



PCIT-Health: An Innovative Intervention for Childhood Obesity Prevention

Sarah E. Domoff and Larissa N. Niec

Abstract

Childhood obesity remains a major public health issue both in the United States and globally. Obesity is associated with numerous health risks; children with obesity are more likely to experience cardiometabolic problems and remain obese into adolescence and adulthood. Given the prevalence of childhood obesity and the serious health risks associated with it, the development of effective prevention programs for obesity in early childhood is crucial. In this chapter, we describe the theoretical rationale for, and development of PCIT-Health, an innovative child obesity prevention program. PCIT-Health is an adaptation of a selective prevention model of PCIT. The PCIT-Health model maintains the core components of PCIT (behavioral assessment, in vivo coaching, parent–child relationship focus) and includes the addition of a health module (Health-directed Interaction, HDI). Parents and children progress to the HDI phase after completing CDI and PDI. The primary goal of HDI is for parents to generalize the skills they learned in the first two phases to contexts that are relevant to a child's

obesity risk: mealtime and screen time. Like the CDI and PDI phases, the HDI phase begins with a teach session, during which parents receive information about positive (or risk-reducing) parenting around feeding style and feeding practices and parenting around screen time (i.e., media parenting). PCIT-Health has the potential to enhance parenting effectiveness, not only around children's general conduct problems, but also specifically around interactions during feeding and screen time.

The Scope of the Problem

Obesity is one of the largest public health issues facing children today. Approximately one in three school-age children (age 6–11 years), and one in four preschool-age children (2–5 years) are overweight or obese in the United States (Skinner, Perrin, & Skelton, 2016). For research and screening purposes, obesity risk is often determined by calculation of a child's body mass index (BMI), which is the ratio of an individual's weight (in kilograms) to the square of an individual's height (in meters; Centers for Disease Control and Prevention [CDC], 2018). For children, BMI percentile, based on the child's age and gender, is used to classify obesity risk. That is, children whose BMI falls at or above the 95th percentile

S. E. Domoff · L. N. Niec (✉)
Department of Psychology, Center for Children,
Families, and Communities, Central Michigan
University, Mount Pleasant, MI, USA
e-mail: niec11@cmich.edu

for their age and gender are considered obese (CDC, 2018). Recent simulation models predict that, if the rates of obesity continue unabated, more than 50% of children today will experience obesity by age 35 years (Ward et al., 2017).

Obesity is associated with numerous health risks; children with obesity are more likely to experience cardiometabolic problems such as hypertension, glucose intolerance, and hyperlipidemia (e.g., Dietz, 1998; Rao et al., 2016). They are also more likely to experience asthma and sleep apnea (Halfon, Larson, & Slusser, 2013). Beyond the clear risks to physical health, children with obesity are also at risk for psychological stressors arising from social stigma (Van Geel, Vedder, & Taniol, 2014). The risks associated with childhood obesity can become chronic, as obesity in childhood frequently leads to obesity in adolescence and adulthood (Freedman et al., 2005). Further, approximately 80% of obese adolescents will remain obese as adults (Lifshitz, 2008). Given the drastically increasing prevalence of childhood obesity and the serious health risks associated with it, the development of effective prevention programs for obesity in early childhood is crucial.

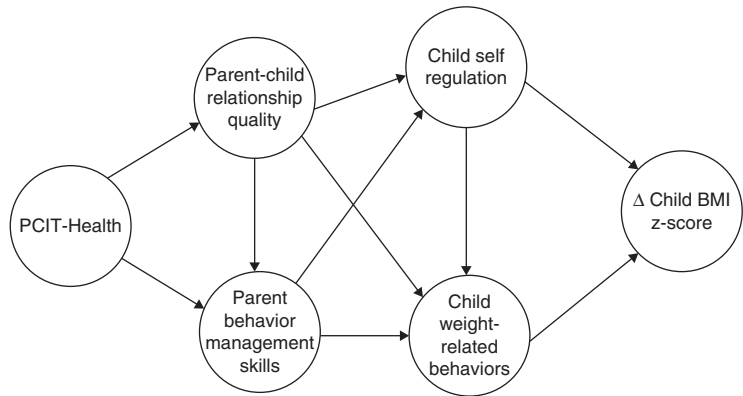
Two major risk factors for childhood obesity are child eating behaviors and screen time, both of which are influenced by parental feeding practices and media parenting practices. Parents who use coercive (i.e., encourage overeating past satiety or “cleaning one’s plate”) or restrictive feeding practices (i.e., prevent children from eating certain foods) are more likely to have children who are obese (Fisher & Birch, 1999; Hoerr et al., 2009; Patrick, Nicklas, Hughes, & Morales, 2005), potentially due to children not establishing their own appetite self-regulation. Another obesogenic feeding practice consists of instrumental feeding, or using food as a reward (Rodgers et al., 2013), which may heighten a child’s responsiveness to food. An additional risk factor for childhood obesity is the amount of time children spend on screen-based sedentary behaviors, such as watching television (TV; American Academy of Pediatrics [AAP], 2011). Across numerous cross-sectional and longitudinal samples, TV screen time (“screen time”) is consistently associated with childhood obesity.

Hours of TV watched on both week days and weekends during childhood predicts obesity in adulthood (Hancox, Milne, & Poulton, 2004; Viner & Cole, 2005). As such, children whose parents set limits on their amount of screen time are less likely to be obese (Gentile, Reimer, Nathanson, Walsh, & Eisenmann, 2014). Taken together, children’s eating behaviors and physical activity are often the focus of public health campaigns to reduce child obesity.

Much of the early work on the treatment and prevention of obesity focused primarily on children’s nutrition and physical activity levels, often in isolation from the family system. However, increasingly parents have been recognized as instrumental in initiating and maintaining healthy eating and physical activity practices in their children. As a result, parent–child interactions, the quality of the parent–child relationship, and specific parenting practices (i.e., parental feeding practices and media parenting) have been a recent focus of child obesity etiology and treatment research. For instance, accumulating evidence has demonstrated that secure attachment between children and their parents, as well as responsive, consistent, and warm parenting practices relate to lower child obesity risk (Anderson, Gooze, Lemeshow, & Whitaker, 2012; Connell & Francis, 2014; Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Wu, Dixon, Dalton, Tudiver, & Liu, 2011).

Three mechanisms have been hypothesized to link the parent–child relationship and obesity risk (see Fig. 1). First, it has been posited that secure attachment is influential in building positive parent–child interactions, which in turn leads to the development of self-regulation in children (Morris et al., 2017). This is especially important for children who experience ongoing stress, such as children living in poverty. In accord, Morris et al. (2017) theorize that strong parent–child relationships may buffer such high-risk children from health risks, such as obesity, through the establishment of adaptive biobehavioral responses to stress. Second, a secure attachment between the parent and child may influence a child’s obesity risk through a specific type of self-regulation: appetite self-regulation (Saltzman, Fiese, Bost, & McBride, 2017). In their “Pathways to Appetite Self-Regulation

Fig. 1 PCIT-health conceptual model



Model,” Saltzman and authors propose that secure attachment yields responsive feeding-specific parenting practices (which are critical to establishing appetite self-regulation). Taken together, these two mechanisms highlight the importance of secure attachment in bringing forth positive parent–child interactions in general and feeding-specific contexts—a predictor of self-regulation and lower obesity risk.

A third mechanism by which the parent–child relationship may be protective against obesity is via enhanced parenting effectiveness. When parents set limits on a child’s sedentary activities (e.g., watching TV or other forms of screen time), or on a child’s behaviors during mealtime or bedtime (contexts important to obesity risk), children may be less compliant with a parent who has a history of lax or harsh parenting (Zeller, Boles, & Reiter-Purtil, 2008). In other words, positive parenting practices may promote greater compliance from children, which may lead to healthier parent–child interactions in contexts that are relevant to obesity risk, such as feeding practices or media-specific practices. In sum, enhancing the parent–child relationship and increasing positive parent–child interactions show great promise in reducing child obesity risk.

Obesity Prevention Efforts To Date

Numerous prevention programs have attempted to reduce obesity risk across childhood. However, most prevention programs lack evidence for long-term effectiveness. Although recent obesity

prevention programs have recognized the importance of including both parents and children, none has targeted the parent–child relationship and parent–child interactions as key mechanisms of obesity risk. A few *treatment* programs for obesity have pursued targeting the family relationships of children who already meet criteria for obesity. Stark et al. (2011) evaluated the Learning About Activity and Understanding Nutrition for Child Health (LAUNCH) program. LAUNCH includes six sessions of parent group treatment, with a focus on enhancing child behavior management skills. Children in the LAUNCH intervention had greater decreases in BMI z-scores and percentiles, compared to children in the control condition whose parents met with a pediatrician for 45 min to discuss the child’s BMI as well as dietary and physical activity recommendations.

Only one obesity treatment program to date includes coaching parents in a manner that shares similarities with PCIT, the Family Mealtime Coaching (FMC) program (Shinn, Timmer, & Sandoz, 2017). In a sample of parent–child dyads (mean child BMI percentile = 97.3), Shinn et al. (2017) coached parents to engage in responsive feeding practices during mealtime. They found that children with baseline BMI percentiles greater than 97th percentile had the greatest change in BMI from pre- to post-program. Based on these treatment programs, and the evidence that strong parent–child relationships may reduce risk for obesity in childhood, it makes sense to focus on parent–child interactions as part of obesity *prevention* programs.

PCIT-Health

Given the compelling evidence that a positive parent–child relationship and effective parenting may prevent obesity in young children, PCIT has great promise as an obesity prevention program. Based on our conceptualization of the model as prevention, we considered existing formats of PCIT that were adapted from the treatment model (see chapter “Teacher-Child Interaction Training”). Upon review, we chose to adapt a selective prevention model of PCIT (PCIT-Selective Prevention PCIT-SP/Family Camp; Niec et al., 2014). As is true of the Family Camp model, the PCIT-Health model maintains the core components of PCIT (behavioral assessment, in vivo coaching, parent–child relationship focus). The primary adaptation includes the addition of a health module (Health-Directed Interaction, HDI) in which parents are introduced to health-related concepts and are coached with their children in obesity-relevant contexts (Domoff & Niec, 2018). Our decision was guided by theory—particularly the aforementioned mechanisms by which secure attachment is theorized to reduce obesity risk via child self-regulation and

enhancement of parenting effectiveness in health-specific contexts.

Although coaching parents in health-salient contexts (e.g., mealtime; akin to Shinn et al., 2017) is an important component of our adaptation, the existing research provides evidence that both the CDI phase of PCIT (strengthening the parent–child relationship) and the PDI phase (facilitating parents’ developmentally appropriate limit setting) are also important in non-obesity related contexts to reduce children’s obesity risk. Changes to the CDI and PDI phases of the PCIT-Health model include tailoring in order to provide opportunities to coach parents to reinforce their children’s healthy behaviors. For example, toys in PCIT-Health include a range of toy food items. During food play, parents learn to reinforce children for healthy food choices. Parents are also coached to observe and reinforce healthy physical activity as modeled by human or animal figures. It is important to note that during CDI and PDI, play remains consistent with the PCIT treatment model (e.g., children and parents play calmly in a small, indoor space) in order to ensure that the intervention focus remains on practicing the parenting skills and strengthening the parent–child relationship (Table 1).

Table 1 Overview of the PCIT-health model

Intervention phase	Sessions	Primary target	Behavioral objectives
Assessment	1. Assessment 2. Assessment	Understanding of parent–child relationship quality, child conduct problems, and family-related risks for obesity	Obtain measures of parent and child functioning and child obesity risk
CDI	3. CDI Teach 4. CDI Coach Session 5. CDI Coach Session 6. CDI Coach Session	Parent–child relationship quality	Parents acquire skills in child-centered interaction and differential attention
PDI	7. PDI Teach 8. PDI Coach Session 9. PDI Coach Session 10. PDI Coach Session	Parents’ healthy limit-setting	Parents acquire developmentally appropriate, consistent, and effective discipline skills
HDI	11. HDI Teach 12. HDI Coach Session 13. HDI Coach Session 14. HDI Coach Session	Generalization of parents’ child-centered and behavior management skills to obesity-risk contexts	Parents consolidate skills and apply them to contexts salient to obesity risk (e.g., meal times, media use)
	15. Graduation	Review of treatment gains, discussion of approaches to future behavior problems, celebration of successes	Prepare parents for future behavioral challenges

Adapted from Domoff and Niec (2018)

CDI child-directed interaction, *PDI* parent-directed interaction, *HDI* health-directed interaction

After completing CDI and PDI, parents and children progress to the Health-Directed Interaction phase. The primary goal of HDI is for parents to generalize the skills they learned in the first two phases to contexts that are relevant to a child's obesity risk: mealtime and screen time. Like the CDI and PDI phases, the HDI phase begins with a teach session, during which parents receive information about positive (or risk-reducing) parenting around feeding style and feeding practices and parenting around screen time (i.e., media parenting).

Parental feeding styles have been defined in parallel to general parenting styles (i.e., authoritarian, authoritative, and permissive, Baumrind, 1967). An authoritative style of feeding has been found to be protective against child obesity risk (Vollmer & Mobley, 2013), whereas authoritarian and permissive feeding styles have been linked to child obesity (Fisher & Birch, 1999; Hoerr et al., 2009). Parents with an authoritative feeding style are balanced in their approach to child feeding: though they encourage their children to consume healthy foods (e.g., fruits, vegetables), parents with an authoritative feeding style also allow the child to make choices and decisions about food (within reason). On the other hand, an authoritarian feeding style consists of high levels of restrictive, coercive feeding practices and little, if any, regard for a child's food preferences (Patrick et al., 2005). Finally, parents with a permissive feeding style allow their children free choice of foods and provide little structure to the food environment. During the HDI teach session, therapists introduce parents to the concept of an authoritative feeding style and discourage permissive/indulgent and restrictive feeding styles. Parents are instructed to make modifications to the home environment to reduce the risks of being indulgent or harsh in their parental feeding practices: for example, placing healthy snack options (e.g., apple slices, oranges, carrots) in arms-reach of children and calorie-dense, nutrient-deficient foods (e.g., cookies, chips) in nonviewable and unreachable locations in the home.

Also during the HDI Teach session, clinicians address another critical set of parenting practices

relevant to obesity risk reduction: parenting around screen time. Numerous studies have supported the role of parental communication about media and media parenting practices in reducing the harmful effects of screen time on child obesity risk (Gentile et al., 2014). There is a specific cluster of media parenting practices, known as "parental mediation of television" (Nathanson, 2001), that has received the most empirical support as effective media parenting practices. Parental mediation consists of two types of parenting behaviors germane to obesity prevention: active mediation and restrictive mediation (Nathanson, 2001). Active mediation refers to parents processing the content of what children are exposed to by labeling behaviors of media characters they would like their child to emulate, explaining motivations or reasons behind the actions of characters seen on shows or movies, and scaffolding children in their understanding and processing of content seen in screen media. Regarding prosocial behaviors, active mediation of Daniel Tiger's Neighborhood was found to predict greater internalization of prosocial messages and positive behaviors in children 2–6 years old, compared to children whose parents do not actively mediate content (Rasmussen et al., 2016). With older children, parent's active mediation of commercials fosters a child's ability to take a critical stance towards commercials, and reduces the likelihood for children to request products advertised on television (Buijzen & Valkenburg, 2005). Promoting a child's resistance to the influence of commercials (which advertise food and beverages that are high calorie and nutrient deficient; Powell, Schermbeck, Szczycka, Chaloupka, & Braunschweig, 2011), is critical in our media-saturated society and necessary for obesity prevention. As such, the HDI Teach session explains the concept of active mediation of media to parents and outlines ways that parents can scaffold children's learning of healthy media content and promote a child's resistance to unhealthy content.

In addition to active mediation, the HDI Teach session also provides psychoeducation about restrictive mediation, which has also been found

to reduce risk for obesity in children (Gentile et al., 2014). Restrictive mediation has been studied in three domains: restriction of content, restriction of duration, and restriction of viewing context. In the HDI Teach session, we provide psychoeducation to parents on the importance of limit setting on: (1) what children see (i.e., reduce exposure to commercial television or advertisement-embedded content, such as “advergames”); (2) how much children watch screen media (e.g., encouraging moderation and avoiding using screen time as an incentive for appropriate behavior); (3) and when they view screen media (i.e., having screen-free zones, such as at the dinner table or during mealtime and in the bedroom). Addressing these media parenting components in HDI Teach is critical given that parents who struggle to implement consistent and effective parenting strategies are more likely to have TV on during mealtime (Domoff, Lumeng, Kaciroti, & Miller, 2017), and that stressed parents also report utilizing TV to manage child behavior during mealtime and bedtime (Domoff, Miller, et al., 2017).

Following the HDI Teach session, families participate in three HDI Coaching sessions. These sessions focus on coaching parents in the parenting skills and practices they learned in the HDI Teach session in two contexts: (1) family mealtime and (2) unstructured child play/free time (Domoff & Niec, 2018). During the family mealtime context coaching session, parents are coached to praise desired mealtime behaviors (e.g., remaining seated, staying at the table) and eating behaviors (e.g., selecting vegetables, trying new foods), and ignore disruptive, non-harmful behaviors (e.g., tapping silverware, playing with food, getting up from table). During the unstructured child play context, parents are coached to engage in active mediation and restrictive mediation. For example, parents are provided with a tablet on which to choose a TV show (via streaming app) or YouTube clip that is developmentally appropriate and prosocial (preferably without commercials). For the restrictive mediation of content skill development, parents are coached to choose shows that are age-appropriate for their child and mute or turn away

the tablet if commercials occur in any segment of the viewing. While watching the show with their child, parents are coached to actively mediate the content by labeling behaviors in the TV characters that they would like their child to repeat and processing the sequence of events in the show so that the child acquires knowledge.

After the segment of the TV show ends, parents are coached to end the screen time successfully (i.e., without extending the amount of time the child can watch TV or promising more screen time later). Parents are then coached to transition from screen time to play time with toys of the child’s choosing (e.g., blocks, coloring or other creative activities). Developing skills to end screen time is crucial as parents often report struggling to transition children away from screens to other daily events or tasks, such as sitting down for dinner and getting ready for bed. Finally, in the last HDI session, parents are coached in the community (e.g., restaurant) to use their newly acquired HDI skills. In that session, parents are coached to put away screens at the table in the restaurant and to use the authoritative feeding practices they acquired during HDI coaching as well as their CDI and PDI skills.

Advantages and Challenges of the PCIT-Health Model

PCIT-Health has the potential to enhance parenting effectiveness, not only around children’s general conduct problems, but also specifically around interactions during feeding and screen time. The two contexts that we address, mealtime and screen time, are notoriously difficult for parents to manage, especially with children who are temperamentally challenging. Parents of children who are “picky eaters” report that mealtime can be conflictual (Fulkerson, Story, Neumark-Sztainer, & Rydell, 2008). Furthermore, children who are prone to negative affect and behavior dysregulation are more likely to be given food to calm the child down (McMeekin et al., 2013), and are more likely to be given screen time to regulate their behavior (Domoff, Lumeng, et al., 2017; Radesky, Peacock-Chambers, Zuckerman,

& Silverstein, 2016). Given that consistent, screen-free family mealtimes may be protective against obesity (Hammons & Fiese, 2011), facilitating effective parenting around mealtime could prove beneficial to a child and family.

In our current digital age, successful media parenting practices are needed, as children at younger ages (i.e., during infancy and toddlerhood) are gaining access to technology and are “owning” their own mobile devices, such as tablets and cell phones (Kabali et al., 2015). Parents report frequently experiencing conflict over child mobile technology use. For example, parents express various tensions, such as wanting to use mobile technology to manage a child’s behavior, but fearing that such use could displace family time (Radesky, Eisenberg, et al., 2016). Particularly concerning is that parents of children with self-regulatory problems are more likely to use technology to calm their children (Radesky, Peacock-Chambers, et al., 2016), especially if these parents feel low levels of control over the child’s behavior. Given that nearly 50% of parents in the US are concerned that their children are “addicted” to their mobile devices (Common Sense Media, 2018), facilitating effective media parenting skills will be another advantage of the PCIT-Health model. Despite these compelling advantages, there are two primary challenges that clinicians may face when implementing PCIT-Health. First, food and screen time are highly reinforcing to children, and parents may not yet see the detrimental effects of using food and screens as rewards early in childhood. In families experiencing poverty, TV use during mealtime is perceived by mothers as helping them achieve child feeding and behavior management goals (Domoff, Miller, et al., 2017). Thus, highly stressed families may experience TV and other screen media (e.g., tablets) as instrumental in making sure that the child is occupied, calm, and well-fed. However, by completing the CDI and PDI sessions prior to HDI, parents will be experiencing more efficacy around parenting and will be more ready to make changes to parenting around feeding and media parenting by the HDI Teach session.

An additional challenge that clinicians may encounter is the struggle that some parents may have in modeling their own healthy food consumption and screen media use. Although the emphasis in the HDI Teach session is the child feeding practices, it would undoubtedly be beneficial if parents also model healthy food choices for their children. Similarly, just as screens pull children away from interactions with parents, so do screens influence parents’ interactions with their children. Parents experience tensions between wanting to be present and engaged but also feeling the pull of work emails and social media notifications on their mobile devices (Radesky, Eisenberg, et al., 2016). Relatedly, children of mothers who experience technology interference during parent–child interactions are more likely to display externalizing behaviors (McDaniel & Radesky, 2018). Assisting parents with their own digital “addictions” may be necessary for some families receiving PCIT-Health.

Conclusions and Next Steps

Childhood obesity is a serious public health concern. Once developed, obesity is notoriously difficult to treat. Prevention of obesity, thus, is a major public health priority. Most childhood obesity prevention programs, however, do not evidence long-term effectiveness. A potential reason for this is that most programs target children’s eating behaviors and physical activity, as well as certain parenting practices, but not the parent–child relationship. Given the links between attachment and child obesity risk, PCIT-Health is uniquely designed to target both parent–child attachment and obesogenic parenting practices. Thus, clinicians working with children who are overweight or whose parents endorse challenges in healthy feeding practices may consider PCIT-Health as a potentially valuable intervention.

In addition to enhancing parent–child interactions to reduce obesity risk, PCIT-Health addresses parenting around screen time. Beyond addressing the risk for obesity with excessive screen time, PCIT-Health may yield other

positive outcomes related to media parenting. In our digital age, PCIT clinicians will increasingly encounter families struggling with excessive screen media use. With most children “owning” their own mobile devices by age 4 years (Kabali et al., 2015), and the relative ease of accessing smartphones and tablets, parents are increasingly experiencing challenges to reducing children’s screen time. Parents seeking help for their children’s externalizing symptoms may also be struggling with the child’s screen media use. That is, children with behavior dysregulation are more likely to be given screen media to calm down, which interferes with their development of emotional and behavior self-regulation (Radesky, Peacock-Chambers, et al., 2016). As such, PCIT clinicians will be positioned not only to facilitate behavior management around nonscreen media activities, but also around reducing excess screen time in children who may be especially susceptible to media effects.

Relatedly, clinicians implementing PCIT may work with parents who temporarily seek reprieve from their children’s misbehaviors or other life stressors by escaping into their own digital worlds. Although taking time out for one’s own well-being is important, too often adults experience the pull of mobile devices away from family interactions. As adults become more immersed in screen-based activities, parent–child interactions may decline. To effectively reach these families, it is recommended that PCIT clinicians assess whether children exhibit problematic use of screen media (e.g., via the Problematic Media Use Measure; Domoff, Harrison, et al., 2017) and integrate questions about how screen media are consumed in the household (by both the parents and children). With PCIT-Health, clinicians will have a window of opportunity to address not only the child’s engagement with screens, but also how parents can model healthy (limited) use of screen media during family time.

The next step in the evaluation of the PCIT-Health model currently ongoing includes a randomized controlled trial to assess the impact of the intervention on children’s change in body mass index and to investigate hypothesized mechanisms of change (e.g., parent–child relationship

quality, effective parenting practices, child affect regulation). The ongoing study will also assess the incremental utility of the Health-Directed Interaction phase to determine whether it adds significantly to benefits found in the PCIT prevention model alone. Subsequent to the controlled trial, we will investigate the feasibility and effectiveness of implementing PCIT-Health in primary care settings, where children may first be identified as at-risk for obesity.

PCIT-Health offers an innovative and promising option to address a serious public health issue. Given the rapid spread of childhood obesity nationally, we must act promptly to assess the effectiveness of the model and investigate novel methods of reaching the families most in need.

References

- American Academy of Pediatrics. (2011). Policy statement—Children, adolescents, obesity, and the media. *Pediatrics*, *128*(1), 201–208.
- Anderson, S. E., Gooze, R. A., Lemeshow, S., & Whitaker, R. C. (2012). Quality of early maternal-child relationship and risk of adolescent obesity. *Pediatrics*, *129*, 132–140. <https://doi.org/10.1542/peds.2011-0972>
- Baumrind, D. (1967). Child care practices anteceding three patterns of preschool behavior. *Genetic Psychology Monographs*, *75*, 43–88.
- Buijzen, M., & Valkenburg, P. M. (2005). Parental mediation of undesired advertising effects. *Journal of Broadcasting and Electronic Media*, *49*, 153–165.
- Centers for Disease Control and Prevention. (2018, January 29). *Childhood obesity facts*. Retrieved April 27, 2018, from <https://www.cdc.gov/healthyschools/obesity/facts.htm>
- Common Sense Media. (2018, February 22). *Common sense and survey Monkey poll parents on YouTube and technology addiction* [Press release]. Retrieved from <https://www.common-sensemedia.org/about-us/news/press-releases/common-sense-and-surveymonkey-poll-parents-on-youtube-and-technology>
- Connell, L. E., & Francis, L. A. (2014). Positive parenting mitigates the effects of poor self-regulation on body mass index trajectories from ages 4–15 years. *Health Psychology*, *33*(8), 757–764. <https://doi.org/10.1037/hea0000014>
- Dietz, W. H. (1998). Health consequences of obesity in youth: Childhood predictors of adult disease. *Pediatrics*, *101*(Supplement 2), 518–525.
- Domoff, S. E., Harrison, K., Gearhardt, A. N., Gentile, D. A., Lumeng, J. C., & Miller, A. L. (2017). Development and validation of the problematic media use measure: A parent report measure of screen media

- “addiction” in children. *Psychology of Popular Media Culture*. <https://doi.org/10.1037/ppm0000163>
- Domoff, S. E., Lumeng, J. C., Kaciroti, N., & Miller, A. L. (2017). Early childhood risk factors for mealtime TV exposure and engagement in low-income families. *Academic Pediatrics*, *17*(4), 411–415. <https://doi.org/10.1016/j.acap.2016.12.003>
- Domoff, S. E., Miller, A. L., Khalatbari, N., Pesch, M. H., Harrison, K., Rosenblum, K., & Lumeng, J. C. (2017). Maternal beliefs about television and parental mediation in a low-income United States sample. *Journal of Children and Media*, *11*(3), 278–294. <https://doi.org/10.1080/17482798.2017.1339102>
- Domoff, S. E., & Niec, L. N. (2018). Parent-child interaction therapy as a prevention model for childhood obesity: A novel application for high-risk families. *Children and Youth Services Review*, *91*, 77–84. <https://doi.org/10.1016/j.chilyouth.2018.05.024>
- Fisher, J. O., & Birch, L. L. (1999). Restricting access to foods and children’s eating. *Appetite*, *32*(3), 405–419. <https://doi.org/10.1006/appe.1999.0231>
- Freedman, D. S., Khan, L. K., Serdula, M. K., Dietz, W. H., Srinivasan, S. R., & Berenson, G. S. (2005). The relation of childhood BMI to adult adiposity: The Bogalusa Heart Study. *Pediatrics*, *115*(1), 22–27.
- Fulkerson, J. A., Story, M., Neumark-Sztainer, D., & Rydell, S. (2008). Family meals: Perceptions of benefits and challenges among parents of 8- to 10-year-old children. *Journal of the American Dietetic Association*, *108*(4), 706–709. <https://doi.org/10.1016/j.jada.2008.01.005>
- Gentile, D. A., Reimer, R. A., Nathanson, A. I., Walsh, D. A., & Eisenmann, J. C. (2014). Protective effects of parental monitoring of children’s media use: A prospective study. *JAMA Pediatrics*, *168*(5), 479–484. <https://doi.org/10.1001/jamapediatrics.2014.146>
- Halfon, N., Larson, K., & Slusser, W. (2013). Associations between obesity and comorbid mental health, developmental, and physical health conditions in a nationally representative sample of US children aged 10 to 17. *Academic Pediatrics*, *13*(1), 6–13. <https://doi.org/10.1016/j.acap.2012.10.007>
- Hammons, A. J., & Fiese, B. H. (2011). Is frequency of shared family meals related to the nutritional health of children and adolescents? *Pediatrics*, *127*(6), e1565–e1574. <https://doi.org/10.1542/peds.2010-1440>
- Hancox, R. J., Milne, B. J., & Poulton, R. (2004). Association between child and adolescent television viewing and adult health: A longitudinal birth cohort study. *The Lancet*, *364*(9430), 257–262. [https://doi.org/10.1016/S0140-6736\(04\)16675-0](https://doi.org/10.1016/S0140-6736(04)16675-0)
- Hoerr, S. L., Hughes, S. O., Fisher, J. O., Nicklas, T. A., Liu, Y., & Shewchuk, R. M. (2009). Associations among parental feeding styles and children’s food intake in families with limited incomes. *International Journal of Behavioral Nutrition and Physical Activity*, *6*(1), 55. <https://doi.org/10.1186/1479-5868-6-55>
- Kabali, H. K., Irigoyen, M. M., Nunez-Davis, R., Budacki, J. G., Mohanty, S. H., Leister, K. P., & Bonner, R. L. (2015). Exposure and use of mobile media devices by young children. *Pediatrics*, *136*(6), 1044–1050. <https://doi.org/10.1542/peds.2015-2151>
- Lifshitz, F. (2008). Obesity in children. *Journal of Clinical Research in Pediatric Endocrinology*, *1*(2), 53–60. <https://doi.org/10.4008/jcrpe.v1i2.35>
- McDaniel, B. T., & Radesky, J. S. (2018). Technofence: Parent distraction with technology and associations with child behavior problems. *Child Development*, *89*(1), 100–109. <https://doi.org/10.1111/cdev.12822>
- McMeekin, S., Jansen, E., Mallan, K., Nicholson, J., Magarey, A., & Daniels, L. (2013). Associations between infant temperament and early feeding practices: A cross-sectional study of Australian mother-infant dyads from the NOURISH randomised controlled trial. *Appetite*, *60*, 239–245. <https://doi.org/10.1016/j.appet.2012.10.005>
- Morris, A. S., Robinson, L. R., Hays-Grudo, J., Claussen, A. H., Hartwig, S. A., & Treat, A. E. (2017). Targeting parenting in early childhood: A public health approach to improve outcomes for children living in poverty. *Child Development*, *88*(2), 388–397. <https://doi.org/10.1111/cdev.12743>
- Nathanson, A. I. (2001). Parent and child perspectives on the presence and meaning of parental television mediation. *Journal of Broadcasting & Electronic Media*, *45*(2), 201–220.
- Niec, L. N., Acevedo-Polakovich, I. D., Abbenante-Honold, E., Christian, A. S., Barnett, M. L., Aguilar, G., & Peer, S. O. (2014). Working together to solve disparities: Latina/o parents’ contributions to the adaptation of a preventive intervention for childhood conduct problems. *Psychological Services*, *11*(4), 410–420.
- Patrick, H., Nicklas, T. A., Hughes, S. O., & Morales, M. (2005). The benefits of authoritative feeding style: Caregiver feeding styles and children’s food consumption patterns. *Appetite*, *44*(2), 243–249.
- Powell, L. M., Schermebeck, R. M., Szczypka, G., Chaloupka, F. J., & Braunschweig, C. L. (2011). Trends in the nutritional content of television food advertisements seen by children in the United States: Analyses by age, food categories, and companies. *Archives of Pediatrics & Adolescent Medicine*, *165*(12), 1078–1086. <https://doi.org/10.1001/archpediatrics.2011.131>
- Radesky, J. S., Eisenberg, S., Kistin, C. J., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Overstimulated consumers or next-generation learners? Parent tensions about child mobile technology use. *The Annals of Family Medicine*, *14*(6), 503–508. <https://doi.org/10.1370/afm.1976>
- Radesky, J. S., Peacock-Chambers, E., Zuckerman, B., & Silverstein, M. (2016). Use of mobile technology to calm upset children: Associations with social-emotional development. *JAMA Pediatrics*, *170*(4), 397–399. <https://doi.org/10.1001/jamapediatrics.2015.4260>
- Rao, W., Su, Y., Yang, G., Ma, Y., Liu, R., Zhang, S., ... Yu, Q. (2016). Cross-sectional associations between body mass index and hyperlipidemia among adults in north-eastern China. *International Journal of Environmental Research and Public Health*, *13*(5), 516. <https://doi.org/10.3390/ijerph13050516>

- Rasmussen, E., Shafer, A., Colwell, M. J., White, S., Punyanunt-Carter, N., Densley, R. L., & Wright, H. (2016). Relation between active mediation, exposure to Daniel Tiger's Neighborhood, and US preschoolers' social and emotional development. *Journal of Children and Media*, *10*(4), 443–461. <https://doi.org/10.1080/17482798.2016.1203806>
- Rhee, K. E., Lumeng, J. C., Appugliese, D. P., Kaciroti, N., & Bradley, R. H. (2006). Parenting styles and overweight status in first grade. *Pediatrics*, *117*(6), 2047–2054. <https://doi.org/10.1542/peds.2005-2259>
- Rodgers, R. F., Paxton, S. J., Massey, R., Campbell, K. J., Wertheim, E. H., Skouteris, H., & Gibbons, K. (2013). Maternal feeding practices predict weight gain and obesogenic eating behaviors in young children: A prospective study. *The International Journal of Behavioral Nutrition and Physical Activity*, *10*, 24. <https://doi.org/10.1186/1479-5868-10-24>
- Saltzman, J. A., Fiese, B. H., Bost, K. K., & McBride, B. A. (2017). Development of appetite self-regulation: Integrating perspectives from attachment and family systems theory. *Child Development Perspectives*, *12*(1), 51–57.
- Shinn, M. M., Timmer, S. G., & Sandoz, T. K. (2017). Coaching to improve mealtime parenting in treating pediatric obesity. *Clinical Practice in Pediatric Psychology*, *5*(3), 232–247. <https://doi.org/10.1037/cpp0000204>
- Skinner, A. C., Perrin, E. M., & Skelton, J. A. (2016). Prevalence of obesity and severe obesity in US children, 1999–2014. *Obesity*, *24*(5), 1116–1123. <https://doi.org/10.1002/oby.21497>
- Stark, L. J., Spear, S., Boles, R., Kuhl, E., Ratcliff, M., Scharf, C., ... Rausch, J. (2011). A pilot randomized controlled trial of a clinic and home-based behavioral intervention to decrease obesity in preschoolers. *Obesity*, *19*(1), 134–141.
- Van Geel, M., Vedder, P., & Tanilon, J. (2014). Are overweight and obese youths more often bullied by their peers? A meta-analysis on the relation between weight status and bullying. *International Journal of Obesity*, *38*, 1263–1267. <https://doi.org/10.1038/ijo.2014.117>
- Viner, R. M., & Cole, T. J. (2005). Television viewing in early childhood predicts adult body mass index. *The Journal of Pediatrics*, *147*(4), 429–435. <https://doi.org/10.1016/j.jpeds.2005.05.005>
- Vollmer, R. L., & Mobley, A. R. (2013). Parenting styles, feeding styles, and their influence on child obesogenic behaviors and body weight: A review. *Appetite*, *71*, 232–241. <https://doi.org/10.1016/j.appet.2013.08.015>
- Ward, Z. J., Long, M. W., Resch, S. C., Giles, C. M., Craddock, A. L., & Gortmaker, S. L. (2017). Simulation of growth trajectories of childhood obesity into adulthood. *New England Journal of Medicine*, *377*(22), 2145–2153. <https://doi.org/10.1056/NEJMoa1703860>
- Wu, T. J., Dixon, W. E., Dalton, W. T., Tudiver, F., & Liu, X. F. (2011). Joint effects of child temperament and maternal sensitivity on the development of childhood obesity. *Maternal and Child Health Journal*, *15*, 469–477. <https://doi.org/10.1007/s10995-010-0601-z>
- Zeller, M. H., Boles, R. E., & Reiter-Purtill, J. (2008). The additive and interactive effects of parenting style and temperament in obese youth seeking treatment. *International Journal of Obesity*, *32*, 1474–1480. <https://doi.org/10.1038/ijo.2008.125>