

Screen-related sedentary behaviours: Children's and parents' attitudes, motivations, and practices

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Abstract

Objective—To investigate school-aged children's and parents' attitudes, social influences, and intentions toward excessive screen-related sedentary behaviour (S-RSB).

Design—A cross-sectional study using a survey methodology.

Setting—Elementary schools in London, Ontario, Canada.

Participants—All grades five and six students, their parents and teachers in the participating schools were invited to voluntarily participate; 508 student-parent pairs completed the surveys.

Main Outcome Measure—Children's screen-related behaviours.

Analysis—Data were analyzed using the Independent Student *t*-test to compare differences of continuous variables and the Chi-Square test to test for differences of categorical variables.

Results—Children spent 3.3 ± 0.15 (standard error) hours per day engaged in screen-related activities. Entertainment, spending time with family, and boredom were cited as the top three reasons for television viewing and video game playing. Compared to “low-screen-users” (i.e. < 2hours/day), “high-screen-users” (i.e. 2hours/day) held less negative attitudes toward excessive S-RSB and perceived loosened parental rules on screen use. Parents of “high-screen-users” held less negative attitudes towards children's S-RSB, had fewer rules about their children's screen use, and were more likely to be sedentary themselves.

Conclusions and Implications—Intervention strategies aimed at reducing S-RSB should involve both parents and children and should focus on fostering behavioural changes and promoting parental role-modeling.

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Keywords

sedentary behaviour; school-aged children; attitudes; social influence; intentions

INTRODUCTION

Childhood obesity is a growing public health problem in Canada, and nearly one out of three Canadian children are either overweight or obese.¹⁻⁴ Sedentary behaviour is one of the major factors contributing to childhood obesity; extensive television viewing and computer use are consistently associated with overweight and obesity in North American children.⁵⁻¹⁰ These findings may be associated with decreased energy expenditure and the increased energy intake either from overeating due to a delay in normal mealtime satiation¹¹ or snacking that occurs during inactive times such as TV viewing.¹²⁻¹⁵ In addition, children may be more likely to choose unhealthy foods as a result of exposure to TV food commercials.¹⁶

Reducing screen-related sedentary behaviour (S-RSB) is essential to prevent and treat childhood obesity.¹⁷⁻¹⁹ Several health professional organizations, including the Canadian Pediatric Society (CPS) and the American Academy of Pediatrics (AAP) recommend that children spend no more than two hours per day in screen-related sedentary activities.^{20,21}

There remains a paucity of research which would allow us to better understand the determinants of sedentary behaviours, when compared to recent research on the determinants of physical activity.²² To this end, it has been recently recommended that initiatives be developed that recognize the determinants of sedentary pursuits may be different than the determinants of physical activity.²² As a result, the development of interventions that reduce sedentary behaviours, rather than just increase physical activity was advised. Additional research to understand what makes sedentary activities more appealing than active pursuits is crucial.²² To develop effective intervention strategies both parental roles in regulating children's screen-related behaviour as well as children's beliefs, attitudes, and motivation toward screen use must be examined.

Guided by the Social-Ecological Model,²³ a comprehensive study was conducted in London, Ontario, Canada in 2005 to investigate school-aged children's screen-related behaviours and potential contributing factors at an intrapersonal, interpersonal, institutional, micro- and macro-environmental level. The overall predictability of these multilevel factors on children's S-RSBs are reported elsewhere.²⁴ The current paper presents the descriptive aspects of the intrapersonal and interpersonal level factors in relation to children's S-RSBs. The measurements of intrapersonal and interpersonal factors were also based partly on the Attitude - Social Influence - Self-Efficacy Model (ASE), and it includes children's and parents' attitudes, social influences, and intentions regarding screen-related activity.²⁵

METHODS

This cross-sectional study targeted grade five and six students, their parents, and their classroom teachers. It was conducted in London, Ontario, Canada in 2005. The University of

Western Ontario and Brescia University College Research Ethics Boards granted approval for use of human subjects. Prior to data collection, informed consent was obtained from both the classroom teachers and parents of the children who took part in the study.

Study Subjects

A stratified-cluster sampling strategy was employed to obtain a random sample of grade five and six students from Public and Catholic School Boards. All elementary schools in the two school boards were stratified into three socio-economic categories according to each school's location in socio-economic diverse census tracts. Twenty-one schools were randomly and evenly selected from the three socio-economic status stratas and were invited to participate. Of the 21 schools selected, 14 schools (67%) agreed to participate.

All grade five and six classes from the 14 participating schools were targeted. Students, parents, and teachers were invited to participate in the study on a voluntary basis. An information letter detailing the study's purpose and procedures was sent home with the children through classroom teachers.

Survey Tools

The questionnaire included the following items to assess key ASE: constructs of attitude, social influence, intention and behavior (i.e. screen time); self-efficacy was not measured. Children's attitudes were assessed by asking how they felt about excessive screen use, and what motivates them to use screens. Social influences were measured by asking their perceptions about parental expectations and controls over screen use. Intention was measured by asking "If I had a choice, I would spend more time taking part in activities (and were given the following choices) physical activity, watching TV, playing games, and using a computer".

Parents' attitudes were measured by asking their perspective on "children spending several hours a day watching TV/playing video games/using a computer" by using a five-point Likert scale with anchor points, such as, 'healthy -> unhealthy'; 'useful -> of no use'; 'beneficial ->harmful', and 'of no concern -> of concern'. Parents' awareness towards the health risks associated with physical inactivity was assessed by their opinion on two statements from Canada's Physical Activity Guide: "Physical inactivity is as dangerous to health as smoking" and "People who are inactive face a greater risk of premature death, heart disease, obesity, ..." with answer options that ranged from "strongly agree to strongly disagree". Parental rules governing children's screen activities were determined by asking, for example, if they use screens to 'babysit' their children, with response options ranging from "never to always". Parents' own preferences regarding physical activity, TV, videos, or movies were measured using a five-point Likert scale with options ranging from "like to dislike". Family influences were measured by asking whether the family eats dinner in front of TV, and whether parents spend leisure time with children in physical activities and screen activities.

The questionnaires were piloted with 15 pairs of grade five and six children and their parents for readability and clarity. The questionnaires were subsequently modified regarding layout, but not content, to improve clarity.

Children's screen-related behaviour was determined using a brief self-administered questionnaire, *The Child Sedentary Activity Questionnaire (CSAQ)* which was adapted from a tool previously reported by Gortmaker et al.,²⁶ to which video games were subsequently added to reflect recent technological changes. This tool was designed to measure children's recall of hours spent each day of the previous week watching television or videos and playing computer and video games outside of school hours. The modified CSAQ tool was subsequently validated by He et al.²⁷ and was shown to have an acceptable validity [Intra-class Correlation Coefficients (ICC) ranged from 0.5 to 0.8] when compared with the Activity Diary Method, and good reliability during two consecutive weeks (ICC of 0.98).²⁷ Children's school screen time was estimated by asking grade five and six classroom teachers about the number of hours their students spent watching television and videos or using computers in the classroom each day. Children's total screen time was the combined amount of screen-related activities during in-school and out-of-school hours.

Data Collection

Children completed the surveys in their classrooms during regular school hours under the supervision of a trained research assistant. Parents were sent surveys to complete at home and returned to classroom teachers. A trained research assistant conducted in-person interviews with each classroom teacher to obtain information about each child's screen time in school during the previous week.

Statistical Analyses

All data was entered into SPSS version 14.0 (SPSS Inc., Chicago, IL). Children's total screen time was defined as the total daily amount of time throughout the week that children spent watching television or videos, playing video games, and using the computer. To compare potential differences in cognition and practices between low and high screen users, children were categorized into two groups: "low-screen users" who met CPS guideline and "high-screen users" who exceeded CPS guidelines.²⁰

The study employed a stratified-cluster sampling strategy. To account for the effects of the sampling design, the SPSS Complex Samples Procedure was used for all descriptive and comparative analyses to allow for the selection of a sample according to a complex design and to incorporate design specifications into data analysis. The Independent Student *t*-test was used to compare differences of continuing variables by gender. Where appropriate, a Chi-square test was used to assess differences between the categorical variables gender and low and high screen users. The level of significance for all statistical tests was set at $p < 0.05$. During data analysis, subjects with missing values were excluded from statistical procedures.

RESULTS

Within the participating schools, 955 eligible child-parent pairs were identified, and 516 (54%) children and 590 (62%) parents completed the questionnaires. Complete data sets were obtained from 515 of the child-parent pairs. Seven children's estimated screen times were considered questionable (>12 hrs/day) and they were excluded from all analyses. The

final sample consisted of 508 child-parent pairs; 403 out of 508 (79.3%) of the parent surveys were completed by mothers.

The mean age of the children was 10.7 ± 0.63 years. Table 1 describes other characteristics of study subjects. Children's gender and grade level were equally represented. Twenty-three percent of children were non-Caucasian. Three quarters of the fathers and half of the mothers worked full-time, and 18% of the children lived in a single-parent household. Approximately two-thirds of parents reported some post secondary education. Approximately two thirds of parents had some post secondary education and the sample evenly represented socio-economic status strata in term of family income with 36.1%, 33% and 31% in the upper-, middle-, and low-tertile, respectively.

Over a one-week period, children spent an average of 3.3 ± 0.15 hours per day engaged in screen-related activities. Significantly more time was spent in these pursuits on weekends, 3.6 ± 0.18 hours, compared to weekdays, 3.1 ± 0.15 ($t = 6.5$, $p < 0.01$). Of the 3.1 hours of screen time during weekdays, children spent approximately 0.5 hours in school watching television or using a computer. Boys spent significantly more time on screen-related activities (3.6 hours/day) than girls (3.1 hours/day) and most of the difference was attributed to playing video games (0.9 ± 1.1 vs 0.5 ± 0.7 hours/day $p < 0.01$) (Figure 1). Approximately three out of four children (74%) exceeded the CPS recommendation of two hours of media use per day.

Children's attitudes, social influences and intention regarding screen-viewing behaviours are presented in Table 2. More than 95% of children recognized the importance of physical activity, and more than half indicated that spending several hours playing video games and using the computer for entertainment was "bad" or "unhealthy". Girls appeared to have a more negative attitude toward spending several hours watching TV on school nights or using computers for entertainment, and they had a more positive attitude toward spending time taking part in physical activity ($p < 0.05$). Girls reported more favorable views on video game screen time than boys ($p < 0.05$). In addition, a significantly smaller proportion of high-screen users held negative attitudes about screen use ($p < 0.01$). More than two-thirds of children indicated that they would elect to spend more time engaged in physical activities if they were "given the choice"; however, fewer boys than girls ($p < 0.01$) and fewer high screen users than low screen users ($p < 0.01$) chose to do so.

As presented in Table 2 for the vast majority of children, the main motivation for television viewing and video game playing was entertainment. Over half of the children also indicated that they played video games because of boredom. Children's top four reasons for using the computer, in rank order, were for homework assignments, playing games, instant messaging, and e-mailing friends. Both girls and boys used the computer primarily for homework assignments, although significantly more girls did so than boys.

Approximately half of the children indicated their parents placed limits on TV viewing and video game playing during the week, yet only about one-third of children indicated they had limits on weekends. More than half of children indicated that they had limits on non-homework computer use on both weeknights and on weekends. Significantly fewer high-

screen users had parental limits on TV, video games, or the computer for non-homework use on weekends.

Table 3 displays parents' knowledge, attitudes, and practices regarding their own and their children's screen-viewing behaviours. The vast majority of parents knew that screen-related inactivity increases the risk of disease and is as dangerous as smoking. Most parents perceived that 'children spending several hours per day' either watching television or using the computer to be harmful and of concern; however, significantly fewer parents of high-screen users were concerned about their children's excessive television viewing. The vast majority (80%) of parents felt that it was necessary to control their children's television viewing, and 64% of parents indicated they never let their child decide how much time to spend watching television. Eighty-seven percent of parents of low-screen users, compared to 77% of high-screen users indicated they enjoyed participating in outdoor activities during their leisure time ($p<0.05$). One-third of parents indicated that they liked to spend leisure time watching television or videos. In terms of parents' physical activity, one-third indicated that they often or always engage in physical activity with their children; however, another one-third participated in physical activity less than three times per week. Approximately 40% of parents indicated that their families sometimes or always ate meals while watching television. Significantly more parents of high-screen users indicated that they ate dinner in front of the television and spent more leisure time watching television or videos with their children ($p<0.01$). About one in four parents indicated that they engaged in screen-viewing for more than two hours each day.

DISCUSSION

This study describes attitudes, social influences, intention, and screen-viewing behaviour of school-aged children. The findings from this study can be used to create strategies for reducing S-RSBs that involve both parents and their children.

S-RSBs were evident in this group of children. The majority of screen-related activities occurred while children were not in school. Overall, three out of four children exceeded the recommended CPS and AAP maximum total media time of two hours per day.^{20,21} This study highlights the need for creative strategies to reduce children's S-RSB, especially approaches that target children's leisure time.

The current study is the first of its kind to quantitatively document children's attitudes, social influences, and intentions regarding screen-related behaviours in a sample of Canadian children. Despite the fact that many subjects were sedentary, a vast majority of them were aware of the negative effects that several hours of S-RSB can have on health. Although the primary purpose of the current study was not to test the goodness of fit of the ASE Model,²⁵ the results showed that attitude and intention do not necessary lead to the behavioral outcome. Recently, a qualitative study in Australia also revealed that school-aged children easily identified physical active pursuits as healthy and sedentary activities as unhealthy in focus group discussions.²⁸ Gender differences in relation to S-RSB were observed in the current study. Girls tended to have a more negative attitude toward excessive TV viewing and computer use for entertainment, they spent less time participating in S-

RSBs, and they also spent significantly less time playing video games. A recent Canadian study also reported a gender difference in sedentary behaviour; however, the differences were attributed to both television and computer use.²⁹ It is noteworthy that boys spent more time than girls playing video games, despite holding a more negative attitude towards them; this indicates there is an inconsistency between attitude and behaviour. Furthermore, subjects in the current study, particularly girls, indicated that, if they had a choice, they would spend more time taking part in physical activity. Presently, it is unclear whether this is due to their knowledge and awareness of the benefits of physical activity or if felt compelled to choose a “right” answer or if it is due the lack of available “choices”. The inconsistency between children’s attitudes and behaviours may be explained, in part, by a behavioural framework developed by Fazio.³⁰ According to Fazio,³⁰ there are two attitude modes that guide behaviour: “explicit attitudes” and “implicit attitudes”. Explicit attitudes guide one’s behaviour by a deliberate and conscious analysis of the costs and the benefits of that behaviour, while implicit attitudes guide behaviours in a more spontaneous and affective manner, without actively considering the pros and the cons. For example, Craeynest et al.³¹ found that both normal weight and obese children have a negative explicit attitude towards unhealthy food and sedentary activities, but obese children had a more positive implicit attitude toward foods in general than their normal weight counterparts. Explicit attitudes are usually assessed by methods in which deliberation is possible, such as questionnaires; implicit attitudes are measured indirectly by using reaction time paradigms.³² Children’s attitudes in the current study were explicitly assessed by questionnaires which reflect their conscious analysis of the costs and benefits of sedentary behaviours. In fact, children may be more likely to listen to their “implicit need” than “explicit deliberation” while making choices. However, their explicit negative attitude toward sedentary activities may not necessarily lead to an active lifestyle. Future research is needed to explore children’s implicit attitudes toward sedentary activities and understand ways to motivate explicit attitude decision making.

Children cited entertainment and boredom as the two main reasons for watching TV or playing video games, and they named their four top motives for computer use as completing homework assignments, playing games, instant messaging, and e-mailing friends. Our findings are in partial agreement with a qualitative study from the U.S. involving children aged seven to ten years that showed entertainment was the principal reason for TV viewing among children.³³

The present study revealed that 41% of children played video games to spend time with friends and 44% watched television to spend time with family. Approximately 50% of parents also indicated that they spent one to two hours leisure time per day with children on S-RS activities. These findings have implications for health policy planners that will develop obesity intervention programs in the future. The creation of programs outside of school time may draw students away from engaging in S-RSBs at home and may help to resolve the boredom expressed by a significant number of children.

Parents in the current study were generally well informed about the negative effects that excessive S-RSB has on their children; however, the majority of the parents and their children indicated they were sedentary. This contradiction between knowledge and

behaviour may in part be explained from the results of a recent qualitative study. An Australian study found that parents did not incorporate their knowledge and awareness about healthy lifestyles into their daily lives and attributed these inconsistencies to challenges and barriers, such as, “lifestyle demands and pressure from their children as a result of advertising and child peer pressure.”²⁸

Parents play a key role in shaping children’s screen-viewing behaviours, and as other have found,³³ behaviours developed early on can become habits later in life.³³ Shaping proper TV viewing behaviors is particularly important in early childhood, since TV viewing contributes to the greatest percentage of total screen time. In addition, TV viewing has not only been linked to decreased energy expenditure, it has also been linked to increased energy intake either from overeating due to a delay in normal mealtime satiation¹¹ or snacking,^{12–15} as well as, exposure to unhealthy food commercials.¹⁶ Recent research found that in contrast to parents of school-age children, parents of preschoolers were not concerned about screen time; however, they were concerned about the content of what their preschoolers were watching.³⁴ Parents of preschoolers were unaware of the linkage between excessive television viewing and the risk of childhood obesity. They perceived television as a useful educational and babysitting tool, and they used it as a coping strategy when handling multiple children.³⁴ One could envision that parents who allow or encourage screen-viewing in early childhood might inadvertently create habits that become ingrained. By the time parents realize the potential negative health consequences of excessive S-RSBs on their school-aged children, it might be difficult or too late to change these behaviours. These descriptive data suggest a need for longitudinal studies to further explore the temporality and causality of parents of preschooler’s cognition towards screen behaviour and their school children’s screen viewing habits to help shed further light on future intervention development or proactive approaches.

Our results indicate that there are opportunities to change attitudes toward excessive screen behaviours among children and parents, and it highlights the important role parents can play in reducing children’s S-RSBs. Although the current paper is descriptive, simple comparisons between low-screen users and high-screen users revealed linkages of cognitive and psychological factors, parental influences, and children’s screen behaviours. Despite the fact that the majority of children and parents held negative attitudes towards excessive screen use and were well informed of the harm associated with this behaviour, differences were still present between the low- and high-screen users. For instance, compared to low-screen users, significantly fewer high-screen users held negative attitudes toward excessive S-RSBs. Considerably more high-screen users watched television to spend time with friends, used a computer to play games online, and perceived a loosening of parental control over their screen usage on weekends. Consistent with findings from children, parents of high-screen users also held less negative attitudes toward excessive screen behaviours, had less concern about children’s excessive television viewing, and allowed their children to decide the amount of television they watched. In addition, significantly fewer parents of high-screen users enjoyed playing sports, and notably more of these parents spent leisure time with their children involved in S-RSBs. Additionally, more high-screen user families ate dinner in front of the television. Thus, future intervention programs should involve both parents and children to change knowledge, attitude, rules and practices toward screen use.

There are a few methodological limitations in this study. The survey tools, except the CSAQ, were not tested for reliability and validity; consequently, the confidence levels of the current findings may be compromised. The questionnaire methodology in the current study measured only explicit attitudes³² that may not necessarily be consistent with behaviour. Future research is needed to explore children's implicit attitudes toward physical and sedentary activities. Such investigations will help us better understand the 'disconnect' between cognition and behavioral outcomes. The cross-sectional nature of the study does not provide evidence for causal associations. The stratified-cluster sampling strategy that was employed may have caused a clustering effect to occur during sampling, and outcomes within clusters may be more similar to each other than outcomes in other clusters. However, statistical adjustments were made to minimize these effects.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Despite the excessive S-RSB among the study population, most children and parents recognize the importance of physical activity and are somewhat aware of the negative effects of excessive screen-viewing on health. Both parental rules and psychological-cognitive factors reported by children and their parents are associated with children's S-RSBs; consequently, intervention strategies that aim to reduce S-RSB should involve both parents and children; focus on children's leisure time; concentrate on fostering behavioural changes; promoting parental role modeling; and creating active living opportunities.

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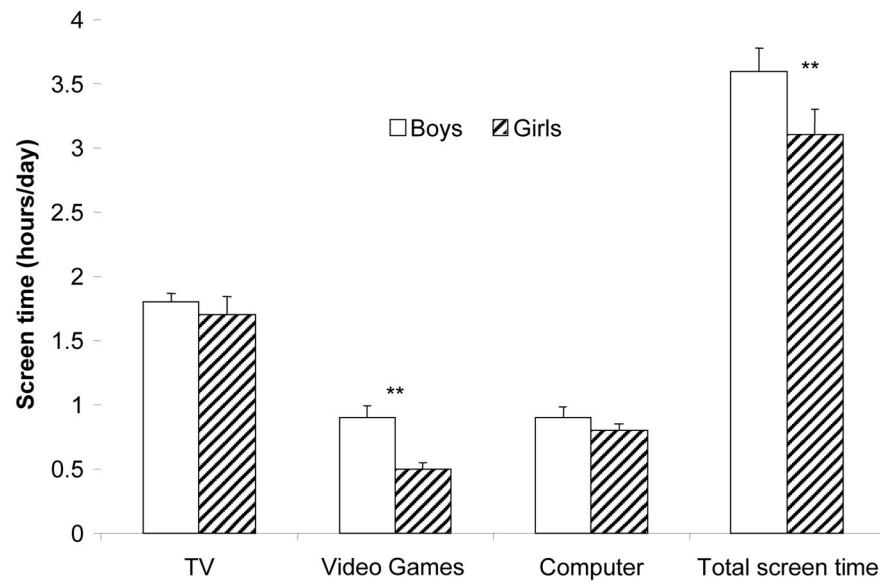
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** $p < 0.01$

Figure 1. Children's screen viewing behaviors by gender: means and standard error, gender difference by student t -test

Table 1

Subjects' characteristics (N=508).

	N (%)
Children's gender	
Boys	248 (48.8)
Girls	260 (51.2)
Children's' Grade	
5	255 (50%)
6	253 (50%)
Children's ethnicity	
Caucasians	389 (77%)
Non-Caucasians	119 (33%)
Family structure	
Two parents	417 (82%)
Single parent	91 (18%)
Fathers' employment	
Full-time	382 (75%)
Part-time	29 (6%)
Not working	96 (19%)
Mothers' employment	
Full-time	255 (50%)
Part-time	115 (23%)
Not working	138 (27%)
Fathers' education	
High school or below	180 (35%)
college/university	271 (53%)
Graduate school	57 (11%)
Mothers' education	
High school or below	144 (28%)
College/university	316 (62%)
Graduate school	48 (9%)
Family income #	
Upper tertile	183 (36%)
Middle tetile	166 (33%)
Low tertile	159 (31%)

Families were categorized into tertiles based on Low Income Cut-off (**LICO**) i.e. Upper tertile: LICO < 5.8%; Middle tertile: LICO 5.9–16.2% and Low tertile: LICO 16.3–85%

Table 2

Children’s attitudes, motivation and practices towards screen viewing and use by children’s gender and screen time (%).

	All n=508	Gender		Screen time	
		Girls n=259	Boys n=249	<2hrs/d n=132	2hrs/d n=376
Attitudes					
I feel exercise is important	96.2	98.1	94.3	96.8	96.0
Watching TV for several hours on weeknights is...					
Bad	67.8	70.5	65.0*	81.4	62.7**
Unhealthy	79.4	77.4	81.5	86.5	77.1
Not useful	48.6	55.2	48.6	61.8	48.6**
Bothering to my parents	35.2	35.3	35.2	36.1	34.8
Watching TV for several hours on weekends is...					
Bad	46.8	47.3	46.2	63.8	40.8**
Unhealthy	74.5	73.6	75.6	81.3	72.3
Not useful	50.4	52.7	48.2	58.7	47.8**
Bothering to my parents	26.1	24.2	28.0	31.4	24.4
Spending several hours playing video games is...					
Bad	52.8	48.4	57.4**	61.6	49.7
Unhealthy	61.6	52.5	71.0**	63.5	61.6
Not useful	45.8	42.2	49.4**	51.8	43.7*
Bothering to my parents	27.0	21.5	32.6**	25.6	27.4
Spending several hours using the computer for entertainment is...					
Bad	53.5	56.0	50.9**	63.6	49.9
Unhealthy	72.2	71.5	72.9	80.1	69.3
Not useful	43.2	45.1	41.3*	50.4	40.8*
Bothering to my parents	31.3	30.4	32.2	30.9	31.4
I watch TV... for entertainment	82.2	79.3	85.3	79.4	83.2

	All n=508	Gender		Screen time	
		Girls n=259	Boys n=249	<2hrs/d n=132	2hrs/d n=376
because I am bored	57.5	58.3	56.6	50.4	60.1
to spend time with family	44.4	47.2	41.6	42.8	45.1
to spend time with friends	26.9	26.4	27.4	16.8	30.5***
to learn stuff for my life	20.0	20.9	19.0	21.6	19.5
to learn stuff for school	12.8	11.9	13.7	15.1	12.1
I use a computer to					
do homework assignment	75.2	81.6	68.5*	82.6	72.8
play games myself	64.6	65.4	64.6	58.2	67.0
instant message friends	51.0	60.0	41.8**	42.9	53.7
e-mail friends	47.6	56.4	38.5**	41.4	49.6
play games online	46.0	43.7	48.3	34.7	49.8*
surf the internet	41.3	38.6	44.0	37.7	42.6
play games with friend(s)	33.0	34.8	31.2	28.3	34.7
I play video games...#	n=375	n=151	n=224	n=83	n=292
for entertainment	87.0	81.0	91.0**	85.2	87.4
because I am bored	57.9	62.0	55.2	59.2	58.6
to spend time with friends	40.6	32.9	45.7	31.3	44.1
to learn stuff for my life	5.2	3.3	6.5	3.7	5.7
to learn stuff for school	5.0	4.0	4.6	1.2	5.4
Social influence					
Perceived parental rules during the week					
limit TV	49.7	52.8	46.6	54.0	48.2
limit video game	54.7	55.0	55.9	58.8	53.6
limit computer use for homework	29.7	33.2	26.2	27.8	30.4
limit computer use for non homework	62.8	68.1	57.5	68.1	61.0
Perceived parental rules on weekend					
limit TV	32.4	31.0	33.7	40.0	29.7*

	All n=508	Gender		Screen time	
		Girls n=259	Boys n=249	<2hrs/d n=132	2hrs/d n=376
limit video game	37.2	38.9	36.5	51.8	33.1**
limit computer use for homework	22.1	23.1	21.1	22.7	21.9
limit computer use on other than homework	51.8	56.2	47.4	64.6	47.4**
Intention					
If I had a choice, I would spend more time taking part in physical activity	69.1	74.3	63.9**	78.0	66.1**

the numbers in this row represented sample size for video game players only, as not all subjects played video games.

Group difference by Chi-Square test,

* p < 0.05,

** p < 0.01

Table 3

Parents' awareness, attitudes and practices pertaining to children's screen-related behaviors by children's screen time (%).

	All (n=496)	Children's screen time	
		<2hrs/d n=127	2hrs/d n=369
Attitudes			
Inactivity is as dangerous as smoking	73.0	76.5	71.8
Inactivity increases risk of diseases	88.8	88.8	88.8
Children spending several hours per day watching TV is...			
Harmful	74.0	78.2	72.6
Unhealthy	84.9	86.1	84.5
Of no use	56.9	64.0	54.4
Of concern	80.0	86.1	77.8 *
Children spending several hours per day using a computer is...			
Harmful	57.5	61.4	56.2
Unhealthy	72.4	77.3	70.7
Of no use	42.5	47.9	40.6
Of concern	67.4	75.8	64.5
Social influence			
Screen viewing rules			
Parents should limit children's TV time	80.1	83.9	78.7
I use TV/computer to entertain/keep my child quiet	34.4	33.7	34.6
I never let my child decide how much time he/she spends on TV	64.4	73.2	61.3 *
Parent's activity preferences			
I like to play sports/outdoor activities in my leisure time	79.7	86.5	77.3 *
I like to watch TV/videos/movies in my leisure time	34.5	29.7	36.2
Parental/family activity patterns			
Parents participate in physical activities 3 times or less/week	37.0	39.0	36.3
Parent often/always engages in sports/physical activities with children	33.9	35.3	33.9
My family eats meals in front of the TV			
Sometimes	23.8	15.8	26.6 **
Often/always	13.7	10.1	15.0
Parent's leisure time with children watching TV and videos or using a computer			
<1 hr/d	51.5	70.7	44.7 *
1–1.9 hrs/d	49.7	26.2	44.4 *
2–4 hrs/d	8.3	3.0	10.1
>4 hrs/d	0.3	0	0.4

12 cases were excluded due to missing values. Difference between low and high screen users by Chi-Square test,

* p <0.05,

**
p < 0.01