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Individual, social and home environment determinants of change in children's television viewing: The Switch-Play intervention

Jo Salmon[a,*], Clare Hume[a], Kylie Ball[a], Michael Booth[b], David Crawford[a]

[a] *Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Melbourne, Australia*
[b] *Centre for Research into Adolescents' Health, School of Public Health, University of Sydney, NSW 2006, Australia*

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Summary Understanding potential determinants of change in television (TV) viewing among children may enhance the effectiveness of programs targeting this behaviour. This study aimed to investigate the contribution of individual, social and home environment factors among 10-year-old Australian children to change in TV viewing over a 21-month period. A total of 164 children (49% boys) completed a 19-lesson (9-month) intervention program to reduce TV viewing time. Children completed self-administered surveys four times over 21 months (pre- and post-intervention, 6- and 12-month follow-up). Baseline factors associated with change in TV viewing during the intervention and follow-up periods were: 'asking parents ≥once/week to switch off the TV and play with them' (21.6 min/day more than those reporting <once/week, $p = 0.007$); being able to 'watch just 1 h of TV per day' (26.1 min/day less than those who could not, $p = 0.010$); 'watching TV no matter what was on' (36.6 min/day more than those who did not, $p < 0.001$); and 'continuing to watch TV after their program was over' (33.0 min/day more than those who did not, $p = 0.006$). With every unit increase in baseline frequency of TV viewing with family and friends, children spent on average 4.0 min/day more watching TV over the 21-month period ($p = 0.047$). Baseline number and placement of TVs at home did not predict change in children's TV viewing over the 21 months. Greater understanding of the family dynamics and circumstances, as well as the individual and social determinants of TV viewing, will be required if we are to develop effective strategies for reducing TV viewing in children.

* Correspondence to: School of Exercise and Nutrition Sciences, Deakin University, 221 Burwood Hwy, Burwood, Vic. 3125, Australia. Tel.: +61 3 9251 7254; fax: +61 3 9244 6017.
E-mail address: jsalmon@deakin.edu.au (J. Salmon).

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Introduction

Several studies have found evidence of positive associations between children's television (TV) viewing and overweight and obesity.[1–5] There is also evidence of inverse associations between fruit and vegetable intake and TV viewing, and positive associations of soft drink consumption, sweet and savoury snacks and takeaway foods with TV viewing among children.[5,6] Studies have found that TV viewing tracks from childhood to adolescence[7]; sometimes more strongly than physical activity.[8] In addition, there is evidence that those who have been identified as high TV viewers in childhood are more likely to be overweight/obese, have poor fitness, smoke and have elevated cholesterol in adulthood.[9]

Concerns about the relationship between TV viewing and children's health are such that paediatric medical associations in the US and Australia and also the Australian government have recommended that children spend no more than 2 h/day watching TV and videos, using the computer/Internet and playing electronic games,[10,11] particularly during daylight hours.[12] On average, Australian children spend 2.5 h/day watching TV[13] and although there are no population prevalence data for the proportion of children meeting these recommendations, two large studies of 1200 and 1560 children in metropolitan Melbourne have reported that 59 and 75% of children (respectively) exceeded 2 h/day watching TV.[5,14] It is therefore important to develop and test strategies for reducing the time that children spend in these sedentary behaviours.

Only a small number of interventions to reduce children's TV viewing have been published. Four studies delivered an intervention program in the school or pre-school setting,[15–18] two in the primary care setting,[19,20] and one in the family/community setting.[21] All reported varying degrees of success in reducing TV viewing; however, few examined potential determinants of change in TV viewing behaviour. One study reported no difference in TV viewing at baseline among children who did or did not have a TV set in their bedroom[18]; however associations with intervention effectiveness on TV viewing over time were not examined. Social ecological models hypothesise that behaviour is shaped by individual or personal, social and physical environment factors.[22] The family and peer social environment is likely to be an important influence on children's ability to reduce their TV viewing. For example, a cross-sectional study has found that boys who watched TV several times/week or more with their family watched significantly more TV per day than those who did not engage in frequent family viewing.[14] Of concern, a recent cross-sectional time-use study of more than 1700 children aged 0–12 years in the US found that the time children spent watching TV with or without parents or siblings was inversely associated with time spent interacting with parents or siblings in other activities.[23] Individual factors, such as children's self-efficacy for reducing TV viewing, behavioural capability or perceived autonomy in choosing activities during free time may also be important determinants of behaviour change.[24]

Understanding potential determinants of change in TV viewing among children may enhance the effectiveness of programs targeting this behaviour. Therefore, this study aimed to investigate whether selected individual, social and home environment factors differentiated changes in TV viewing during the course of an intervention delivered over 9 months, with 6- and 12-month (21 months in total) follow-up among 10-year-old Australian children.

Methods

Participants

A group randomised intervention was conducted over a 9-month period between March and December 2002; the methods have been reported in detail elsewhere.[25] Children were recruited from 17 classes at three schools in low socioeconomic areas of Melbourne, and were randomised to one of four conditions: a Behavioural Modification condition (BM); a Fundamental Motor Skills condition (FMS); a combined BM/FMS condition; and a comparison usual curriculum condition (C). The BM program (received by the BM only and combined BM/FMS groups) received material delivered in 19 lessons which aimed to reduce children's television viewing and other screen-based behaviours, and also helped children identify physically active alternatives in which they could participate at home or in the community. The FMS program, also consisting of 19 lessons, was delivered to the FMS only and combined BM/FMS groups and targeted mastery of six fundamental movement skills.

In the intervention, only children who received the BM program were encouraged to reduce their TV viewing. Given this, we were interested in whether the response of children who received the BM program varied by selected individual, social and home environment factors. Therefore, only those children who received the BM program (i.e., BM and BM/FMS groups) were included in the analyses. This research study was approved by the Deakin Univer-