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Veitch, J., Hume, C., Salmon, J., Crawford, D. and Ball, K. 2013, What helps children to be more active and less sedentary? Perceptions of mothers living in disadvantaged neighbourhoods, *Child : care, health and development*, vol. 39, no. 1, pp. 94-102.

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What helps children to be more active and less sedentary? Perceptions of mothers living in disadvantaged neighbourhoods.

Running title: What helps children to be more active and less sedentary?

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Acknowledgements

Jenny Veitch and Clare Hume are funded by National Heart Foundation of Australia Post-doctoral Research Fellowships. Kylie Ball is funded by a National Health and Medical Research Council Senior Research Fellowship, ID 479513. Jo Salmon is supported by a National Heart Foundation of Australia and sanofi-aventis Career Development Award Fellowship. David Crawford is supported by a Public Health Research Fellowship from the Victorian Health Promotion Foundation. Authors acknowledge the support of Dr Michelle Jackson who co-ordinated the project and the Research Fellows who conducted the interviews. The authors declare that they have no competing interests.

Abstract

Background: Increasing children's participation in physical activity and decreasing time spent in sedentary behaviours is of great importance to public health. Despite living in disadvantaged neighbourhoods, some children manage to engage in health-promoting physical activity and avoid high levels of screen-based activities (i.e. watching TV, computer use and playing electronic games). Understanding how these children manage to do well and whether there are unique features of their home or neighbourhood that explain their success is important for informing strategies targeting less active and more sedentary children. The aim of this qualitative study was to gain in-depth insights from mothers regarding their child's resilience to low physical activity and high screen-time.

Methods: Semi-structured face-to-face interviews were conducted with 38 mothers of children who lived in disadvantaged neighbourhoods in urban and rural areas of Victoria, Australia. The interviews were designed to gain in-depth insights about perceived individual, social and physical environmental factors influencing resilience to low physical activity and high screen-time.

Results: Themes relating to physical activity that emerged from the interviews included: parental encouragement, support and modelling; sports culture in a rural town; the physical home and neighbourhood environment; child's individual personality; and dog ownership. Themes relating to screen-time behaviours encompassed: parental control; and child's individual preferences.

Conclusions: The results offer important insights into potential avenues for developing 'resilience' and increasing physical activity and reducing screen-time among children living in disadvantaged neighbourhoods. In light of the negative effects of low physical activity and high levels of screen-time on children's health this evidence is urgently needed.

Introduction

Among children, regular physical activity provides mental and physical health benefits and can reduce the risk of chronic diseases such as diabetes, cardiovascular disease and overweight and obesity (Must and Tybor 2005). In contrast, time spent in sedentary behaviours including screen-time (i.e. watching TV, computer use and playing electronic games) is considered a key contributor to the childhood obesity epidemic (Rey-Lopez *et al.* 2008) and is associated with other adverse health outcomes such as insulin resistance (Sardinha *et al.* 2008). Increasing children's participation in physical activity and decreasing time spent in sedentary behaviours is therefore of great importance to public health (Biddle *et al.* 2004).

The increased risk of obesity among individuals who are socially and economically disadvantaged (those with low education levels, low incomes, unemployed/low status occupations or living in disadvantaged neighbourhoods) is well-documented (Ball and Crawford 2006). Although evidence is inconsistent, some studies have found that children of low socioeconomic status (SES) are less physically active than those of higher SES (Ball *et al.* 2009, Borraccino *et al.* 2009, Findlay *et al.* 2009). Children from low SES families, or who live in socioeconomically disadvantaged neighbourhoods, are more likely to watch TV (Brodersen *et al.* 2005, Salmon *et al.* 2005) than children living in high SES neighbourhoods. Despite living in disadvantaged neighbourhoods some children do, however, manage to maintain high levels of physical activity and spend little time watching TV. The term 'resilience' may be used to describe these children who are able to demonstrate positive behaviours such as participating in regular physical activity despite exposure to circumstances of high risk associated with living in disadvantage neighbourhoods.

Previous qualitative research with 10-11 year old children has highlighted that families from low, middle and high socio-economic backgrounds support their children to be active in different ways (Brockman *et al.* 2009). Understanding how some socioeconomically disadvantaged children manage to do well, and whether there are particular unique features of the home or neighbourhood that explain their ‘resilience’ to low activity levels or high TV viewing is important for informing the development of strategies targeting less active and more sedentary children. To our knowledge, no study has examined mothers’ perceptions of factors associated with children’s positive physical activity and screen-based behaviours, despite living in disadvantaged neighbourhoods.

Ecological models suggest that aspects of the home or neighbourhood environment, as well as personal factors, are likely to predict health behaviours such as physical activity or screen-time (Bronfenbrenner 1979, Davison and Birch 2001). The family is the primary social setting that impacts on young people and parents have been recognised by the World Health Organisation (World Health Organisation 2004) and in other research as being influential in child weight-related behaviours (Crawford *et al.* 2006, Norton *et al.* 2003, Pocock *et al.* 2010). Despite the important role that parents are likely to play by providing, for example, support for and active modelling of physical activity, little is known about mothers’ beliefs and strategies regarding their child’s physical activity and screen-time behaviours, particularly among ‘resilient’ children living in disadvantaged neighbourhoods.

The current study was therefore designed to gain a better understanding of mothers’ perceptions of factors that support children to be physically active and that help limit time spent in screen-based behaviours, particularly TV viewing and video/computer games. Specifically, we aimed to gain in-depth insights from mothers living in disadvantaged

neighbourhoods regarding their perceptions of their child's resilience to low physical activity and high screen-time. Given the paucity of knowledge on this particular topic, a qualitative design was considered most appropriate.

Methods

This qualitative study involved face-to-face interviews with 38 mothers. The interviews were designed to gain in-depth insights about perceived individual, social and physical environmental factors influencing resilience to low physical activity and high screen-time among mothers of children living in disadvantaged neighbourhoods of urban and rural areas of Victoria, Australia. As the current study was nested within a larger study of women and their children, the methods employed in this study allowed for an exploration of mothers' perceptions. Ethics approval for this study was granted by the Deakin University Human Research Ethics Committee. Informed consent was obtained from all participants.

Participants

Participants were drawn from a larger study of women and children living in socioeconomically disadvantaged neighbourhoods who participated in the Resilience for Eating and Physical Activity Despite Inequality (READI) study. This was a longitudinal cohort study examining resilience to obesity among socially and economically disadvantaged women and children. Methods have been described in more detail elsewhere (Cleland *et al.* 2010). Briefly, women and their children living in disadvantaged suburbs in 40 urban and 40 rural areas of Victoria were recruited to the study. Disadvantaged areas were defined as those suburbs in the bottom tertile of the Victorian socioeconomic index for areas (SEIFA) distribution. Rural areas were defined as those areas falling outside metropolitan Melbourne, and outside a 25km radius of six rural Victorian cities. One hundred and fifty women aged

18-45 years residing in each of the 80 suburbs (total n=11,940) were randomly selected from the Victorian electoral roll and were sent an invitation to participate. Completed surveys were received from 4,349 women. Of these, 1457 had a child aged 5-12 years, with 771 agreeing for their child to participate (response rate 53%). Complete data were available for 636 children. As part of the READI study, women self-reported their highest qualification, their employment status, marital status, and country of birth.

For the current study, participants were selected using purposive criterion sampling. Children from the READI baseline cohort (2008) were selected if they met the following criteria: willing to participate in future research; aged 8-12 years; in the healthy weight range (using BMI for age percentiles); regular consumers of fruits (≥ 1 serves p/day) and vegetables (≥ 2 serves p/day); and were relatively physically active (ranked top 50% for participation in moderate-to-vigorous physical activity measured using objective accelerometry physical activity measures), compared to the rest of the sample. In total, 67 children met these criteria and were invited, along with their mother, to participate in the current study. In addition, objective assessment using accelerometry (collected as part of the READI baseline data) showed that children included in the current study spent a significantly lower proportion of their day being sedentary (38%) than did other children in the READI cohort (43%, $p=0.04$; data not shown), suggesting that our sample were slightly less sedentary than the cohort as a whole.

In July 2009 mothers of the selected 67 children were sent a letter explaining the study and inviting them (and their child) to participate. Each potential participant was then contacted by phone (no more than twice) by the field manager to discuss their potential involvement in the study. From these 67 eligible mothers, 12 did not respond to the invitation, eight refused

participation, six had relocated, and following recruitment, three withdrew due to work commitments. The remaining 38 mother-child pairs agreed to participate (response rate 57%). Since the focus of this paper was on mothers' perceptions of factors associated with their child's physical activity and sedentary behaviours, only mothers' data relating to these themes are presented here.

Materials

The ecological model guided the development of a semi-structured interview schedule designed to explore mothers' perceptions of influences on their child's physical activity and screen-based activities (Davison and Birch 2001). This included an investigation of influences at the individual (e.g. child's own preferences), social (e.g. siblings and friends involvement in physical activity and presence of other children in neighbourhood to be active with) and physical environment levels (e.g. access to parks and sport facilities in the neighbourhood). Our own previous research (Veitch *et al.* 2006, Veitch *et al.* 2007), and pilot interviews with a convenience sample of four mothers were used to help develop the interview schedule. The pilot interviews were undertaken to trial the interview schedule and this resulted in minor modifications to the schedule such as the addition of questions about their child's peers.

During the interview, mothers were asked to respond to questions such as: "What are the main things that decide how active your child is?"; "Do the facilities or programs for sport and physical activity in your neighbourhood encourage/motivate your child to be more active?"; "What do you actively do that you think helps your child to be physically active?"; and "Is there anything that helps your child not to spend too much time watching the TV or

using computer games?” Prompts were also employed where necessary to clarify participants’ comments or to encourage more detailed responses.

Procedure

Two trained female research staff conducted each interview (lasting approximately 20-45 minutes) at participants’ homes from July to October 2009. The interviewers (n=5) were aged between 25-30 years and were working within the health research field. With the participants’ permission, handwritten notes were taken by a staff member and an electronic dictaphone was used to record each interview. At the commencement of each interview, the research staff introduced themselves as members of a team of researchers and explained the purpose and context of the interview. The mothers were advised that they had been selected because their nominated child participated in relatively more physical activity compared with other children in the READI cohort, and that we were interested in finding out what was helping their children to be physically active and if there were any strategies parents used to help limit the time their child spent in screen-based activities. The research staff asked the mothers to be as honest as possible when discussing their child’s behaviour and explained that there were no right or wrong answers. Mothers were presented with a \$25 gift voucher as compensation for their time.

All interview data were transcribed verbatim. Analysis of data was based on an examination of participants’ response to each question. All transcripts were read line by line by the first author and the content of each response was coded and entered as ‘free-nodes’ (which are labels that describe themes) into a database using NVivo version 8 qualitative software program (QSR International 2007). This program was used to code, sub-categorise, and unify coding of transcript text. The data was then reviewed to develop a detailed hierarchical

numerical coding scheme and inductive thematic analysis was used to develop and interpret the themes (Green and Thorogood 2009). Responses based on the main themes to emerge from the interviews are described, with illustrative quotes drawn as examples from the raw data.

Results

A summary of the sociodemographic characteristics for the mothers is provided in Table 1. The mothers' mean age was 38.6 years ($SD=4.6$) and the child about whom the mother responded was 9.4 years ($SD=1.6$). Twenty-one percent of families lived in an urban area and 79% in a rural location.

From the analysis of data a range of potential or perceived influences on children's physical activity and screen-time behaviours emerged. The themes related to physical activity from most to least mentioned included: parental encouragement, support and modelling; sport culture in a rural town; the physical home and neighbourhood environment; child's individual preferences; and dog ownership. The themes related to screen-time behaviours encompassed: parental control and child's individual preferences. The quotes provided are verbatim responses from the mother and for descriptive purposes include child's gender, age and area of residence in parentheses.

Physical activity

Parental encouragement, support and modelling

Parental encouragement for their child to be active was the most commonly discussed factor that mothers' believed influenced their child's involvement in physical activity. This included parents encouraging their children to go outdoors and be active, parents being prepared to let

their children “have a go” at different activities, parent modelling of physical activity, parents encouraging active transport, parents being prepared to support their child’s involvement in organised activities, and parents volunteering to be involved in their children's sports.

Overall, mothers appeared to recognise the benefits of participating in sport and being physically active and were enthusiastic about their child’s involvement. Mothers described how they believed their personal involvement in physical activity set a positive example for their child, and how they were motivated to be regularly active as a family.

“We sort of encourage them to do any form of sport they want to do so if they show an interest in something we look into it. We’ll take him to have a look.” (mother of son aged 7, rural)

“I try and do as much as I can so he can see that it isn’t just him that’s being active. My husband will often take them bike riding. Or we’ll go for a walk in summer time. So we just try to be as active as we can and let him see that we’re trying to be active as well.” (mother of son aged 7, rural)

“Yeah, I think it’s very important for young people to have lots of sport. And it gives them good values and participation in the community. And I think that’s character building for kids.” (mother of daughter aged 11, rural)

Sport culture in a rural town

Throughout the interviews there was a very strong sense of community involvement in sport from families residing in rural towns. In general, mothers described a positive sport culture and commented that sport and physical activity were a focus of their town and this

encouraged their children to participate. It was reported that children in some rural towns did not have a wide range of other things to do so sport and physical activity were a major focus for the community and involvement was viewed very positively. The same sentiments were not expressed by mothers living in urban areas.

“Sport’s a big thing in the country towns so it’s easiest to fit in. And there’s a fair amount of peer group, not pressure, but encouragement to play basketball or other sports.”

(mother of son aged 9, rural)

“I don’t know whether because being in a rural town that the kids do tend do to a lot more sport. That’s sort of their options. You know like there are not shopping centres to hang out or there’s not the chain takeaway. So yeah they like their sports and yeah school’s got a really good sports programme. You do lots of sports.” (mother of daughter aged 10, rural)

The physical home and neighbourhood environment

The physical environment both at home and within the broader neighbourhood emerged as having a significant perceived influence on children’s participation in physical activity.

Overall, mothers reported that their children had access to a wide variety of play and sports equipment at home and also had a yard [or garden] which was large enough to play in and this encouraged their children to spend time being active outdoors.

“Yeah she’s got a boxing bag she can use and we’ve got her bike and the trees out the back that she climbs. Her scooter. The trampoline. So she’s got a lot of activities to do.

And her “cubby” [small play house for children usually in garden] down the back so she’s constantly moving.” (mother of daughter aged 9, urban).

“Our area is not actually a good area for going out. You can’t ride a bike or anything but thankfully we have a big backyard so they can play outside.” (mother daughter aged 8, urban).

Living in a cul-de-sac also emerged as having a positive influence on children’s physical activity. Mothers explained that their children enjoyed playing with other children living in the cul-de-sac and this encouraged active outdoor play.

“Where we are in the bottom of the court’s really good ‘cause there are a lot of kids, like next door and just around here. They’ll all get out and ride their bikes or scooters or whatever.” (mother of daughter aged 8, rural).

Within the neighbourhood environment, the provision of and access to sporting facilities, parks, and safe tracks for walking and cycling were frequently mentioned by mothers as a feature that encouraged their child to be physically active.

“The tracks I must admit have been a good thing. The nice wide concrete paths, do encourage you to be more active because if the kids want to take their bike or their scooter the path is wide enough, there are no driveways so it’s safer for them if they’re scooting along ahead of you. So safe paths - that’s probably the number one thing. Accessibility.” (mother of daughter aged 12, urban).

“We’re pretty lucky I mean we’ve got football, netball, basketball, tennis, dancing, there’s lots of things available for kids in X. They’ve got the wetlands and they’ve got all tracks down there. There’s only a few major roads that you gotta be careful with kids.”

(mother of son aged 9, rural)

Child’s individual preferences

Mothers commented that their child’s individual personality traits, enjoyment of physical activity, and a natural tendency to be active were major determinants of their child’s participation in physical activity.

“He just likes being active, I think. He loves riding his scooter. He loves playing footy, he loves playing tennis. So the things he does he really enjoys doing and he’ll want to go. He’ll say, ‘Can we’ and he wants to do it.” (mother of son aged 9, rural).

“She’s just active. She doesn’t sit still for two minutes. And even of a night she’s still going.” (mother of daughter aged 10, urban).

“She loves her dancing, she’s always done that from little. They’re very motivated kids so they enjoy being physical which is a good thing so I don’t have to really get involved with preaching about doing anything.” (mother of daughter aged 12, urban).

Dog ownership

Mothers strongly reinforced the benefits that dog ownership had on the frequency with which their child, and their wider family unit as a whole, participated in regular walking.

“Probably the most significant thing is we picked up a two-year old Labrador last year and she [daughter] encourages me if it’s time to take Bonny for a walk. ‘Mum, we need to take Bonny for a run’. Yeah so, I think probably the walking and we try and do it as a family because it’s good for all of us really.” (mother of daughter aged 8, rural).

“If I’m walking the dog I’ll ask him [her son] to come with me. Also, it’s good rather than just maybe sort of coming home from school and sitting in front of the telly or the computer.” (mother of son aged 11, rural).

Screen-time behaviours

Parental control - set rules and encourage alternative outdoor activities

Mothers described successfully exerting strong control over their children’s screen-time behaviours by setting rules and limits regarding TV viewing and computer game use and by simply turning off electronic equipment. For example, parents enforced rules such as only allowing the television to be turned on after all homework was completed and for a maximum of one hour. Other rules such as ‘no TV during meal times’ and ‘no TV’s in the bedrooms’ were also frequently mentioned with time restrictions more heavily enforced during weekdays with children being permitted more screen-time on weekends and school holidays.

“Well there’s the restrictions. They’re only allowed to have their ‘DS’ [hand held electronic game] on the weekend after it’s time to come inside. So that’s not an option during the day.” (mother of son aged 8, rural)

“Just put bans on how much they’re allowed. With ‘game boys’ and that sort of thing we set limits and if we feel that they’re not listening to us when we tell them to turn it off then we just take them away for a bit.” (mother of son aged 10, rural)

Mothers also frequently stated that in order to decrease screen-time they encouraged their child to play outside as much as possible. When discussing alternatives for screen-time, mothers from rural towns commented that having more space and opportunities for their child to be involved with outdoor activities was a strong motivator for living in a rural area.

“I turn the telly off and I kick him out. Get outside and play.” (mother of son aged 7, rural)

“I’ll just turn it off [TV and computer]. He doesn’t get a choice. I make them go outside before, because otherwise they get on the computer and then they don’t move at all. So, I just make them go outside and run laps.” (mother of son aged 11, rural)

“Having lots of other things available helps him to not spend too much time watching TV. That’s one of the reasons I guess we live here rather than in town. I wanted to be able to have a pony and room to ride a bike and that sort of thing.” (mother of son aged 9, rural)

Child’s individual preferences

Mothers reported a wide variation in time spent in screen-based activities and child’s preferences emerged as a major factor that influenced these behaviours. Firstly, some mothers commented that their child was not the type to spend large amounts of time in screen-based

activities and therefore they did not believe it was necessary to regulate this behaviour.

“They’re pretty good at self-regulating. I’m not very often in that situation to have to tell them to turn it off. They know themselves pretty much that the weather’s nice, it’s time to get out and do something else. So, I don’t really have to crack the whip.”

(mother of daughter aged 12, urban)

In contrast, other mothers reported that their child would be tempted to spend many hours continuously in screen-based activities and they needed to have strict rules limiting screen-time.

“Computer is the killer for her. She’ll come home from school and she could sit on that for four hours.” (mother of daughter aged 8, rural)

Further, some mothers reported that their child was generally very active and they felt it was quite satisfactory for them to have some ‘down time’ watching the TV.

“Sometimes ‘cause both of them are so active they’ve just gotta have time to relax.”

(mother of son aged 9, rural)

Discussion

Enhancing our understanding of supports for physical activity and methods employed to overcome children spending long periods of time in screen-based activities may facilitate physical activity interventions and sedentary behaviour prevention strategies. This is particularly important for those children engaging in low levels of physical activity and high

levels of screen-time, such as those living in socioeconomically disadvantaged neighbourhoods.

Consistent with previous quantitative research (Salmon *et al.* 2005, Norton *et al.* 2003) the findings from this study highlighted the powerful influence parents have on children's participation in active and sedentary pursuits. Parents' encouragement and support of physical activity, being positive role models of an active lifestyle, and being actively involved in their child's sporting activities were found to be of key importance to children's involvement in physical activity. Mothers also believed that parental control over the time children spend in screen-based behaviours, including setting rules and limitations and encouraging alternate activities, comprised a strong influence on their child's screen-based activities.

These findings are consistent with a systematic review of quantitative studies that found parental support to be positively associated with physical activity among children aged 4-12 years (van der Horst *et al.* 2007), and also a review of qualitative research that found parental enjoyment and support of physical activity to be a key motivation for young people to be active (Allender *et al.* 2006). Further, a recent qualitative study by Granich *et al.* (2010) involving focus groups and interviews with 11-12 year old Australian children and their parents found parent modelling, and rules and restrictions were major perceived influences on sedentary behaviours among youth (Granich *et al.* 2010). The current study findings suggest that parents/mothers contribute to their child's resilience by supporting their child's participation in physical activity and in reducing time spent being sedentary. Helping parents to find ways to support their child's participation in physical activity and to develop effective strategies for setting rules and limitations regarding screen-use among their children is

crucial. Developing parenting skills and giving parents strategies to help them manage their child's health behaviours may therefore be important components of future intervention programs.

Individual-level factors have been found to explain much of the variance in physical activity, with previous studies showing preferences to be associated with children's overall physical activity (Salmon *et al.* 2005, Sallis *et al.* 2000). Our previous qualitative research with parents (Veitch *et al.* 2006) also identified children's individual preferences as being a key determinant of children's outdoor free-play. Similarly, in the current study children's individual preferences were highlighted by mothers as having an important perceived influence on time spent in both physical activity and screen-based behaviours. Considering the increasing appeal of screen-based technology, it may be difficult to decrease children's preferences of these activities. However, future intervention strategies, particularly among children from disadvantaged neighbourhoods, may benefit from exploring ways to increase children's preferences for physical activity and opportunities for children to participate in physical activities that they enjoy.

In the current study, mothers also described how some children were able to successfully regulate (and limit) their screen-time, whereas other children could spend many continuous hours in screen-time. Children who were spending less time in screen-time appeared to have mothers who took control of their child's screen-time and insisted that their child go outside and play. This further demonstrates that mothers/parents support and control of their child's behaviour is helping children to be 'resilient'. Considering these findings, potential interventions may focus on raising both parents' and children's awareness of time spent in

screen-based behaviours, increasing children's ability to regulate time spent in these pastimes, and teaching parents how to help their child regulate their screen-time.

Although a small number of mothers mentioned that their child was more likely to be active outdoors with friends, in contrast to previous literature from qualitative and quantitative studies (Bagley *et al.* 2006, Moore *et al.* 2010) the influence of siblings or having friends living nearby to play with did not emerge as a major theme in this study. However, strong community social norms for engaging in physical activity and sport emerged as a factor that mothers from rural towns believed had a significant positive influence on their child's physical activity. Few studies have examined rural/urban differences in children's physical activity or sedentary behaviour, particularly among disadvantaged neighbourhoods (Davis *et al.* 2008, Joens-Matre *et al.* 2008, Moore *et al.* 2010). The findings from the current study indicate, however, that it may be important for future research to investigate differences between urban and rural populations and particularly the impact of social norms and community support for physical activity on overall physical activity levels.

In support of previous quantitative research that suggests that the built environment may be key to promoting active lifestyles among youth (Davison and Lawson 2006, Veitch *et al.* 2010), the results from this study highlight the importance of the neighbourhood physical environment for children living in socio-economically disadvantaged communities. Mothers commented that provision of outdoor play equipment and a yard at home, living in a cul-de-sac, and having access to sporting facilities, parks, and suitable paths in the neighbourhood had a positive influence on their child's physical activity. Importantly, some mothers from rural areas perceived that living in a rural town provided their child with a more supportive physical environment for physical activity which assisted in decreasing time spent in screen-based activities. Interestingly, a recent quantitative study of Canadian adolescents (n= 4851,

mean age 14 years) found after adjusting for age, sex, socio-economic position and region of Canada that young people living in more rural areas were 31% less likely to be in the high screen-time category compared with participants living in the large metropolitan areas (Bruner *et al.* 2008). These results confirm the potential importance of a supportive physical environment, suggesting that it not only increases opportunities for physical activity, but may also help to reduce time spent in sedentary behaviours.

This research is unique in its exploration of factors that may support children to be physically active despite living in disadvantaged neighbourhoods. The findings should, however, be considered in light of the study limitations. Our results are based on the views of mothers and the views of fathers have not been explored using this study design. Mothers were aware that their child participated in relatively more physical activity compared with other children in the READI cohort and it is possible that this may have influenced the mothers' responses and comments during the interview. Too few children met sedentary behaviour recommendations to include this as part of the sampling criteria; however, objective assessment showed that the children included in this study spent a significantly lower proportion of time in sedentary behaviour compared with the children in the READI cohort who were not selected to be a part of the current study. Children's perceptions are not presented here; however, mothers exert considerable influence on their children's physical activity and sedentary behaviours and mothers' perceptions are likely to ultimately influence their child's behaviour.

Further, the study population was confined to metropolitan and rural areas of Victoria, Australia and therefore the results are limited in their ability to be generalised to families living in other areas. Finally, although all families in this study were living in disadvantaged areas, not all participants were experiencing disadvantage at the family level. As our findings

suggest that one of the potential drivers of resilient children is the ability of mothers to provide support for their child's physical activity and control of their child's screen-time, an examination of the reasons why the mothers were 'resilient' in this way could be a valuable component of future studies.

Although these findings require further confirmation with larger samples using quantitative methods, the results suggest that parental involvement and modelling of an active lifestyle, living in a rural area, having a supportive physical environment, enjoying being active and owning a dog may help children living in disadvantaged areas to participate in regular physical activity. Further, parental control and children's individual preferences emerged as key factors influencing screen-time. The results indicate that some children are able to overcome barriers to participate in physical activity and that such resilience is strongly supported by their parents/mothers. This study offers important insights into how children living in disadvantaged neighbourhoods, and particularly those residing in rural areas, are able to participate in physical activity and reduce time in screen-based behaviours.

Funding

This work was supported by an Australian National Health and Medical Research Council Strategic Award (Grant#374241).

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Table 1: Sociodemographic characteristics of interview participants

Mother	Mean (SD) or N (%)	Range
Mean Age (years)	38.56 (4.6)	28.79-46.12
Education		
Low: Did not complete High School	8 (21.1%)	
Medium: Completed High School/trade/certificate/diploma	17 (44.7%)	
High: Completed tertiary education	13 (34.2%)	
Employment		
Full time	12 (31.6%)	
Part time	8 (21.1%)	
Not currently employed	18 (47.4%)	
Marital Status		
Single	0	
Married/DeFacto	36 (94.7%)	
Separated/Divorced/Widowed	2 (5.3%)	
Country of birth		
Australia	35 (92.1%)	
Other	3 (7.9%)	
Region		
Urban	8 (21%)	
Rural	30 (79%)	