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**Children's perceptions of the factors helping them to be 'resilient' to sedentary lifestyles**

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## **Abstract**

Despite the increased risk of sedentary lifestyles associated with socioeconomic disadvantage, some children living in disadvantaged areas display 'resilience' to unhealthy behaviours whereby they manage to engage in regular physical activity and avoid high levels of screen time. It is important to understand what is helping these children to do well. This qualitative study explored the perceptions of 'resilient' children regarding factors that assist them to engage in high levels of physical activity and low screen time. In-depth face-to-face interviews were conducted with 38 children (7-13 years) living in disadvantaged neighbourhoods in urban and rural areas of Victoria, Australia. Themes that emerged relating to physical activity included: parental support and encouragement of physical activity; having a supportive physical environment; and having friends to be active with. Themes relating to screen time included: individual preferences to be active; knowledge of health risks associated with sedentary behaviour; having a home environment supportive of physical activity; and parental rules. The results provide valuable insights regarding factors that may help children living in disadvantaged neighbourhoods to be physically active and reduce their screen time and may inform future studies targeting this important population group.

## **Introduction**

Childhood physical activity and sedentary behaviour can have positive [1, 2] and negative [3-5] health outcomes respectively. Public health promotion strategies must therefore focus on promoting children's physical activity and reducing their sedentary behaviours including screen time (i.e. watching TV, computer use and playing electronic games) [1].

Socioeconomic disparities in physical activity levels have been reported consistently among adults [6]. Among children, findings are less consistent but children from low socioeconomic status (SES) backgrounds may be at greater risk of engaging in low levels of physical activity [7-10] and children from low SES families or who live in socioeconomically disadvantaged neighbourhoods are more likely to watch TV than children living in high SES neighbourhoods [11, 12]. However, it appears that some children living in disadvantaged areas do manage to engage in regular physical activity and relatively low levels of screen time [13, 14] despite the increased risk associated with their disadvantaged position. Such behaviours in the context of socioeconomic adversity have been argued as reflecting a type of 'resilience' [15]. Resilience has been defined as a 'dynamic process encompassing positive adaptation within the context of significant adversity' [16]. There is potential for lessons to be learned from these 'resilient' children regarding how they are able to demonstrate positive health behaviours while residing in environments shown to negatively influence these health behaviours.

In order to understand children's health behaviours, the social ecological model is often employed to guide observational research. The social ecological model posits that multiple levels of influence may impact a child's behaviour. Broadly, social ecological models are

comprised of three universal domains (i.e. intrapersonal, social and physical environment) [17-19] each containing influences that differ according to the target behaviour and population group. Factors in all three domains have been shown to be associated with both physical activity and sedentary behaviour [20]. For example, our previous qualitative research has found children's individual preferences are key determinants of active and sedentary behaviours [21, 22], a finding consistent with those of other quantitative studies [20, 23]. The family is the primary social setting that impacts on youth and parental support is likely to be of major importance in influencing children's behaviour through a variety of mechanisms such as modelling active lifestyles, providing social support for physical activity, by parents being active with their child, watching their child engage in physical activity and taking their child to places to be active [20, 24, 25]. Parenting practices have been found to influence both physical activity screen time behaviours [26]. The physical home and neighbourhood environment is also likely to impact on both active and sedentary behaviours [27]. Children living in lower SES households have been shown to have more opportunities to engage in sedentary behaviour and fewer opportunities for physical activity [28].

To our knowledge, no previous research has examined the factors perceived by socioeconomically disadvantaged yet physically active children to influence their physical activity and screen time. This study aimed to conduct an in-depth exploration with 'resilient' children to explore their perceptions of factors that may be assisting them to engage in relatively higher levels of physical activity and low screen time despite living in socioeconomically disadvantaged areas. Enhancing our understanding of the barriers and supports assisting children to be physically active and engage in low screen time may inform intervention strategies targeting children living in disadvantaged neighbourhoods who are

less active and more sedentary. Qualitative methods have been shown to generate rich data and provide important insights into poorly understood areas, and considering the unique focus on factors associated with ‘resilience’ among children living in disadvantaged neighbourhoods a qualitative approach was considered most appropriate for this study.

## **Methods**

This study involved face-to-face interviews with a sample of 38 children to explore perceived individual, social and physical environmental factors associated with children’s resilience to low physical activity and high screen time. The study was nested within a larger study exploring the health of women and children in disadvantaged areas of Victoria, Australia. Ethics approval for this study was granted by the Deakin University Human Research Ethics Committee. Informed consent was obtained from all parents of participating children.

### *Participants*

Participants were drawn from the Resilience for Eating and Physical Activity Despite Inequality (READI) study, a longitudinal cohort study examining resilience to obesity among socially and economically disadvantaged women and children. The methods have been described in more detail elsewhere [15]. In brief, women and their children living in low SES suburbs in 40 urban and 40 rural areas were recruited. Disadvantage was classified using area-level disadvantage, which has been shown to have associations with poorer health outcomes, independent of individual markers of disadvantage [29]. Specifically, disadvantaged areas were defined as those suburbs in the bottom tertile of the Victorian socioeconomic index for areas (SEIFA) distribution. This index considers area-level income, education and employment. Rural areas were defined as an area outside metropolitan Melbourne and outside a 25km radius of six rural cities in Victoria. Using the Victorian

electoral role (registration compulsory for Australian citizens) 150 women (aged 18-45 years) living in each suburb (total n=11,490) were randomly selected and posted an invitation to participate. Of the 4,934 women who returned completed surveys, 1457 had a child aged 5-12 years and 771 consented for their child to participate (response rate 53%). As part of the READI study, women self-reported their age, height and weight, highest level of education attained, employment status, marital status, and country of birth.

For the present study, purposive criterion sampling was used to select participants. Children aged 8-12 years from the READI baseline cohort (2008) who were considered resilient on measures of body weight, diet and physical activity were sampled. The following criteria were used to determine 'resilience' (n=67 children): in the healthy weight range (using body mass index (BMI) for age percentiles); regular consumers of fruits ( $\geq 1$  serves p/day) and vegetables ( $\geq 2$  serves p/day); and relatively physically active (ranked top 50% for participation in moderate- to vigorous-intensity physical activity measured using objective accelerometry physical activity measures), compared to the rest of the sample. Further analysis of the objective accelerometry data revealed that these children spent a significantly lower proportion of their day sedentary (38%) compared with the other children in the READI cohort (43%;  $p=0.04$ , data not shown).

Mothers of the 67 identified children were sent a letter in July 2009 explaining the study and inviting them and their children to participate in individual one-on-one interviews. Follow-up phone calls were made by the field manager to discuss the study and their potential involvement. Twelve mothers did not reply, eight actively refused participation, six had moved house and three withdrew post-recruitment due to work commitments. The final sample consisted of 38 mother-child pairs (response rate 57%). Mothers' own perceptions of

the factors contributing to their children's resilience have been described elsewhere [22, 30].

The present paper reports on children's perceptions of factors associated with their engagement in physical activity and low screen time.

### *Materials*

Using a social ecological framework [17], a semi-structured interview schedule was developed. The interview aimed to investigate the individual (e.g. child's preference), social (e.g. presence of friends to play with) and physical environmental (e.g. availability and access to sporting and recreational facilities in the neighbourhood) influences on the child's behaviour. Previous research [21, 31] and pilot interviews with six children were used to help develop the interview schedule. During the pilot interviews the children suggested that visual aids (e.g. computer slides showing different examples of physical activities, screen-based behaviours and settings) would help children to think about and comment on these behaviours. Therefore a selection of slides showing various activities (e.g. walking and riding to school, playing individual and team sports, and playing in the street, park and yard) were included as part of the interviews. During the interview, children were asked to respond to questions and comments such as: 'Why do you go to the park and what makes you want to go there?'; 'What do your parents do to help you to be more active?'; 'What kinds of activities do you do as a family?'; 'Why do you play team sports?'; and 'We would like you to talk about other things you do in your free time like watching TV and playing on the computer.'

### *Procedures*

The interviews were conducted at each participant's home between July and October 2009 by two trained female staff (aged 25-30 years). Each interview lasted approximately 25 minutes and with participant's permission, was recorded using an electronic Dictaphone, with

additional hand written notes made where required. The interviews commenced with the research staff introducing themselves, and reminding the children of when they previously wore an accelerometer as part of the READI study. The researchers explained that the findings from the accelerometer suggested they were relatively more physically active and less sedentary compared with other children in the READI cohort and that we were interested in finding out what they thought may be helping them to be more active and spend less time in screen time. The children were asked to answer as honestly as possible and were provided with a \$10 voucher as compensation for their time. Prompts were employed where necessary to clarify questions or encourage more detailed responses.

Interviews were transcribed verbatim and then analysed using NVivo version 9 qualitative software program (QSR International 2007). Analyses of data were based on an examination of participant's responses during the interview. The first author read all transcripts in full repeatedly to get a sense of the whole (immersion in data), then re-read assigning key codes based on recurring concepts to develop a detailed hierarchical numerical coding scheme [32]. The codes were entered as free-nodes (labels that describe themes) into the NVivo database and inductive thematic analysis was used to develop and interpret the themes [33]. To increase the validity and interpretation of the data, the second author reviewed and coded each interview transcript to check for inter-coder agreement. The software package was used to facilitate analyses of data and identification of themes and relevant quotes. Responses based on the main themes to emerge from the interviews are described, with illustrative quotes drawn as examples from the raw data.

## **Results**

The sociodemographic characteristics of the children and their mothers are shown in Table I. On average, children were aged 9.4 years (SD 1.56; 52.6% male) and had a BMI of 17.0kg/m<sup>2</sup> (SD 1.83). Twenty-one percent of families lived in an urban area and 79% in a rural location. The main themes drawn from the interviews relating to children's physical activity and screen time are listed in Table II. The quotes provided in the following section are verbatim responses from the child and for descriptive purposes the child's sex and age are included in parentheses.

### *Physical activity*

#### **Theme 1: Parental support and encouragement**

Children repeatedly spoke about how their parents motivated and encouraged them to be physically active. Children commented that their parents spoke positively about physical activity, were active role models, were active with their child, they supported their child's participation in organised activity, and encouraged them to play outside. This was portrayed by the children as being very important and positively influenced their participation in physical activity.

Interviewer: What do your parents do to help you be more active?

Respondent: Always like motivating me and like being positive about it and like not negative. If I want to go to the basketball stadium they won't say oh, that's a long way away and stuff (girl aged 9 years).

Well, my mum takes me up to the tennis club and helps me have a hit of tennis (girl aged 9 years).

Interviewer: What do your parents do to help you be more active? So, you've mentioned that you go for walks together you know as a family. Do they do anything else to encourage you to be physically active?

Respondent: Sometimes my dad goes, 'Oh come on we'll go for a walk' or 'Come on we'll go for a scooter ride'. And me and my sister have scooters and my dad... normally one of us would go with my dad and we'd scoot around the block and we'd try a race (girl aged 10 years).

Interviewer: Do your parents think it's important to do physical activity?

Respondent: Yes. If I'm just sitting indoors, they [parents] turn the TV off and tell me to go outside (boy aged 8 years).

Children also spoke about how their parents encouraged them to participate in organised sport and were prepared to drive them to training and games and pay associated costs.

Interviewer: Do you think that they [parents] think it's important for you to do physical activities?

Respondent: Yeah definitely. Any sport I want to try they'll sign up for it in a club or anything. Yeah always and they'll take me to any sport (boy aged 11 years).

Interviewer: Do they [parents] think that it's important to do physical activity?

Respondent: Yes they do. That's why they're trying to get me into karate.

They help me get into football teams and find out where games are and all of that (boy aged 9 years).

Children frequently mentioned that their parents showed support by being involved in their sports as coaches or assisted with the running of the competitions in some way.

Interviewer: Do your parents talk to you about the type of activities that you do? Do they talk to you about tennis and footy?

Respondent: Yeah 'cause she [mum] coaches sometimes; she's like the coach of the team and Dad helps out in footy (boy aged 9 years).

## **Theme 2: Physical environment**

The physical environment emerged as a strong theme throughout the interviews with both home and neighbourhood environments being perceived as having a significant impact on how active children were. When asked about their active play children often spoke about playing at parks within their neighbourhood. The main factor that determined which park they visited was the parks' proximity to their home, with the closer parks visited most often. The facilities at the park were also an important reason for children to visit particular parks. Children discussed the facilities available at the park and which ones they enjoyed using, and this often dictated which parks they visited and how active they were whilst at the park.

Interviewer: Do you play at a park?

Respondent: There's one that we go to, sometimes we scooter there

Interviewer: Why do you scooter to that park?

Respondent: It's really close. It's just really easy to go there [park] and they've got this really fun kind of web thing and you climb up to the top (girl aged 10 years).

When asked about where they were active, many children mentioned that they lived in a cul-de-sac or court and that they enjoyed playing in their street or in their friends cul-de-sac.

Interviewer: Do you like to play on the street?

Respondent: Ahhh, I love playing on the street. I especially like going up the court and going down. That's fun (girl aged 8 years).

Interviewer: What kind of street do you live on? Is it one you can play on the road?

Respondent: No, but I've got a friend and she's got a kind of blocked off street. They have this billy cart and we always go on it (girl aged 10 years).

Among the children who did not live in a cul-de-sac or court, a significant factor influencing play in their street was traffic flow. Children who lived in a quiet street or one with minimal traffic also spoke about playing in their street.

Interviewer: What kind of street do you live on? Is it easy to play out there?

Respondent: It's easy to play in the street 'cause there's not many cars that come past. Instead of just sitting on my bum watching TV I go outside and ride my bike in the street (boy aged 9 years).

Throughout the interviews there was a strong suggestion that the home environment played an important role in assisting children to be active. Children spoke about the size of their yard enabling them to run around and be active as well as accommodate equipment that they enjoyed using. In particular, many children reported using a trampoline or playing with the dog when being active in their yard.

Interviewer: Why do you play in the yard?

Respondent: We've got this big trampoline that I like to jump on... I normally jump on the tramp and play with my dog (boy aged 7 years).

We put up goalposts in the back yard and we've got lots of space so that helps (boy aged 9 years).

A large number of children who were interviewed participated in organised sport. Children spoke about the sports courts and ovals within their neighbourhood that they used and it appeared that the provision of adequate facilities nearby home assisted with their ability to be involved with a variety of sports throughout the year.

Interviewer: You play football? So is it easy to get to?

Respondent: Yes. So it's really good.

Interviewer: Are there many places to do sports in this area?

Respondent: Yes, we have netball courts and near the river down there we have the cricket oval and the footy oval (boy aged 9 years).

Respondent: I like dance because I can just well run around and do weird things and at the end of the year we put on a concert and it's just really cool to hear people clapping for you.

Interviewer: Is it easy to get to your dancing and netball?

Respondent: Yeah. We've got the one oval and we've got two netball courts at the far end of town and we have the community centre and skate park (girl aged 10 years).

### **Theme 3: Friends**

The social environment also emerged as an important determinant of children being active. Children frequently spoke about how they went to the park or played in the street with friends and they would be active together.

Interviewer: So why do you play at the park?

Respondent: I go to the park so I can play with my friends and so I can see my friends and have a 'muck around' and stay fit (boy aged 9 years).

Sometimes I meet up with my next door neighbour and have a kick of the footy after school (boy aged 13 years).

In addition, when asked why they played organised sport, many children responded that it was the social aspect of the game that encouraged their participation. Children were influenced by their friend's choice of sport and this often determined why children chose to participate in particular sports.

Interviewer: Why did you do it [play football]?

Respondent: So I could still keep my friendships with other kids and so I'd stay fit and probably to get some trophies (boy aged 9 years).

Interviewer: So you say you play footy and tennis?

Respondent: Yeah

Interviewer: So why do you play those sports?

Respondent: Well, footy I just really like footy. It's the same with tennis. Lots of my friends play footy and tennis as well.

Interviewer: Do many kids in your area play sport?

Respondent: At school everyone plays sport pretty much I think there's only like two or three in my grade that don't play Saturday sports (boy aged 11 years).

### *Screen time*

#### **Theme 1: Individual factors**

The most frequently mentioned factor that arose when discussing how much time children spent watching TV and playing electronic-games (e-games) was children's individual preference to be physically active. Children spoke about how they would prefer to spend time playing outside or playing sport and this was the main factor that influenced the amount of time they spent engaged in screen time.

Interviewer: We're now going to talk to you about the things you do in your free time like watching the TV and playing the computer. Do you like doing these things?

Respondent: Sometimes I feel like I don't really want to be a slob and sit on the couch I just get dressed and just go outside and do something (girl aged 10 years).

Interviewer: What do you think stops you doing these things [screen time] more often?

Respondent: Sport I guess, and going to the skate park. I'd rather do that than anything (boy aged 9 years)

Interviewer: And what stops you from doing them [watch TV, play e-games] more often?

Respondent: Because I'm usually outside.

Interviewer: Do you prefer to be outside?

Respondent: Yep (boy aged 9 years).

Children's knowledge of the health risks associated with sedentary behaviour also emerged as an influence on screen time. Throughout the interviews children spoke about how they were aware that spending large amounts of time in screen-based behaviours was not recommended and was associated with negative health outcomes. The children stated that they limited the amount of time spent watching TV and playing e-games as they knew it was unhealthy.

Interviewer: Why wouldn't you sit down and play it all day long?

Respondent: It's not healthy (girl aged 7 years).

## **Theme 2: Physical home environment supportive of physical activity**

When discussing how much time they spent watching TV children spoke about how they would chose to interrupt their screen time by going outside and playing, often with siblings or friends. Having a home environment that was supportive of physical activity such as having a yard with space to play and available facilities/play equipment to be active emerged throughout the interviews as a factor that assisted children to play outside and this seemed to help reduce screen time.

Instead of watching TV like I always ask my brothers if they want to go and jump on the trampoline with me (boy aged 7 years).

### **Theme 3: Parental rules limiting screen time**

Finally, a small number of children spoke about how their parents set rules that determined how much time and when they were able to watch TV and play e-games. The children stated that the rules often included limitations on time spent in screen time on weekdays, and rules governing total screen time. These rules reduced the time children were able to spend engaged in these behaviours.

Interviewer: What stops you playing the X-box more often?

Respondent: Probably mum and dad just saying go outside and that (boy aged 9 years).

My mum says I have to stop [watching TV and playing e-games] to have dinner, and she makes me do homework, do jobs and go places (girl aged 9 years).

## **Discussion**

Focussing efforts on modifiable factors to both increase physical activity and decrease sedentary behaviour in high risk groups is critical for improving health and reducing health inequalities. This study offers important insights into factors that may be important to focus on in future studies targeting children living in low SES neighbourhoods. The findings from the interviews with the children indicated that, in keeping with the social ecological framework, factors in all three domains (individual social and physical) were important determinants of these behaviours.

The three main factors that were assisting children to be physically active included parental support and encouragement, the physical environment at home and within the broader neighbourhood, and involvement and presence of friends, suggesting that both the physical and social support and infrastructure are important. The social environment including parental social support in the form of encouragement for being physically active as well as modelling active behaviours, direct support such as transport to and from activities, sourcing physical activity opportunities (e.g. finding teams) and assisting with coaching emerged as having a significant influence on children's activity. Such factors have previously been found to be associated with children's physical activity in numerous studies [20, 24, 25, 34, 35]. For example, a cross-sectional study by McMinn et al among 9-10 year old children found family social support to be positively associated with children's outside school objectively measured physical activity on weekdays and weekends [24] and in a six year longitudinal study of more than 700 children aged 10 years at baseline, parental encouragement and positive attitude towards children's physical activity at ten years of age was shown to be associated with higher levels of physical activity at 16 years [36]. The current study; however, adds to the literature by demonstrating the importance of these factors for children being able to engage in regular physical activity despite challenging socioeconomic circumstances.

Consistent with existing quantitative literature showing that the built environment is important for encouraging physical activity among children and youth [21, 27, 37], these findings have implications as it appears that there are tangible actions that other socioeconomically disadvantaged parents could take (such as providing equipment at home for their children to play with outdoors) to encourage their children to be more active. Previous research has shown that children from lower income households have less access to play equipment such as bikes and jump ropes compared with children in higher income households [28], so it may be that the children in the current study were more likely to be 'resilient' to inactivity as they had access to active play equipment at home.

The key factors that emerged that were important for reducing screen time were individual preferences for physical activity and knowledge regarding the health risks associated with sedentary behaviours, the physical environment at home, and parental rules limiting screen time. Children in the current study cited a preference for being active; particularly for engaging in outdoor activities rather than spending extended time in screen-based pursuits. Children also mentioned the health benefits of physical activity and the negative health effects of sedentary behaviours as one factor that helped them to limit their screen time. Although the finding that children are aware of the health consequences of sedentary behaviour is encouraging and suggests that some education messages are reaching their targets, it is possible that this is somewhat of a socially desirable response, rather than a true influence on their behaviour. Nonetheless, individual-level factors relating to screen time appear to play an important role in helping children in the current study to limit their screen time. These individual-level factors may be particularly important for children living in disadvantaged neighbourhoods as previous studies have shown that children in lower SES households were more likely to have access to TV's or DVD players in their bedrooms and

their parents were more likely to watch TV with them more often than those from higher income families [28]. Research shows that children watch more TV when their parents watch TV with them [11].

In keeping with the finding for physical activity, the physical environment at home emerged as a key theme related to screen time with children citing the availability of active alternatives at home as a factor that helped to limit the time they spent in screen behaviours. Access to physical activity equipment in the home has previously reported as a correlate of sedentary time among pre-school children in the US [38] and by the mothers of the children in the current study [22], and lower SES home environments have been shown to have fewer opportunities for physical activity [28].

The importance of the social environment for helping to limit screen time is further supported by the emergence of a final key theme, relating to parental rules. The existence of rules limiting time spent in screen behaviours was cited by children in the current study as an important factor limiting screen time and has been demonstrated in several previous studies examining children's sedentary behaviour [11, 26, 39] as well as by mothers' of these children [22]. For example permissive parenting has been shown to be associated with high levels of TV viewing among 10-11 year old children with children with parents who put few restrictions on their children's TV viewing being three times as likely to watch >4hrs (vs 2 hrs) of TV per day compared with children from high restriction families [26].

It is interesting that children frequently mentioned that factors in the physical and social environments were helping them to be active, but individual preferences were discussed more frequently in relation to reducing screen time. These findings suggest that efforts to promote

physical activity amongst disadvantaged children may benefit from focussing on the home and neighbourhood environment and developing parental support for their children to be active whereas strategies promoting reduced screen time should be more focused on the child and their attitudes towards physical activity and knowledge regarding the health risks associated with high levels of screen time. Nonetheless, it is likely that factors from all three domains may have combined or interactive effects on influencing children's participation in both active and sedentary pursuits. For example, parental and environmental support for physical activity may assist in shaping children's preferences away from more sedentary pursuits.

These findings have important implications for programs aiming to increase children's physical activity and limit screen time. It is important that parents recognise the significance that encouragement for being physically active, as well as their own activity, and the provision of opportunities to be active at home (e.g. the provision of equipment), has on children's perceptions about physical activity and screen time. In addition, there is a need for urban/municipal planning to ensure that the local neighbourhood is providing facilities such as appealing parks and playgrounds and sporting facilities that make it easy for children to engage in active play and participate in team sports or organised activity.

Qualitative research examining factors important for limiting screen time is relatively scarce; therefore the current study adds some important contextual information from which insights in to what factors could be important when trying to increase physical activity and limit screen time among children. Such insights may be difficult to detect using traditional quantitative methodology. The combined importance of the physical and social environment

for promoting physical activity and possibly also for reducing screen time is one such finding.

The findings from this study are limited by the possibility that children are not aware of, or able to comprehensively report, the influences on their behaviours; however, the views of mothers of these children have been reported previously [22]. It is also acknowledged that the children were aware of the objective of the study and it is possible that they provided socially desirable responses. In addition, the study population was confined to urban and rural areas of Victoria, Australia and it is not possible for these results to be generalized to families living in other areas. Although all families in this study were living in disadvantaged areas, it is important to acknowledge that not all families were experiencing disadvantage at the family level. The methodology used in this study was limited to a semi-structured interview format with the interviewer asking questions and prompts and a slide show of various activities and settings. It is acknowledged that the inclusion of other exploratory methodologies may have enhanced the data that was gathered and future studies may wish to consider the use, for example, of behavioural mapping techniques [40] or photography methodologies [41] to explore these issues further. Finally, we are unaware how the responses obtained from the children in this study compare with those children who are not resilient to the behaviours examined; however, this was not intended to be a comparative study and instead has generated hypotheses about factors that might be further explored in quantitative studies of those who are and are not resilient. Despite these limitations, this study was unique in its focus on resilience. It is important to obtain insights from these ‘resilient’ children regarding how they are able to demonstrate positive health behaviours while residing in environments shown to negatively influence these health behaviours.

This study highlights the indispensable role that parents play in the promotion of physical activity among children, particularly among children living in disadvantage neighbourhoods. Health promotion programs may need to help raise parents' awareness of the importance of their own behaviour and other forms of social support that can promote children's physical activity. Future studies may investigate possible strategies to assist with the modification of parental physical activity habits and exploring ways for parents to provide greater social support and a physical home environment that provides greater opportunities for physical activity. In addition, in order to encourage parents to implement consistent strategies to restrict their child's TV viewing, future studies should investigate approaches for most effectively delivering these messages. This may include greater promotion of screen time recommendations and education regarding the health risks and adverse behavioural outcomes of prolonged sedentary behaviour for both children and parents.

## **Conclusion**

This study highlights the importance of focussing specifically on resilient children to better understand ways to prevent low levels of physical activity and high screen time. The presence of parental encouragement for physical activity, rules limiting screen time, a home and neighbourhood environment supportive of active alternatives, friends to play with, and individual preferences for active pursuits appeared to be key factors in helping children in the current study to be resilient to low levels of physical activity and high screen time.

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**Table I Sociodemographic characteristics of children and their mothers**

	Mean (SD) or %	Range
<b>Child</b>		
Mean age (years)	9.4 (1.56)	7.1-12.9
Gender		
Male	52.6%	
Female	47.4%	
Mean BMI	17.0 (1.83)	14.3-21.7
<b>Mother</b>		
Mean age (years)	38.6 (4.6)	28.8-46.1
Education		
Low: Did not complete High School	21.1%	
Medium: Completed High School/trade/certificate/diploma	44.7%	
High: Completed tertiary education	34.2%	
Employment		
Full time	31.6%	
Part time	21.1%	
Not currently employed	47.4%	
Marital status		
Single	0	
Married/DeFacto	94.7%	
Separated/divorced/widowed	5.3%	
Country of birth		
Australia	92.1%	
Other	7.9%	
Region		
Urban	21%	
Rural	79%	
Mean BMI	26.2 (6.29)	17.3-43.9

**Table II**      **Main themes emerging from the interviews with children**

<b>Main theme</b>	<b>Description/examples</b>
<b>Physical activity themes</b>	
Parental support and encouragement	Parental encouragement for their children to be physically active, participate in organised sports and play outside.
Physical environment at home and in the neighbourhood	Space and equipment within the home environment, availability of good quality parks nearby home, living in a cul-de-sac or street with low traffic flow, and neighbourhood facilities for organised sport.
Friends	Influence of friends on children's physical activity in the street, local parks and within organised sport.
<b>Screen time themes</b>	
Individual factors	Individuals' choice to be active outdoors and knowledge of health risks associated with screen time.
Physical environment at home	Availability of space and equipment within the home environment where children can be active.
Parental rules	Parental rules restricting time spent in screen time.