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Exploring parents' screen-viewing behaviours and sedentary time in association with their attitudes toward their young child's screen-viewing

Emma Solomon-Moore [a,*], Simon J. Sebire [a], Corrie Macdonald-Wallis [a], Janice L. Thompson [b], Deborah A. Lawlor [c,d], Russell Jago [a]

[a] Centre for Exercise, Nutrition and Health Sciences, School for Policy Studies, University of Bristol, Bristol, UK
[b] School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, UK
[c] School for Social and Community Medicine, University of Bristol, Bristol, UK
[d] MRC Integrative Epidemiology Unity, University of Bristol, Bristol, UK

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ABSTRACT

Sedentary time and screen-viewing (SV) are associated with chronic disease risk in adults. Parent and child sedentary time and SV are associated. Parents influence children's SV through parenting styles and role modelling. Understanding whether parents' attitudes toward child SV are associated with their own SV and sedentary time will aid development of family interventions to reduce sedentary behaviours. Cross-sectional data with 809 parents from Bristol, UK were collected in 2012–2013 and analysed in 2016. Parental total sedentary time was derived from accelerometer data. Parents self-reported daily television viewing, use of computers, games consoles, and smartphone/tablets (none, 1–59 min, 1–2 h, >2 h) and attitudes toward child SV. Adjusted linear and logistic regression models were used to examine associations, separately for weekdays and weekend days. Having negative attitudes toward child SV was associated with lower weekend sedentary time (Coeff: −6.41 [95% CI: −12.37 to −0.45] min/day). Limiting behaviours and having negative attitudes toward child SV were associated with lower weekday television viewing (OR: 0.72 [0.57–0.90] and 0.57 [0.47–0.70] respectively), weekend television viewing (0.75 [0.59–0.95] and 0.61 [0.50–0.75]), and weekend computer use (0.73 [0.58–0.92] and 0.80 [0.66–0.97]). Negative attitudes were also associated with lower smartphone use on weekdays (0.70 [0.57–0.85]) and weekends (0.70 [0.58–0.86]). Parent self-efficacy for limiting child SV and setting SV rules were not associated with sedentary time or SV. Reporting negative attitudes toward child SV was associated with lower accelerometer-assessed weekend total sedentary time and self-reported SV behaviours, while limiting child SV was also associated with lower self-reported SV.

1. Introduction

Sedentary behaviours are defined as any waking behaviours characterised by an energy expenditure of ≤1.5 METS, where sitting or lying is the dominant mode of posture (e.g., screen-viewing (SV), motorised transport, office work) (The Sedentary Behaviour and Obesity Expert Working Group, 2010; Sedentary Behaviour Research Network, 2012). National data from England in 2012 suggest that adults spend approximately 5 h daily being sedentary on both weekdays and weekend days (Health and Social Care Information Centre, 2013). Moreover, half of English adults in 2012 spent two or more hours watching television (TV) or other screens daily, and a third watched TV for over 3 h (Shiue, 2016), with TV viewing the most prevalent leisure-time activity for UK adults in 2005 (Office for National Statistics, 2006).

Sedentary time and SV (TV, computers, tablets, smartphones, video games) have been found to be associated with increased risk of obesity (Blanck et al., 2007; Heinonen et al., 2013; Hu et al., 2003; Shields and Tremblay, 2008), cardiovascular disease (Dunstan et al., 2010; Ford and Caspersen, 2012; Inoue et al., 2008; Katzmarzyk et al., 2009; Stamatakis et al., 2011; Wijndaele et al., 2011), diabetes (Hu et al., 2003), cancer (Friberg et al., 2006; Howard et al., 2008), all-cause mortality (Dunstan et al., 2010; Inoue et al., 2008; Katzmarzyk et al., 2009; Stamatakis et al., 2011), mental disorders (Shiue, 2016), and poor self-rated health (Shiue, 2016) in adults. A study of Finnish adults found that each additional self-reported daily TV hour was associated with a 1.81 ± 0.44 cm larger waist circumference in women and 2.0 ± 0.44 cm in men (reference category: <1 h; $p < 0.0001$) (Blanck et al., 2007). However, both cross-sectional and prospective studies in children and adults show little association between objectively-assessed time spent sedentary with adiposity or adverse cardio-metabolic health

Abbreviations: SV, screen-viewing; TV, television; IMD, indices of multiple deprivation.

* Corresponding author at: Centre for Exercise, Nutrition and Health Sciences, School for Policy Studies, 8 Priory Road, Bristol, BS8 1TZ, UK.
E-mail address: Emma.Solomon@bristol.ac.uk (E. Solomon-Moore).

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(van Ekris et al., 2016; Ekelund et al., 2012; Stamatakis et al., 2012; Stamatakis et al., 2015). This lack of association suggests that reporting bias may explain some of the associations with adverse outcomes seen in studies that only use self-report. An alternative explanation may be that SV is more strongly associated with negative health, for example due to an increase in snack consumption during SV (Pearson and Biddle, 2011), with measures of SV currently relying on self-reported data because objective SV measures for use in population studies do not exist. While some sedentary activities are associated with positive educational, mental and social benefits (e.g., reading, connecting with loved ones, imaginative play) (Jacobs et al., 2008), the links with adverse health outcomes, at least from self-reported data, cannot be ignored. As such, there is a need to develop effective interventions to reduce SV and sedentary time for the whole family. While reductions in sedentary time at work are desirable, it is more likely that major reductions in sedentary behaviour will come from addressing leisure-time behaviours, such as SV, and shifts toward more active travel (The Sedentary Behaviour and Obesity Expert Working Group, 2010).

To develop effective interventions to reduce SV and sedentary time among families, we must first understand how parent and child sedentary behaviours are associated, and how parents can influence their child's behaviours. Parent TV-viewing time has been found to be strongly associated with child TV-viewing across the week (Jago et al., 2012; Jago et al., 2014a). Parents who report low restriction of sedentary activities, low self-efficacy, and permissive parenting styles have children with greater levels of SV on average (Jago et al., 2011; Smith et al., 2010). Findings from a previous study using the B-Proact1v dataset, found parental self-efficacy to limit child SV was associated with child weekday TV-viewing and mediated associations between parental control and child SV (Jago et al., 2015). Beyond these observational studies, a RCT of a school-based intervention aimed at improving 9–10 year olds' physical activity and diet, reduced child-reported SV (though not their accelerometer-assessed sedentary behaviour or any of the primary outcomes) and this effect appeared to be mediated by an effect on child-reported maternal limitation of SV (Kipping et al., 2014; Lawlor et al., 2016).

These studies demonstrate that associations exist between parent and child SV time, and that parenting styles and preference for limiting child SV are associated with child SV. However, it is yet unknown whether parents' attitudes toward their child's SV are associated with their own SV and sedentary time. For instance, if parents who report more negative attitudes toward their child's SV also report less SV and spend less time being sedentary themselves, there is potential to develop interventions to encourage parents to have negative attitudes toward their child's SV with the aim of reducing both parent and child SV and sedentary time. Therefore, it is important to understand which aspects of parents' attitudes toward child SV (e.g., self-efficacy for limiting SV, preference for limiting SV, negative attitudes toward SV, setting rules about SV) are associated to parents' own SV and sedentary behaviour.

The aim of this study was to examine whether parents' attitudes toward their young child's SV behaviour was associated with their (the parents) objectively-assessed total sedentary time and self-reported SV behaviours. Specifically, it is hypothesised that parents with a more restrictive attitude toward their young child's SV (i.e., higher preference and efficacy for limiting child SV, more rules and negative attitudes toward SV) would engage in less accelerometer-assessed sedentary time and self-reported SV themselves.

2. Methods

2.1. Study sample

Data are from the cross-sectional B-Proact1v study, which aimed to identify factors associated with young children's (5–6 years) and parents' physical activity and SV. Details of the study design have been reported previously (Jago et al., 2014b). Between February 2012 and May 2013, data were collected from 57 primary schools in the greater Bristol area. In total, 1267 child-parent dyads wore and returned an accelerometer and were included in the final dataset. For the current study, we were interested in parent objectively-assessed sedentary time and self-reported SV behaviours, and therefore only parents that both wore and returned an accelerometer and completed all the SV measures were included in the analyses ($n = 809$). Fig. 1 shows the study flow of participants. Ethical approval was granted by the School for Policy Studies research ethics committee at the University of Bristol, and written informed consent was obtained for all participants (Jago and Bailey, 2001).

2.2. Measures

2.2.1. Sedentary time

Participants were asked to wear an ActiGraph GT3X waist-worn accelerometer for five consecutive days, including two weekend days, during all waking hours. Data were recorded in 10-second epochs, and uniaxial data were processed using Kinesoft (v3.3.75; Kinesoft, Saskatchewan, Canada). Accelerometer data were considered valid if participants provided at least two weekdays and one weekend day of at least 500 min of data. Three days of monitoring have previously been demonstrated to produce reliable estimates of sedentary time in adults (Dillon et al., 2016). Accelerometer "non-wear" time was defined as periods of ≥60 min of consecutive zero values, with an allowance of up to 2 min of interruptions, and were removed from analyses (Troiano et al., 2008). Sedentary time was determined from accelerometer data using a threshold of <100 counts per minute (Tudor-Locke et al., 2010). Total sedentary time, including both work and leisure time, was analysed separately for weekdays and weekend days. A previous study by Clemes et al. found that objectively-assessed sedentary time was higher on workdays than non-workdays (Clemes et al., 2014).

2.2.2. Self-report measures

Parents completed a questionnaire about family characteristics, personal demographics, health aspirations, home media environment, SV time, and their attitudes toward their child's SV behaviour. The Index of Multiple Deprivation (IMD) scores, based upon the English Indices of Deprivation (http://data.gov.uk/dataset/index-of-multiple-deprivation), were assigned to each family based on their reported home postcode. Home media environment was assessed

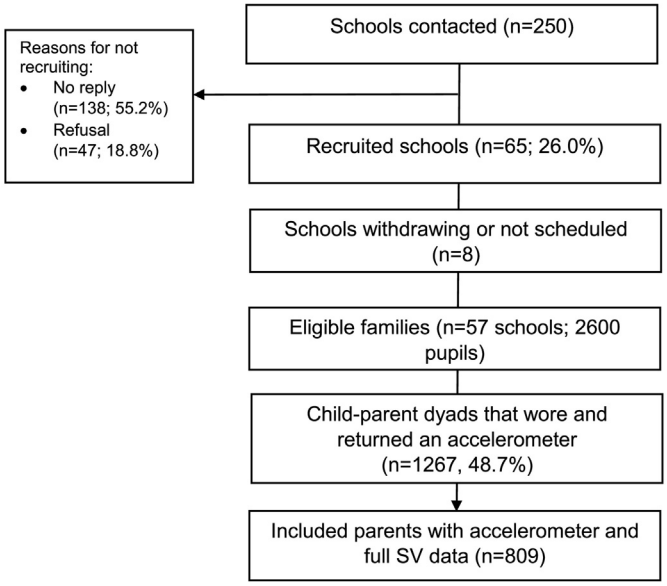

Fig. 1. Study flow of participants.