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Associations between rule-based parenting practices and child screen viewing: A cross-sectional study

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ABSTRACT

Background. Child screen viewing (SV) is positively associated with poor health indicators. Interventions addressing rule-based parenting practices may offer an effective means of limiting SV. This study examined associations between rule-based parenting practices (limit and collaborative rule setting) and SV in 6–8-year old children. *Methods.* An online survey of 735 mothers in 2011 assessed: time that children spent engaged in SV activities; and the use of limit and collaborative rule setting. Logistic regression was used to examine the extent to which limit and collaborative rule setting were associated with SV behaviours. *Results.* 'Always' setting limits was associated with more TV viewing, computer, smartphone and game-console use and a positive association was found between 'always' setting limits for game-console use and multi-SV (in girls). Associations were stronger in mothers of girls compared to mothers of boys. 'Sometimes' setting limits was associated with more TV viewing. There was no association between 'sometimes' setting limits and computer, game-console or smartphone use. There was a negative association between collaborative rule setting and game-console use in boys. *Conclusions.* Limit setting is associated with greater SV. Collaborative rule setting may be effective for managing boys' game-console use. More research is needed to understand rule-based parenting practices.

Introduction

Sedentary behaviours, defined as activities with low levels of energy expenditure (Pate et al., 2008), are highly prevalent in children and adolescents (Foley et al., 2011; Pate et al., 2011; Basterfield et al., 2011). A common form of sedentary behaviour among children is screen viewing (SV), (e.g. watching television (TV)) (Foley et al., 2011). Sedentary behaviours are established in infancy (Vandewater et al., 2007) and remain moderately stable during childhood (Francis et al., 2011; Janz et al., 2005; Biddle et al., 2010). Girls and boys (5–7-year-olds) in England spend on average 1.4 and 1.6 hours(h) respectively watching TV on a typical weekday (Scholes and Mindell, 2012). TV viewing for more than 2 h per day during childhood is associated with poor health indicators (Tremblay et al., 2011) and has been associated with adverse health outcomes in adulthood (Hancox et al., 2004). In addition to TV viewing, recent research has found that children engage in a variety of SV modes and multi-SV (using more than one SV device simultaneously) (Jago et al., 2011a, 2013a; Rideout et al., 2010). Guidelines in the United Kingdom (UK) recommend that young people minimise sedentary time (Department of Health PA, Health Improvement and Protection, 2011), whilst the American Academy of Paediatrics (AAP) states that parents should limit non-educational SV to no more than 2 h per day (Strasburger, 2011). Developing effective strategies to reduce SV before it becomes established, requires research investigating the correlates of a range of SV behaviours in children (Jago et al., 2011a, 2013a,b; O'Connor et al., 2013a).

Parents influence child energy-balance behaviours (Pearson et al., 2009). There is evidence for a positive association between parent and child TV viewing (Jago et al., 2010, 2012, 2013a, 2014). Screen media parenting practices are defined as, "goal-directed parent behaviors or interactions with their child about media for the purpose of influencing some aspect of the youth's screen media use behaviors" (pS113) (O'Connor et al., 2013a). Synthesised evidence of the association between parenting practices and child SV is inconsistent (Jago et al., 2013b). Previous research has shown that SV rule-based practices are associated with less TV viewing (Jago et al., 2011b; Veldhuis et al., 2014; Davison et al., 2005; Barradas et al., 2007; van Zutphen et al.,

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2007; de Jong et al., 2013). In contrast, children in families in the Be Active, Eat Right study, with rules for computer and video game use were more likely to spend greater than 30 minutes per day engaged in these activities (Veldhuis et al., 2014). There is a need for more research exploring the association between rule-based parenting practices and a range of SV modes beyond the TV.

Parenting styles used to deliver practices may contribute to their effectiveness (Baumrind, 1971). Setting rules (time limits, rules around viewing during meal times etc.) in a collaborative style may be an effective method for managing children's SV, as it could minimise parent–child conflict and promote self-regulated behaviour. A similar construct of 'negotiated rules' has been proposed as a practice whereby "parents and child negotiate rules about screen media use" (pS-113) (O'Connor et al., 2013a). O'Connor and colleagues highlighted a need for research assessing whether collaboratively implemented rule-based practices influence child SV (O'Connor et al., 2013a) as such this study aimed to examine the association between two rule-based parenting practices (limit setting and collaborative rule setting) and SV in 6–8-year-olds.

Methods

An advertisement posted onto the Netmums website (www.netmums.com), a UK-based parenting organisation (Barradas et al., 2007), invited parents of 6–8-year-old children to complete an anonymous survey in relation to their eldest child in that age group. Consent to participate in the research was taken prior to survey completion. Ethical approval for this study was granted from a University of Bristol ethics committee.

Participants were asked to report their current employment status (Options = Student, Housewife/Househusband, Full-time, Part-time, Unemployed), their education status (Options = Did not complete secondary school, GCSE or GNVQ level or equivalent (examinations completed at 16-years), A-levels/Advanced GNVQ (examinations completed at 18-years), University degree, Post-graduate degree or higher), the number, age and gender of all children living in the same household.

Parents reported the number of hours that their eldest 6–8-year-old child spent engaged in different SV behaviours on a weekday (TV viewing; computer use; smartphone use, game-console use and multi-SV. A definition of the latter was provided for participants. Response categories: *none*; *less than 1 h*; *up to 2 h*; *up to 3 h*; *up to 4 h* and *more than 4 h per day*). Parent-proxy reports are appropriate for this age group (Atkin et al., 2012) and the reliability coefficients of such measures are fair to high whilst the validity is variable (Lubans et al., 2011).

Parents reported the frequency with which they set limits on the amount of time their child engaged in each of the five SV behaviours separately (*How often do you set limits on the amount of time your child X?* Response categories: *never*; *rarely*; *sometimes*; *always*; *not applicable*). This item was adapted from an existing scale (Carlson et al., 2010) by including a broader range of SV behaviours (computer and smartphone use). We also removed the "very often" response category in line with the research of the developers of the scale (Carlson et al., 2010). Parents reported whether or not they used collaborative rule setting in general (*In setting SV rules (or if you were to set rules) do you: set rules for your child with their input?* Response categories: *yes or no*). This item was developed for this research.

Data reduction

To reflect the AAP guidance (Strasburger, 2011), TV viewing responses were collapsed to produce a dichotomous variable: '2 h or less' (none; less than 1 h and up to 2 h) and 'more than 2 h' (up to 3, 4 h and more than 4 h per day). The distribution of non-TV SV was different to that of TV viewing, with fewer children reportedly engaging in high levels of these behaviours. Therefore, computer and multi-SV time were coded into 'less than 1 h per day' and 'more than or equal to 1 h per day', whilst smartphone and game-console use were coded into 'none' and 'some' (less than 1 h, up to 2, 3, 4 h and more than 4 h per day). Due to the low proportion of responses for 'never' and 'rarely' limit setting, these items were collapsed to produce three categories ('never or rarely', 'sometimes' and 'always'). Participants responding 'not applicable' to any question were removed from the analyses. Owing to the low responses from fathers (n = 8, 2% of the sample), the analysis was limited to mothers.

Statistical analyses

Descriptive statistics (frequencies, percentages, means and standard deviations) were calculated for all variables. Logistic regression models were computed for each SV behaviour as the outcome variable, and limit setting (matched to the SV mode) and collaborative rule setting as the exposure variables. Parents were not asked to report limit setting of multi-SV, as it was anticipated that this would not be a utilised practice. We hypothesised that limit setting of individual SV behaviours may influence time spent multi-SV. Therefore, the multi-SV model used the limit setting practices of all the other SV behaviours as exposure variables. Tests exposed little evidence for multi-collinearity between limit setting variables and between limit setting and collaborative rule setting variables (Variance Inflation Factor < 10 Bowerman and O'Connell, 1990) and therefore they were used as exposure variables in the same model. Models were adjusted for parental age, parental education and the number of children in the family. All available data for mothers were used in each analysis.

Results

Seven-hundred and fifty parents completed the survey. Mothers (n = 735) included in the analysis had a mean age of 35.51-years (SD = 5.93) and a mean number of children per family of 2.24 (SD = 0.92) (Table 1). Most mothers had achieved at least secondary education (97.1%). Approximately half (53.3%) of the children were girls, and 47.8% of the girls and 41.8% of boys were 6-years-old.

Most children spent '2 h or less' watching TV per weekday, 'less than one hour' using computers and 'less than one hour' engaging in multi-SV (Table 2). There was strong evidence for gender differences in the time spent using game-consoles (64.4% of boys compared to 32.4% of girls spent 'some' time) and smartphones (56.9% of boys

Table 1
Characteristics of participants and their children.

	N	%	Mean	SD
Mothers	735	98		
Missing	7	0.9		
Age (years)	718		35.51	5.93
Missing	17			
N of children	735		2.24	0.92
Parental education				
Did not complete secondary school	19	2.9		
GCSE or GNVQ level or equivalent (e.g. O levels/CSE's)	174	23.7		
A Levels/Advanced GNVQ or equivalent	210	28.6		
University degree	205	27.9		
Post-graduate degree or higher	127	17.3		
Boys	343	46.7		
Age (years)				
6	134	39.1		
7	120	35.0		
8	89	25.9		
Girls	392	53.3		
Age (years)				
6	164	41.8		
7	134	34.2		
8	94	24.0		