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Active Screen Time Among U.S. Youth Aged 9–18 Years, 2009

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Abstract

Objective—This study documented the prevalence of active screen time (i.e., screen time that includes active games, exercise or dance videos, or TV exercise programs) and identified characteristics associated with it among youth 9–18 years of age.

Subjects and Methods—This cross-sectional study was conducted on a convenience sample of 1,165 youth using the 2009 Styles Surveys; data were weighted to approximate the Current Population Survey. We calculated descriptive statistics and conducted multivariable logistic regression to identify characteristics associated with active screen time by estimating adjusted odds ratio (aOR) and 95 percent confidence intervals (CIs).

Results—The sample comprised 51.4 percent boys, and almost 60 percent were non-Hispanic white. The prevalence of active screen time ≥ 1 hour/day was 31.2 percent on a typical school day and 41.6 percent on a typical weekend day. Logistic regression revealed youth with physical activity of 3–5 days/week had higher odds of active screen time ≥ 1 hour/day compared with youth with no physical activity (aOR school day = 2.8, 95 percent CI 1.5–5.2; aOR weekend day = 2.3, 95 percent CI 1.4–3.9). Certain characteristics (i.e., sex, age group, race/ethnicity, income, and sedentary screen time) were significantly associated with active screen time ≥ 1 hour/day, but associations were inconsistent for school and weekend days.

Conclusions—Three in 10 youth are engaging in at least 1 hour of active screen time on school days, and about 4 in 10 youth are engaging in at least one hour on weekend days. Understanding the use of active screen time and associated characteristics are important for developing interventions addressing screen time and physical activity.

Introduction

THE AMERICAN ACADEMY OF PEDIATRICS recommends that youth over 2 years of age spend no more than 2 hours each day with screen media.¹ However, children 8–18 years of age spend approximately 7.5 hours daily with screen media, including TV, computers, videogames, and movies.² About 4.25 hours of this time is watching TV, and about 1.25 hours is playing videogames.² Sedentary behaviors such as these may influence energy balance through

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displacement of physical activity (PA),³ increased energy intake,^{4,5} or reduced metabolic rate.⁶ Furthermore, time spent watching TV and videos and playing videogames is positively associated with childhood obesity.^{7–12}

Not all screen time is sedentary. Youth may engage in various types of PAs while viewing a screen, such as active games, exercise or dance videos, or TV exercise programs. Active screen time, in this study, is therefore defined as screen time that includes active games, exercise or dance videos, or TV exercise programs. Active games use cameras and motion sensors to capture a user's movement patterns as they perform activities such as jumping.¹³ Compared with sedentary videogame playing, active gaming increases energy expenditure.^{13–20} The PA intensity of active gaming reaches light to moderate intensity (ranging from 2.0 to 5.0 metabolic equivalents of task [METs] and averaging 3.1–3.3 METs) and can reach vigorous intensity during games such as boxing.^{14,21,22} We were unable to find published studies of youth energy expenditure specific to exercise videos, dance videos, or TV exercise programs, but the compendium of energy expenditures for youth reports that energy expenditure during videogames that require a dance mat can range from 1.7 to 6.4 METs, depending on the level of effort.²³

To date, we were unable to identify any published studies on the prevalence of active screen time among U.S. youth. The aims of this study were therefore to explore on typical school and weekend days the prevalence of active screen time and the sociodemographic, behavioral, and home environmental characteristics associated with active screen time among U.S. youth.

Subjects and Methods

Survey procedures

This cross-sectional study was based on Porter Novelli's HealthStyles and YouthStyles Surveys, both conducted in the fall of 2009. HealthStyles and YouthStyles are mail surveys administered annually as follow-up surveys to ConsumerStyles, a consumer mail panel survey. ConsumerStyles participants are sampled from a panel of approximately 328,000 potential respondents using a sampling design stratified on region, household income, population density, age, and household size and provides an oversample of low-income/minority participants and households with children to ensure adequate representation of these groups.²⁴ Respondents received a small incentive. The response rate for the 2009 ConsumerStyles Survey was 49.4 percent (10,587/21,420).

HealthStyles surveys adults (≥ 18 years) and is designed to assess health-related attitudes and behaviors. YouthStyles surveys youth (9–18 years) who had a parent/guardian complete and return HealthStyles and assesses many issues. YouthStyles data are weighted by the sex and age of child, household size, income, head of household age, and the race/ethnicity of the adult in the study, to approximate the 2008 Current Population Survey population. Households that receive YouthStyles surveys also receive HealthStyles surveys, which allows the two datasets to be merged. The response rates were 65 percent (4556/7004) for HealthStyles and 49.1 percent (1310/2666) for YouthStyles.²⁴ This analysis was exempt from the Centers for Disease Control and Prevention Institutional Review Board process

because personal identifiers were not included in the data provided to the Centers for Disease Control and Prevention.

Analytic sample

Data from HealthStyles were linked to YouthStyles using a unique household identifier. The combined dataset, which included the parent's sociodemographic data and parent-reported child sex and age along with the YouthStyles variables, had 1310 youth respondents with matched parental data. We excluded 55 youth because of missing data for the active screen time questions, 20 for missing data on the PA question, 15 for missing data on sedentary screen time for a weekend day, 27 for missing data on sedentary screen time for a school day, and 28 for missing data on parental rules regarding TV time or content, leaving an analytic sample of 1165 youth.

Outcome variable

The outcome variable for this study was active screen time, reported by youth. Active screen time on school days and weekend days was ascertained from two questions on YouthStyles, "How many hours are you physically active while using any of the following: Wii, exercise or dance videos, or TV exercise programs?" This question was asked for school days and weekend days. For analysis, responses were collapsed into the following categories: < 1 hour and 1 hour; the cut-point was based on the distribution of responses in the analytic sample to have adequate sample sizes in the 1 hour category. The question was created by the authors and was not based on prior questions from other surveys. The authors assessed face validity of the questions but did not conduct further validity or reliability testing.

Potential correlates

Potential correlates were sociodemographic, behavioral, and home environmental characteristics, and mutually exclusive response categories were created for each correlate. Potential correlates were parent-reported and youth-reported and are summarized in Table 1. Missing data for potential correlates ranged from none to 2.4 percent and were excluded from analyses.

Selection of several of the potential correlates was based on previous findings. For example, we included vigorous PA (VPA), sports participation, and sedentary screen time based on two randomized intervention studies that reported short-term benefits of active gaming on PA and sedentary screen time.^{25,26} We included parental rules on screen time based on findings showing youth who were aware of their parents' rules on screen time were less likely to watch TV or play videogames for more than 2 hours a day.²⁷ We included rules on TV content to examine if it was associated with active screen time because parents may be more supportive of active gaming or exercise videos than sedentary TV viewing. We included TV in the bedroom because this is associated with higher odds of excessive TV viewing.²⁸ We included having a computer in the bedroom because this may be a vehicle for sedentary or active screen time.

Analysis

We calculated frequencies for each variable. We used logistic regression to estimate odds ratios and 95 percent confidence intervals (CIs) for active screen time of ≥ 1 hour on school days and on weekend days. All statistical analyses were performed with use of Statistical Analysis Software (SAS) version 9.3 (SAS Institute Inc., Cary, NC), which accounted for the sample design.

Results

There was an even distribution of boys and girls, and nearly 60 percent were non-Hispanic white. Nearly half reported VPA on 3–5 days per week. Just over a quarter reported their parents had rules on TV content and time, and 70.6 percent had a TV in their bedroom. No active screen time on a school day was reported by 50.7 percent of the respondents, whereas 31.2 percent reported ≥ 1 hour. On weekend days, 46.9 percent of respondents reported no active screen time, and 41.6 percent reported ≥ 1 hour (Table 2).

On school days, youth of other race/ethnicity who live in households with lower income, participate in more VPA, and spend more time in sedentary screen time were more likely to participate in active screen time (Table 3). Youth of other race/ethnicity were more likely to report active screen time on a school day of ≥ 1 hour compared with non-Hispanic white youth (adjusted odds ratio [aOR] = 1.9, 95 percent CI 1.1–3.3). Those living in a household with an annual income of \$30,000– < \$60,000 were less likely to report active screen time on a school day of ≥ 1 hour compared with those with annual household incomes of < \$30,000 (aOR = 0.6, 95 percent CI 0.4–0.9). Youth reporting VPA on 3–5 days and 6–7 days per week also had significantly higher odds of reporting active screen time on a school day of ≥ 1 hour compared with those reporting no PA: aOR = 2.8, 95 percent CI 1.5–5.2 (3–5 days); aOR = 2.4, 95 percent CI 1.2–4.6 (6–7 days). Furthermore, youth who reported sedentary screen time of > 2 hours had higher odds of active screen time of ≥ 1 hour compared with youth reporting ≤ 2 hours (aOR = 1.6, 95 percent CI 1.2–2.1).

On weekend days, girls, Hispanics, and those with 1–2 or 3–5 days of VPA were more likely to report active screen time, whereas older youth were less likely. Specifically, girls compared with boys (aOR= 1.5, 95 percent CI 1.1–1.9) and Hispanic youth compared with non-Hispanic white youth (aOR= 2.0, 95 percent CI 1.3–3.0) reported ≥ 1 hour of active screen time. Furthermore, youth who were 15–18 years old were less likely to report active screen time of ≥ 1 hour on a weekend day compared with those in the 9–11-year-old age group (aOR= 0.5, 95 percent CI = 0.3–0.7). Lastly, engaging in VPA 1–2 or 3–5 days per week compared with none was associated with active screen time of ≥ 1 hour: aOR= 1.9, 95 percent CI 1.1–3.3 (1–2 days); aOR= 2.3, 95 percent CI 1.4–3.9 (3–5 days).

Discussion

To our knowledge, this study is the first to describe the prevalence of active screen time among U.S. youth 9–18 years of age. The findings indicate that 3 in 10 youth report active screen time of ≥ 1 hour on school days and that 4 in 10 report active screen time of ≥ 1 hour on weekend days. Youth in households with lower income and those who have higher

amounts of VPA and higher amounts of sedentary screen time were more likely to participate in active screen time on school days. On weekend days, girls, Hispanics, and those in the middle categories of VPA were more likely to report active screen time, whereas older youth were less likely to report active screen time.

Our findings regarding gender and screen time are consistent with a cross-sectional study that examined active gaming among adolescents in Quebec, which assessed if adolescents played active games and, if so, how many days a week they played.²⁹ They did not, however, distinguish between school and weekend days. That study found boys were less likely than girls to report active gaming. Our association of girls reporting more active screen time on weekend days may be useful for developing interventions for girls to engage in PA on weekends. Regarding screen time, our finding that those with > 2 hours of sedentary screen time on school days were more likely to engage in active screen time is consistent with the Quebec study,²⁹ where those who reported > 2 hours of nonactive videogames had about four times the adjusted odds of reporting active gaming. Our results for school days, however, are contrary to two randomized intervention studies that reported short-term benefits of active gaming on PA and sedentary screen time.^{25,26} The differences may be due to study design and the question that was asked; we asked about behaviors on a typical school or weekend day, whereas the intervention studies followed children in the sample who were given new active gaming equipment over 10–12 weeks. The interventions' results may also be partially explained by the novelty of having new active gaming equipment.

Our finding that VPA was the most strongly associated correlate with active screen time needs further exploration. Because these are cross-sectional data, it is possible that youth reported their VPA when asked how many days they engage in activity that made them sweat and breathe hard and on the active screen time questions. It is also possible that youth who participate in more frequent VPA are more likely to participate in active screen time. A cross-sectional survey of adults showed that almost 60 percent who played active games reported starting a new fitness activity and nearly 70 percent reported more PA after becoming involved with active games.³⁰ It is unknown if this is also true among youth. A systematic review of active gaming among youth emphasized the need for research focusing on the behavioral aspects of active gaming with respect to the possible displacement of alternative activities that are either more sedentary or more active.²¹

We were unable to find published reports on active screen time and an association with race/ethnicity or age. Our findings may suggest, at least on weekends, that Hispanic youth have greater access to appropriate equipment allowing for active screen time compared with non-Hispanic white youth. Hispanic youth have previously been reported to spend more time with videogames.² We also found, on school days, those of other race/ethnicity were more likely to engage in active screen time < 1 hour, which may suggest youth in this category have more opportunities for active screen time during the week but less over the weekend. Regarding age, older adolescents were less likely to report active screen time on weekends. A previous study reported that videogame playing peaks among 11–14 year olds, but the previous study did not differentiate time spent with active games and traditional videogames by age group.² This may be due to increased interest and opportunities for active screen time

among younger children. Thus, if active screen time is to be used to increase PA among youth, our findings suggest that interventions may be more successful if targeted toward children 9–11 years of age.

There are strengths and limitations to our analysis. This is the first study using a large dataset to examine the prevalence of active screen time among U.S. youth. Although it was a convenience sample, the data were weighted to U.S. demographic characteristics. However, there are several limitations. First, this was a cross-sectional analysis; thus causation cannot be examined. Second, race/ethnicity is based on parents, not youth, as this is not included on YouthStyles. Youth's race/ethnicity was classified based on the parent's HealthStyles response. Third, there was a low response rate for YouthStyles (49 percent). Fourth, the questions on active and sedentary screen time did not undergo testing for reliability and validity. Children might be mobile while using certain technologies, especially hand-held devices. This may limit their ability to separate PA from inactivity. Fifth, the questions on active screen time only identified the Wii™ (Nintendo of America, Redmond, WA) and did not list other consoles available in 2009. Sixth, the questions on active screen time included active gaming and other forms of active screen time, preventing examination of the different forms separately. Lastly, these data are approximately 4 years old, and technology has expanded since the survey was conducted. Findings could be different if these questions were repeated.

The question we used to assess active screen time included three different screen-based activities: Active games, exercise or dance videos, or TV exercise programs. Youth may participate in exercise or dance videos or TV exercise programs, although we were unable to identify literature on the prevalence of participating in these activities. Active gaming may be most reflective of active screen time because active gaming is a popular activity. Sixty-four percent of 8–18 year olds report ever playing the Wii.² We were unable to find studies on the amount of time youth spend with exercise or dance videos or TV exercise programs. Future studies may examine the different forms of active screen time.

Active gaming may be one of several strategies for children to participate in PA. Active gaming needs to be studied more comprehensively to understand not only the correlates of the behavior but any potentially unintended consequences. A science panel convened by The American Heart Association and Nintendo of America emphasized the need for research on behaviors associated with active gaming so that games may be designed to optimize energy expenditure.³⁰ The “Physical Activity Guidelines for Americans Midcourse Report: Strategies to Increase Physical Activity Among Youth” acknowledges the evidence is not sufficient to suggest that playing active videogames increases PA, but also acknowledges that technology in this area is changing.³¹ Therefore, the midcourse report states that active gaming may be a potential strategy to increase PA.³¹ Active Healthy Kids Canada, however, does not recommend active gaming for children to meet PA guidelines because of the following reasons: They do not lead to increased overall daily PA levels; they may increase heart rate but they do not significantly help children reach 60 minutes daily of moderate to VPA; the appeal diminishes over time; and they do not offer the benefits (e.g., fresh air) that come with outdoor active play.³²

In conclusion, many U.S. youth reported engaging in active screen time. About 3 in 10 youth reported at least 1 hour on school days, and about 4 in 10 reported at least 1 hour of active screen time on weekend days. Understanding the use of active screen time and associated characteristics is important for developing interventions addressing screen time and AP.

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Table 1

Potential Correlates included in the Logistic Regression Models

Potential correlate	Categorization
Parent-reported, HealthStyles 2009	
Race/ethnicity	Non-Hispanic white, non-Hispanic black, Hispanic, and non-Hispanic other
Annual household income	< \$30,000, \$30,000–< \$60,000, \$60,000–< \$85,000, or \$85,000
Marital status	Married/domestic partnership or not married
Region of the country based on Census regions	New England (CT, ME, MA, NH, RI, VT); Middle Atlantic (NJ, NY, PA); East North Central (IL, IN, MI, OH, WI); West North Central (IA, KS, MN, MO, NE, ND, SD); South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV); East South Central (AL, KY, MS, TN); West South Central (AR, LA, OK, TX); Mountain (AZ, CO, ID, MT, NV, NM, UT, WY); or Pacific (CA, OR, WA, AK, HI)
Child's age group	9–11, 12–14, or 15–18 years
Youth-reported, YouthStyles 2009	
Vigorous PA: "On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat or breathe hard?"	0, 1–2, 3–5, and 6–7 days
Sports participation was assessed by asking youth to check from a list of 15 sports/PAs they do regularly.	Yes (those who reported doing at least one activity), No (those who did not report any activities)
Parental rules on TV content and time were derived from the following measures: "My parents have rules about how much time I can spend watching TV" and "My parents let me watch pretty much whatever I want on TV." We combined these two questions to create one variable on parental rules on TV content and time.	No rules, rules on time only, rules on content only, and rules on content and time
Presence of a computer in the bedroom (from a checklist of items the respondent has)	Yes, No
Presence of a TV in the bedroom (from a checklist of items the respondent has)	Yes, No
Sedentary screen time asked separately for typical school and weekend days: "How many hours do you spend not being physically active, watching TV/ videos; playing videogames; or using computers or hand-held devices (e.g., iPhone)?"	2 and >2 hours, which were based on the AAP's recommended limit for recreational screen media ¹

AAP, American Academy of Pediatrics; PA, physical activity.

Table 2

Sociodemographic, Home Environment, and Behavioral Characteristics of the Sample, HealthStyles and YouthStyles 2009

	<i>n</i> ^a	<i>Percentage</i> ^b
Sociodemographic characteristics		
Youth sex		
Boy	657	51.4
Girl	508	48.6
Youth age group (years)		
9–11	347	27.7
12–14	342	28.9
15–18	476	43.5
Parent race/ethnicity		
Non-Hispanic white	764	59.6
Non-Hispanic black	158	15.6
Hispanic	158	18.5
Other	85	6.3
Parent annual household income		
< \$30,000	261	19.3
\$30,000–< \$60,000	301	28.9
\$60,000–< \$85,000	217	19.3
\$85,000	386	32.6
Parent marital status		
Married or domestic partnership	949	78.3
Not married	216	21.7
Region of country		
New England	34	2.8
Middle Atlantic	161	13.8
East North Central	227	19.3
West North Central	101	8.3
South Atlantic	186	16.4
East South Central	84	6.4
West South Central	122	10.5
Mountain	88	8.1
Pacific	162	14.4
Physical activity characteristics		
Youth vigorous intensity physical activity per week		
0 days	114	10.4
1–2 days	250	22.2
3–5 days	546	46.9
6–7 days	255	20.5
Youth sports participation		

	<i>n</i> ^a	<i>Percentage</i> ^b
Yes	1099	94.1
No	66	5.9
Home environmental characteristics		
Parental rules on TV viewing		
No rules	97	8.6
Time only	285	24.7
Content only	474	40.5
Content and time	309	26.2
Computer in bedroom, youth		
No	703	60.0
Yes	462	40.0
Television in bedroom, youth		
No	360	29.4
Yes	805	70.6
Screen time habits		
Youth sedentary screen time		
School day		
None	73	6.3
>0 to 2 hours	544	47.3
> 2 hours	548	46.4
Weekend day		
None	59	5.1
>0 to 2 hours	369	31.9
> 2 hours	737	63.0
Youth active screen time		
School day		
None	602	50.7
> 0 to < 1 hour	201	18.1
1 hour	362	31.2
Weekend day		
None	559	46.9
>0 to < 1 hour	132	11.4
1 hour	474	41.6

The size of the sample was 1165 youth.

^aUnweighted frequency, except where noted.

^bWeighted percentage, except where noted.

Table 3

Prevalence and Odds Ratios of Active Gaming on a Typical School Day and Weekend Day, HealthStyles and YouthStyles 2009

	School day			Weekend day		
	Percentage	Unadjusted OR (95% CI) ^a	Adjusted OR (95% CI) ^{ab}	Percentage	Unadjusted OR (95% CI) ^c	Adjusted OR (95% CI) ^{bc}
Youth sex						
Boy	30.4	1.0	1.0	37.7	1.0	1.0
Girl	32.0	1.1 (0.8–1.4)	1.2 (0.9–1.5)	45.9	1.4 (1.1–1.8) ^d	1.5 (1.1–1.9) ^d
Youth age group (years)						
9–11	35.7	1.0	1.0	52.7	1.0	1.0
12–14	31.7	0.8 (0.6–1.2)	0.8 (0.6–1.2)	44.0	0.7 (0.5–1.0)	0.7 (0.5–1.0)
15–18	27.9	0.7 (0.5–1.0)	0.7 (0.5–1.0)	33.1	0.4 (0.3–0.6) ^d	0.5 (0.3–0.7) ^d
Parent race/ethnicity						
Non-Hispanic white	27.5	1.0	1.0	37.4	1.0	1.0
Non-Hispanic black	36.2	1.5 (1.0–2.2)	1.3 (0.8–2.0)	46.6	1.5 (1.0–2.1)	1.3 (0.8–2.1)
Hispanic	36.2	1.5 (1.0–2.2)	1.6 (1.0–2.5)	50.5	1.7 (1.2–2.4) ^d	2.0 (1.3–3.0) ^d
Other	39.0	1.7 (1.0–2.8)	1.9 (1.1–3.3) ^d	43.3	1.3 (0.8–2.1)	1.3 (0.8–2.3)
Parent annual household income						
< \$30,000	39.0	1.0	1.0	46.9	1.0	1.0
\$30,000– < \$60,000	25.4	0.5 (0.4–0.8) ^d	0.6 (0.4–0.9) ^d	37.5	0.7 (0.5–1.0)	0.7 (0.5–1.1)
\$60,000– < \$85,000	30.0	0.7 (0.4–1.0)	0.8 (0.5–1.2)	40.4	0.8 (0.5–1.1)	0.9 (0.6–1.4)
≥ \$85,000	32.4	0.7 (0.5–1.1)	0.8 (0.5–1.3)	43.0	0.9 (0.6–1.2)	1.1 (0.7–1.6)
Parent marital status						
Married or domestic partnership	31.1	1.0	1.0	41.9	1.0	1.0
Not married	31.3	1.0 (0.7–1.4)	0.9 (0.6–1.3)	40.7	1.0 (0.7–1.3)	0.9 (0.6–1.3)
Region of country						
New England	32.2	1.0	1.0	41.6	1.0	1.0
Middle Atlantic	38.6	1.3 (0.6–3.1)	1.1 (0.5–2.8)	45.8	1.2 (0.5–2.7)	1.0 (0.4–2.3)
East North Central	32.7	1.0 (0.4–2.4)	1.0 (0.4–2.4)	41.6	1.0 (0.5–2.2)	0.9 (0.4–2.1)
West North Central	24.9	0.7 (0.3–1.8)	0.7 (0.3–1.8)	33.6	0.7 (0.3–1.7)	0.7 (0.3–1.7)
South Atlantic	26.9	0.8 (0.3–1.8)	0.7 (0.3–1.7)	43.6	1.1 (0.5–2.4)	0.9 (0.4–2.2)
East South Central	34.4	1.1 (0.4–2.8)	0.9 (0.3–2.4)	51.1	1.5 (0.6–3.5)	1.3 (0.5–3.3)
West South Central	34.8	1.1 (0.5–2.7)	0.8 (0.3–2.2)	41.5	1.0 (0.4–2.3)	0.8 (0.3–1.8)
Mountain	28.9	0.9 (0.3–2.2)	0.7 (0.3–2.0)	41.5	1.0 (0.4–2.4)	0.8 (0.3–1.9)
Pacific	27.6	0.8 (0.3–1.9)	0.6 (0.3–1.6)	36.3	0.8 (0.4–1.8)	0.6 (0.2–1.3)
Youth vigorous-intensity physical activity						
0 days	17.3	1.0	1.0	28.9	1.0	1.0
1–2 days	25.9	1.7 (0.9–3.1)	1.6 (0.9–3.1)	41.6	1.8 (1.0–3.0)	1.9 (1.1–3.3) ^d
3–5 days	36.2	2.7 (1.5–4.8) ^d	2.8 (1.5–5.2) ^d	46.8	2.2 (1.3–3.5) ^d	2.3 (1.4–3.9) ^d

	School day			Weekend day		
	Percentage	Unadjusted OR (95% CI) ^a	Adjusted OR (95% CI) ^{ab}	Percentage	Unadjusted OR (95% CI) ^c	Adjusted OR (95% CI) ^{bc}
6–7 days	32.5	2.3 (1.3–4.2) ^d	2.4 (1.2–4.6) ^d	36.3	1.4 (0.8–2.4)	1.5 (0.9–2.7)
Youth sports participation						
No	18.9	1.0	1.0	41.5	1.0	1.0
Yes	31.9	2.0 (1.0–4.0)	1.6 (0.8–3.1)	41.7	1.0 (0.6–1.7)	0.7 (0.4–1.3)
Parental rules on TV viewing						
No rules	36.7	1.0	1.0	43.0	1.0	1.0
Time only	35.4	0.9 (0.6–1.6)	0.9 (0.6–1.6)	49.1	1.3 (0.8–2.1)	1.2 (0.7–2.1)
Content only	28.9	0.7 (0.4–1.1)	0.8 (0.5–1.3)	34.3	0.7 (0.4–1.1)	1.0 (0.6–1.6)
Content and time	29.2	0.7 (0.4–1.2)	0.7 (0.4–1.2)	45.6	1.1 (0.7–1.8)	1.3 (0.8–2.3)
Computer in bedroom, youth						
No	31.2	1.0	1.0	43.2	1.0	1.0
Yes	31.2	1.0 (0.8–1.3)	1.0 (0.8–1.3)	39.4	0.9 (0.7–1.1)	1.0 (0.8–1.4)
Television in bedroom, youth						
No	28.5	1.0	1.0	43.1	1.0	1.0
Yes	32.3	1.2 (0.9–1.6)	1.2 (0.9–1.6)	41.0	0.9 (0.7–1.2)	1.0 (0.7–1.4)
Youth sedentary screen time						
2 hours	28.3	1.0	1.0	43.7	1.0	1.0
>2 hours	34.5	1.3 (1.0–1.7)	1.6 (1.2–2.1) ^d	40.4	0.9 (0.7–1.1)	1.1 (0.8–1.4)

The size of the sample was 1165 youth. Active gaming on a typical school or weekend day is based on how much time the respondent stated he or she was physically active while using any of the following: the Wii, exercise or dance videos, or TV exercise programs. The responses were dichotomized to <1 hour or ≥1 hour.

^aModeled active gaming on a typical school day of ≥1 hour compared with <1 hour.

^bIncluded sex, age group, parent's race/ethnicity, annual household income, parent's marital status, region, vigorous intensity physical activity, sports participation, parental rules on TV, computer in bedroom, TV in bedroom, and sedentary screen time in one model.

^cModeled active gaming on a typical weekend day of ≥1 hour compared with <1 hour.

^dSignificant difference compared with reference group.