targeted behaviors and to overcome barriers; intervention components and resource; appropriate intervention channel; program duration and frequency; intervention evaluation; and policy approaches.

Round 1 Results

Items from the first round were arranged into ten categories based on themes of the open-ended questions. Attention was given to items that were mentioned most across panels, and differences between panels.

Primary target

Across expert panels, it was suggested that an intervention designed to prevent and/or treat obesity among foster children target children, foster parents, and birth families. While researchers and foster parents suggested that the intervention target the entire family (including siblings), social workers did not. More specifically, a couple of experts suggested that the primary recipient of such an intervention would depend on the foster child's age. One researcher said the following:

"I think it depends on age ...I would say parent

and child, up to age 11, and then around 12-15 to focus primarily on the child. Although, you'd certainly have to eventually...bring the parent in...I would consider switching the center of the treatment at around age 12."

In addition, it was suggested by the research panel that targets and strategies may differ based on the goal of prevention versus treatment.

Potential groups involved in phases of the intervention

Participants provided several suggestions about different groups or organizations that should/could be involved in supporting a physical activity and healthy eating intervention for children. Social workers and researchers suggested that the intervention involve behavioral health service representatives, and social workers/social service agencies. While a researcher stated that, "*social workers could be trained to deliver the intervention to foster families with guest speakers as appropriate,*" a social worker expanded on the type of social workers and inclusion of health service representatives by saying,

"social workers who work with the foster care system, including ones that prepare home studies and handle casework. Additionally, agencies (public and private) who work in the system. State department of DSS officials as well. Counselors and doctors who treat this population."

Experts also suggested targeting the school system, with one researcher providing the following rationale:

"A child spends a large proportion of his/her time in school, thus implementing policies and practices within the school environment is critical (e.g., policies regarding the content of school meals and what

competitive foods and beverages are available in vending machines, snack bars, school stores, health and physical education curricula, opportunities for physical activity outside of physical education class).”

It was suggested that intervention developers collaborate with the following groups and organizations: health care (e.g. physicians, nurses), community and school sport organizations, and local community organizations.

Strategies to promote engagement from the target audience

In order to promote changing the targeted behaviors, experts across panels suggested several programmatic strategies, organization approaches, and the provision of incentives for children and parents. Researchers and social workers, but not foster parents, suggested incentivizing social workers. Suggested incentives included gift cards, money, passes to theme parks, training hours, fun games, free downloads, free garden seeds, food, and incentivizing participants upon completion of the program. One social worker stated:

“I think flyers and incentives would definitely work. With new state changes, foster parents are required to have more yearly training hours. A good incentive may be that they receive certain hours for each session they attend. As for the foster children, other incentives may work, such as ... winning prizes. If there are other children there, that's also usually a good environment.”

Foster parents indicated that incentives for families and children would be a good way to promote healthy eating and physical activity behaviors. Some suggested door prizes and incentives for completing the program. They also noted that it was important that the sessions

were interesting and had *“related giveaways like jump ropes and water bottles.”* Incentives were also highlighted as a method to overcome barriers. One researcher noted:

“... I believe the biggest hurdle will be the foster parents. To recruit them you will need engaged social workers. For that, you will need some financial incentives for social workers as well as the foster parents. For the children as long as it is framed as a fun program you will not have any problems with their participation. The key here will be social workers (gatekeepers) and foster parents. I think financial incentives might be your best option.”

There was less consistency across the panels related to strategies for promoting interest and commitment. Researchers provided programmatic strategies relative to scheduling and program structure, social workers provided recommendations relative to foster parents, and foster parents made suggestions concerning program promotion and a fun environment. One researcher also referenced collaborating with schools as a way to promote commitment to the program, which is expressed in the following statement:

“Flyers will not work. Monetary incentives will work. Building trusting relationships will work. Maybe the school could intervene and provide a way for the children to get home after staying late at school.”

Below are additional statements reflecting thematic responses.

Social worker: *“Stress getting healthy and feeling better. Making exercising a family bonding time and preparing meals a family bonding time.”*

Foster parent: *“Utilize required training, show case studies of success...”*

Strategies to promote the targeted behaviors

Experts across panels suggested intervention component strategies aimed at the intervention delivery personnel, parents, social service agencies, funding, program structure, collaborations with organizations, and providing resources. These strategies encompassed the provision of knowledge, behavioral skills, targeting the social and physical environment for food and physical activity, locating resources, and hands-on activities. General strategies included educating participants on eating healthy and engaging in physical activity, related benefits and consequences, increasing access and availability of healthful eating and physical activity, and developing safe environments for obese children. One researcher provided suggestions that also included overcoming barriers and policy implementation.

Researcher: *“Opportunities for regular exercise are more limited for children and adolescents in foster care. Therefore, I think interventions need to be incorporated into policy, so that these children have access to a regular fitness program, and activities that involve peers. Many of the youth I talk with are not allowed unsupervised activities, and this is a barrier to increasing activity level. Teaching older youth how to grocery shop, teach strategies for healthy food choices, and how to prepare and cook fresh foods.”*

In one of the following quotes, a social worker suggested that intervention strategies targeting parents include the importance of modeling behaviors, limiting sedentary behavior, and social services providing opportunities.

Social worker: *“The importance of modeling physical activity and healthful eating should be stressed to all caretakers. Foster parents need to be trained*

on healthful eating. The importance of physical activity and healthful eating should be included in all types of parenting classes endorsed by DSS. There should be strict limits on the amount of time spent playing video games and watching TV.”

Researcher: *“The intervention may also need to provide activities for kids while the foster parents are participating in training sessions. Possibly creating intervention activities for them at the same time would help address this barrier.”*

Social worker: *“I think by relaying the importance of how nutrition plays a role in a child's development, behavior, and emotional well-being will help parents understand how focusing on it can benefit them.”*

Foster parent: *“Concrete ways to fit healthy eating and activity into a busy life. Acknowledgement and understanding that everyone has a different history/relationship to food issues. Concrete strategies to make healthy eating and activity affordable.”*

Intervention components and resources

Experts across panels suggested the provision of resources concerning community access to physical activity opportunities, meal planning, and affordable healthy options. Experts also suggested handouts, while foster parents mentioned childcare. Furthermore, experts suggested highlighting beneficial yet measurable outcomes of nutrition and physical activity. A social

worker suggested highlighting the impact on behavioral problems, whereas, a researcher suggested highlighting the impact on family interactions.

Social worker: *“Understanding the value of healthy nutrition on school performance, quality of life, life expectancy etc. Also understanding that eating can be used to compensate for other problems including emotional ones and helping finding alternatives to this cycle of behavior.”*

Researcher: *“Use physical activity opportunities as a way to promote family interaction and bonding.”*

Another social worker also detailed components of intervention sessions focusing on healthy eating habits.

Social worker: *“Healthy Eating Habits: Easy recipes with healthy foods ‘hidden’ in them, not buying ‘junk food’ so options are healthy for parents and children. If intervention is done in a classroom, recipe swapping, having weekly supermarket sales and pick out affordable healthy sales each class, coupon swap and teach people how to use coupons effectively.”*

Appropriate Intervention Channel

Experts across panels suggested several types of intervention delivery channels. These channels were face-to-face (in-person), print-based materials, or technology-based. Types of face-to-face sessions included hands-on knowledge and experience, home visits, group classes, group counseling, and workshops (interaction and exchange of information among attendees). Print-based materials included publications and monthly newsletters. Technology-based intervention delivery methods included phone, Internet, and multi-media. Experts across panels

suggested intervention delivery via face-to-face sessions, the Internet, and group settings. However, there was a wide range of unique responses regarding primary and secondary delivery methods. While one researcher suggested multi-media, a few social workers suggested print-based materials and alignment with home visits. Lastly, a few participants said the intervention method depends on the intervention phase.

Researcher: *“The intervention is likely to be most effective if, at least, the first mode of delivery is an in-person visit; follow-up can be done via telephone or Internet, and possibly a second in-person visit. It is important to follow-up to find out where the family is struggling with implementing new practices and helping them find solutions for problems they have encountered. Research demonstrates that entities that receive more technical assistance as part of an intervention fare better than entities that receive less.”*

Program Duration and Frequency

Experts across panels suggested bi-weekly or monthly intervention delivery, with one social worker suggesting intervention delivery several times per week. Some researchers suggested a step approach, with one mentioning the duration as well:

“Sessions must extend over a year. At first, the sessions need to be several times a week and by the end of the long-term program, the sessions could be biweekly and/or monthly.”

In terms of duration, at least one expert from each panel suggested an intervention delivered over a period of three months. Suggestions ranged from six weeks to one year, with one social worker suggesting the entire duration of a child’s term in foster care. Foster parents

and social workers also suggested integration of the program into the pre-existing 12-hour training requirements or 8-week course for biological parents, respectively.

Foster parent: *“Again, I think that you should target programs to hit the 12 hours of required training. I don't think that DSS personnel fully appreciate how being a foster parent is a full time job (as is being any parent) in addition to my paying full time job. Most foster parents will commit that required 12 hours of training and none more...so hit them there.”*

Potential Barriers

Barriers were related to the environment, parents (biological and foster) and foster children. Experts from all panels mentioned barriers related to the lack of time, attendance at sessions, and the cost associated with healthy eating and physical activity. Researchers reported environment-related barriers, while all panels mentioned barriers for foster parents and children. One social worker mentioned barriers related to biological parents, foster parents, and the demands of the foster care system:

“When biological parents are working towards reunifying with their children, they are required to complete numerous services, which are very time consuming. Especially with this population, if it is not something mandatory, it is less likely to be completed. The parents are stressed and overwhelmed during this time. Depending on what type of case it is, the same may be for the foster parents. At times, they are having to take children to multiple appointments throughout the week, as well as having interventions at school. If it does not seem beneficial to them, it may just seem as one more thing on their list.”

Strategies to overcome barriers

Strategies specific to overcoming barriers included education/training, early intervention for parents (e.g. before becoming certified and when entering care), and assistance with food preparation. Researchers also suggested an increase in foster parent stipend, a cap on the number of foster kids in the home, and collaborations. Researchers and social workers suggested assistance with caring for children during the intervention (e.g. childcare, respite programs).

Intervention evaluation

While experts from all panels suggested evaluating specific outcomes related to health and receipt of the intervention, researchers also suggested evaluation based on generalizability and the inclusion of a comparison group. Furthermore, researchers suggested evaluating cost-effectiveness and evaluating program delivery personnel, recipients, and social workers.

Constant monitoring was suggested by a social worker and a foster parent.

Social worker: If a child is in need of weight management services, it can be documented as part of their foster care service plan, and can be monitored by social workers.

Participants also suggested baseline and follow-up measures, with one researcher stating,

“Baseline and follow-up measures to assess attitudes and behavioral changes in eating and physical activity and knowledge about nutrition.”

A social worker mentioned evaluating retention among participants:

“Every 6 months evaluate the people that stick with the program, or drop out. Whatever the intervention is needs to be tailored to each individual person. People will be more likely to stick with it if it is convenient for them.”

Policy approaches

Experts were asked to list policy approaches that would support an intervention targeting the healthful eating and physical activity habits of foster children. Responses suggested the provision of resources, actions to be taken by social service agencies, policies related to foster and biological parent trainings, and policies pertaining to funding and organizations (e.g. state level, county level, community, etc.). One researcher suggested screening upon entry into care and the provision of resources accordingly:

“Obesity could be something that is screened for when a child comes into care as part of the initial assessment completed by the local DSS. Additional resources could be made available to the foster family if child is obese and has health issues related to the obesity.”

A foster parent also suggested state-level policy approaches,

“Policy usually comes from the top of an organization, in this case, I think it would have to come from the state in order to be uniform or, as a minimum, come from the county social services dept. Foster children are required to have a yearly physical, so maybe the child's doctor could have a "check box" to sign off on if an intervention is deemed necessary.”

Round 2 Methods

Procedures and participants

Participants received print versions of a survey via postal mail along with pre-paid postage envelopes. The investigator followed up with participants by phone and email to confirm receipt, participation in the second round, and collaboratively agree upon a date of return. Over a period of three months, twenty-two out of the initial thirty-eight experts (5 foster parents, 8

social workers, 9 researchers) completed the second round. Reasons for a lack of participation included difficulty reaching participants, no response, time conflicts, and the length of the survey.

Questionnaire

The questionnaire for Round 2 was 22 pages and included 514 distinct items drawn directly from Round 1 responses (Appendix L). The large number of items resulted from the focus on treatment versus prevention and importance versus practicality of strategies. Therefore, some responses were rated for both importance and practicality for both prevention and treatment. Experts were asked to rate the following: intervention targets (foster child, foster parent, biological parent, entire family) as primary or secondary for three age groups (younger than 8 years old, 8-12 year olds; 13 – 18 year olds); importance and practicality of potential groups involved in phases of the interventions; strategies to promote engagement from the target audience; strategies to promote the targeted behaviors and to overcome barriers; intervention components and resources; appropriate intervention channels; program duration and frequency; potential barriers; strategies for evaluating the intervention (e.g. components or characteristics, populations, variables); outcomes; and policy approaches; and to rate the level of agreement of two statements. Importance and practicality ratings were completed on a scale of 0 (not at all) to 10 (Very). Agreement ratings were on a scale of 1 (strongly disagree) to 5 (strongly agree).

Data analysis

Responses were organized by category (e.g. barriers, evaluation, policy approaches) and type of expert (e.g. foster parent, social worker, research scientist). Experts ranked intervention targets and delivery modes as primary or secondary. Data corresponding to these items were tallied within panels and across panels. Average ratings and interquartile ranges (IQR) values for

importance and practicality were calculated for each response by expert type and collectively. The IQR was used to determine consensus, with lower numbers reflecting higher levels of consensus. Study investigators used the remaining steps to analyze the data:

1. Calculated the upper 25% quartile for average ratings and IQR values, eliminating statements that did not fall into this upper quartile (anything below the 75th percentile; Linstone & Turoff, 2002).
2. Removed any statement that did not receive a high average rating and consensus value by all experts, irrespective of averages and IQR values within expert types.
3. Analysis did not result in the selection of a significant number of statements that were considered practical by all experts. Therefore, an additional analysis was conducted to see if any of the statements from the second step were rated as practical by any of the three expert panels, as reflected by an average rating and IQR greater than the 75th percentile.
4. Compared statements that reflected consensus of high importance (above the 75th percentile) by one panel and consensus of low importance by other panels (below the 10th percentile).

Round 2 Results

Round two results are organized based on the intervention target, mode of delivery, and suggestions pertaining to content, and other processes and outcomes. Results are also presented based on suggestions across panels and differences between panels.

Intervention target – Most experts suggested that interventions, for children under the age of eight and between the ages of nine and twelve, should primarily target foster parents (n=19, 18, respectively) and biological parents (n=17, 17, respectively). They indicated that the foster

child (n=10, 10, respectively) and the entire family (n=12, 10, respectively) should serve as secondary intervention targets. However, for an intervention targeting children between the ages of thirteen and eighteen, the foster parent (n=16) and the child (n=17) should serve as the primary targets, with biological parents (n=7) and the entire family (n=8) serving as secondary targets. See Table 3 for more information.

Intervention mode - Most experts agreed that an intervention targeting foster children should be delivered primarily in-person (n=21; average practicality rating = 8). The second highest rated delivery channel was through group classes (n=15; average practicality rating = 7.4). Secondary modes of delivery were the Internet, phone, and multi-media (n=15 for all). However, these modes received low practicality ratings ($x=2.0, 1.0, 2.8$, respectively). See Table 4 for more information on the percentage of experts who rated the intervention modes as primary or secondary.

Content-related suggestions – Experts agreed on the importance of twenty-two content-related strategies for preventing (Table 4) and treating obesity (Table 5), while three additional strategies received high consensus and importance ratings for treatment only. Such content-related strategies deemed important for treating and preventing obesity included educating parents on healthy lifestyles, behavioral strategies (e.g. goal setting), and accessing resources (e.g. physical activity opportunities and affordable foods). Items that were only important for treating obesity were strategies for shopping for healthy items, making new foods palatable, and meal planning. Thirteen additional strategies for the prevention of obesity received consensus by at least one panel as practical. Whereas, researchers and social workers agreed that it is important and practical to provide knowledge about reading nutrition labels, and the benefits of healthy eating and physical activity; foster parents and social workers agreed on the importance

and practicality of educating parents on meal routines. Foster parents and researchers agreed that providing easy-to-follow food plans would also be important and practical for an intervention designed to prevent or treat obesity among this population. Four of the content-related strategies suggested for the prevention and treatment of obesity were not rated as practical by any of the panels, nor two of the strategies that were only mentioned for treatment (e.g. teach birth parents ways to be physically active and eat affordable, gear the program to the entire family).

Process-related suggestions – Experts agreed on the importance of eighteen suggestions related to the process of an intervention designed to prevent or treat obesity among foster children (see Tables 6 & 7). Seven of the suggestions received high consensus on the level of importance for interventions designed not only to prevent obesity, but to treat it as well. Examples of these strategies include DSS engaging foster families in the entire process, collaborating with Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) for nutrition education, and overcoming the biological parent’s home environment as a potential barrier. None of the suggestions received consensus on practicality across all panels. However, foster parents and social workers agreed on the practicality of the inclusion of tasty and healthy options for the prevention and treatment of obesity. They also agreed on the inclusion of fun, health and activity focused activities for children during parents’ training in an intervention designed to prevent obesity.

Outcome-related suggestions – Four suggestions related to evaluating the intervention for sustainability were provided (see Table 8). All experts agreed that it was important to evaluate foster children and their foster parents in interventions designed to prevent and treat obesity in this population. However, the research panel was the only panel to agree that foster children

should be evaluated in interventions designed to prevent and treat obesity, whereas the foster parent panel was the only one to agree on the practicality of evaluating foster parents.

Differences between panels – Table 9 lists the suggestions that received consensus on high importance by one panel but low importance by another. Items that the foster parent panel agreed was of high importance were rated of low importance by researchers and social workers, and vice versa. However, there were no extreme (consensus by one panel as highly important or practical and low by another) differences in the ratings of social workers and researchers. Whereas, researchers and social workers rated foster parents' attendance as an important barrier, foster parents rated it of low importance. Foster parents agreed on the importance of measuring health care utilization by foster and birth parents, nutrition knowledge weekly, and cholesterol weekly for preventing or treating obesity, and researchers did not. Alternatively, researchers agreed on the importance of social service agencies implementing a policy assessing the food environment during home visits, foster parents indicated that this strategy was of low importance.

Discussion

Experts provided an extensive list of suggestions for developing an intervention designed to prevent and/or treat obesity, with each panel creating several unique responses. Across all panels, experts suggested integrating a weight management intervention into ongoing agency-based training opportunities, with foster parents and social workers receiving training hours for their participation. The most noticeable differences in responses between panels were suggestions for the intervention design. While researchers provided detailed strategies for research design, social workers provided suggestions comparable to current delivery methods. These differences are not surprising. The researchers involved in this study have experience

with research design, making them knowledgeable about the level of detail necessary to execute a scientifically sound intervention. Also, social workers and foster parents have firsthand knowledge of some of the existing foster care system practices. Therefore, it is assumed that they would provide strategies that would fit well within the current system.

Recent legislation has focused on reunification as a primary goal of the foster care system (VDSS, 2012), with services being offered to facilitate the reunification of foster children with their biological parents. Therefore, it was not surprising that experts suggested targeting birth parents.

Overall, most of the strategies provided by experts across panels, are not unique to the foster care system, and have been used by the general population (Golan et al., 2006). It is a common thought that purchasing healthy foods, and increasing physical activity through gym memberships, and participation in organized sports is costly. While, foster parents receive supplemental income for caring for children placed in their homes, foster parents do not think that this income is suitable for caring for their child (Brown, Gerritts, Ivanova, Mehta, & Skrodzki, 2012). Therefore, it is not surprising that experts also suggested addressing cost-related strategies for improving healthy eating and physical activity behaviors (Rehm, Monsivais, & Drewnowski, 2011).

Experts also provided system specific strategies related to food as a coping mechanism. Foster children experience high rates of emotional and behavioral problems (Burns et al., 2004). Research suggests that one of their coping mechanisms is aberrant food behavior. Therefore, experts suggested that intervention content also include addressing the use of food as emotional support. Whereas, research and practice demonstrates that attendance during foster parent trainings is problematic, foster parents, who may practice this poor attendance, may not perceive

their attendance as problematic. Or perhaps, foster parent panel experts may represent the small portion of foster parents who regularly attend trainings.

The research team's hypothesis that an intervention targeting foster children would suggest targeting nutrition, physical activity, and the home environment through a combination of delivery methods was partially correct. While experts across panels agreed that it is important to target fruit and vegetable consumption and physical activity, suggestions to target sugar-sweetened beverages and sedentary behaviors were not rated as significantly important. Also, while experts across panels agreed on the importance and practicality of intervention delivery through face-to-face encounters, the inclusion of web-based approaches and telephone counseling were not rated as overly important or practical.

Interventions and information related to foster care are often delivered through face-to-face encounters or publications. Therefore, these results are not surprising. However, a few recent studies targeting this population have tested the effectiveness of an intervention delivered through the Internet. These studies resulted in increased knowledge about the subject matter, user satisfaction, and implementation fidelity (Delaney, Nelson, Pacifici, White, & Smalley, 2012; Pacifici, Delaney, White, Nelson, & Cummings, 2006).

This study had a few limitations. Some of these limitations are related to the questionnaire design. Firstly, for the second round of a Delphi Study, the inclusion of all responses from the open-ended questions distributed in previous rounds is of normal practice (Rowe & Wright, 2001). Despite numerous attempts to condense responses from Round 1, the Round 2 questionnaire consisted of twenty-two pages, and took experts at least 45 minutes to an hour to complete. The length of the survey may have resulted in participant burden, with participants not giving latter questions a significant amount of thought (Galesic & Bosnjac,

2009). Due to the participant burden expressed upon completion of the second round, as well as a saturation of data, the research team decided to end the Delphi Study after two rounds. Even though data analysis of the second round provided many suggestions, experts did not provide much consensus on the importance and practicality of evaluation outcomes and measurement periods. Therefore, a third round may have provided an opportunity for experts to reevaluate items aligning to the previous mentioned limitation. Lastly, even though experts rated the importance of intervention targets, the round two questionnaires did not query experts on practicality.

Despite our limitations, this study had many strengths, which warrants acknowledgment. The research team recruited a heterogeneous panel of experts, spanning amount of experience, and research expertise. Therefore, experts provided suggestions perspectives that were based on research, and practicality. Similarly, another strength was experts' duration in their respective fields as well as their length of time as foster parents, with some experts having experience in multiple domains (e.g. research and social work, research and foster parent). Lastly, this study resulted in a lot of rich data.

Based on the rich data that we have collected, we recommend testing an intervention designed to improve healthful eating and physical activity habits of foster children. This intervention should primarily target foster and biological parents of children under the age of twelve, whereas, if the child is between the ages of thirteen and eighteen, it should primarily target the foster parent and the child. Furthermore, we suggest a research design that is delivered primarily through face-to-face modes, utilizing the Internet, phone, and multi-media as secondary delivery modes. The intervention should utilize the content-related suggestions provided by experts and should include methods for overcoming the potential barrier of foster

parents attendance. Interventionists can utilize previous nutrition and physical activity based interventions as well as interventions conducted with this population to determine appropriate timing and outcomes for evaluations

Lastly, such an intervention should be designed with policy in mind. Panel experts provided several policy-related suggestions. Most importantly, they suggested screening obesity upon entry into foster care. Further research is necessary to determine the effectiveness of such a method. Additionally, it is important to determine whether existing child welfare policies address nutrition, physical activity, and weight status of foster children; and/or how such intervention strategies can be integrated.

Table 1. Expert characteristics

	FP	RS	SW	All
Gender				
Female	50%	54%	79%	62%
Male	50%	46%	21%	38%
Race				
AA/Black	10%	0%	29%	14%
Asian	10%	0%	0%	3%
Mixed	0%	8%	0%	3%
White	80%	92%	71%	81%
Highest Degree				
Associate's	10%	0%	0%	3%
Bachelor's	10%	0%	64%	27%
Master's	20%	31%	29%	27%
Doctoral	10%	69%	0%	27%
Age (years), range, mean (M)	26-62 <i>M</i> =45	33-64 <i>M</i> =50	23-62 <i>M</i> =37	23-64 <i>M</i> =43
Length of Expertise (years)	1 -23 <i>M</i> =6	5-37 <i>M</i> =19	2-40 <i>M</i> =13	1-40 <i>M</i> =14

Note. AA – African-American; FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Characteristics across panels.

Table 2. Intervention target

		FP Primary	FP Secondary	R Primary	R Secondary	SW Primary	SW Secondary	All Primary	All Secondary
Target for children under 8 years old	Foster Parent	67%	33%	0%	0%	78%	11%	83%	13%
	Biological Parent	100%	0%	50%	0%	78%	11%	74%	4%
	Child	17%	50%	13%	63%	33%	22%	22%	43%
	Entire Family	17%	50%	13%	63%	22%	44%	17%	52%
Target for children 9 to 12 years old	Foster Parent	67%	33%	88%	13%	78%	11%	78%	17%
	Biological Parent	100%	0%	50%	0%	78%	11%	74%	4%
	Child	17%	50%	50%	38%	44%	44%	39%	43%
	Entire Family	17%	50%	13%	50%	22%	33%	17%	43%
Target for children 13 to 18 years old	Foster Parent	67%	17%	75%	25%	67%	22%	70%	22%
	Biological Parent	50%	50%	38%	13%	56%	33%	26%	30%
	Child	67%	0%	75%	25%	78%	22%	74%	17%
	Entire Family	17%	67%	0%	63%	11%	44%	9%	35%

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels.

Table 3. Intervention mode

Intervention Mode	Panel (n, Average Practicality)							
	All Primary	All Secondary	FP Primary	FP Secondary	R Primary	R Secondary	SW Primary	SW Secondary
In-person	91% (8.0)	13% (2.0)	83% (8.2)	17% (3.0)	100% (7.5)	0%	89% (8.2)	11% (2.0)
Internet	0%	65% (2.0)	17% (8.0)	67% (3.0)	25% (8.0)	63% (3.0)	22% (7.4)	67% (1.3)
Phone	22% (7.2)	65% (1.0)	0	50% (2.0)	25% (8.1)	63% (1.0)	22% (6.6)	67% (1.5)
Multi-media	17% (7.2)	65% (2.8)	17% (6.0)	50% (1.0)	25% (7.9)	63% (2.0)	11% (7.0)	78% (2.5)
Publications	13% (7.1)	52% (4.0)	0	67% (1.8)	13% (7.3)	63% (4.3)	22% (6.8)	78% (3.0)
Home visits	43% (6.7)	39% (1.5)	33% (8.0)	33% (1.5)	50% (6.0)	38% (0.5)	44% (6.8)	44% (0.5)
Monthly newsletters	17% (7.4)	61% (1.0)	17% (7.3)	50% (0.3)	0	75% (1.5)	33% (7.3)	56% (1.0)
Hands on knowledge & experience	57% (7.7)	35% (1.8)	83% (8.2)	17% (0.0)	63% (7.9)	25% (2.0)	44% (7.2)	56% (2.0)
Workshops	61% (7.5)	26% (2.0)	33% (7.0)	33% (0.0)	75% (7.5)	25% (3.0)	67% (7.8)	22% (2.0)
Group or family counseling	52% (7.2)	39% (1.3)	67% (7.2)	33% (1.0)	50% (6.7)	38% (4.0)	44% (7.5)	44% (1.0)
Group classes	65% (7.4)	26% (2.0)	33% (6.0)	33% (2.5)	100% (7.9)	0%	56% (7.6)	44% (1.0)
Combination of clinical & e-health components	30% (7.0)	52% (2.8)	33% (6.0)	33% (2.5)	25% (7.2)	50% (2.5)	33% (7.2)	67% (3.0)

Note. Practicality rated on a scale of 0 (not at all) to 10 (very).

Table 4 Content-related suggestions for preventing obesity

Content	IPO				PPO			
	All	FP	R	SW	All	FP	R	SW
Healthy food choices	9.5, 0.8	10.0, 0.0	9.5, 0.3	9.3, 1.0	8.8, 2.0*	9.0, 2.0*	9.4, 1.0*	8.2, 1.0*
Limiting sugar	9.3, 1	9.6, 1.0	9.3, 1.3	9.2, 1.0	8.1, 3.0	8.3, 2.3	8.5, 2.3	7.7, 2.0
Reading labels	9.3, 1	9.6, 1.0	9.1, 1.3	9.2, 1.0	8.2, 3.0*	8.0, 2.5	8.8, 1.5*	7.9, 3.0*
Benefits of healthy eating & PA	9.6, 0	10.0, 0.0	9.4, 1.0	9.6, 0.0	9.0, 2.0*	8.5, 2.5	9.7, 0.5*	8.6, 2.0*
Educate parents on meal routines	9.2, 1.8	9.6, 1.0	9.5, 0.3	8.7, 2.0	8.4, 2.0*	9.3, 1.3*	8.6, 2.3	7.8, 1.0*
Educate parents on making healthy foods available	9.4, 1	10.0, 0.0	9.5, 0.3	8.9, 2.0	7.8, 4.0	9.3, 1.3*	8.3, 3.3	6.7, 3.0
Educate parents on making healthy foods accessible	9.4, 1	10.0, 0.0	9.5, 0.3	8.9, 2.0	7.7, 4.0	9.5, 0.5*	8.0, 3.5	6.7, 3.0
Educate parents on role modeling	9.1, 1.8	9.6, 1.0	9.3, 1.3	8.8, 2.0	7.9, 2.0	9.3, 1.3*	7.5, 2.8	7.6, 1.0
Educate parents on avoiding food as punishment & emotional support	9.5, 1	10.0, 0.0	9.4, 1.0	9.2, 1.0	7.9, 3.0	10.0, 0.0*	7.6, 2.3	7.2, 1.0
Components should include goal setting	8.8, 2	9.5, 0.8	9.1, 1.0	8.1, 2.0	N/A	N/A	N/A	N/A
Exposure to sports & outdoors activities	8.8, 2	9.7, 0.0	9.0, 1.5	8.0, 2.0	N/A	N/A	N/A	N/A
Convenient access to affordable foods	8.8, 2	9.0, 1.5	9.5, 0.3	8.0, 2.0	N/A	N/A	N/A	N/A
Educate parents on portion control & junk food	9, 1.5	9.1, 0.8	9.3, 1.3	8.6, 1.5	7.7, 2.0	7.2, 4.0	8.4, 2.3	7.3, 1.5
Educate parents on free or low-cost physical activity	9.0, 2.0	9.1, 1.5	9.0, 2.0	9.0, 2.0	8.2, 1.0*	9.0, 2.0*	8.0, 2.5	7.7, 0.0
Teach birth parents ways to be physically active & eat healthy affordably	8.9, 2.0	9.1, 1.5	8.9, 2.3	8.8, 2.0	6.4, 3.8	7.2, 5.0	6.5, 3.8	5.8, 4.0
Encourage kids to eat healthy foods	9.3, 1	10.0, 0.0	9.3, 1.3	8.9, 1.0	8.0, 3.0	9.3, 0.8*	8.1, 3.3	7.2, 2.0
Exercising as a family weekly	9.1, 1.3	9.6, 0.8	9.0, 1.3	8.3, 2.0	6.5, 3.0	8.8, 2.0*	5.9, 3.3	5.8, 3.0
Limit fast foods	9.4, 1	9.9, 0.0	9.0, 1.5	9.4, 1.0	7.0, 3.0	9.0, 1.0*	6.8, 4.0	6.2, 2.0
Easy to follow food plans	9, 2	9.5, 1.0	9.1, 1.5	8.7, 2.0	8.5, 2.0*	9.0, 1.0*	9.4, 1.0*	7.6, 1.0
Gear the program to the entire family	9, 2	9.1, 1.5	9.1, 1.3	8.8, 2.0	7.8, 3.5	8.2, 1.0	7.6, 4.0	7.8, 2.0
Teach strategies to make healthy eating & PA affordable	9, 2	9.4, 1.0	8.9, 2.3	8.7, 1.0	6.9, 3.8	6.6, 3.0	7.3, 3.8	6.8, 2.0
Parents should be educated on family routines for PA	8.9, 2	9.4, 1.0	9.4, 1.0	8.1, 2.0	7.4, 3.0	9.0, 2.0*	7.9, 3.3	6.3, 2.0

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; IPO - importance of preventing obesity; PPO - Practicality of using the strategy in an intervention designed to prevent obesity; * - Consensus of importance based on methods listed in text. . Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

Table 5 Content-related strategies for treating obesity

Content	ITO				PTO			
	All	FP	R	SW	All	FP	R	SW
Healthy food choices	9.5, 0.8	10.0, 0.0	9.5, 0.3	9.3, 1.0	8.8, 2.0*	9.3, 1.3*	9.4, 1.0*	8.1, 2.0*
Limiting sugar	9.3, 1	9.6, 1.0	9.3, 1.3	9.2, 1.0	8.0, 3.0	8.3, 2.3	8.5, 2.3	7.4, 2.0
Reading labels	9.3, 1	9.6, 1.0	9.1, 1.3	9.3, 1.0	8.2, 3.0*	8.3, 2.3	8.8, 1.5*	7.8, 3.0
Benefits of healthy eating & PA	9.6, 0	10.0, 0.0	9.4, 1.0	9.6, 0.0	8.9, 2.0*	8.5, 2.5	9.7, 0.5*	8.4, 3.0*
Educate parents on meal routines	9.2, 1.8	9.6, 1.0	9.5, 0.3	8.7, 2.0	8.4, 2.0*	9.3, 1.3*	8.6, 2.3	7.8, 1.0*
Educate parents on making healthy foods available	9.4, 1	10.0, 0.0	9.5, 0.3	8.9, 2.0	7.8, 4.0	9.3, 1.3*	8.3, 3.3	6.8, 3.0
Educate parents on making healthy foods accessible	9.4, 1	10.0, 0.0	9.5, 0.3	8.9, 2.0	7.8, 4.0	9.5, 0.5*	8.0, 3.5	6.8, 3.0
Educate parents on role modeling	9.1, 1.8	9.6, 1.0	9.3, 1.3	8.8, 2.0	7.9, 2.0	9.3, 1.3*	7.5, 2.8	7.6, 1.0
Educate parents on avoiding food as punishment & emotional support	9.5, 0.8	10.0, 0.0	9.4, 1.0	9.3, 1.0	7.9, 3.0	10.0, 0.0*	7.6, 2.3	7.2, 1.0
Components should include goal setting	9.0, 1.5	9.7, 0.0	9.4, 1.0	8.2, 2.0	N/A	N/A	N/A	N/A
Exposure to sports & outdoors activities	8.8, 2	9.7, 0.0	9.0, 1.5	8.1, 2.0	N/A	N/A	N/A	N/A
Convenient access to affordable foods	8.9, 2	9.0, 1.5	9.5, 0.3	8.2, 2.0	N/A	N/A	N/A	N/A
Educate parents on portion control & junk food	9.1, 1.0	9.1, 0.8	9.3, 1.3	9.0, 1.3	7.9, 3.0	8.0, 1.0	8.3, 2.3	7.5, 2.5
Educate parents on free or low-cost physical activity	9.2, 1.5	9.4, 1.0	9.0, 2.0	9.3, 1.3	8.2, 1.0*	8.6, 1.0*	8.1, 2.5	8.0, 0.3*
Teach birth parents ways to be physically active & eat healthy affordably	9.0, 2.0	9.0, 1.5	8.9, 2.3	9.2, 2.0	6.7, 3.0	7.2, 5.0	6.6, 3.5	6.6, 3.0
Encourage kids to eat healthy foods	9.5, 1.0	10.0, 0.0	9.3, 1.3	9.4, 1.0	8.4, 3.0*	9.3, 0.8*	8.1, 3.3	8.3, 2.0*
Exercising as a family weekly	9.2, 1.0	9.7, 0.0	9.0, 1.3	9.1, 1.0	6.7, 3.0	9.0, 2.0*	5.9, 3.3	6.1, 3.0
Limit fast foods	9.4, 1	9.9, 0.0	9.0, 1.5	9.4, 1.0	7.3, 3.0	9.6, 1.0*	6.8, 4.0	6.4, 2.0
Easy to follow food plans	9.0, 2.0	9.3, 1.0	9.1, 1.5	8.7, 2.0	8.5, 2.0*	9.0, 1.0*	9.4, 1.0*	7.6, 1.0
Gear the program to the entire family	9, 2	9.0, 1.5	9.1, 1.3	9.0, 2.0	7.8, 3.5	8.2, 1.0	7.6, 4.0	7.8, 3.5
Teach strategies to make healthy eating & PA affordable	8.9, 2.0	9.2, 1.8	8.9, 2.3	8.7, 1.0	7.1, 3.5	7.2, 3.0	7.4, 3.5	6.9, 2.0
Parents should be educated on family routines for PA	9.0, 2.0	9.4, 1.0	9.4, 1.0	8.3, 3.0	7.4, 3.0	9.0, 2.0*	7.9, 3.3	6.3, 2.0
Teach foster parents how to shop for healthy items	9.3, 1.5	9.3, 1.8	9.5, 0.5	9.3, 1.3	8.0, 3.0	8.6, 2.0*	8.0, 0.8	7.8, 1.8
Teach parents ways to make new foods more palatable	8.6, 2.0	8.7, 1.8	9.1, 1.3	8.1, 2.0	7.0, 2.8	6.8, 3.0	7.8, 2.3	6.4, 5.0
Meal planning	8.7, 2.0	8.8, 1.8	9.1, 1.3	8.3, 2.0	7.5, 2.8	8.4, 2.0	8.4, 1.3	6.2, 3.0

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; ITO - importance of treating obesity; PPO - Practicality of using the strategy in an intervention designed to treat obesity; * - Consensus of importance based on methods listed in text.. Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

Table 6 Process-related strategies for preventing obesity

Process	IPO				PPO			
	All	FP	R	SW	All	FP	R	SW
Program strategies should consist of fun, health & activity focused activities for children during parents' training	9.2, 1.3	9.4, 0.8	9.4, 1.0	8.8, 2.0	8.5, 1.0*	8.8, 2.0*	8.6, 0.5	8.2, 1.0*
Tasty healthy options	9.2, 1.0	9.4, 1.5	9.3, 1.0	8.9, 1.0	8.5, 3.0	8.6, 3.0*	8.6, 2.3	8.2, 3.0*
Healthy food/coupons as a child incentive	9.0, 2.0	9.3, 0.8	9.0, 2.0	8.9, 2.0	7.8, 3.0	8.0, 4.0	7.5, 3.0	7.9, 1.0*
Build trusting relationships between deliverers & participants	8.7, 2.0	9.0, 2.0	9.0, 1.3	8.2, 1.0	7.5, 2.5	7.8, 0.0	7.9, 2.5	6.9, 2.0
DSS should engage foster families in the entire process.	9.1, 1	9.1, 0.8	9.1, 1.0	9.0, 1.0	7.3, 3.8	8.4, 3.0	7.1, 2.5	6.9, 2.0
DSS should collaborate with WIC for nutrition education	8.9, 2	9.3, 0.0	9.1, 1.3	8.4, 2.0	7.5, 4.0	7.2, 5.0	7.5, 3.3	7.7, 3.0
Collaborate with schools & encourage them to participate in a school-based program for promoting PA & healthful eating	8.8, 2	9.6, 0.8	9.0, 2.0	7.9, 2.0	6.4, 3.5	8.2, 3.0	6.3, 3.0	5.6, 2.0
Unhealthy home environment of biological parents is a potential barrier	8.9, 2.0	9.2, 1.8	9.1, 1.3	8.4, 1.3	6.1, 3.0	6.8, 5.0	5.8, 1.5	6.1, 3.0
Resources should include the provision of treatment for specific cause of obesity ^a	8.9, 2	9.8, 0.0	9.3, 1.3	8.0, 2.3	7.3, 1.3	8.8, 1.3*	6.9, 1.3	6.9, 1.5
DSS should screen for obesity upon entry into care ^a	8.9, 2	9.2, 2.0	9.5, 0.3	8.0, 2.0	7.6, 3.3	7.5, 1.0	8.3, 3.0	6.9, 4.0

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; IPO - importance of preventing obesity; PPO - Practicality of using the strategy in an intervention designed to prevent obesity; * - Consensus of importance based on methods listed in text.; ^a – policy approach; DSS – Department of Social Services; PA – physical activity. Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

Table 7. Process-related strategies for treating obesity

Process	ITO				PTO			
	All	FP	R	SW	All	FP	R	SW
Program strategies should consist of fun, health and activity focused activities for children during parents' training	9.0, 1.8	9.2, 1.0	9.4, 1.0	8.7, 2.0	8.2, 1.8*	8.8, 2.0*	8.5, 1.3	7.7, 2.0
Tasty healthy options	9.2, 1.0	9.4, 1.0	9.3, 1.0	9.0, 1.0	8.5, 2.8*	9.4, 1.0*	8.6, 2.3	7.9, 3.0*
Parent incentives should consist of healthy food/coupons	9, 2	9.4, 0.0	9.0, 2.0	8.8, 2.0	7.7, 3.0	8.4, 4.0	7.5, 3.0	7.4, 2.0
Make the intervention a family affair	8.7, 2	9.2, 2.0	8.9, 2.0	8.2, 1.0	7.3, 2.0	8.2, 2.0	6.8, 3.0	7.2, 1.0
DSS should engage foster families in the entire process.	9.0, 1	9.0, 0.8	9.1, 1.0	9.0, 1.0	7.4, 3.8	8.4, 3.0	7.3, 2.5	6.9, 2.0
DSS should collaborate with WIC for nutrition education	8.9, 2	9.2, 0.0	9.1, 1.3	8.4, 2.0	7.5, 4.0	7.2, 5.0	7.5, 3.3	7.7, 3.0
Provide multiple opportunities for fun PA	8.9, 2	9.3, 1.0	9.3, 1.3	8.2, 2.0	7.5, 1.0	8.4, 2.0	7.6, 1.8	6.8, 1.0
Increase after-school activities	8.7, 2	9.0, 1.5	9.0, 2.0	8.2, 2.0	6.4, 2.8	7.8, 4.0	5.8, 3.0	6.1, 2.0
Develop safe environments for obese children to exercise	8.9, 2	8.8, 1.5	9.3, 1.3	8.6, 2.0	6.5, 3.0	7.8, 2.0	5.8, 2.3	6.4, 2.0
Intervention should last one year	9.1, 2	10.0, 0.0	9.5, 1.0	8.3, 1.0	6.6, 3.0	6.8, 3.3	6.6, 3.5	6.5, 2.3
Unhealthy home environment of biological parents is a potential barrier	9, 2	9.2, 1.8	9.3, 1.3	8.6, 1.3	6.2, 3.0	6.8, 5.0	5.8, 1.5	6.4, 3.0
Foster parents eating habits are a potential barrier	8.6, 2	9.3, 0.8	8.9, 2.0	7.9, 2.0	6.5, 3.8	8.6, 1.0	5.0, 3.8	6.6, 2.0
Child disordered eating history is a potential barrier	9.1, 2	8.8, 1.8	9.4, 1.0	9.0, 2.0	7.4, 1.0	7.6, 1.0	6.6, 3.3	8.0, 2.0*
Resources should include the provision of treatment for specific cause of obesity ^a	9.1, 2	9.8, 0.0	9.3, 1.3	8.6, 2.3	7.6, 1.3	9.0, 0.5*	6.9, 1.3	7.5, 1.0
DSS should screen for obesity upon entry into care ^a	9, 2	9.2, 2.0	9.6, 0.3	8.3, 2.0	8.1, 3.0	8.0, 2.5	8.8, 1.3*	7.4, 2.5

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; ITO - importance of treating obesity; PPO - Practicality of using the strategy in an intervention designed to treat obesity; * - Consensus of importance based on methods listed in text.; ^a – policy approach; DSS – Department of Social Services; PA – physical activity. Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

Table 8. Outcome-related strategies for preventing and treating obesity

Outcome	IPO				PPO			
	All	FP	R	SW	All	FP	R	SW
Evaluate foster children	9.0, 2.0	9.0, 1.5	9.5, 1.0	8.7, 1.0	8.0, 1.8	8.2, 1.0	8.9, 2.0*	7.1, 3.0
Evaluate foster parents	9.1, 1.5	9.3, 1.0	9.4, 1.3	8.8, 1.0	7.7, 1.0	8.8, 2.0*	7.4, 1.3	7.3, 1.0
Outcome	ITO				PTO			
	All	FP	R	SW	All	FP	R	SW
Evaluate foster child's eating behavior	8.9, 2	9.2, 2.0	9.5, 1.0	8.1, 2.0	7.6, 3.3	8.5, 2.0	8.1, 4.0	6.5, 1.5
Evaluate foster child's physical activity	8.9, 2	9.4, 1.0	9.6, 0.5	8.0, 2.3	7.9, 2.3	8.5, 2.0	8.6, 2.0	6.9, 0.5

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; ITO - importance of treating obesity; PPO - Practicality of using the strategy in an intervention designed to treat obesity; * - Consensus of importance based on methods listed in text. Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

Table 9. Items that received a consensus of high importance and/or practicality for an item by one expert panel but low importance and/or practicality by another panel.

Content	IPO			PPO			ITO			PTO		
	FP	R	SW	FP	R	SW	FP	R	SW	FP	R	SW
Foster parents' barriers for an intervention preventing or treating obesity would be attendance	5.3, 1.0	9.1, 1.3	8.6, 1.0	5.2, 1.0	***	7.9, 2.0	5.5, 1.0	9.1, 1.3	8.6, 1.0	5.4, 1.0	***	7.9, 2.0
Social service should implement a policy that food environments are assessed during home visits	***	***	***	***	***	***	4.6, 2.0	8.9, 2.0	***	***	***	***
Body mass index should be monitored	***	***	***	***	***	***	4.6, 2.0	8.9, 2.0	***	***	***	***
Measure health care utilization of foster parents	9.0, 2.0	4.7, 2.5	***	***	***	***	9.0, 2.0	4.7, 2.5	***	***	***	***
Measure health care utilization of birth parents	9.0, 2.0	4.7, 2.5	***	***	***	***	9.0, 2.0	4.7, 2.5	***	***	***	***
Measure nutrition knowledge weekly	9.5, 1.0	2.0, 2.5	***	9.0, 1.5	4.8, 4.8		***	***	***	***	***	***
Measure cholesterol weekly	8.8, 2.3	0.0, 0.0	***	8.7, 1.0	2.5, 2.5		***	***	***	***	***	***

Note. FP - Foster parent panel; R - Researcher panel; SW – Social worker panel; All – Ratings across panels; ITO - importance of treating obesity; PPO - Practicality of using the strategy in an intervention designed to treat obesity; * - Consensus of importance based on methods listed in text; *** - no significant difference among panel. Importance and practicality ratings on a scale of 0 (not at all) to 10 (very).

References

- Almeida, F. A., Shetterly, S., Smith-Ray, R. L., Estabrooks, P. A. (2010). Reach and effectiveness of a weight loss intervention in patients with prediabetes in Colorado. *Preventing Chronic Disease*, 7. http://www.cdc.gov/pcd/issues/2010/sep/09_0204.htm
- Altshuler, S. J., & Poertner, J. (2003) Assessing child well-being in non-relative foster care with a new outcome measurement tool. *Journal of Family Social Work*, 7, 73–85.
doi: 10.1300/J039v07n02_06
- Bautista-Castano, I., Doreste, J., & Serra-Majem, L. (2004). Effectiveness of interventions in the prevention of childhood obesity. *European Journal of Epidemiology*, 19, 617-622.
doi: 10.1023/B:EJEP.0000036890.72029.7c
- Brown, J. D., Gerritts, J., Ivanova, V., Mehta, N., & Skrodzki, D. (2012). Motives of aboriginal foster parents. *Children and Youth Services Review*, 34, 1298-1304.
- Brown, J.D., & Bednar, L.M. (2006). Foster parent perceptions of placement breakdown. *Children and Youth Services Review*, 28, 1497-1511.
doi: 10.1016/j.childyouth.2006.03.004
- Burns, B. J., Phillips, S. D., Wagner, H. R., Barth, R. P., Kolko, D. J., Campbell, Y., & Landsverk, J. Mental Health Need and Access to Mental Health Services by Youths Involved With Child Welfare: A National Survey. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43, 960–970. Doi: 10.1097/01.chi.0000127590.95585.65
- Campbell, K., Hesketh, K., Crawford, D., Salmon, J., Ball, K., & McCallum, Z. (2008). The infant feeding activity and nutrition trial (INFANT) an early intervention to prevent childhood obesity: cluster-randomized controlled trial. *BMC Public Health*, 8, 103-111.
doi: 10.1186/1471-2458-8-103

- Delaney, Nelson, Pacifici, White, & Smalley. (2012). Web-Enhanced Preservice Training for Prospective Resource Parents: A Randomized Trial of Effectiveness and User Satisfaction. *Journal of Social Service Research*, 38, 503-514. doi: 10.1080/01488376.2012.696416
- Estabrooks, P. A., & Glasgow, R. E. (2006). Translating effective clinic-based physical activity interventions into practice. *American Journal of Preventive Medicine*, 31, 45-56. doi: 10.1016/j.amepre.2006.06.019
- Estabrooks, P. A., Almedia, F. A., Hill, J. L., Smith-Ray, R. L., Schriener, P., van den Burg, R., & Gonzales, M. (2011). Move more: translating efficacious physical activity intervention principles into effective clinical practice. *International Journal of Sport and Exercise Psychology*, 9, 4-18.
- Estabrooks, P. A., Bradshaw, M., Dzewaltowski, D. A., & Smith-Ray, R. L. (2008). Determining the impact of Walk Kansas: applying a team-building approach to community physical activity promotion. *Annals of Behavioral medicine*, 36, 1-12. doi: 10.1007/s12160-008-9040-0
- Galesic, M & Bosnjac, M. (2009). Effects of Questionnaire Length on Participation and Indicators of Response Quality in a Web Survey. *Oxford Journals Social Sciences Public Opinion Quarterly*, 73, 349-360. doi: 10.1093/poq/nfp031
- Gamache, S., Mirabell, D., & Avery, L. (2006). Early childhood developmental and nutritional training for foster parents. *Child and Adolescent Social Work Journal*, 23, 501-511. doi: 10.1007/s10560-006-0053-x
- Golan, M., & Crow, S. (2004a). Parents are key players in the prevention and treatment of weight-related problems. *Nutrition Reviews*, 62, 39-50. doi: 10.1301/nr.2004.jan.39-50

- Golan, M., Kaufman, V., & Shahar, D. R. (2006). Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*, 95, 1008-1015.
doi: 10.1079/BJN20061757
- Gordon, T. J. (1994). *The Delphi Method*. Washington, DC: United Nations University.
- Gortmaker, S. L., Peterson, K., Wiecha, J., Sobol, A. M., Dixit, S., Fox, M. K., & Laird, N. (1999). . Reducing obesity via a school-based interdisciplinary intervention among youth - Planet health. *Archives of Pediatrics & Adolescent Medicine*, 153, 409-418.
- Hadfield, S. C., & Preece, P.M. (2008). Obesity in looked after children: is foster care protective from the dangers of obesity? *Child: Care, Health, and Development*, 34, 710-712.
doi: 10.1111/j.1365-2214.2008.00874.x
- Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32, 1008-1015. doi: 10.1046/j.1365-2648.2000.01567.x
- Holland, P., & Gorey, K. M. (2004). Historical, Developmental, and Behavioral Factors Associated with Foster Care Challenges. *Child and Adolescent Social Work Journal*, 21, 117-135. doi: 10.1023/B:CASW.0000022727.40123.95
- James, S. (2004). Why do foster care placements disrupt? An investigation of reasons for placement change in foster care. *The Social Service Review*, 78, 601-627.
doi: 10.1086/424546
- Kain, J., Uauy, R., Albala, V. F., Cerda, R., & Leyton, B. (2004). School-based obesity prevention in Chilean primary school children: methodology and evaluation of a controlled study. *International Journal of Obesity*, 28, 483-493.
doi: 10.1038/sj.ijo.0802611

- Kim, K. H., Linnan, L., Campbell, M. K., Brooks, C., Koenig, H. G., & Wiesen C. (2008). The WORD (Wholeness, Oneness, Righteousness, Deliverance): A faith-based weight-loss program utilizing a community-based participatory research approach. *Health Education & Behavior, 35*, 634-650. doi: 10.1177/1090198106291985
- Leathers, S. J., Spielfogel, J. E., McMeel, L. S., & Atkins, M. S. (2011). Use of a parent management training intervention with urban foster parents: A pilot study. *Children and Youth Services Review, 33*, 1270-1279. doi: 10.1016/j.childyouth.2011.02.022
- Pacifici, Delaney, White, Nelson, & Cummings. (2006). Web-based training for foster, adoptive, and kinship parents. *Children and Youth Services Review, 28*, 1329-1343.
- Pasztor, E. M., Hollinger, D. S., Inkelas, M., & Halfon, N. (2006). Health and mental health services for children in foster care: The central role of foster parents. *Child Welfare, 85*, 33-57.
- Price, J. M., Chamberlain, P., Landsverk, J., & Reid, J. (2009). KEEP foster-parent training intervention: model description and effectiveness. *Child & Family Social Work, 14*, 233-242. doi: 10.1111/j.1365-2206.2009.00627.x
- Price, J. M., Chamberlain, P., Landsverk, J., Reid, J. B., Leve, L. D., & Laurent, H. (2008). Effects of a foster parent training intervention on placement changes of children in foster care. *Child Maltreatment, 13*, 64-75. doi: 10.1177/1077559507310612
- Rehm, C. D., Monsivais, P., & Drewnowski, A. (2011). The quality and monetary value of diets consumed by adults in the United States. *American Journal of Clinical Nutrition, 94*, 1333-1339.
- Rogers, E. M. (2003). *Diffusion Networks*. In *Diffusion of Innovations (5th ed)*. New York: Free Press.

- Rowe, G., & Wright, G. (2001). "Expert opinions in forecasting role of the Delphi technique," in J. S. Armstrong (Ed.) *Principles of Forecasting: Handbook for Researchers and Practitioners*. Norwell: Kluwer Academic Publishers: 125-144.
- Schneiderman, J.U., Leslie, L.K., Arnold Clark, J., McDaniel, D. & Xie, B. (2011) Pediatric health assessments of young children in child welfare by placements. *Child Abuse and Neglect*, 35, 29-39. doi: 10.1016/j.chiabu.2010.06.007
- Simon, C., Schweitzer, B., Oujaa, M., Wagner, A., Arveiler, D., Tribby, E.,...Platat, C. (2008). Successful overweight prevention in adolescents by increasing physical activity: a 4-year randomized controlled intervention. *International Journal of Obesity*, 32, 1489-1498. doi: 10.1038/ijo.2008.99
- Steele J. S., & Buchi, K. F. (2008). Medical and mental health of children entering the Utah foster care system. *Pediatrics*, 122, E703-E709.
- Stroebele, N., Ogden, L.G., & Hill, J.O. (2009). Do calorie-controlled portion sizes of snacks reduce energy intake. *Appetite*, 52, 793-796. doi: 10.1016/j.appet.2009.02.015
- Tarren-Sweeny. (2006). Patterns of aberrant eating among pre-adolescent children in foster care. *Journal of Abnormal Child Psychology*, 34, 623-634. doi: 10.1007/s10802-006-9045-8
- van Stralen, M. M., Kok, G., de Vries, H., Mudde, A. N., Bolman, C., & Lechner, L. (2008). The Active plus protocol: systematic development of two theory- and evidence-based tailored physical activity interventions for the over-fifties. *BMC*, 8, 399. doi:10.1186/1471-2458-8-399
- Virginia Department of Social Services Child and Family Services Manual. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/index.cgi> Updated July 2012 . Accessed August 15, 2012.

von der Gracht, H. A. (2008). *The Future of Logistics. Scenarios for 2025*.

Betriebswirtschaftlicher Verlag Dr. Th. Gabler / GWV Fachverlage GmbH, Wiesbaden.

CHAPTER V

Manuscript 3 - Assessing Policies and Programs Impacting Foster Children for Nutrition and Physical Activity Content

ABSTRACT

Recent studies suggest that approximately 35% of foster youth are overweight or obese, with the incidence of obesity among adolescents being higher than that of the general population. While, a few court cases have resulted in the removal of extremely obese children from their homes, it is unknown whether the foster care system is equipped to care for this population of children. The purpose of this study was to determine the extent of nutrition and physical activity content in federal and state legislation pertaining to children in foster care, as well as programs administered by local social service agencies. The research team conducted a content analysis of federal- and state-level legislations. Furthermore, representatives from 93 local branches of Virginia Department of Social Services, completed questionnaires on training programs provided to foster parents caring for their foster children. Federal and state legislations include minimal provisions on ensuring optimal weight, eating and physical activity behaviors of children while in care. Only 16 out of the 93 participating agencies cover nutrition topics during pre-service training, while nutrition is only briefly covered in in-service training materials, utilized by 83 of the agencies. Results of this study suggest that foster parents are not being educated on proper nutrition, physical activity, and weight status of foster children.

Introduction

Obesity has become a growing problem among all age groups. According to the latest published data from National Health and Nutrition Examination Survey (NHANES), 31.9% of children and adolescents aged 2 to 19 are overweight or obese (>85th percentile) (Ogden, 2008). Literature suggests that children diagnosed as overweight or obese tend to become obese adults

(Singh, Mulder, Twisk, van Mechelen, & Chinapaw, 2008). Emerging data suggest that children in foster care have higher rates of overweight and obesity when compared to the general population. These studies suggest that approximately 35% of foster youth are overweight or obese, with the incidence of obesity among adolescents being higher than that of the general population (Schneiderman, 2011, Hadfield & Preece, 2008, Steele & Buchi, 2008). In a few states, extremely obese children have been removed from their natural parents to provide a safer out-of-home environment (Murtagh & Ludwig, 2011). However, it is unknown whether the foster care system is equipped to care for this population of children in terms of policies to support foster parents in providing a home environment that encourages healthful eating, physical activity, and weight management.

Several policy initiatives are underway to curb the obesity epidemic and its impact on children (Vonasek & Mulheron, 2009). Legislation has been passed to provide direction for states to design, enact, and enforce policies to help improve children's health and prevent childhood obesity (Vonasek & Mulheron, 2009). Systems affected by these policy initiatives include school settings, community settings, and health care settings. These initiatives seek to impact nutrition, physical activity, screen time, and partnerships through education, programs, funding, and changes to the physical environments.

For example, the objective of the Texas Public School Nutrition Policy was to promote a healthy school environment through portion control, and the restriction of fat content in foods, as well as high-fat vegetables (Mendoza, Watson, & Cullen, 2010). Similarly, the North Carolina Division of Public Health, administered grants for counties to implement policies and environmental changes that promote healthful eating and physical activity (Cousins, Langer, Rhew, and Thomas, 2011). Combined, these initiatives demonstrated that policy approaches

could result in successful environmental changes that subsequently improved child lifestyle behaviors.

In light of the potential of extremely obese children being referred to foster care, it is important to understand any policies that may be in place, or needed, to aid foster parents and social service systems to adequately address the needs of these children. As may be expected, much of the legislation concerning foster children focuses on reunification, funding, health care access, child abuse and neglect, and transitions to independent living (Child Welfare Information Gateway, 2011). Although the Foster Care Independence Act of 1999 states that foster parents should be able to meet the needs of their foster children, preliminary searches of legislation involving foster parents or children do not specifically mention meeting the physical health needs of foster children (Grimm, 2003). Furthermore, it is unknown whether federal or state legislation and local social service agencies include provisions for preventing or treating obesity among foster children.

Approximately 5,368 foster children reside in Virginia (VDSS, 2012). As of June 2012, 50% of these youth were removed from their last placement due to neglect (VDSS, 2012). Also, the goals for at least 57% of these children are either long term foster care, reunification with guardians, or has not been established (VDSS, 2012). Virginia's foster care system is supervised at the state level but administered locally (Code of Virginia, Section 63.2). Children in foster care and their families receive caseworkers. Caseworkers

“meet with children and families to monitor children's safety and well-being; assess ongoing service needs of children, families, and foster parents; engage biological and foster parents in developing case plans; assess permanency options for the child; monitor family progress toward established goals; and ensure that

children and parents are receiving necessary services.”

(National Conference of State Legislatures)

The application process for prospective foster parents include orientation on becoming a foster parent, criminal history check, physical examination, home studies, analysis as to whether the individual is physically and emotionally capable of caring for the child, assessment that they are financially self-sufficient without relying on foster care payments, and training (VDSS, 2012; VDSS, 2012b). Local agencies in Virginia are advised to require at least 10 hours of pre-service training (VDSS, 2012) for prospective foster and adoptive parents (collectively known as resource parents), with many local agencies requiring 20 hours of in-service training for existing foster parents, annually. Upon caring for a child, foster parents receive compensation, which is contingent upon the child’s age and needs. Foster parents, caring for children under the care of Virginia Department of Social Services, receive an average basic monthly payment of \$546 per child, with some foster parents receiving additional daily supervision reimbursement, and/or special services payment (e.g. medical compensation, education or tutoring compensation, additional funds for transporting child to a school in a different district) (Virginia Department of Social Services, 2012). The purpose of this study is to determine the extent of nutrition and physical activity content in federal and state legislation pertaining to children in foster care, as well as programs administered by local social service agencies.

Methods

This study included a content analysis of federal and state-level legislations as well as training programs offered by local social service agencies.

Policy Analysis

Two researchers, with experience in child welfare (doctoral candidate and professor who received doctorate in Social Work), collectively identified legislation pertaining to the foster care system. Identified legislation included the following: Child Abuse Prevention and Treatment Act; Child Welfare and Adoption Assistance Act of 1980: Public Law 96-272; Title IV-B of the Social Security Act; Title IV-E of the Social Security Act; Adoption and Safe Families Act of 1997: Public Law 105-89; and Foster Care Independence Act of 1999 (see Table 1 for more information pertaining to the nutrition content of these laws; physical activity and weight-related content were not available). The doctoral candidate read the publications and extracted content concerning nutrition, physical activity, and weight.

Training Program Analysis

In order to gather training program information from local agencies, researchers requested permission from Virginia Department of Social Services, as well as directors of local agencies (Appendix M). Upon approval, agencies received a survey link via email (Appendix N), which included questions that inquired about agency affiliation, length of affiliation, and contact information (Appendix O). Representatives were also asked to provide information about pre-service training curriculums, and both pre-service topics and in-service topics. More specifically, the questionnaire included questions requesting specific information about training or materials concerning nutrition or physical activity (e.g. basic food groups, meal planning, and meal preparation). Researchers requested and reviewed training guides listed by local representatives. Two out of three pre-service training guides were retrieved and analyzed for content. The third training guide was not received due to lack of responsiveness from the publishing company and an unwillingness of the local representatives to share a copy.

Results

Policy analysis

Federal legislation – Federal legislation included verbiage on ensuring the safety of children as well as health insurance coverage. The Child Abuse Prevention and Treatment Act makes provisions for grants that ensure that youth who have been abused have their physical health needs diagnosed and treated and for collaborations that provide health and developmental evaluations. This legislation also supports research on effective programs designed to improve activities, such as, identification, screening, medical diagnoses...health evaluations, and services.” Furthermore, in order for local agencies to receive Title IV-E funding, agencies must provide family preservation services and family support services. The former encompasses services designed to improve health, and the latter encompasses referral services for families to receive access to nutrition programs (RIN 0970-AB34). Lastly, federal legislation requires that in order for agencies to receive funding, their eligibility review should demonstrate that children are receiving services to meet their physical needs (RIN 0970-AA97). While legislations include content related to the health of abused children, the provision of nutrition education is the only explicit content related to nutrition, physical activity, or weight.

State legislation – The “Code of Virginia” and the “Virginia Department of Social Services Division of Family Services: Local department resource, foster and adoptive family home approval guidance” are the two state-based policies related to foster care. The Code of Virginia includes information on requirements for placement of foster children, services, administration review, visitation, child support, acceptance of children by local departments, liability insurance, and minimal training requirements for foster parents. However, this legislation does not include any language related to nutrition, physical activity, nor weight. As

for the second policy, in order for foster homes to receive continuous approval, “the provider shall ensure the child receives meals and snacks appropriate to daily nutritional needs.”

Training program analysis

The primary researcher contacted directors from 123 local agencies to request participation in the study. Directors representing 108 agencies responded, five of which declined due to lack of resources. Between October 24, 2011 and December 16, 2011, 93 participants completed the short survey. Most of the representatives, who completed the survey, self-identified as social worker supervisors. Table 1 provides more information on the job titles of those who completed the survey, along with their length of service.

Most agencies use a curriculum titled “PRIDE” (n=82) for pre-service training of their foster parents. Other agencies use PATH (n=6), PS-MAPP (n=1), and VISSTA (n=2). The VISSTA training is no longer being offered and the PATH curriculum was unavailable. For the purposes of this study, the curriculum for PRIDE and PS-MAPP were reviewed for content related to nutrition, physical activity, and weight. PRIDE pre-service training includes 10 major topics (see Table 2). Four of the major topics include information related to nutrition. Nutrition and weight are most often discussed under the topic, “Meeting Developmental Needs – Attachment.” Poor eating habits, deprivation of food, low birth weight, and medical neglect (e.g. extreme obesity) are listed as signs of neglect. Under the topic, “Meeting Developmental Needs – Discipline,” content regarding the use of food as punishment is included, with social service agencies having policies against such activity. Under “Planning for Change,” the following are stressed: the importance of foster parents exercising, and not insisting that children eat. Content related to nutrition and physical activity is mentioned most often under “Promoting Safety, Permanence, and Well-being.” Parents are advised to involve children in the food planning

process, to educate children about the food pyramid, to encourage good nutrition by offering healthy snacks (in order to ensure dental health), and to plan mealtimes and mealtime routines. During the discussion of this topic, the importance of fitness via youth involvement in organized sports, family fitness activities, and providing opportunities for children to exercise daily are stressed.

PS-MAPP is a 10-week program that also educates prospective foster and adoptive parents on ten major topics (see Table 3). As with the PRIDE curriculum, the following are listed as signs of neglect: underweight status, lack of food, being consistently hungry, begging and stealing food. Under the topic, “Helping children learn to manage their behaviors,” the use of food is once again listed as an ineffective and unacceptable form of disciplining foster youth. Lastly, under the topic, “Helping Children with Birth Family Connections,” food is mentioned in the context of cultural norms associated with the child’s birth family.

According to Table 4, agencies provide in-service training to parents on at least 19 topics. Topics that are covered most often by agencies include behavior management (n=75), foster parent issues (n=73), and attachment (n=69). The topics least often provided by agencies include special needs (n=35), health and nutrition (n=33), and caring for medically fragile children (n=26). Even though 33 agencies indicated that they cover health and nutrition during their in-service training, in response to a subsequent question, only 17 agency representatives indicated that they provided (foster parents =16, biological parents =1) training or materials (pre-service or in-service) on nutrition and physical activity. Within the past two years, three agencies offered nutrition and physical activity related training thrice, one offered it twice, and thirteen agencies offered it once. Most of the training topics that were provided were related to nutrition (n=20), two focused on nutrition and physical activity, and two solely focused on physical activity.

Discussion

Federal- and state-level legislation charge the foster care system to ensure the “safety, and well-being” of children in care (Child Abuse Prevention and Treatment Act, 2011). Even though nutrition and weight are listed as signs of neglect, there are very little provisions on ensuring optimal weight, eating and physical activity behaviors of children while in care. According to Title IV-E of the Social Security Act, social service agencies are required to provide nutrition education. However, according to content analysis of training programs, this education is most often in relation to behavioral disorders, malnourishment, and transition into independent living. At the state level, legislation indicates that foster parents are to ensure that children receive adequate nutrition according to their needs. However, only 16 out of the 93 participating agencies cover nutrition topics during pre-service training, while nutrition is only briefly covered in the in-service training materials, utilized by 83 of the agencies. These numbers suggest that most of the local agencies of VDSS are not providing adequate education on healthful eating and physical activity to the individuals responsible for the care of children in care – foster parents.

There is growing evidence of the effectiveness of a number of healthful eating and physical activity interventions targeting the home environments of children (Stroebele, Ogden, & Hill, 2009; Simon et al., 2008; Kain, Uauy, Albala, Cerda, & Leyton, 2004). Some of these interventions promote the inclusion of parents in order to more effectively increase health behaviors and prevent or treat obesity (Campbell et al., 2008; Gamache, Mirabell, & Avery, 2006; Golan, Kaufman, & Shahar, 2006). Significant relationships have been demonstrated between the following aspects of the home environment and eating and physical activity behaviors: the availability of outdoor play equipment (Spurrier, Magarey, Golley, Curnow, &

Sawyer, 2008), play space, toys and exercise equipment, accessibility of “ready to eat” foods, the accessibility of fruits and vegetables (Cullen et al., 2003), and parent modeling (Hopper et al., 1996; Spurrier et al., 2008). Furthermore, interventions targeting parents usually include educational components stressing the importance of increasing fruit and vegetable intake, decreasing the consumption of foods high in sugar and fat, and increasing physical activity (Golan et al., 2006).

Based on this evidence, we are able to make several recommendations. The organization and substance of federal and state legislations concerning child welfare and the pre-service training materials used to train foster parents are structured in a manner that facilitates the integration of content, services, and outcomes related to nutrition, physical activity, and weight-related. Currently, the federal government provides funding for foster care through Title-IV of the Social Security Act. In order for LDSS agencies to receive funding for foster care and child and family services, they must undergo several reviews and meet criteria for several outcomes (Part 1355, Title IV-E). Outcomes are related to children receiving adequate services to meet their needs, staff training, and licensing, recruitment, and retention for resource parents (Part 1355, Title IV-E). Federal legislators can intervene and ensure adequate physical health of children by collecting data on weight status, dietary practices and engagement in physical activity. Furthermore, staff and resource parent training should include education on the components of a healthy lifestyle, with emphasis on healthful eating, physical activity, and a healthy home environment.

According to the Code of Virginia, LDSS are to enter into a written agreement with persons taking children, while caseworkers are to develop foster care plans. These foster care plans often involve the biological parent and the child. Results of a recent Delphi study,

surveying expert panels of foster parents, research scientists, and social workers, provides strategies that can be incorporated into the written agreements and the foster care plans. These strategies include the provision of resources for healthful eating and physical activity opportunities (Parks et al., In Preparation) along with targeting the home environment of birth and foster families (Parks et al., In Preparation).

As previously mentioned, PRIDE and MAPP are two pre-service training manuals that are used for training prospective resource families. The content of both of these manuals (PRIDE: Meeting developmental needs – discipline, Planning for change; MAPP: Understanding the impact of fostering or adopting, Where the MAPP Leads. A foster care and adoption experience) includes informing parents of parenting strategies, such as modeling, praise, rewards, encouragement, and creating boundaries. In home-environment literature, these strategies can be categorized as targeting the social environment, and are applicable to the food and physical activity environments. These training materials can be expanded by providing examples of modeling, praising, encouraging, rewarding, and creating boundaries around healthful eating and physical activity. A session on “Promoting safety, permanence, and well-being” exists within the PRIDE training materials. As previously mentioned, the “promoting well-being” component of this material includes content on nutrition and physical activity. However, this content can be expanded with more knowledge on healthful eating and physical activity. Evidence-based strategies for improving healthful eating, physical activity, and weight status, that can be included in training materials are: limiting portion sizes, sugar-sweetened beverage consumption, fatty foods, and sedentary behavior. Furthermore, we recommend the inclusion of national recommendations for limiting SSB intake to 8 ounces per day (Johnson et al., 2009), eating at least 5 cups of fruits and vegetables daily, and providing information on the

2008 Physical Activity Guidelines for Americans, which varies based on age (U. S. Department of Health and Human Services, 2008).

Moreover, when discussing health recommendations and guidelines for foster children and their placements, one must consider the role of the federal managed care system, or Medicaid, may play in guiding recommendations. Child welfare agencies are responsible for meeting the health needs for all children in their care—be it mental health services or preventive physical health measures concerning physical activity and nutrition—and many of the children in foster care are eligible to receive Medicaid benefits (Green, Sommers, & Cohen, 2005). Each state has the power to customize their Medicaid program by setting payment rates and eligibility standards, determining health services covered and delivering the health program under specific federal guidelines (Green et al., 2005), and in Virginia, all foster children who are residents of the commonwealth and meet certain income requirements are eligible to receive Medicaid. In Virginia, foster children participate in a medical passport system called the EPSDT, or the Early and Periodic Screening, Diagnosis and Treatment program, a federal program, which is designed as a comprehensive preventative health program for all Medicaid recipients until age 21 (Figure 1). Each child is required to undergo an annual exam once reaching the age of three, and during these annual well-child checkups, children and foster parents are often informed about any concerns regarding nutrition and physical activity (Department of Medical Assistance Services). The health education component of the EPSDT requires doctors to discuss health concerns regarding nutrition, weight status and physical activity with children and their parents/guardians and to recommend evidence-based interventions and treatment that are determined medically necessary (Sebelius, 2011). However, in one study measuring the EPSDT's success in providing obesity treatment, researchers concluded that although the program provides comprehensive

screening tools to monitor and treat obesity, many states, Virginia included, do not provide care that is consistent with the federal recommendations to prevent, screen and manage childhood obesity (Lee, Sheer, Lopez, Rosenbaum, 2010). States are not using the EPSDT program at full potential, and in Virginia, the EPSDT may provide ample opportunity for doctors, LDSS and health researchers to provide comprehensive nutrition and physical activity interventions within the foster care system when they are needed; however, more study is needed to assess the effectiveness of the EPSDT program in monitoring the nutrition and physical activity status of the foster care population.

Extreme obesity is considered a sign of medical neglect (Child Welfare League of America, 2009), and may be considered a reason for a child's removal from their home, it is uncertain that the foster care system is equipped to assist such cases. Legislation does suggest monitoring and evaluation of physical health needs, and the provision of health care services. So perhaps, the foster care system ensures that children who are medically neglected receive proper health care. However, results of this study do not suggest that foster parents are being educated on proper nutrition, physical activity, and weight status of foster children.

Future research should examine the policies of other states within the United States of America or other child welfare systems to determine the extent of content related to nutrition, physical activity, and weight status. Research on the eating and physical activity habits and weight status of foster children is also necessary. Furthermore, in order to assess the need for more foster parent education on nutrition, physical activity, and weight, agencies should assess the knowledge and practices of potential and existing foster parents.

Table 1. Federal and State Legislation Nutrition Content

Legislation	Nutrition Content
Child Abuse Prevention and Treatment Act	“Withholding of medically indicated treatment is defined as failure to respond to infant’s life-threatening conditions by providing treatment (including appropriate nutrition, hydration and medication)”
Child Welfare and Adoption Assistance Act of 1980	None available
Title IV-B of the Social Security Act	Family preservation services include “services designed to improve parenting skills with respect to matters such as ... nutrition” Family support services “may include...nutrition programs”
Title IV-E of the Social Security Act	None available
Adoption and Safe Families Act of 1997	None available
Foster Care Independence Act of 1999	Independence living program should receive “Funding for programs that will provide services e.g. “high school diploma, career exploration, vocational training, job placement and retention, training in daily living skills, training in budgeting and financial management skills, substance abuse prevention, and preventive health activities (including smoking avoidance, nutrition education, and pregnancy prevention)”

Table 2. PRIDE Curriculum Topics

Connecting with PRIDE	Meeting developmental needs-discipline
Teamwork toward permanence	Continuing family relationships
Meeting developmental needs-attachment	Planning for change
Meeting developmental needs-loss	Taking PRIDE-making an informed decision
Strengthening family relationships	Promoting Safety, Permanence, and Well-Being

Table 3. PS-MAPP Curriculum Topics

Partnership as a foundation for the foster care/adoption program	Helping Children with Birth Family Connections
Where the MAPP Leads: A foster care and adoption experience	Gains and losses: Helping children leave foster care
Losses and Gains: The need to be a loss expert	Understanding the impact of fostering or adopting
Helping children with attachments	Perspectives in adoptive parenting and foster parenting – teamwork and partnership
Helping children learn to manage their behavior	Beginning and end

Table 4. Agency Descriptives

Job Title	N	Average Length of Employment
Social Work Supervisor	23	17
Director	10	20
Resource Family Coordinator	7	9
Senior Social Worker	7	11
Social Worker II	6	16
Foster Care Social Worker	6	5
Social Worker II	6	8
Services Supervisor	3	12
Family Development Specialist	3	6
Foster Care Supervisor	3	10
Other	13	11

Table 5. In-service topics covered by agencies

Topic	Number of Agencies	Topic	Number of Agencies
Behavior Management	75	Sexuality & Sexual Development	55
Foster Parent Issues	73	Mental Health Issues	52
Attachment	69	Independent Living Program Skills	50
Separation, Grief, or Loss	68	Education Advocacy	47
Trauma, Abuse, & Neglect	68	Abuse/Addiction	46
Birth Parents	67	Domestic Violence	42
Adolescent Issues	66	Special Needs	35
Child Development	66	Health & Nutrition	33
Cultural Issues	59	Caring for Medically Fragile Children	26
Emotional-Behavioral Disorders	56		

Figure 1: EPSDT Well-Child Checkup Timeline

Virginia EPSDT Periodicity Chart																														
Age	Birth	3-5 days	1 month	2 months	4 months	6 months	9 months	12 months	15 months	18 months	24 months	30 months	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20 years
History, Measurements, Physical Exam, Lab Tests and Anticipatory Guidance, etc.	Follow the AAP Recommendations for Preventive Pediatric Health Care																													
Mandatory Blood Lead Test									12 & 24 month Blood Lead Test				Lead Test if no prior history																	
Immunizations	Immunizations follow American Committee on Immunization Practices (ACIP)																													
Vision Screen													Administered at the 3, 4, 5, 6, 8, 10, 12, 15 and 18 year visits																	
Hearing Screen	Administered at the Newborn, 4, 5, 6, 8 and 10 year visits																													
Psychosocial/Behavioral Assessment	Follow the AAP Recommendations for Preventive Pediatric Health Care																													
Developmental Testing							Administered at the 9, 18, 24 and 30 month visits																							
Refer to Dental Home/Assess Oral Risks									12 m		24 m		30 m	Refer for dental services at 3 and 6 years. Dental exams provided every 6 months.																
Age	Birth	3-5 days	1 month	2 months	4 months	6 months	9 months	12 months	15 months	18 months	24 months	30 months	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20 years

References

- Adoption and Safe Families Act of 1997, Pub. L. No. 105-89 § 111 Stat. 2115 (1997).
- Bayless, L., & Craig-Oldsen, H. (2009). PS-MAPP: Partnering for safety and permanence - Model approach to partnerships in parenting- Leader's guide. Topeka: Children's Alliance of Kansas.
- Campbell, K., Hesketh, K., Crawford, D., Salmon, J., Ball, K., & McCallum, Z. (2008). The infant feeding activity and nutrition trial (INFANT) an early intervention to prevent childhood obesity: cluster-randomized controlled trial. *BMC Public Health*, 8, 103-111. doi: 10.1186/1471-2458-8-103
- Child Abuse Prevention and Treatment Act § 42 USC 5101 et seq; 42 USC 5116 et seq (2010).
- Child Welfare and Adoption Assistance Act of 1980, Pub. L. No. 96-272, § 94 Stat. 500
- Child Welfare Information Gateway. (2011). *Foster care statistics, 2009*. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau.
- Child Welfare League of America. (2009). PRIDE: Preservice: Trainer's Guide. Washington, DC.
- Code of Virginia § 63 § (2012).
- Cousins, J. M., Langer, S. M., Rhew, L. K., & Thomas, C. (2011). The Role of State Health Departments in Supporting Community-Based Obesity Prevention. *Preventing Chronic Disease*, 8, A87. http://www.cdc.gov/pcd/issues/2011/jul/10_0181.htm. Accessed August 12, 2012.
- Cullen, K. W., Baranowski, T., Owens, E., Marsh, T., Rittenberry, L., & de Moor, C. (2003). Availability, accessibility, and preferences for 100% fruit juice, and vegetables influence children's dietary behavior. *Health Education & Behavior*, 30, 615-626.

doi: 10.1177/1090198103257254

Department of Medical Assistance Services. Birthday News: It's time for your well-child checkup. Virginia Department of Social Services, Richmond: VA. Access date: Aug. 12, 2012. Available from: http://dmasva.dmas.virginia.gov/Content_atchs/mch/mch-epsdt_achld_eng.pdf

Foster Care Independence Act of 1999, Pub. L. No.106-169, § 113 Stat. 1882 (1999).

Gamache, S., Mirabell, D., & Avery, L. (2006). Early childhood developmental and nutritional training for foster parents. *Child and Adolescent Social Work Journal*, 23, 501-511.
doi: 10.1007/s10560-006-0053-x

Golan, M., Kaufman, V., & Shahar, D. R. (2006). Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*, 95, 1008-1015.
doi: 10.1079/BJN20061757

Green, R., Sommers, A., & Cohen, M. (2005). Medicaid Spending on Foster Children. Brief No. 2: Child Welfare Research Program. The Urban Institute: Washington DC. Available at: http://www.urban.org/UploadedPDF/311221_medicaid_spending.pdf

Grimm, B. (2003). Child and family services reviews: Part II in a series. Foster parent training: What the CFS reviews do and don't tell us. Youth Law News: Journal of the National Center for Youth Law. April-June 2003. *Foster Care Manual*. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/manual.cgi> Updated August 2009 . Accessed December 6, 2010.

Hadfield, S. C., & Preece, P.M. (2008). Obesity in looked after children: is foster care protective from the dangers of obesity? *Child: Care, Health, and Development*, 34, 710-712.
doi: 10.1111/j.1365-2214.2008.00874.x

- Hopper, C. A., Munoz, K. D., Gruber, M. B., MacConnie, S., Schonfeldt, B., & Shunk, T. (1996). A school-based cardiovascular exercise and nutrition program with parent participation: An evaluation study. *Child Health Care, 1996, 25*, 221-235.
doi: 10.1207/s15326888chc2503_5
- Kain, J., Uauy, R., Albala, V. F., Cerda, R., & Leyton, B. (2004). School-based obesity prevention in Chilean primary school children: methodology and evaluation of a controlled study. *International Journal of Obesity, 28*, 483-493.
doi: 10.1038/sj.ijo.0802611
- Lee, J. S., Sheer, J. L. O., Lopez, N., Rosenbaum, S. (2010). Coverage of Obesity Treatment: A State-by-State Analysis of Medicaid and State Insurance Laws. *Public Health Reports July- August 2010, 125*, 596-604.
- Mendoza, J. A., Watson, K., & Cullen, K. W. (2010). Change in dietary energy density after implementation of the Texas Public School Nutrition Policy. *Journal of the American Dietetic Association, 110*, 434-440. doi: 10.1016/j.jada.2009.11.021
- Murtagh, L. & Ludwig, D. S. (2011). State Intervention in Life-Threatening Childhood Obesity. *Journal of the American Medical Association, 306*:206-207. doi:10.1001/jama.2011.903
- National conference of state legislatures. Child welfare caseworker visits with children and parents: innovations in state policy. September 2006. Available at <http://www.ncsl.org/issues-research/human-services/child-welfare-caseworker-visits-with-children367.aspx>, August 12, 2012.
- Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). High body mass index for age among US children and adolescents, 2003-2006. *Journal of American Medical Association, 299*, 2401-2405. doi: 10.1001/jama.299.20.2401

- Parks, S. L., Almeida, F. A., McFerren, M. M., Deater-Deckard, K., & Estabrooks, P. A. (In preparation). Associations between the home environment and children's eating and physical activity habits and weight status across different family dynamics: a systematic review.
- Schneiderman, J.U., Leslie, L.K., Arnold Clark, J., McDaniel, D. & Xie, B. (2011) Pediatric health assessments of young children in child welfare by placements. *Child Abuse and Neglect*, 35, 29-39. doi: 10.1016/j.chiabu.2010.06.007
- Sebelius, K. (2011). Report to Congress: Preventive and obesity-related services available to Medicaid enrollees. U.S. Department of Health and Human Services; 2010.
<https://www.cms.gov/MedicaidCHIPQualPrac/downloads/RTConPreventiveandObesity-RelatedServices.PDF>.
- Simon, C., Schweitzer, B., Oujaa, M., Wagner, A., Arveiler, D., Tribby, E.,...Platat, C. (2008). Successful overweight prevention in adolescents by increasing physical activity: a 4-year randomized controlled intervention. *International Journal of Obesity*, 32, 1489-1498.
doi: 10.1038/ijo.2008.99
- Singh, A. S., Mulder, C., Twisk, J. W. R., van Mechelen, W., Chinapaw, M. J. M. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews*, 9, 474-488. doi: 10.1111/j.1467-789X.2008.00475.x
- Social Security Act, 42 U. S. C. §601–687, subchapter IV, chapter 7, Title 42.
- Spurrier, N. J, Magarey, A. A, Golley, R, Curnow, F, & Sawyer, M. G. (2008). Relationships between the home environment and physical activity and dietary patterns of preschool children: a cross-sectional study. *International Journal of Behavioral Nutrition & Physical Activity*, 5, 31-43. doi: 10.1186/1479-5868-5-31

- Steele J. S., & Buchi, K. F. (2008). Medical and mental health of children entering the Utah foster care system. *Pediatrics*, *122*, E703-E709. doi: 10.1542/peds.2008-0360
- Stroebele, N., Ogden, L.G., & Hill, J.O. (2009). Do calorie-controlled portion sizes of snacks reduce energy intake. *Appetite*, *52*, 793-796. Doi: 10.1016/j.appet.2009.02.015
- U.S. Department of Health and Human Services. *Physical Activity Guidelines Advisory Committee Report, 2008*. Washington, DC: U.S. Department of Health and Human Services, 2008.
- Virginia Department of Social Services Child and Family Services Manual. Virginia Department of Social Services Web Site. <http://www.dss.virginia.gov/family/fc/index.cgi> Updated July 2012 . Accessed August 15, 2012.
- Vonasek, K., & Mulheron J. (2009). Shaping a healthier generation: successful strategies to prevent childhood obesity. *NGA Center for Best Practices*.

CHAPTER VI

General Conclusions

Childhood obesity and the prevalence of unhealthy behaviors is a growing problem in America. Foster children are not protected from the incidence of obesity and related health behaviors (e.g. poor nutrition, sedentary behaviors, etc.). This dissertation included three studies that collectively demonstrate the need for systems to address childhood obesity among this subgroup. Results supported that of other studies, demonstrating that the prevalence of obesity in a sample of foster children in Virginia is higher than that of the general population. Likewise, foster children are engaging in unhealthy behaviors and are being cared for by foster parents, who are not providing healthy nutrition and physical activity environments.

Throughout this dissertation, strategies, channels, and structures that can support a practical and effective program designed to address obesity and related behaviors have been discussed. Systems involved in such a program include: federal, state, and local agencies responsible for the well-being of foster children, health care providers, existing community-based organizations and programs (e.g. the Special Supplemental Nutrition Program for Women, Infants, and Children), and research centers (e.g. university-based). Agencies related to the wellbeing of foster children have the power to implement behavioral support, monitor behavioral changes, and integrate effective approaches into policy. Furthermore, federal- and state-based agencies can provide funding to offset any additional costs.

Foster parent training opportunities is an existing structure that allows the integration of behavioral support. Since foster parents are required to receive training prior to and during their time as caregivers, this would ensure that support reaches a large portion of the system. Nutrition education is modestly touched upon in the parent training programs, however, foster parents

receive little behavioral support to make changes to the nutrition and physical activity home environment. This behavioral support would facilitate improvements in eating and physical-activity related behaviors, and subsequently, weight-related outcomes among children.

While this dissertation has addressed many gaps in the literature concerning foster children, weight, and health-related behaviors, as well as strategies for attacking obesity, this area of research is novel. With additional research and systems-based programs and strategies, enhancement of foster children's health is inevitable.

Appendix A: Questions from Virginia Childhood Obesity Research Survey

1. How many days during the past 7 days did you eat fruit? Please do not include fruit juice.

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

a. About how many pieces of fruit did you have on the days when you ate fruit? _____

2. How many days during the past 7 days did you eat vegetables including green salad?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

a. About how many vegetables did you eat on the days when you ate vegetables? _____

These next several questions are about the food you eat during the average school week. Please do not include food eaten during the weekends.

3. During the average school week, how many days do you eat breakfast? Please do not count days when you ate pastries for breakfast, such as doughnuts, muffins, or pop-tarts.

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

4. During the average school week, how many days do you eat lunch?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

5. During the average school week, how many days do you buy lunch at school?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

6. When you buy lunch at school, what do you usually buy?

- ₁ Standard meal option (Main dish, fruit/vegetable, bread, & milk)
- ₂ Fast food options (pizza, burgers, French fries)
- ₃ Healthy a la carte items (yogurt, fruit, juice, bottled water, milk)
- ₄ Snacks (chips, ice cream, fruit snacks)
- ₅ Other

7. Does your school serve food from fast food restaurants, such as Pizza Hut, Subway or other local fast food restaurants?

₁ Yes ₂ No

8. During the average school week, how many days do you eat lunch from these in-school fast food restaurant selections?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

9. During the average school week, how many days do you buy snacks, chips, or candy from your school vending machine?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

These next couple of questions are about foods you eat during the average week outside of school. Please do not include food you eat at school.

10. During the average week, how many days do you eat food from a fast food restaurant such as McDonald's, Hardee's, or Pizza Hut?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

11. During the average week, how many days do you drink soda or eat snacks, chips or candy?

₀ 0 ₁ 1 ₂ 2 ₃ 3 ₄ 4 ₅ 5 ₆ 6 ₇ 7

12. On an average school day, how many hours do you watch TV?

₁ I do not watch TV on an average school day

₂ Less than 1 hour per day

₃ 1 hour per day

₄ 2 hours per day

₅ 3 hours per day

₆ 4 hours per day

₇ 5 or more hours per day

13. On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work?

₁ I do not use except for school work on an average school day

₂ Less than 1 hour per day

₃ 1 hour per day

₄ 2 hours per day

₅ 3 hours per day

₆ 4 hours per day

₇ 5 or more hours per day

Appendix B: National Cancer Institute Food Frequency Questionnaire All Day Screener

1. Over the last month, how many times per month, week, or day did you drink 100% juice such as orange, apple, grape, or grapefruit juice? Do not count fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 2)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

- a. Each time you drank 100% juice, how much did you usually drink?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than $\frac{3}{4}$ cup (less than 6 ounces)	$\frac{3}{4}$ to 1 $\frac{1}{4}$ cup (6 to 10 ounces)	1 $\frac{1}{4}$ to 2 cups (10 to 16 ounces)	More than 2 cups (more than 16 ounces)

2. Over the last month, how many times per month, week, or day did you eat fruit? Count any kind of fruit—fresh, canned, and frozen. Do not count juices. Include fruit you ate at all mealtimes and for snacks.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 3)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

- a. Each time you ate fruit, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than 1 medium fruit (less than $\frac{1}{2}$ cup)	1 medium fruit (about $\frac{1}{2}$ cup)	2 medium fruits (about 1 cup)	More than 2 medium fruits (more than 1 cup)

3. Over the last month, how often did you eat lettuce salad (with or without other vegetables)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 4)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

a. Each time you ate lettuce salad, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
About ½ cup	About 1 cup	About 2 cups	More than 2 cups

4. Over the last month, how often did you eat French fries or fried potatoes?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 5)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

a. Each time you ate French fries or friend potatoes, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small order or less (about 1 cup or less)	Medium order (about ½ cups)	Large order (about 2 cups)	Super Size order or more (about 3 cups or more)

5. Over the last month, how often did you eat other white potatoes? Count baked, boiled, and mashed potatoes, potato salad, and white potatoes that were not fried.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 6)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

a. Each time you ate these potatoes, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 small potato or less (½ cup or less)	1 medium potato (½ to 1 cup)	1 large potato (1 to 1 ½ cups)	2 medium potatoes or more (1 ½ cups or more)

6. Over the last month, how often did you eat cooked dried beans? Count baked beans, bean soup, refried beans, pork and beans and other bean dishes.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 7)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

- a. Each time you ate these beans, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than ½ cup	½ to 1 cup	1 to 1 ½ cups	More than 1 ½ cups

7. Over the last month, how often did you eat other vegetables?

DO NOT COUNT: •Lettuce salads •White potatoes •Cooked dried beans
•Vegetables in mixtures, such as in sandwiches, omelets, casseroles,
Mexican dishes, stews, stir-fry, soups, etc.
•Rice

COUNT: All other vegetables – raw, cooked, canned, and frozen

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

- a. Each time that you ate these other vegetables, how much did you usually eat?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than ½ cup	½ to 1 cup	1 to 1 ½ cups	More than 1 ½ cups

8. Over the last month, how often did you eat tomato sauce? Include tomato sauce on pasta or macaroni, rice, pizza and other dishes.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never (Go to Question 2)	1-3 times last month	1-2 times per week	3-4 times per week	5-6 times per week	1 time per day	2 times per day	3 times per day	4 times per day	5 or more times per day

a. Each time you ate tomato sauce, how much did you usually eat?

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ |
| About ¼ cup | About ½ cup | About 1 cup | More than 1 cup |

9. Over the last month, how often did you eat vegetable soups? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.

- | | | | | | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ |
| Never
(Go to
Question
2) | 1-3
times
last
month | 1-2
times
per
week | 3-4
times
per
week | 5-6
times
per
week | 1
time
per
day | 2
times
per
day | 3
times
per
day | 4
times
per
day | 5 or
more
times
per day |

a. Each time you ate vegetable soup, how much did you usually eat?

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ |
| Less than ½ cup | 1 to 2 cups | 2 to 3 cups | More than 3 cups |

Appendix C: Beverage Intake Questionnaire

In the past month, please indicate your response for each beverage type by marking an “X” in the bubble for “how often” and “how much each time”

1. Indicate how often you drank the following beverages, for example, you drank 5 glasses of water per week, therefore mark 4-6 times per week
2. Indicate the approximate amount of beverage you drank each time, for example, you drank 1 cup of water each time, therefore mark 1 cup under “how much each time”
3. Do not count beverages used in cooking or other preparations, such as milk in cereal
4. Count milk added to tea and coffee in the tea/coffee with cream beverage category NOT in the milk categories

Type of Beverage	HOW OFTEN (MARK ONE)							HOW MUCH EACH TIME (MARK ONE)				
	Never or less than 1 time per week (go to next beverage)	1 time per week	2-3 times per week	4-6 times per week	1 time per day	2+ per day	3+ per day	Less than 6 fl oz (3/4 cup)	8 fl oz (1 cup)	12 fl oz (1 ½ cups)	16 fl oz (2 cups)	More than 20 fl oz (2 ½ cups)
Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
100% Fruit Juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetened Juice Beverage/Drink (fruit ades, lemonade, punch, Sunny Delight)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole Milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced Fat Milk (2%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low Fat/Fat Free Milk (Skim, 1%, Buttermilk, Soymilk)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soft drinks, Regular	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diet Soft Drinks/ Artificially Sweetened Drinks (Crystal Light)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweetened Tea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tea or Coffee, with cream and/or sugar (includes non-dairy creamer)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tea or Coffee, black, with/without artificial sweetener (no cream or sugar)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy & Sports Drinks (Red Bull, Rockstar, Gatorade, Powerade, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (list):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix D: Physical Activity Questionnaire for Children

We are trying to find out about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired or games that make you breathe hard, like tag, skipping, running, climbing, and others.

1. Physical activity in your spare time: Have you done any of the following activities in the **past 7 days (last week)**? If yes, how many times? (Check only one box per row.)

	No	1-2	3-4	5-6	7 times or more
Skipping.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Rowing/canoeing.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
In-line skating.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Tag.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Walking for exercise.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Bicycling.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Jogging or running.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Aerobics.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Swimming.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Baseball, softball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Dance.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Football.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Badminton.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Skateboarding.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Soccer.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Street hockey.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Volleyball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Floor hockey.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Basketball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Ice skating.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Cross-country skiing.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Ice hockey/ringette.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Other:	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
_____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
_____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

₁ ₂ ₃ ₄ ₅
I don't do PE Hardly ever Sometimes Quite often Always

3. In the last 7 days, what did you do most of the time *at recess*? (Check one only.)

- | | | | | |
|--|---------------------------------------|---------------------------------------|---|--|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| Sat down
(talking, reading,
doing
schoolwork) | Stood around
or walked
around | Ran or played
a little bit | Ran around
and played
quite a bit | Ran and played
hard most of
the time |

4. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Check one only.)

- | | | | | |
|--|---------------------------------------|---------------------------------------|---|--|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| Sat down
(talking, reading,
doing
schoolwork) | Stood around
or walked
around | Ran or played
a little bit | Ran around
and played
quite a bit | Ran and played
hard most of
the time |

5. In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| None | 1 time last
week | 2 or 3 times last
week | 4 times last
week | 5 times last
week |

6. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ |
| None | 1 time last
week | 2 or 3 times
last week | 4 times last
week | 5 times last
week | 6 or 7 times
last week |

7. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| None | 1 time | 2 - 3 times | 4 - 5 times | 6 or more times |

8. Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

₁ All or most of my free time was spent doing things that involve little physical effort.

₂ I sometimes (1 – 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics).

₃ I often (3 – 4 times last week) did physical things in my free time.

₄ I quite often (5 – 6 times last week) did physical things in my free time.

₅ I very often (7 or more times last week) did physical things in my free time.

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Tuesday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Wednesday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Thursday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Friday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Saturday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Sunday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

₁ Yes

₂ No

If yes, what prevented you? _____

Appendix E: Physical Activity Questionnaire for Adolescents

We are trying to find out about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired or games that make you breathe hard, like tag, skipping, running, climbing, and others.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Check only one box per row.)

	No	1-2	3-4	5-6	7 times or more
Skipping.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Rowing/canoeing.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
In-line skating.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Tag.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Walking for exercise.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Bicycling.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Jogging or running.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Aerobics.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Swimming.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Baseball, softball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Dance.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Football.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Badminton.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Skateboarding.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Soccer.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Street hockey.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Volleyball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Floor hockey.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Basketball.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Ice skating.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Cross-country skiing.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Ice hockey/ringette.....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Other:	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
_____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
_____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

₁ ₂ ₃ ₄ ₅
I don't do PE Hardly ever Sometimes Quite often Always

3. In the last 7 days, what did you do most of the time *at recess*? (Check one only.)

- | | | | | |
|--|---------------------------------------|---------------------------------------|---|--|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| Sat down
(talking, reading,
doing
schoolwork) | Stood around
or walked
around | Ran or played
a little bit | Ran around
and played
quite a bit | Ran and played
hard most of
the time |

4. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Check one only.)

- | | | | | |
|--|---------------------------------------|---------------------------------------|---|--|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| Sat down
(talking, reading,
doing
schoolwork) | Stood around
or walked
around | Ran or played
a little bit | Ran around
and played
quite a bit | Ran and played
hard most of
the time |

5. In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| None | 1 time last
week | 2 or 3 times last
week | 4 times last
week | 5 times last
week |

6. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ |
| None | 1 time last
week | 2 or 3 times
last week | 4 times last
week | 5 times last
week | 6 or 7 times
last week |

7. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

- | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| None | 1 time | 2 - 3 times | 4 - 5 times | 6 or more times |

8. Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

- ₁ All or most of my free time was spent doing things that involve little physical effort.
- ₂ I sometimes (1 – 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics).
- ₃ I often (3 – 4 times last week) did physical things in my free time.
- ₄ I quite often (5 – 6 times last week) did physical things in my free time.
- ₅ I very often (7 or more times last week) did physical things in my free time.

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Tuesday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Wednesday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Thursday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Friday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Saturday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Sunday	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

- ₁ Yes ₂ No











If yes, what prevented you? _____

Appendix F: Rapid Assessment of Physical Activity

Physical Activities are activities where you move and increase your heart rate above its resting rate, whether you do them for pleasure, work, or transportation.

- ▶ The following questions ask about the amount and intensity of physical activity you usually do. The intensity of the activity is related to the amount of energy you use doing these activities.

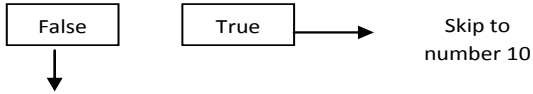
Examples of physical activity intensity levels:

<p>Light activities</p> <ul style="list-style-type: none"> - your heart beats slightly faster than normal - you can talk and sing 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Walking Leisurely</p> </div> <div style="text-align: center;">  <p>Stretching</p> </div> <div style="text-align: center;">  <p>Vacuuming or Light yard work</p> </div> </div>
<p>Moderate activities</p> <ul style="list-style-type: none"> - your heart beats faster than normal - you can talk but not sing 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Fast Walking</p> </div> <div style="text-align: center;">  <p>Aerobics Class</p> </div> <div style="text-align: center;">  <p>Strength Training</p> </div> <div style="text-align: center;">  <p>Swimming Gently</p> </div> </div>
<p>Vigorous Activities</p> <ul style="list-style-type: none"> - your heart rate increases a lot - you can't talk or your talking is broken up by large breaths 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Stair Machine</p> </div> <div style="text-align: center;">  <p>Jogging or Running</p> </div> <div style="text-align: center;">  <p>Tennis, Racquetball, Pickleball or Badminton</p> </div> </div>

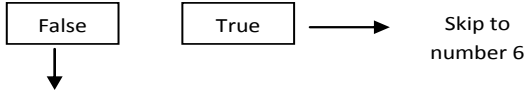
How physically active are you?

(for each question, please circle your answer and follow the arrows)

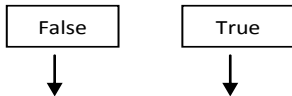
1. I rarely or never do any physical activities.



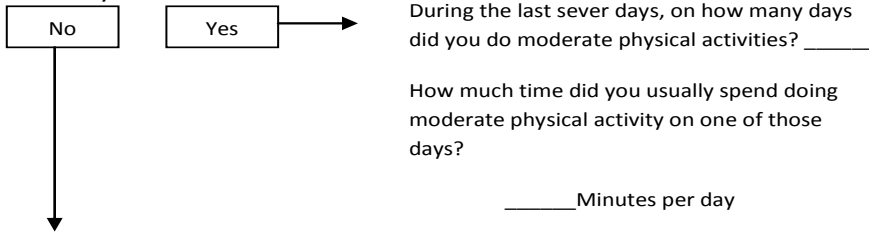
2. I do some **light** and/or **moderate** physical activities, but not every week.



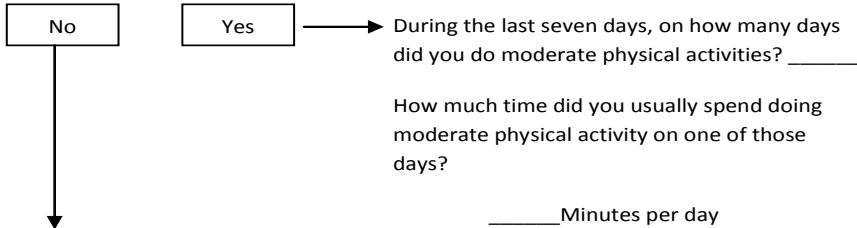
3. I do **light** physical activities every week.



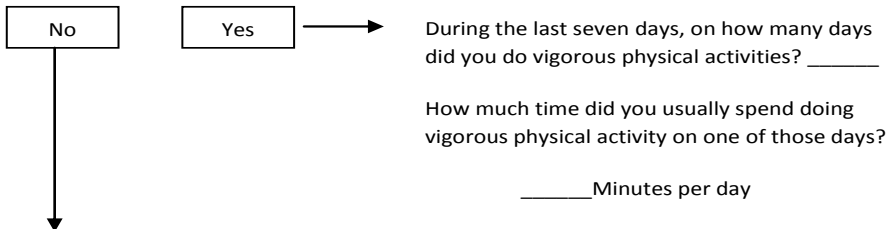
4. I do **moderate** physical activities every week, but less than 5 times per week or less than 30 minutes on those days.



5. I do 30 minutes or more per day of **moderate** physical activities 5 or more days per week.



6. I do **vigorous** physical activities every week, but less than 3 times per week or less than 20 minutes on those days.



7. I do 20 minutes or more per day of **vigorous** physical activities 3 or more days per week.

<input type="checkbox"/> No	<input type="checkbox"/> Yes	→	
↓			During the last seven days, on how many days did you do vigorous physical activities? _____
			How much time did you usually spend doing vigorous physical activity on one of those days? _____ Minutes per day

8. I do activities to increase muscle strength, such as lifting weights or calisthenics, twice a week or more.

<input type="checkbox"/> No	<input type="checkbox"/> Yes	→	
↓			During the last seven days, on how many days did you do activities to increase muscle strength? _____
			Do you do at least 8 to 10 exercises of at least 8 to 12 repetitions? Yes No

9. I do activities to improve flexibility, such as stretching or yoga, once a week or more.

<input type="checkbox"/> No	<input type="checkbox"/> Yes
↓	↓

10. During the last 7 days, how much time did you spend sitting on a weekday? Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.
_____ **Minutes per day**

11. When you are at work which of the following best describes what you do?

Mostly sitting/standing Mostly walking Mostly heavy labor

12. Thinking about the time you spend watching TV, playing video games, and on the computer please answer the following questions.

13. In your free time on an average weekday (Monday-Friday), how many hours do you spend watching TV & videos?

14. 1 0 15. 2 ½ 16. 3 1 17. 4 2 18. 5 3 19. 6 4+
- hour hour hours hours hours

Appendix G: Comprehensive Home Environment Survey

1. Thinking about the time you spend watching TV, playing video games, and on the computer please answer the following questions.

a) In your free time on an average weekday (Monday-Friday), how many hours do you spend **watching TV & videos**?

₁ 0 ₂ ½ hour ₃ 1 hour ₄ 2 hours ₅ 3 hours ₆ 4+ hours

b) In your free time on an average weekday (Monday-Friday), how many hours do you spend **playing active video games such as Wii Fit or DDR**?

₁ 0 ₂ ½ hour ₃ 1 hour ₄ 2 hours ₅ 3 hours ₆ 4+ hours

c) In your free time on an average weekday (Monday-Friday), how many hours do you spend **playing other video games**?

₁ 0 ₂ ½ hour ₃ 1 hour ₄ 2 hours ₅ 3 hours ₆ 4+ hours

d) In your free time on an average weekday (Monday-Friday), how many hours do you spend **playing or doing work on the computer at home**?

₁ 0 ₂ ½ hour ₃ 1 hour ₄ 2 hours ₅ 3 hours ₆ 4+ hours

PART A: Think about the things **that are currently in your home** and **circle your response** for each question.

1. Think about who prepares the food in your home, which of the following best indicates your role?

₁ Food preparation is primarily my responsibility

₂ I prepare food sometimes but it is not primarily my responsibility

₃ I share food preparation equally with another family member

₄ I rarely prepare food in our house

2. Think about who plans family activities in your home, which of the following best reflects your role?

1 Activity planning is primarily my responsibility

2 I plan family activities but it is not primarily my responsibility

3 I share family activity planning equally with another family member

4 I rarely plan family activities

3. Think about the foods your child eats, which of the following best describes you?

1 I am the one who has the most knowledge about what my child eats

2 I have some knowledge about what my child eats but *I am not* the one who knows the most

3 I share equally in my knowledge of what my child eats with another family member

4 I do not usually know what my child eats

4. Think about the activities your child participates in, which of the following best describes you?

1 I am the one who has the most knowledge about what my child's activities

2 I have some knowledge about my child's activities but *I am not* the one who knows the most

3 I share equally in my knowledge of my child's activities with another family member

4 I do not usually know about most of my child's activities

5. What best describes your home?

1 Apartment

2 Condominium

3 Multi-family house

4 Single family house

5 Mobile home

6 Shelter



6. How many staircases do you have in your home?

1 0

2 1

3 2

4 3

7. How often does your family eat fruits and vegetables that you have grown?

1 Not at all

2 Rarely

3 Some of
the time

4 Most of the
time

5 All of the
time

8. What is the average time that you spend preparing the evening meal?

1 0-15
minutes

2 16-30
minutes

3 31-45
minutes

4 46-60
minutes

5 >60
minutes

9. Where do you typically shop for your groceries?

1 Corner
Store

2 Farmers Market

3 Grocery Store
(e.g., Kroger)

4 Other:

10. Which of these statements best describes the food eaten in your household in the last 12 months?

1 Often we don't
have enough to
eat

2 Sometimes we
don't have
enough to eat

3 We have
enough to eat but
not always the
kinds of food we
want

4 We always
have enough to
eat and the kinds
of food we want

11. How often during the last 12 months have you been hungry because your family couldn't afford more food?

1 Almost every
month

2 Some months,
but not every
month

3 Only 1-2
months

4 I have not
been hungry for
this reason

PART B: Think about the things **that are currently in your home** and **circle your response** for each question.

1. Please indicate if you have the following areas in or around your home. If you have an area but it is **not suitable** for your child to play/exercise in please mark “No”

Inside playroom/area	Yes	No
Workout/exercise room	Yes	No
Sandbox	Yes	No
Outside Play area/yard	Yes	No

2. What is the approximate size of your yard?

₁ We do not
have a yard

₂ Small

₃ Medium

₄ Large

- b) Which of the following things does **your child** have?

Jungle-gym/swing set	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Size-appropriate bicycle	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Rollerblades/skates	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, are they in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Skateboard/scooter	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Jump rope	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Basketball hoop	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Baseball equipment (At least one of the following: ball, bat or mitt)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Tennis/racquetball racket	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Hockey Equipment (at least a hockey stick)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Ball of any kind (Volleyball, soccer, football, fitness ball, foam balls etc.)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		
	<i>If yes, is it in working condition?</i>		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No

	Pedometer (step counter)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Winter Sports Equipment (at least one of the following: sled, skis, snowboard, ice skates)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Home aerobic equipment (e.g., treadmill, cycle)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Yoga/exercise mat	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Hiking shoes	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, are they in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Running shoes (athletic or “tennis” shoes)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, are they in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Sandbox	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Trampoline	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Yard Game (e.g., croquet, horseshoes etc.)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Pool (in ground or above)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Weight lifting equipment, toning devices (e.g., free weights)	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
Consi	An active video game like Wii Fit?	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	Hula Hoop	<input type="checkbox"/> ₁ Yes	All <input type="checkbox"/> ₂ Most <input type="checkbox"/> ₃ Some <input type="checkbox"/> ₄ Very few <input type="checkbox"/> ₅ None		<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	3. How much of it is stored in an area that your child uses regularly?	<input type="checkbox"/> ₁ Yes	1 <input type="checkbox"/> ₂ No	3	4	5
	4. How much of it is stored some place where your child would need help getting out before he/she can use them.	<input type="checkbox"/> ₁ Yes	1 <input type="checkbox"/> ₂ No	2	3	4
		<i>If yes, is it in working condition?</i>			<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
	5. How much of it is stored out of sight when he/she is not using them.	<input type="checkbox"/> ₁ Yes	1 <input type="checkbox"/> ₂ No	3	4	5
	Other equipment Please list:				<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No
dering the things that you said you have in the question above...	_____					

PART C: In the past 30 days, think about the types of things you did in your leisure time and you parenting related to physical activity. Please check the appropriate box for each question

1. How often did your child see you...

	Never	Rarely	Sometimes	Frequently	Always
Doing something that was physically active (e.g., walking, biking, playing sports)?	0	1	2	3	4
Doing moderately active housework or yard-work?	0	1	2	3	4
Use physical activity for relaxation or stress relief?	0	1	2	3	4

2. How often...

	Never	Rarely	Sometimes	Frequently	Always
Did your child hear you talk about participating in a sport or being physical active?	0	1	2	3	4
Did your child hear you say that you were too tired to do something active?	0	1	2	3	4
Were you physically active with your child or did you play sports with him/her?	0	1	2	3	4
Did you verbally encourage your child to be physically active or play sports?	0	1	2	3	4
Did you transport your child to a place where he/she can be physically active or play sports?	0	1	2	3	4
Did you send your child outside to play when the weather was nice?	0	1	2	3	4
Did you give your child options to new physical activities to try?	0	1	2	3	4
Did you praise your child when they were physically active?	0	1	2	3	4

Did you watch your child practice or perform a dance routine?	0	1	2	3	4
Did you watch your child practice for sports?	0	1	2	3	4
Did you watch your child play sports?	0	1	2	3	4

3. How often, in an average week, do you attend a gym, YMCA, or community center to exercise?

₁ ₂ ₃ ₄ ₅ ₆ ₇
Not at **1 time** **2** **3** **4 times** **5 times** **More than 5 times**
all **times** **times**

PART D: Think about the media equipment that is currently in your home and circle your response for each question.

1. How many TVs do you have in your home? _____ (If none, skip to **question 7**)
2. Do you have a digital TV recorder (e.g., TiVo, Replay TV, Sonic Blue)

₁ **Yes** ₂ **No** ₃ **Don't know**

3. What best describes your television service for the primary television in the home?

₁ **No TV in the home** ₂ **No cable** ₃ **Basic cable** ₄ **Cable + premium channels** ₅ **Satellite/Dish**

4. Do you have exercise equipment (such as stationary bikes, treadmills) in your main TV viewing area?

₁ **Yes** ₂ **No**

5. Does your main TV viewing area have adequate space for your child to play or exercise while watching TV/Videos?

₁ **Yes** ₂ **No**

6. Does your child have a TV in his/her bedroom? (*please check your response*)

₁ Yes ₂ No

7. Does your child have a video game station or computer? (*please circle your response*)

₁ Yes ₂ No ₃ Don't know

8. Do you have a desktop or laptop computer in your home?

₁ Yes ₂ No ₃ Don't know

9. Does your child have a PSP, Nintendo DS, iTouch or any other handheld video game?

₁ Yes ₂ No ₃ Don't know

10. Do you have video games on your phone?

₁ Yes ₂ No ₃ Don't know

11. Approximately how many video games and computer games are in your home? (Include items that are owned, rented and borrowed)

₁ 0 ₂ 1-10 ₃ 11-20 ₄ 21-30 ₅ 31-40 ₆ 41-50 ₇ >50

12. How often is your television left on, whether or not it is being watched?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

13. How often does your child see you...

	Never	Rarely	Sometimes	Frequently	Always
On the computer?	0	1	2	3	4
Watching TV/movies?	0	1	2	3	4
Playing video games	0	1	2	3	4

PART E: Based on the last 30 days, thinking about your parenting regarding time spent watching television, playing video games, and on the computer, please circle your answers.

1. Do you have any firm limits or agreements with your child about how much he/she can watch TV or Videos?

₁ No (If no, go to Question 2) ₂ Yes (If yes, go to Question 1a)

1a. How much time are they allowed to watch Television or Videos per day? _____

1b. How often are these limits enforced?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

2. Do you have any firm limits or agreements with your child about how much time he/she is allowed to play on the computer or use it to communicate with friends?

₁ No (If no, go to Question 3) ₂ Yes (If yes, go to Question 2a)

2a. How much time is allowed to play or talk with friends on the computer per day? _____

2b. How often are these limits enforced?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

3. Do you have any firm limits, or agreements, about how much time your child can play video games?

₁ No (If no, go to question 4) ₂ Yes (If yes, go to Question 3a)

3a. How much time are they allowed to play video games per day? _____

3b. How often are these limits enforced?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

4. How often do you discipline your child for playing video games or watching TV without permission?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

5. How often does your child eat in front of the TV?

₁ Never ₂ 1 time or less per week ₃ 2-3 times per week ₄ 4-5 times per week ₅ Everyday

6. Do you have the following TV rules....

No TV/DVD before homework	Yes	No
No computer before homework	Yes	No
No internet without permission	Yes	No

PART F: Thinking of **the past 30 days**, please answer the following questions about the types of **foods you had in your house**. Please circle the appropriate number for each food item.

1. How often did you have the following fruits (fresh, canned, or frozen) in your house?

	Never	Rarely	Sometimes	Frequently	Always
Apples	0	1	2	3	4
Oranges	0	1	2	3	4
Bananas	0	1	2	3	4
Grapes	0	1	2	3	4
Pears	0	1	2	3	4
Strawberries	0	1	2	3	4
Blueberries/ blackberries	0	1	2	3	4
Kiwi	0	1	2	3	4
Cantaloupe/Melon	0	1	2	3	4
Pineapple	0	1	2	3	4
Peaches/ nectarines	0	1	2	3	4
Plum	0	1	2	3	4
Applesauce	0	1	2	3	4
Fruit Salad	0	1	2	3	4
Watermelon	0	1	2	3	4
Mango	0	1	2	3	4

Other: _____	0	1	2	3	4
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2. How often did you have the following vegetables (fresh, canned, or frozen) in your house?

	Never	Rarely	Sometimes	Frequently	Always
Asparagus	0	1	2	3	4
Beans (baked, lentils, kidney, etc.)	0	1	2	3	4
Beets	0	1	2	3	4
Bell Pepper (red, green, or yellow)	0	1	2	3	4
Broccoli	0	1	2	3	4
Brussel Sprouts	0	1	2	3	4
Cabbage	0	1	2	3	4
Carrots	0	1	2	3	4
Cauliflower	0	1	2	3	4
Celery	0	1	2	3	4
Corn	0	1	2	3	4
Cucumber	0	1	2	3	4
Green Beans	0	1	2	3	4
Greens (mustard, collard, kale, spinach, swiss chard etc.)	0	1	2	3	4
Lettuce	0	1	2	3	4
Mixed vegetables	0	1	2	3	4
Mushroom	0	1	2	3	4
Onion (green, red, white, yellow)	0	1	2	3	4
Peas	0	1	2	3	4
Potatoes	0	1	2	3	4
Squash (acorn, zucchini etc.)	0	1	2	3	4

Sweet Potatoes/ Yams	0	1	2	3	4
Tomatoes	0	1	2	3	4
Other: _____	0	1	2	3	4

3. Would you say the amount of fresh fruit and vegetables you currently have in your home is...

- 1 More than usual**

 2 Less than usual

 3 About the same

4. How often did you have the following juices in your house (fresh, frozen, bottled, or canned)?

	Never	Rarely	Sometimes	Frequently	Always
Apple juice	0	1	2	3	4
Grape juice	0	1	2	3	4
Orange juice	0	1	2	3	4
Fruit juice blend	0	1	2	3	4
Vegetable juice (e.g., V8, tomato juice)	0	1	2	3	4
Other: Specify _____	0	1	2	3	4

5. How often did you have the following snack items in your house?

	Never	Rarely	Sometimes	Frequently	Always
Chips	0	1	2	3	4
Popcorn	0	1	2	3	4
Nuts	0	1	2	3	4

Crackers	0	1	2	3	4
Pretzels	0	1	2	3	4
Sunflower Seeds	0	1	2	3	4
Other: Specify _____	0	1	2	3	4

6. How often did you keep the following drinks (boxed, canned, powdered) in your house?

	Never	Rarely	Sometimes	Frequently	Always
Sugared Drinks (Sports drinks, Kool-aid®, boxed or bottled fruit flavored drinks, sweetened teas)	0	1	2	3	4
Non-diet Soft Drinks (ie. Soda, Carbonated beverages)	0	1	2	3	4
Other: Specify _____	0	1	2	3	4

7. How often did you have the following sweets/dessert foods in your house?

	Never	Rarely	Sometimes	Frequently	Always
Candy	0	1	2	3	4
Cookies	0	1	2	3	4
Cakes/Snack cakes	0	1	2	3	4
Ice Cream, Sherbet, Frozen Yogurt or Sugared Popsicles	0	1	2	3	4
Chocolate/Chocolate bars	0	1	2	3	4
Other: Specify _____	0	1	2	3	4

PART G. Based on **the past 30 days**, thinking about where you like to store food, please circle the appropriate response for each statement.

	Never	Rarely	Sometimes	Frequently	Always
1. Fruits and vegetables in a place where they could be seen and easily reached.	0	1	2	3	4
2. Can the child get a soda without the help or permission of an adult	0	1	2	3	4
3. Can the child get snack foods without the help or permission of an adult	0	1	2	3	4

PART H : Based on the past 30 days, thinking about your food and meal behaviors, please circle the appropriate response for each statement

1. How often did you...

	Never	Rarely	Sometimes	Frequently	Always
Eat healthy meals or snacks while your child was around? (“healthy” defined as fruits, vegetables, low-fat foods, lean meats, whole grains etc.)	0	1	2	3	4
Eat meals in the living room or TV room?	0	1	2	3	4
Take a second helping during meals?	0	1	2	3	4
Eat unhealthy snacks around your children?	0	1	2	3	4
Drink sugared drinks or non-diet soda around your children?	0	1	2	3	4
Avoid going to cafes or restaurants with your children which sell unhealthy foods?	0	1	2	3	4
Avoid buying sweets and chips or salty snacks (change to fatty snacks?) and bringing them into the house	0	1	2	3	4
Not buy foods that you would like because you do not want your children to have them?	0	1	2	3	4

2. How often did your child see you....

	Never	Rarely	Sometimes	Frequently	Always
--	-------	--------	-----------	------------	--------

Eat while standing?	0	1	2	3	4
Eat straight from the pot/pan/bowl?	0	1	2	3	4
Eat while watching television, reading, or working?	0	1	2	3	4
Eat when you were bored?	0	1	2	3	4
Eat when you were angry or in a bad or sad mood?	0	1	2	3	4
Eat late in the evening or at night?	0	1	2	3	4
Eat while driving	0	1	2	3	4

3. Are you or anyone else in the home following a weight loss diet?

₁ Yes ₂ No ₃ Don't know

4. How many days of the week do your family sit at a table and eat dinner together?
This includes when it is just you and your child(ren).

₁ One day or less ₂ 2 days ₃ 3 days ₄ 4 days ₅ 5 days ₆ 6 days ₇ 7 days

5. How often do you take your child with you grocery shopping?

₁ Never ₂ Rarely ₃ Sometimes ₄ Frequently ₅ Always

PART I: Based on the last 30 days, thinking about your parenting regarding food, please circle your answers.

1. How often did you...

	Never	Rarely	Sometimes	Frequently	Always
Use food as a reward for your child?	0	1	2	3	4
Use food as a punishment for your child?	0	1	2	3	4
Prepare meals with your child?	0	1	2	3	4

Plan meals/menus with your child?	0	1	2	3	4
Offer healthy snacks when your child was hungry?	0	1	2	3	4
Eat breakfast with your child?	0	1	2	3	4
Eat dinner with your child?	0	1	2	3	4
Have regularly scheduled meals and snacks with your family?	0	1	2	3	4
Allow your child eat snacks or sweets without permission?	0	1	2	3	4
Allow your child to take soft drinks whenever he/she wants	0	1	2	3	4
Give my child soft drinks or snacks if (s)he asks	0	1	2	3	4
Give your child something else if they did not like what was prepared	0	1	2	3	4

2. Do you have the following food rules in your home....

How many servings of fruit and vegetables your child should eat	Yes	No
How many snacks is your child allowed to eat	Yes	No
When to snack	Yes	No
Which snacks to eat	Yes	No
No second helpings at meals	Yes	No
Limited portion sizes at meals	Yes	No
No dessert except fruit	Yes	No
No sweet snacks	Yes	No
No fried snacks at home (such as potato chips)	Yes	No
Avoid going to cafes or restaurants with your children which sell unhealthy foods?	Yes	No
Avoid buying sweets and crisps (change to fatty snacks?) and bringing	Yes	No

them into the house		
---------------------	--	--

3. When it is mealtime and your child is not hungry what would you usually do?

Suggest the child sit down at the table but not eat	Suggest the child eat later	Suggest the child sit down at the table but eat less	Convince the child to eat a full meal with the family	It never happens, the child is always hungry
--	------------------------------------	---	--	---

4. Do you buy food upon your child's request?

a. Fruits and vegetables:

₁ Not at all ₂ Rarely ₃ Sometimes ₄ Quite a bit ₅ Very much

b. Snacks or sugary cereal:

₁ Not at all ₂ Rarely ₃ Sometimes ₄ Quite A Bit ₅ Very much

Part J. Please complete the following questions thinking about your opinion of your child's weight and your parenting regarding food.

1. How concerned are you....

	Unconcerned	A little concerned	Concerned	Fairly Concerned	Very Concerned
About your child eating too much when you are not around him/her?	0	1	2	3	4
About your child having to diet to maintain a desirable weight?	0	1	2	3	4
Are you about your child becoming over weight?	0	1	2	3	4

2. How much do you agree/disagree?

	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree
I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, or pastries)	0	1	2	3	4
I have to be sure that my child does not eat too much	0	1	2	3	4
I have to be sure that my child does not eat too much of his/her favorite foods	0	1	2	3	4
I intentionally keep some foods out of my child's reach	0	1	2	3	4
If I did not guide or regulate my child's eating, (s)he would eat too many junk foods	0	1	2	3	4
If I did not guide or regulate my child's eating, she would eat too many of his/her favorite foods	0	1	2	3	4

3. How much do you agree/disagree?

	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree
My child should always eat all of the food on his/her plate	0	1	2	3	4
I have to be especially careful to make sure my child eats enough	0	1	2	3	4
If my child says "I am not hungry", I try to get him/her to eat anyway	0	1	2	3	4
If I did not guide or regulate my child's eating, (s)he would eat much less than she should	0	1	2	3	4

PART K: Based on your kitchen in the past 30 days, please circle your answers.

1. In your kitchen do you have...

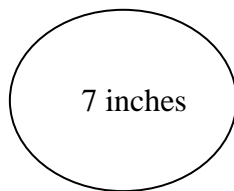
adequate counter space to prepare food?	Yes	No
--	------------	-----------

adequate refrigerator and freezer space?	Yes	No
adequate cupboard storage space?	Yes	No
a microwave?	Yes	No
a toaster?	Yes	No
a steamer?	Yes	No
a stove Top?	Yes	No
an oven?	Yes	No

2. How much do you use cooking equipment for food preparation (such as oven, microwave, food processor, electric mixer)?

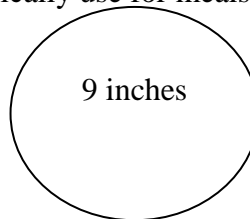
₁ Not at all ₂ Rarely ₃ Sometimes ₄ Quite a bit ₅ Very much

3. What size plate does your family typically use for meals? (See examples below)



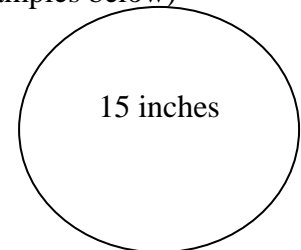
7 inches

Small



9 inches

Medium



15 inches

Large

4. How confident are you that you have accurately reported your child's home environment on this survey?

₁ Not at all ₂ A little ₃ Moderately ₄ Quite completely

Part L. For each category, circle the description that best fits your child or your family. It is important to indicate the *most common or typical pattern* and not what you would like to happen.

In a typical week...				
1. Does your family eat dinner while watching television?	Yes		No	
2. Do you use food as a reward for good behavior?	Yes		No	
3. Do you restrict how much your child eats potato chips, cookies, and candy?	Yes		No	
4. Do you have a routine or schedule for bedtime for your child?	Yes		No	
5. How many hours of sleep does your child usually get each night?	<8	8-9	9-10	>10
6. How many hours of television does your child watch?	<7	7-14	>14	
7. Does your child have a television in his or her bedroom?	Yes		No	
8. Do you monitor the amount of television your child watches?	Yes		No	
9. How often does your child eat breakfast?	Almost never	Sometimes	Often	Almost always
10. How often does your family eat at least one meal together each day?	Almost never	Sometimes	Often	Almost always
11. How often does your family eat fast food during the week?	Almost never	Sometimes	Often	Almost always
12. How often does your family eat fruits and/or vegetables with your main meal?	Almost never	Sometimes	Often	Almost always
13. How often do you use prepackaged foods (like frozen pizza) for your main meal?	Almost never	Sometimes	Often	Almost always
14. How often does your family freshly prepare food (like chicken, pasta) for your main meal?	Almost never	Sometimes	Often	Almost always
15. How often does your family drink soda pop or Kool-Aid at snacks and meals?	Almost never	Sometimes	Often	Almost always

16. How often does your family drink 100% fruit juice or low fat milk at snacks and meals?	Almost never	Sometimes	Often	Almost always
17. How often do you participate in at least 30 minutes of physical activity per day?	Almost never	Sometimes	Often	Almost always
18. How often does your family play games outside, ride bikes, or walk together?	Almost never	Sometimes	Often	Almost always
19. How often does your child participate in physical activity during their free time?	Almost never	Sometimes	Often	Almost always

20. In the past year how many organized sports with a coach or leader (e.g. soccer) or in organized group activities involving physical activity (e.g. swim lessons) has your child participated in?

0-1

1-2

3-4

5+

Appendix H: Demographic Questions and Medical History included in Parent Questionnaire

Part M. Caregiver information. Please answer the following questions about characteristics that describe you.

1. Are you:

Female

Male

2. What is your age: _____

3. How would you describe *your* race?

Black or African American

White

American Indian/
Alaskan Native

Asian

Mixed Race

Native Hawaiian or Other Pacific Islander

Not sure

Other: _____

4. How would you describe *your* ethnicity?

1

2

3

Hispanic or Latino

Not Hispanic or Latino

Not Sure

5. What is the highest grade that you completed?

₁

₂

₃

₄

₅

Graduated High School/GED

Some College

Graduated 2-year College

Graduated College

Post Graduate

6. What is your height: _____

7. What is your weight: _____

8. How many children live in your home? _____

9. How many foster children live in your home? _____

10. How long has the foster child who has lived with you the longest been in your care?

V. Demographic Information

The following questions are in reference to your foster child. If you have more than one child with you at the time, you can answer the questions in regards to the *foster child who has been with you the longest*.

1. How would you describe the race of *the child*?

₁

₂

₃

₄

₅

₆

₇

₈

Black or African American

White

**American Indian/
Alaskan Native**

Asian

Mixed Race

Native Hawaii an or Other Pacific Islander

Not sure

Other:

2. How would you describe the ethnicity of *the child*?

Hispanic or Latino

Not Hispanic or Latino

Not Sure

3. Does your child have any physical medical conditions?

₁ Yes ₂ No

a. If so, please list them:

4. Is your child taking any medications?

₁ Yes ₂ No

a. If so, please list them: _____

5. What is your family's annual household income?

<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Less than 10,000	\$10,000 - \$19,000	\$20,000 - \$50,000	\$50,000 - \$100,000	Greater than \$100,000

6. Which of the following best describes your occupation

<input type="checkbox"/> ₁ Full time working outside the home	<input type="checkbox"/> ₂ P/T working outside the home	<input type="checkbox"/> ₃ Working from home for a salary	<input type="checkbox"/> ₄ Stay at home mom/dad
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7. What percent of the time does your child live with you?

<input type="checkbox"/> ₁ Less than 25%	<input type="checkbox"/> ₂ Between 25% and 50%	<input type="checkbox"/> ₃ Between 50% and 75%	<input type="checkbox"/> ₄ More than 75% but less than 100%	<input type="checkbox"/> ₅ 100%
--	--	--	--	--

8. Do you have a dog?

₁ Yes ₂ No



Appendix I: Recruitment Telephone Script

Hi _____. My name is Serena L. Parks and I am a doctoral student in the Translational Obesity Research Program at Virginia Tech. Over the next few months, I will be conducting a Delphi study to develop intervention strategies to prevent or treat obesity among children in foster care. This study will consist of approximately three surveys over about 6 months time. The first survey is open-ended and will take less than an hour to complete. The other two surveys will be more structured and take less than half an hour to complete. You have been selected as a potential panel expert due to your experience {insert applicable field}. By completing this study, not only will you contribute to the scientific evidence concerning this understudied population, but you will also be entered into the following drawings separately: \$50 for completion of the first round; \$75 for completion of the second round; and \$100 for completion of the third round. For the first three rounds, we will conduct separate lotteries for each group of experts; therefore, you have about a 1 out of 15 chance of winning. All participants will be entered into a final \$250 drawing for the completion of any additional rounds of questionnaires. There are no foreseen risks associated with your participation.

Are you willing to serve as a panel expert?

- If yes: Thank you. According to our data, your email address is _____. Check back next week. _____. Is this correct? More information along with the first round of questions will be emailed to you by the end of the day. Will you be able to return your responses by May 6th (or 7 days from the date they've been contacted)? If not, which date works best?
- If no, proceed to the remainder of the script and ask questions 1 through 6.

Thank you for your time. Before we end this conversation, I would like to ask you a few demographic questions: End of next week

1. How would you describe your race: African American/Black; White; American Indian/Alaskan Native; Asian; Mixed Race; Native Hawaiian or Other Pacific Islander
 - 1a. Also, are you Latino or Hispanic?
2. How old are you?
3. What is your primary profession?
4. How long have you been working in your current field?
5. I have here that you received a {insert degree} in {insert field}. Is this accurate?
 - If information is not available: What degrees have you obtained? In which fields did you obtain them?
6. Can you provide us with the contact information for at least one of your colleagues, whom you think would be suitable for this study? Thanks. Lastly, please provide me with a mailing address in the event that we mail you a questionnaire during subsequent rounds.

Thanks again for your time.

Appendix J: Delphi Study Recruitment Email

Dear _____,

Thank you for your willingness to participate in the project, Integrating Healthful Eating and Physical Activity Skills into the Foster Care System: A Delphi Study. Preliminary data suggest that, on average, foster children are not meeting recommendations for fruit and vegetable intake, engagement in physical activity, limited sugar-sweetened beverage intake, nor limited screen time. Our local data also suggests that more than 90% of foster parents may be overweight or obese. The goal of this study is to identify promising intervention strategies for this population and context with the goal of preventing and/or treating obesity among children in foster care; and the possible related outcome of reduced obesity in foster parents.

As part of your participation in this study, we will ask you to complete three rounds of surveys that will begin by assessing your opinions in a general way and finish by having you respond to specific intervention strategies. Results from the first round will be used to develop the second round survey. On the second survey you will be asked to rate the responses that participants provide for the questions below. This information will be synthesized across participants and a third survey will be created to provide final ratings. The need for subsequent rounds is unlikely, but if interpretation of the third survey is difficult we may contact you to complete a final rating.

Please complete the first survey by accessing the following link:

(Survey Link)

Password: (Survey Password)

As we talked about on the phone, your deadline for completing the survey is {insert date agreed upon}.

Thanks again for your time!

Serena

Appendix K: Delphi Study Round 1 Questionnaire

Integrating Healthful Eating and Physical Activity Skills into the Foster Care System: A Delphi Study

Thanks again for your participation in this project. Your personal responses to this questionnaire will be confidential. However, all panel experts will be provided with aggregated results to rate during subsequent rounds.

By completing this questionnaire, not only will you contribute to the scientific evidence concerning this understudied population, but you will also be entered into one of three first round lotteries for \$50. We do not anticipate any risks associated with your participation.

Please answer each of the open-ended questions listed below.

Name:

1. There is clear evidence that an overconsumption of sugar sweetened beverages, eating too few fruits and vegetables, getting too much sedentary screen time, and not getting enough physical activity contribute to childhood weight status. Previous studies testing programs to prevent and/or treat childhood obesity suggest intervening with parents of younger children (e.g., <12 years old) to change the home activity and food environment can be successful. Other research has demonstrated targeting both the parent and child can also be successful.
 - a. Who should an intervention designed to prevent and/or treat childhood obesity among foster children target (e.g. child, parent, family, schools)?
 - b. What types of strategies do you think would work best to promote physical activity and healthful eating for foster children?
2. What components and resources should be included in the intervention (e.g. healthy eating habits, family rules, handouts)?
3. What is an appropriate delivery method (telephone, internet, in-person) for this intervention?
4. How long should this type of program be (e.g., 4 weeks, 3 months)? And how should sessions be spaced (e.g., weekly, biweekly, monthly)?
5. What are some potential barriers to delivering an intervention to prevent and/or treat obesity among this population?
6. What are some strategies to overcome the barriers that you listed in question five?

7. How should the intervention be evaluated to determine if it should be sustained?
8. What are potential recruitment and retention strategies (e.g. flyers, incentives, etc.) that would be successful to attract foster parents and foster children?
9. Can you think of how, and what type of, policy approaches could be used to support this type of intervention?

Appendix L: Delphi Study Round 2 Questionnaire

Integrating Healthful Eating and Physical Activity Skills into the Foster Care System: A Delphi Study

Round 2 Questionnaire

Thank you for participating in the first round of our study. The questions included in this second of three rounds of surveys are based on the responses we received from 13 researchers, 14 social workers, and 10 foster parents. We synthesized the feedback and are working towards developing a specific structure and intervention content. Some of these questions will seem familiar, but please answer each one based on your opinions and experience.

1. This first set of questions is related to who should be involved in receiving the intervention designed to prevent and/or treat obesity among foster children. Many of the responses included an age and time-based factor that could influence who should be involved. For example, some folks thought that the child should not be involved if they were under 8 years old. Others thought that children over the age of 13 should be the primary target of the intervention. Below we ask you to indicate who you think should be involved in receiving intervention strategies based on the child's age.

Please put a 'P' beside the person or people you feel should be the primary recipient of the intervention strategies and an 'S' beside those you think should be included but would be secondary in receiving intervention strategies. If you feel like someone does not need to be involved just leave the box blank. It is okay to have more than one primary recipient.

If a program is designed to prevent and/or treat obesity among foster children under the age of 8:

Foster parent	
Biological parent	
Child	
Entire family (including siblings)	

If a program is designed to prevent and/or treat obesity among foster children 9 to 12 years old:

Foster parent	
Biological parent	
Child	
Entire family (including siblings)	

If a program is designed to prevent and/or treat obesity among foster children 13 to 18 years old:

Foster parent	
Biological parent	
Child	
Entire family (including siblings)	

2. We also received many suggestions about different groups or organizations that should/could be involved in supporting a physical activity and healthy eating intervention for children. There was also a clear distinction in regards to obesity prevention versus obesity treatment. For the following organizations or groups, please separately rate the importance and practicality of having each of the **following groups** involved in an intervention to prevent or treat obesity among foster children. Use the following 0 to 10 scale for both importance and practicality:

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Healthcare (e.g. physicians, nurses)				
Behavioral health services (e.g. counseling)				
School				
Local departments of social services				
State departments of social services				
Reunification process				
Community and school sport organizations				
Local community organizations				

3. Experts provided several suggestions for developing interest and commitment from children and foster parents for a program designed to increase physical activity (PA) and healthy eating (HE) in order to prevent and/or treat obesity among foster children. Suggestions included incentivizing those involved, programmatic strategies, and organization approaches. Use the following 0 to 10 scale to rate the importance and practicality of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please rate the importance and practicality of providing the following **incentives**:

	Importance	Practicality
Money		
Gift cards		
Grocery store gift cards for healthy food		
Free foster parent/child day at local gym or YMCA		
Passes to water or theme parks		
Parents and children should choose incentive		
Door prizes		
Completion of the program		

Please rate the importance and practicality of providing **children** with the following **incentives** (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Importance	Practicality
Fun games (sports equipment, wii type of games, social outlets for family engagement)		
Free downloads for teenagers		
Free garden seeds		
Offer pizza at sessions		

Please separately rate the importance and practicality of providing **parents** with the following **incentives to develop interest and commitment** to a program to prevent or treat childhood obesity among foster children:

	PREVENT Obesity		TREAT Obesity	
	Importance	Practicality	Importance	Practicality
Healthy food or healthy food coupons				
Training hours				
Contest among foster parents regarding healthy living				

Please rate the importance and practicality of providing **social workers** with the following **incentives** for a program designed to prevent and/or treat obesity among foster children:

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Importance	Practicality
Training hours		
Financial incentives		

Please separately rate the importance and practicality of the following programmatic strategies for developing interest and commitment to a program designed to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Emphasis on becoming healthy and feeling better				
Provide fun, health and activity focused activities for children during parents' trainings				
Tasty healthy food options				
Programs with social and peer support (e.g. dancing, recreational sports, outdoor activities)				
Family affair				
Flyers on the cost and consequences of poor diet and inactivity				
Make the intervention time sensitive (not during work hours)				
Offer supportive and ongoing contact with staff				
Build trusting relationships between program deliverers and participants				
Constantly remind parents what they can to implement HE				
Promotion at program meeting focused on other topics				
Share successful case studies				

Please separately rate the importance and practicality of the following **organization approaches for developing interest and commitment** to a program designed to prevent or treat obesity among foster children:

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Reach target population by going through clinical primary care pediatric setting				
Get involved with target population's churches, work or any function				

4. We also received suggestions about strategies that could be included in an intervention designed to increase physical activity (PA) and health eating (HE) for children. It has been suggested that some of these strategies would help overcome potential barriers. These strategies concern agencies, finances, programmatic components, parents, providing resources, and collaborating with organizations. Use the following 0 to 10 scale to rate the importance of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please separately rate the importance and practicality of having each of the following **strategies** involved in an intervention to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Text messaging or email support to engage kids				
Games to encourage PA and HE				
Educating children about balanced diets				
Teach older youth grocery shopping techniques				
Teach older youth consequences of eating habits				
Provide visual demonstrations				
Provide multiple opportunities for fun PA				
Increase in school activities				
Increase after-school activities				
Promote food pantries				
Develop safe environments for obese children to exercise				
Convince society that obesity is a deadly problem				

Please separately rate the importance and practicality of having each of the following strategies for **parents** involved in an intervention to prevent or treat obesity among foster children:

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Teach foster parents how to shop for healthy items				
Hands-on food preparation				
Teach time management skills for incorporating PA and HE				
Educate on portion control and junk foods				
Food rules (monitoring, restrictions, boundaries)				
Educate about free or low-cost physical activities				
Help foster parents find recipes				
Offer health coaching				

Please separately rate the importance and practicality of having each of the following strategies for **parents** involved in an intervention to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Organize foster parent fresh food crops				
Have parents promote TV programs demonstrating HE choices				
Parents should find chores around the house to promote PA				
Teach parents how to provide alternatives to food rewards				
Parents incentivize PA with screen time				
Fun activities for biological and foster parents				
Teach birth parents ways to be physically active and eat healthy affordably				
Screen time limits and restrictions				
Build motivation for participants to change				
Include demonstrations and discussions in foster parent trainings on healthful eating				
Brief motivational interviewing delivered through healthcare (sessions that allow participants to work through barriers to behavior change)				
Become aware of what children are eating at school				
Come up with ways to make the new foods more palatable.				
Let kids mix foods				
Allow children to assist with growing a garden				
Communicate the benefits of healthier options with children				
Encourage kids to eat healthy foods				
Exercising as a family weekly				
Limiting fast foods				

Please separately rate the importance and practicality of having each of the following strategies for **social service agencies** involved in an intervention to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Develop a system of care with integrated services that place healthy lifestyle as a priority				
Provide fees for after school sports				
Provide funding for kids to enroll in PA and HE opportunities				
Assist foster parents and group homes with setting expectations for participation in after school sports				
Incorporate movement into learning opportunities				
Make trainings active				
Work with foster parents on involving kids in PA				
Engage foster family in entire process				
Include PA and HE promotion in all parenting classes/trainings				
Collaborate with WIC for nutrition education				
Collaborate with Parks and Recreations for PA opportunities				
Intervene as soon as possible once a child has entered the foster care system				
Make the intervention a part of the respite programs for foster care parents				
Use social worker to promote the intervention and incentivize them based on the number of their families who join and remain in the program				
Cap the number of foster children in a home to two or three				
Require foster parents to work diligently to have the child within certain health standards or risk losing the placement				
Enlist individuals who work with them to help them understand the connection between emotional issues and overeating or unhealthy eating				
Build the material into PRIDE classes				

Please separately rate the importance and practicality of implementing the following **finance-related strategies** to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Provision of funding through Department of Child and Family Service policies that promote an active lifestyle				
Increase payments to foster parents to help with purchasing healthier foods				
Develop an initiative to lobby for an increase in food stamp benefits				

Please separately rate the importance and practicality of implementing the following **programmatic strategies** to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Provide intervention activities for kids while the foster parents are participating in training sessions				
Identifying where families struggle, provide ongoing support where needed (via phone or email)				
Educate youth about HE, PA, and food preparation				
Integrate the intervention with training for foster parents				
Skill building for the kids, irrespective of their placement				
Gear the program to the entire family				
Educate biological parents on managing money				
Provide concrete strategies to make HE and activity affordable				
Include the use of typical foods				
Provide samples at group sessions for parents to taste along with a cooking workshop on how to fix the recipes				
Encourage simple changes and show people how to do what's being requested of them				

Please continue to separately rate the importance and practicality of implementing the following **programmatic strategies** to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Relaying the importance of the effect nutrition has on a child's development, behavior, and emotional well-being				
Discuss with families their reasons for resistance				
Educate biological and foster parents on meal planning				
Explain that it is essential to learn new strategies				
Help foster parents realize how they indirectly benefit from child's good eating habits				
Make sure people are aware of their body mass index				
Computer demonstrations reflecting how people will look in 5-10 years				
Show families charts, movies, and statistics of problems associated with being unhealthy				
Individuals teaching the material should be positive and energetic				
Acknowledge and understand that everyone has a different history/relationship to food issues				

Please separately rate the importance and practicality of implementing the following strategies involving **collaborations with organizations** in order to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Involve the community through collaborations with neighborhood schools, organizations, and grocery stores				
Collaborate with grocery stores and ensure that they are supplying fresh fruits and vegetables, healthy grains, and healthy choices in their delis				
Collaborate with schools and encourage schools or districts to participate in a school-based program for promoting PA and healthful eating (e.g., the Healthy Schools Program)				
Help schools partner with community organizations that provide opportunities beyond what are available in schools				
Schools should provide a way for children to get home after staying late at school				
Communities should provide activities available to all children				

Please separately rate the importance and practicality of the following **resource-related** strategies to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Access to online resources about nutrition and healthy menu items				
Cooking workshops for parents or teens who struggle with obesity				
Incorporate healthy catered meals into the training events				
Provide childcare				
Present easy to follow food plans				

5. The following responses are related to topics, components, and resources that experts believe should be included in an intervention targeting healthy eating (HE) and physical activity (PA) habits and weight status for foster children. Use the following 0 to 10 scale to rate the importance and practicality of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please separately rate the importance and practicality of including the following **knowledge concepts** in an intervention to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Healthy food choices				
Limiting sugar				
Reading labels				
Picking seasonal foods				
Growing gardens				
Benefits of HE and PA				
Benefits of nutrition on outcomes such as school performance, quality of life and life expectancy				
PA as a means of promoting interaction and bonding				

Please separately rate the importance and practicality of **educating participants** about the following **parenting strategies** in an intervention to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Parenting styles				
Family rules around exercising and eating				
Family routines for PA				
Meal routines				
Making healthy foods available				
Making healthy foods accessible				
Introducing new foods				
Role modeling				
Preparing meals as a family				
Avoiding food as punishment and emotional support				

Please separately rate the importance and practicality of providing the following **resources** in an intervention to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Meal ideas				
Recipes				
Cookbooks designed by foster parents				
Eating and exercise plans				
Access to PA opportunities				
Nutrition support hotline				
Online and phone coaching				
Mental health services and counseling				
Nutrition analysis				
Self-monitoring strategies				

Please separately rate the importance of providing parents with **handouts** concerning the following topics in an intervention to prevent or treat obesity among foster children:

	Prevent Obesity	Treat Obesity
	Importance	Importance
5-2-1 message (5 or more servings of fruits & vegetables; 2 hours or less of recreational screen time; 1 hour or more of PA)		
Evidence-based child rearing information		
Statistics on the number of children not receiving adequate nutrition		

Please separately rate the importance of including the following **components** in an intervention targeting foster families in an intervention to prevent or treat obesity among foster children:

	Prevent Obesity	Treat Obesity
	Importance	Importance
Goal setting		
Discussions with nutritionists and physicians		
Lessons on supermarket sales (effective coupon usage, swapping coupons, and healthy options)		
Active lessons within a grocery store		
Instruction on good habits across school, home, and social environment		
Exposure to sports and outdoor activities		
Incentives for changing negative behaviors		
Engaging opportunities for education		
Convenient access to affordable foods		

6. For the following question, experts provided suggestions regarding the primary intervention channel as well as ideas for supplemental delivery modes. Please put a 'P' beside the delivery mode you feel should be the primary mode and an 'S' beside the modes you think should be include but would be secondary/supplemental. If you feel like a certain mode should not be used then leave the box blank. Also, use the following 0 to 10 scale to rate the practicality of utilizing the intervention modes that you think should be included.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	'P' or 'S'	Practicality
In-person		
Internet		
Phone		
Multi-media		
Publications		
Home visits		
Monthly newsletters		
Hands on knowledge and experience		
Workshops		
Group or family counseling		
Group classes		
Combination of clinical and e-health components		

7. For the following item, we received suggestions about the duration and frequency of a weight management program for children. How long do you think a weight management program targeting children should last? Use the following 0 to 10 scale to rate the importance and practicality of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please separately rate the importance and practicality of implementing an intervention to prevent or treat obesity among foster children for the following **duration**:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
One year				
Three months				
Six months				
Six weeks				
As long as the child is in foster care				
Integrated into pre-established eight week course for biological parents				
Integrated into pre-existing 12 hour training requirements				
Four to six weeks				

Please separately rate the importance and practicality of implementing an intervention to prevent or treat obesity among foster children with the following **frequency** (continued):

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
A stepped approach (several times a week, weekly, then bi-weekly)				
Several times a week				
Weekly				
Bi-weekly				
Monthly				
Weekly then monthly				
Two 2-hours sessions for 2 weeks then monthly				

Using the following scale, please rate your level of agreement with the following statements:

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

	Agreement
The intervention mode should be determined based on the intervention phase (e.g., a stepped approach beginning with in-person sessions, then telephone, then internet).	
The program deliverers must first build a relationship of trust.	
The intervention should consist of diverse delivery methods depending on region (e.g., rural versus urban).	

8. This set of responses cover types of barriers that may be encountered when delivering an intervention to increase healthful eating (HE) and physical activity (PA) in order to prevent and/or treat obesity. Experts provided barriers such as those related to the environment, parents, and children. Use the 0 to 10 scale below to rate the importance and practicality of addressing the following barriers.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please rate the importance of addressing the following barriers:

	Importance
Cost associated with HE and PA	
Lack of funding for nutritional consultation or enrollment in behavioral change programs	
Poor presentation of materials	
Difficulty of introducing unfamiliar foods	
Achieving success in a short period of time, but being unable to maintain changes	
Lack of time for social workers to engage and recruit foster parents	

Please separately rate the importance and practicality of addressing the following **environment-related barriers** when delivering an intervention to prevent or treat obesity (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Unstable placement of foster children				
Returning to biological home with unhealthy behaviors				
Unsupportive school nutrition environment				
Lack of physical education in schools				
Limited activities for obese kids				
Lack of access to healthy foods				
Lack of access to PA venues				

Please separately rate the importance and practicality of addressing the following **foster parent-related barriers** when delivering an intervention to prevent or treat obesity:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Habits associated with family/cultural norms				
Parents bad eating habits				
Nutrition and PA not being a priority in the home				
Feeling stigmatized if overweight/obese				
Existing struggles with obesity				
Excessive stress				
Lack of knowledge				
Lack of motivation (e.g., resistance to altering current behaviors)				
Lack of ownership of the child's eating and activity behavior				
Education fatigue due to other foster parent requirements				
Difficulty in getting good attendance at program sessions				
Biological parent's continuation of intervention strategies				
Denial concerning the problem				
Lack of time due to busy schedules				
Lack of time to support children's participation in organized sports due to multiple placements.				
Foster parents' own unhealthy eating and activity behaviors				

Please separately rate the importance and practicality of addressing the following **child-related barriers** when designing an intervention to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Mental and behavioral issues				
Appetite and weight related side effects of medications				
History of disordered eating				
Taste preference				
Feeling isolated				

9. This set of items reflects feedback we received on methods for evaluating whether a weight management program for foster children should be sustained. Responses pertained to ways to design the intervention, who the evaluations should target, variables to evaluate, and outcomes that should be measured. Use the following 0 to 10 scale to rate the importance and practicality of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please separately rate the importance and practicality of evaluating an intervention to prevent or treat obesity among foster children with the following **components or characteristics**:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Administer surveys before and after the intervention.				
Compare individuals who did not receive the intervention to those who received the intervention.				
Evaluate the degree to which the intervention works based on foster parent/child characteristics (e.g., race/ethnicity).				
Evaluate the degree to which the intervention works based on region (e.g., rural/urban).				
Evaluate how easy the intervention is to deliver.				

Please rate the importance and practicality of **evaluating** changes in the following **populations** (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Importance	Practicality
Social workers		
Foster parent trainers		
Foster children		
Foster parents		
Biological parents		

Please rate the importance and practicality of **evaluating** the **variables** listed below:

	Importance	Practicality
Level of engagement		
Compliance with the intervention		
Satisfaction		
Utilization of recipes		
Attendance		
Cost of the program to foster parents		
Cost of the program to delivering system		
Social workers should incorporate weight management services into foster child's service plans and monitor accordingly		

10. Please rate the **importance** of measuring the following outcomes for each target population and at which time point. Use the following 0 to 10 scale to rate the importance of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Target			Follow-up					
	Foster child	Foster Parent	Biological parent	Each session	Bi-weekly	3-months	6-months	12-months	Constant
Deviations from typical growth trajectories									
Eating behaviors of foster children in home and school (e.g. food frequency, food type)									
PA behaviors of foster children									
Weight									
Body mass index									
Body mass index percentile									
Body fat									
Health complications									
Health care utilization									
Changes in attitude concerning eating and PA									
Nutrition knowledge									
Blood pressure									
Cholesterol									
School-related behaviors (e.g. attention span, less disruptive behavior)									
Mediators of behavior change (e.g. level of confidence to make a change and the likelihood that they will monitor their behaviors)									

11. Please rate the **practicality** of measuring the following outcomes for each target population and at which time point. Use the following 0 to 10 scale to rate the importance of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Target			Follow-up					
	Foster child	Foster Parent	Biological parent	Each session	Bi-weekly	3-months	6-months	12-months	Constant
Deviations from typical growth trajectories									
Eating behaviors of foster children in home and school (e.g. food frequency, food type)									
PA behaviors of foster children									
Weight									
Body mass index									
Body mass index percentile									
Body fat									
Health complications									
Health care utilization									
Changes in attitude concerning eating and PA									
Nutrition knowledge									
Blood pressure									
Cholesterol									
School-related behaviors (e.g. attention span, less disruptive behavior)									
Mediators of behavior change (e.g. self-efficacy and self-regulation)									

12. Lastly, we received feedback concerning different policy approaches that could be used to support a weight management intervention targeting healthful eating (HE) and physical activity (PA) among foster children. Suggested approaches include providing resources, agency-related strategies, and targeting parent trainings. Use the following 0 to 10 scale to rate the importance and practicality of the following suggestions.

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

Please separately rate the importance and practicality of policy approaches, which include the providing the following **resources** in an intervention designed to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Increased access to PA programs				
Provide resources to families dealing with obesity				
Provide treatment for specific causes of obesity				
Provide coupons for purchasing healthy foods				
Supervised after school programs that provide foster children's access to HE, coping skills and activities				

Please separately rate the importance and practicality of policy approaches for **social services agencies** to implement in order to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Screen for obesity upon entry into care				
Initial health requirements to become foster parents and require foster parent to maintain a specific health status.				
Require foster parents to have kids within health standards				
Establish policies requiring/encouraging foster parent and biological parent interaction				
Assess food environment during home checks				
Agency should monitor body mass index				
Involve caseworkers				
Establish body mass index as an indicator of overall health				
Prioritize HE and PA				
Intervention for biological parents				
Implement in agency guidelines				
Emphasize in Child and Family Service Reviews measures				

Please separately rate the importance and practicality of the following policy approaches, which **target parent trainings** in order to prevent or treat obesity among foster children (continued):

Not at all					Some what					Very
0	1	2	3	4	5	6	7	8	9	10

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Institutionalize mandatory training				
Mandatory 2-credit annual web-based in-service training				
Mandatory trainings annually				
Mandatory trainings every five years				
Nutrition education classes				
PA education				
Have biological parents take nutrition and PA classes before reunification				

Please separately rate the importance and practicality of the following policy approaches to prevent or treat obesity among foster children:

	Prevent Obesity		Treat Obesity	
	Importance	Practicality	Importance	Practicality
Financial support contingent on healthy food practices				
Increase billable services to those able to provide counseling (e.g. physicians, psychologists)				
Policies incentivizing youth's participation in PA or nutrition				
Public and private partnerships				
Policy and programs for community collaborations				
Adjust nutritional standards in schools and group homes				
Facilitate change through training, coaching and rewards				
Partnership between state and local department social services and foster parent				
State level policy				
County level policy				
Checkbox during annual physical indicating necessary intervention				

Thank You for Your Time ☺

Appendix M: Email to Local Directors

Dear {Name of Local Director},

My name is Serena L. Parks and I am a doctoral student in the Translational Obesity Research Program at Virginia Tech under the guidance of Dr. Paul Estabrooks. I am currently conducting several studies regarding eating and physical activity habits and childhood weight management as it relates to the foster care system.

I am in the process of executing my third dissertation study entitled, "Assessing Policies and Programs Impacting Foster Children for Nutrition and Physical Activity Content." The purpose of this study is to determine the extent of nutrition and physical activity content in policies and training programs at the federal, state and local levels.

The reason for this email is to acquire permission to contact a representative from your local agency who could provide me with answers to the questions below (e.g. foster parent recruiter, foster parent program coordinator). We will collect these answers using a short web-based survey, which is available at {insert link}. Responses to these questions are only for the purposes of this study. None of these responses will be associated with your state accountability or quality control. Upon the completion of this study, Dr. Estabrooks and I will be glad to share the results of our study.

Can you provide me with the name of the person who could provide me with this information?

Questions to be asked:

- * Which training guide does your agency use for pre-service training (MAPP/GPS, PATH, PRIDE, VISSTA)?
- * Which topics does your agency cover during in-service training?
- * Over the past two years, has your local agency provided any training or materials concerning nutrition and physical activity? If yes, please provide information for any trainings or materials your agency has provided concerning nutrition or physical activity (e.g. basic food groups, meal planning, meal preparation).
- * Which local department of Virginia Department of Services do you work for?
- * What is your job title?
- * How long have you been working with the Department of Social Services?

Thank you for your time,
Serena

Appendix N: Email to Local Representatives

Dear {Local contact},

My name is Serena L. Parks, and I'm a doctoral student under Dr. Paul Estabrooks in the department of Human Nutrition, Foods, and Exercise at Virginia Tech. I am currently conducting several studies regarding eating and physical activity habits and childhood weight management as it relates to the foster care system.

As a part of my third study, {Enter director's name} gave me permission to contact you to see if you could answer a few questions about opportunities available to foster parents via pre-service and in-service training. These questions can be answered by going to the following link: {Insert link}

I will follow up with you in a week. Please let me know if you would need more time.

Thanks a lot for your assistance!
Serena

Appendix O: Program Analysis for Nutrition and Physical Activity Content Survey

*1. Which training guide does your agency use for pre-service training? If you do not use any of the curriculums listed below, please list which topics are covered in your pre-service training.

MAPP/GPS

PATH

PRIDE

VISSTA

If other, please specify

*2. Which topics does your agency cover during in-service training?

Adolescent Issues (e.g., Adolescent Development)

Attachment

Birth Parents (e.g., Introduction to Family Partnership Meetings)

Caring for Medically Fragile Children

Child Development

Discipline/Behavior Management

Diversity and Cultural Issues

Domestic Violence

Educational Advocacy

Emotional-Behavioral Disorders (e.g., ADHD, ODD, Conduct Disorder)

Foster Parenting Issues (e.g., The Impact of Fostering, Stress Mngmt)

Health and Nutrition

Independent Living Skills

Mental Health Issues (e.g., Bipolar Disorder, PTSD)

Separation, Grief, or Loss

Sexuality and Sexual Development (e.g., Sexual Abuse)

Special Needs (e.g., Autism Spectrum Disorders, Down Syndrome)

Substance Abuse/Addiction

Trauma, Abuse, & Neglect

If other, please specify

*3. Over the past two years, has your local agency provided any training or materials concerning nutrition and physical activity?

Yes

No

4. Please provide as much information as possible for any trainings or materials your agency has provided concerning nutrition or physical activity (e.g. basic food groups, meal planning, meal preparation).

Date, Title of Training, Mandatory/Optional

*5. Please list the local department of Virginia Department of Social Services that you work for and/or service.

6. What is your job title?

7. How long have you been working with the Virginia Department of Social Services?

8. Please enter your contact information

First Name

Last Name

Work Phone

Email Address

9. Is it okay to contact you if we need clarification or have any further questions?

Yes

No

Note: Questions including an (*) were required. Participants were not allowed to skip required questions.