Predicting Child Physical Activity and Screen Time: Parental Support for Physical Activity and General Parenting Styles

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Objective: To examine relationships between parenting styles and practices and child moderate-to-vigorous physical activity (MVPA) and screen time. Methods: Participants were children (6.9 ± 1.8 years) with a body mass index in the 70–95th percentile and their parents (421 dyads). Parent-completed questionnaires assessed parental support for child physical activity (PA), parenting styles and child screen time. Children wore accelerometers to assess MVPA. Results: Parenting style did not predict MVPA, but support for PA did (positive association). The association between support and MVPA, moreover, varied as a function of permissive parenting. For parents high in permissiveness, the association was positive (greater support was related to greater MVPA and therefore protective). For parents low in permissiveness, the association was neutral; support did not matter. Authoritarian and permissive parenting styles were both associated with greater screen time. Conclusions: Parenting practices and styles should be considered jointly, offering implications for tailored interventions.

Key words parenting practices; parenting style; pediatric obesity; physical activity; screen time.

Pediatric obesity is a growing public health concern in the United States (Ogden, Carroll, Kit, & Flegal, 2012). The etiology of obesity is complex and encompasses multiple factors, ranging from genetic to social-environmental (Manco & Dallapiccola, 2012; Scaglioni, Arrizza, Vecchi, & Tedeschi, 2011). The present manuscript focuses on the latter, in particular, the combined role of parenting practices and styles in explaining two important child weight-related behaviors, physical activity (PA) and screen time.

Parenting practices are strategies that parents use to encourage their children to engage in specific behaviors. Parental support for PA is one such practice. Types of support include encouragement, involvement, and facilitation or logistical support. A review paper on parental correlates of child PA determined that all but one of 19 studies showed a strong positive association between types of parental support for PA and child PA (Gustafson & Rhodes, 2006). For example, both adolescent- and parent-reported parental encouragement of PA were positively associated with adolescent-reported PA and inversely associated with adolescent-reported time spent watching TV (McGuire, Hannan, Neumark-Sztainer, Crossrow, & Story, 2002). In another study, parent-reported encouragement of PA was positively associated with parent-reported child PA, positively associated with child-reported attraction to PA, and not associated with parent-reported child sedentary behavior (Taylor, Wilson, Slater, & Mohr, 2011). Parental involvement (playing sports or engaging in PA with children) and logistical support (enrolling children in sporting activities or providing transportation to parks and playgrounds) have also been positively associated with child PA (Davison, Cutting, & Birch, 2003; Jago, Davison, Brockman et al., 2011; O’Connor, Chen, Baranowski, Thompson, & Baranowski, 2013; Welk, Wood, & Morss, 2003). This body of work underscores the importance of parenting practices in promoting child physical health, largely within activity-specific domains but in some cases also across activity-specific domains.
Parenting style refers to a more trait-like or dispositional aspect of parenting characterized by varying degrees of warmth and demand. Four prototypes are created by crossing these two dimensions (Baumrind, 1966; Maccoby & Martin, 1983). Authoritative parenting is high in both warmth and demand. Parents create structure and set expectations, but do so within a warm, open, supportive context. Authoritarian parenting is characterized by low warmth and high demand. Children are expected to adhere to rules and responsibilities, and to do so without question. Permissive parenting is characterized by high warmth and low demand. Parents set few expectations and assign few responsibilities. Neglectful parenting is low on both dimensions, characterized by little responsiveness and structure. Findings indicate adaptive correlates of an authoritative parenting style, including greater child PA (Schmitz et al., 2002; Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011). Neglectful, uninvolved parenting, in contrast, has been associated with lower child PA (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010).

Despite the growing attention to both parenting practices and styles in the context of pediatric obesity, much of the extant literature in this area has focused on the former, in particular, feeding practices (Patrick, Hennessy, McSpadden, & Oh, 2013). Less attention has been paid to more general parenting styles (Patrick et al., 2013). As noted in a recent review (Vollmer & Mobley, 2013), only two studies have examined the role of general parenting styles in predicting child sedentary behavior. In addition, very few studies have looked at the relative contributions of both practices and styles in predicting child PA and/or screen time. Notable exceptions include Hennessy et al. (2010); Jago, Davison, Brockman et al. (2011); Jago, Davison, Thompson et al. (2011); and Taylor et al. (2011). In each of these studies, parenting practices independently predicted outcomes. For example, logistical support for PA was positively associated with child PA (Hennessy et al., 2010; Jago, Davison, Brockman et al., 2011), as was encouragement of PA (Taylor et al., 2011). Parenting styles also independently predicted outcomes. In two cases, permissiveness was associated with a positive outcome, greater child activity (Hennessy et al., 2010; Jago, Davison, Brockman et al., 2011); in another, it was associated with a negative outcome, watching more TV (Jago, Davison, Thompson et al., 2011). Although informative, only two of these studies examined the potential for interaction between parenting styles and practices (Hennessy et al., 2010; Taylor et al., 2011). Hennessy et al. (2010) found that for permissive parents, monitoring child PA was positively associated with child PA; for nonpermissive parents, the association between monitoring and PA was negative. Greater reinforcement of PA was also associated with more PA for permissive but not nonpermissive parents.

In a recent review, Patrick et al. (2013) point out several gaps in the literature and directions for future research. Among other suggestions, they note that parenting styles may operate at a broader, more global level as compared with practices, and encourage examination of the understudied possibility that styles may function as a moderator of the association between specific parenting practices and child health outcomes (advanced by Darling & Steinberg, 1993). This has important clinical implications in that heretofore most interventions have aimed to modify either specific parenting practices or more general family processes; better assimilation of the two could optimize treatment efficacy (Patrick et al., 2013). Evidence for moderated relationships, in addition, might suggest targeted or tailored approaches. For example, an authoritative parenting style might serve to offset restrictive practices (Patrick et al., 2013). Conversely, a supportive parenting practice might serve to offset a more rigid, potentially maladaptive parenting style such as authoritarianism.

In the present study, we examined relationships among general parenting styles, a domain-specific parenting practice, and child PA and screen time in a large sample of parents of young children who were overweight (body mass index [BMI] percentile 85–95th) or at-risk for becoming overweight (BMI percentile 70–84th). Specifically, we examined the unique and relative contributions of general parenting styles and support for PA in predicting child PA and screen time. In contrast to previous studies relying on self- or parent-reported indicators of child PA, we measured this construct objectively using accelerometry, quantified as minutes of moderate-to-vigorous physical activity (MVPA). Based on the literature, we hypothesized that both general parenting styles and support for PA would be independently related to child PA and screen time. Owing to the mutability of parenting practices relative to parenting styles (the latter presumably more dispositional in nature), we quantified the relationship between support for PA and outcomes accounting for parenting style. We also assessed whether support for PA/outcome relationships differed as a function of parenting style. This hierarchical, moderated approach offers implications for interventions designed to modify parenting practices to improve children’s outcomes, potentially as a function of parenting style.

Method
Participants
This manuscript used baseline, pre-randomization data from the Healthy Homes/Healthy Kids study, a randomized
controlled trial of a pediatric primary care-based behavioral intervention designed to prevent unhealthy weight gain among overweight and at-risk for becoming overweight children (Sherwood et al., 2013). Parent-child dyads were recruited from those scheduled for a well-child visit with a pediatric primary care provider at 1 of 20 clinics in the greater Minneapolis-St. Paul area. To be eligible, children had to be aged 5–10 years with a BMI placing them in the 70–95th percentile for age and gender. Parents needed to be English-speaking and willing and able to complete questionnaires. Exclusionary criteria for children were consistent use of a steroid medication for more than 1 month, participation in other child health-related research, a chromosomal abnormality, and chronic conditions such as type 1 diabetes or cancer. Families planning to move out-of-state in the next 24 months were also excluded.

Eligible and consenting dyads were randomized to either an obesity prevention arm or a control contact arm focused on general health, safety, and injury prevention. Both groups received brief provider counseling regarding healthy eating and activity patterns and injury prevention, followed by 14 phone coaching calls to reinforce the provider message and provide family-specific, tailored guidance for their randomized treatment condition. The study protocol was approved by the Institutional Review Board of both HealthPartners and the University of Washington.

**Procedures**

Parent-child dyads were recruited and randomized through a multistep process coordinated between research study staff and participating clinics. First, children scheduled for a well-child visit were screened for initial eligibility based on age and prior weights and heights entered in the electronic medical record. The child’s primary care provider was then consulted via secure messaging through the electronic medical record to confirm preliminary eligibility prior to the well-child visit. If confirmed, a study invitation letter was sent to parents from the child’s primary care provider and the study principal investigator. A recruitment phone call followed at which potential interest and eligibility were assessed and a baseline home visit was scheduled. At this home visit (in advance of the well-child visit), eligibility was confirmed by measuring the child’s height and weight and computing BMI percentile; consent and assent forms were then reviewed with the parent and child and signed. In addition, the parent was given a survey packet to complete and bring to the well-child visit (baseline demographic and psychosocial questionnaires), and the child was given an accelerometer to wear for a week and instruction regarding this request.

**Measures**

**Anthropometry**

Child weight and height were measured by study staff in the family home using a Seca 876 flat scale and Seca 217 stadiometer (Seca Corp., Hanover, MD). Children were instructed to remove shoes and any heavy clothing. Weight and height were measured twice. If the first two measurements differed by more than 0.2 kg for weight or more than 1.0 cm for height, the process was repeated a third time. Data for the multiple assessments were averaged. To assess validity, a second trained staff member measured the height and weight of 42 participants. Primary and secondary rater weight and height measurements were highly correlated intraclass correlation (ICC = 0.99). BMI was calculated as weight in kilograms/height in meters$^2$. BMI percentile was then calculated using the CDC 2000 Growth Charts.

**Accelerometry**

We assessed child PA using ActiGraph GT1M accelerometers (ActiGraph LLC, Pensacola, FL). Children were asked to wear the accelerometers for 7 full days during waking hours. The devices were placed on elastic belts and fitted on the right hip. Children were included in analyses of the PA data if they recorded at least 4 valid monitoring days, defined as 10 or more hours of wear time. Nonwear time was defined as a string of 60 min or more of zero-counts, allowing for a 2-min interruption interval of 100 counts or less. To estimate minutes spent in MVPA, data were aggregated into 1-min epochs; cutoff points were developed per Evenson, Catellier, Gill, Ondrak, and McMurray (2008).

**Parenting Styles and Dimensions Questionnaire**

The Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson, Mandleco, Olsen, & Hart, 2001) measures three higher-order parenting style factors from multiple subscales: Authoritative, authoritarian, and permissive. The authoritative factor consists of the 5-item connection dimension (warmth and support), the 5-item regulation dimension (reasoning/induction), and the 5-item autonomy granting dimension (democratic participation). The authoritarian factor consists of the 4-item physical coercion dimension, the 4-item verbal hostility dimension, and the 4-item nonreasoning/punitive dimension. The permissive factor consists solely of the 5-item indulgent dimension. Items such as “I spoil my child” (indulgent) are rated on a 1–5 (never to always) scale. The developers reported Cronbach’s coefficient alpha values of 0.86 for authoritative parenting, 0.82 for authoritarian parenting, and 0.64 for permissive parenting. Values based on the present sample were 0.83 for authoritative, 0.72 for authoritarian, and 0.70 for permissive. In a review
of psychometric properties of the PSDQ (based on 53 articles published between 1995 and 2012), Olivari, Tagliabue, and Confalonieri (2013) deemed its validity quite good, albeit tested in few studies. For example, in a study of 450 parents of 6-8-year-old children, authoritative parenting was positively associated with measures of parental affective responsiveness and involvement, whereas authoritarian and permissive parenting styles were inversely associated with these measures (Topham et al., 2011). PSDQ parenting styles have also been associated with child disruptive behavior: Positive associations with permissive and authoritarian parenting and an inverse association with authoritative parenting (Querido, Warner, & Eyeberg, 2002).

**Support for Child PA**

Parents were asked to rate the frequency during the past week that they: Encouraged their child to do PA or play sports, engaged in PA or played sports with their child, provided transportation so their child could engage in PA or play sports, or watched their child engage in PA or play sports (based on a modification of Trost et al., 2003). The original scale included a fifth item, “told your child that PA is good for his/her health.” Internal consistency based on all five items was reported as 0.78 and 1-week test–retest reliability as 0.81 (Trost et al., 2003). We omitted the fifth item to focus solely on encouragement, involvement, and logistic support. The original scale also required respondents to answer each item three times with respect to different members of the household: Male adult(s), female adult(s), and other children. We focused here on just one set of responses referring directly to the parent in the study. Ratings were made on a 0–4 (*none to daily*) scale. Cronbach’s coefficient alpha based on the present sample was 0.77.

**Child Screen Time**

Four items assessed the amount of time children spent on an average weekday and an average weekend day (a) watching TV and (b) playing video or computer games or using a computer for purposes other than schoolwork (Schmitz et al., 2004). Reliability and validity of the measure were tested using a sample of 245 middle-school children (Schmitz et al., 2004). Children were asked to complete the questionnaire items twice, 1 week apart. They were also asked to keep a log of their TV and computer use. One-week test–retest reliability values for the two questionnaire administrations ranged from 0.55 to 0.68 across TV/computer and weekday/weekend day ratings. Correlations between the questionnaire and log ranged from 0.37 to 0.47, all *p* values < .0001.

Response options for the four screen-time questionnaire items were 0 h (coded as 0), less than 1 h (coded as 0.5), 1 h (coded as 1), 2 h (coded as 2), 3 h (coded as 3), 4 h (coded as 4), and 5 or more h (coded as 5) per day. Separate estimates of the time per day spent watching TV and playing video games/using a computer were calculated as the sum of the weekday estimate multiplied by 5 and the weekend day estimate multiplied by 2, divided by 7. Total screen time per day was estimated as the sum of average daily TV time and video game/computer time. Consistent with the American Academy of Pediatrics’ (2013) recommendation that children’s screen time be limited to 2 h per day or less, each child was then classified according to whether their average estimated daily screen time was less than or equal to 2 h (coded 0) or greater than 2 h (coded 1). This dichotomy was consistent with the distribution of average daily screen time.

**Analyses**

Analyses were conducted using Statistical Package for the Social Sciences 20.0 and SAS 9.2. Measures of central tendency and dispersion characterized the sample. Bivariate relationships among predictors and outcomes were assessed using Pearson product moment or Spearman rank order (for relationships with screen time) correlation coefficients. Chi square analyses and *t*-tests were conducted to examine potential differences in the demographic, predictor, and outcome variables as a function of accelerometer wear adherence (wearing the accelerometer for less than 4 versus 4 or more days).

Three general linear and three logistic regression models predicted MVPA and screen time, respectively, from four blocks of predictors: Child BMI and gender (block 1), parenting practice (block 2: support for PA), one of three parenting styles (block 3: authoritarian, authoritative, or permissive), and the parenting style–practice interaction (block 4). The proportion of variance accounted for (R squared for linear models) or model discrimination (c statistic for logistic models) are reported for each of the four blocks. The final models included parameters from blocks 1 through 4 if the parenting style–practice interaction was significant. Otherwise, they included parameters through block 3. Effect size estimates (raw regression coefficients or odds ratios) and their variability (standard error or 95% confidence interval) are reported for each parameter retained in the final models. All continuous predictors were mean-centered. Gender was coded so that boys were the reference category. Significant interactions were graphed and interpreted using methods outlined by Aiken and West (1991).
Characteristics of the Sample

Table I displays demographic and clinical characteristics of the sample (N = 421 dyads) as well as descriptive characteristics for MVPA, screen time, and the parenting factors. Most parents were mothers. The average parent age was 37 years, and the majority was White, non-Hispanic, and married. Children were, on average, 6.9 years old. Child gender was evenly distributed (49% girls). In keeping with the inclusion criteria, children on average fell at the 85th percentile for BMI. Children spent just under 1 h per day engaged in MVPA (54 min), and 54% had more than 2 h of daily screen time. The mean support for PA score was 2.53 on a 0–4 scale. Mean scores for parenting styles on a 1–5 scale were 1.57 for authoritarian, 1.90 for permissive, and 3.95 for authoritative.

Table II displays a correlation matrix of the parenting practice and style predictors and the outcomes. More authoritative parenting was associated with less authoritarian (r = −.35) and less permissive (r = −.23) parenting, whereas authoritarian and permissive parenting styles were positively associated (r = .43). More authoritative parenting was also associated with more support for PA (r = .24). The outcome measures, MVPA and more than 2 h of daily screen time, were not associated with each other (r = −.02).

Predictors of Child MVPA

As noted previously, analyses treating MVPA as the outcome included only those children who wore the accelerometer for at least 4 of the requested 7 days (N = 322). These children differed in race from those who did not wear the accelerometer for at least 4 days, as did their parents. Specifically, children who were adherent with respect to accelerometer wear and their parents were more
likely to be White as compared with children who were not adherent with respect to accelerometer wear and their parents (77% vs. 61% for children, and 85% vs. 72% for parents, p values < .01). Parents of children who were adherent with wear of the accelerometer were also more likely to be college-educated (74% vs. 64%, p < .05). Interestingly, parents of children who were not adherent with wear of the accelerometer reported greater support for PA as compared with parents of children who were adherent with wear of the accelerometer, M (SD) = 2.72 (0.79) and 2.47 (0.87), p < .01. The two subgroups did not differ with respect to other demographic characteristics, child BMI, the parenting styles, or MVPA, all p values > .05. (For the accelerometer wear nonadherent group, MVPA was based on those with 1–3 valid days.)

The left panel of Table III displays results of the prediction of MVPA from parenting styles and support for PA. The total amount of variance explained ranged from 18 to 21% across models. A significant portion of this variance was explained by the demographic and anthropometric variables entered in block 1 (17%). Child BMI was inversely associated with MVPA, such that with each unit increase in BMI, activity decreased by 8 min per day. Child gender was also associated with MVPA, such that girls were less active than boys. Parenting styles (authoritative, authoritarian, or permissive) were not significantly associated with MVPA. Support for PA, in contrast, was positively associated with MVPA. For each unit increase in BMI, MVPA decreased by 8 min per day (to be expected), and girls engaged in 12–13 min less MVPA per day than did boys (in line with past research; Jago, Davison, Brockman et al., 2011). BMI, but not gender, also emerged as a risk factor for screen time. These initial findings highlight the need for interventions designed to increase PA and decrease screen time among overweight or at-risk for overweight children.

Parenting style added 2–6% and support for PA about 1% to model accuracy. Child BMI was positively related to screen time, such that each unit increase in BMI was associated with a 20–23% increase in the likelihood that the child had more than 2 h of daily screen time. Girls were no more or less likely than boys to have more than 2 h of screen time. Authoritative parenting was not associated with screen time, but each unit increase in both authoritarian and permissive parenting styles was associated with an increased likelihood of more than 2 h of daily screen time (133 and 113% increases, respectively). The prediction of screen time from support for PA was not significant, nor were there any significant interactive relationships between parenting styles and support for PA.

**Discussion**

This study sought to examine (1) the unique and relative contributions of general parenting styles and support for PA in predicting child PA and screen time, and (2) the potential for interactive or moderated relationships among the two parenting constructs. Before discussing these results, it is worth noting that child BMI and gender explained a significant portion of the total variance in MVPA. With each unit increase in BMI, MVPA decreased by 8 min per day (to be expected), and girls engaged in 12–13 min less MVPA per day than did boys (in line with past research; Jago, Davison, Brockman et al., 2011). BMI, but not gender, also emerged as a risk factor for screen time. These initial findings highlight the need for interventions designed to increase PA and decrease screen time among overweight or at-risk for overweight children.

Parenting style (authoritative, authoritarian, or permissive) did not predict MVPA. While not statistically significant, the value for permissive parenting was nonetheless in the expected direction based on past research indicating a positive association between permissive parenting and MVPA (Hennessy et al., 2010; Jago, Davison, Brockman et al., 2011). Our parenting practice, in contrast, was positively associated with MVPA. Activity increased by 4–5 min per day with each unit increase in support. This is in line with previous research (Gustafson & Rhodes, 2006) but augments the extant literature by demonstrating that support for PA explained further variance in MVPA above and beyond the contributions of BMI, gender, and parenting styles. It is important to note, however, that the percent of additional variance explained was quite small, only 2%. This main effect was qualified, moreover, by a support for PA × parenting style interaction for the model involving permissiveness, explaining an additional 2% of variance in
this outcome. The association between support for PA and MVPA differed as a function of parental permissiveness. When parents were low in permissiveness, support did not matter. In contrast, when parents were high in permissiveness, high support was protective and low support was deleterious. This interaction is similar to that observed by Hennessy et al. (2010) described previously. Higher levels of reinforcement and monitoring of PA were associated with higher levels of child PA for permissive but not nonpermissive parents. Our finding thus bolsters the small body of work on practice–style interactions, but does so using a disparate (larger and at-risk) sample and different indicators of a domain-specific parenting practice and general parenting styles. The study by Hennessy and colleagues consisted of seventy-six 6–11-year-old children living in rural US communities and categorized parents into just one parenting style as opposed to treating parenting style as a continuous variable.
It is intriguing to consider the mechanisms by which parenting style might moderate the association between parental support for PA and MVPA. It is possible that highly permissive parents are more supportive of child PA, but our correlational data (Table II) do not bear this out. It is also possible that permissive parenting, characterized by high warmth and low demand, is associated with more unstructured playtime. Children of highly permissive parents may choose to spend this time in active play if they are generally supported and encouraged with respect to PA. For example, they may routinely participate in sporting activities or be transported to playgrounds. If they are generally unsupported with respect to PA, they may choose to spend the bulk of any unstructured time in inactive play. Hypothesized mechanisms aside, these findings suggest that support for PA may serve to ameliorate the potentially maladaptive effects of permissiveness, underscoring the need for assessment and joint consideration of both practices and styles. Because parenting style is ostensibly more dispositional in nature, it may be less malleable and therefore less amenable to change (Power et al., 2013). Accordingly, interventions may show particular benefit in attempting to modify parenting practices to support child health. Our data support the utility of interventions designed to increase parental support for PA in that high support, while inconsequential for parents low in permissiveness, was beneficial for everyone else. In other words, support for PA did no harm and in most cases was protective. Interventions aimed at modifying certain practices, though, might be optimally tailored to different parenting styles. Otherwise stated, parenting style, broader in nature, might dictate or at the very least inform ways to most effectively intervene (promote certain practices) with different types of parents.

While no main effect of parenting style emerged for MVPA, each unit increase in both authoritarian and permissive parenting was associated with an increased likelihood of more than 2 h of daily screen time (133 and 113% increases, respectively). The permissive finding is consistent with prior work (Jago, Davison, Thompson et al., 2011) and suggests implications for interventions targeted to parents with these general styles. Support for PA did not predict screen time. This practice was therefore only effective within the PA domain and had no effect on sedentary behavior. Taylor et al. (2011) similarly found that encouraging PA predicted child PA but not child sedentary behavior. One could theorize that if a given practice increases PA, it might also decrease screen time. A physically active child, for example, might simply have less time for sedentary activities such as watching TV. This does not appear to be the case in our sample, as MVPA was unrelated to screen time (r = -.02); perhaps not surprising, given that PA and sedentary behavior are often observed to be independent of each other (Bid., Gorey, Marshall, Murd. & Cameron, 2004; Wong & Leatherdale, 2009). Future research will benefit from further exploration of different types of support and their within- and cross-domain associations or lack thereof.

Limitations of this study must be considered. First, as noted previously, findings regarding parenting factors should be tempered by their incrementally low explanatory power. Second, because we used baseline data from an intervention trial targeted to overweight and at-risk for overweight children, we had a restricted range of child BMI. Replication in a more normally distributed sample is advised. Third, the sample as a whole was rather homogeneous with regard to race and ethnicity. Homogeneity was further increased for analyses involving accelerometry. These analyses were limited to children who wore the accelerometer for at least 4 of 7 days. This resulted in a more White and well-educated analysis sample. Our findings regarding MVPA, then, may or may not generalize to our full sample or the greater population of children in this BMI percentile range and their parents. Importantly, though, the two accelerometer wear subgroups did not differ with respect to MVPA, screen time, or the three parenting styles. Fourth, owing to the cross-sectional nature of the data, we cannot infer causality. Fifth, both parenting practices and styles were assessed via parent-report. A relatively recent study (Taylor et al., 2011) found that although child-reported parenting style was associated with child attitudes about food and PA, parent-reported parenting style was not. Certainly the two indicators could yield different results. Similarly, one of our outcomes, screen time, was assessed via parent-report. Future research would benefit from the inclusion of objective measures and/or observational methods. To date, these methods have seemingly been used more to assess feeding behavior than practices surrounding PA and sedentary behavior (Moens, Braet, & Soetens, 2007). Intriguing virtual reality methods, currently being used to measure child feeding in simulated situations (Persky & McBride, 2009), could potentially be applied to PA and screen time. In addition, accelerometry could be used to measure not just PA, as done here, but also sedentary behavior.

Despite limitations, findings from the present study, drawn from a relatively large sample and strengthened by the objective measurement of weight, height, and PA, extend our knowledge of the role of parent factors in pediatric obesity. Interventions aimed at increasing PA and decreasing screen time among children may benefit from the inclusion of parent-focused components. Indeed, in
support of focusing on parents, research has demonstrated that parent-only interventions are not inferior to interventions targeting both parents and children (Boutelle, Cafri, & Crow, 2011). Pediatric obesity interventions incorporating both parenting and lifestyle components, moreover, are superior to those focused solely on parenting (Gerards, Sleddens, Dagnelie, de Vries, & Kremers, 2011). Findings also offer implications for clinical practice and well-child medical visits. Pediatricians and pediatric nurse practitioners should consider parenting factors when counseling families with an overweight, obese, or at-risk child. As part of the routine clinical practice protocol, ideally during all well-child visits, parents should be encouraged by physicians and/or other health care professionals to provide support to their children for PA. Specific suggestions can be given to parents on how to provide opportunities for these activities. For example, facilitating the child to be involved in sports, taking the child to places appropriate for PA such as a park, or having physically active equipment (e.g., jump rope or ball games) around the home might be proposed. If time permits, further working out with the parent the specific times per day or week when these events might occur would also be desirable. Finally, it would be helpful for providers to include in this conversation, suggestions of ways parents can be active with their child in such activities. These activities might include walks, fruit/vegetable-picking excursions, bike rides, etc. While all parents can likely benefit from these discussions, those with a permissive parenting style might particularly derive benefit from them.

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References


