Applied Research Brief: Weight Control; Youth

Internet and Video Game Use in Relation to Overweight in Young Adults

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Abstract

Purpose. *To examine the relationship between interactive media use (Internet and video games) and overweight risk in young adults.*

Design. *Prospective cohort study.*

Setting. *France (TEMPO study).*

Subjects. *Community sample of 674 young adults aged 22 to 35 in 2009 (response rate to the original mail out: 44.3%).*

Measures. *Data were collected through mail-based questionnaires from study participants in 1999 (juvenile overweight, juvenile TV use) and 2009 (overweight, Internet and video game use, regular physical activity), and from their parents who participated in the GAZEL study from 1989 to 2009 (parental overweight).*

Analysis. *Logistic regression.*

Results. *Participants who engaged in regular video game use (>1 time/wk) were more likely to be overweight than those who did not (odds ratio [OR] 2.20, 95% confidence interval [CI] 1.42–3.42). Adjusting for sex, regular athletic activity, juvenile overweight, juvenile TV use, and parental overweight, the OR associated with video game use decreased but remained statistically significant (OR 1.94, 95% CI 1.15–3.28). We found no significant association between Internet use and overweight.*

Conclusion. *Video game use may be a relevant target for interventions aiming to decrease the burden of overweight and associated consequences in young adults. (Am J Health Promot 2014; 28[5]:321–324.)*

Key Words: Overweight, Video Game Use, Epidemiological Study, Longitudinal Cohort, Young Adult, Prevention Research. Manuscript format research; Research purpose: modeling/relationship testing; Study design: survey research; Outcome measure: behavioral; Setting: community; Health focus: weight control; Strategy: education, culture change; Target population age: youth; Target population circumstances: all education levels, all income levels, all races/ethnicities

PURPOSE

Time spent in screen-based activities (TV, computer) predicts overweight and obesity in children and adolescents.[1] The use of interactive media (Internet and video games) has recently rapidly increased,[2,3] and time spent playing video games may be a stronger correlate of overweight and obesity,[4] cardiovascular risk factors (elevated blood pressure and cholesterol),[5] and cardiovascular fitness[4] than TV and computer use.

In young adulthood, (1) media use habits persist[6] and (2) many people gain a significant amount of weight,[7] and interactive media use may be a relevant risk factor of overweight. We tested this hypothesis in a community sample of young adults (22–35 years), accounting for sociodemographics, behavioral characteristics, and personal and parental history of overweight.

METHODS

Design

Sample. The TEMPO study based in France began in 2009 (44.3% response to the original mail out)[8] via a postal

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Table 1
Characteristics of TEMPO study participants (France, 2009, Age 22–35 Years)

	% (No.)
Sociodemographics	
Age, y	
<30	57.3 (386)
≥30	42.7 (288)
Sex	
Female	60.2 (406)
Male	39.8 (268)
Education level	
>High school	80.2 (527)
≤High school	19.8 (130)
Lives with partner	
Yes	58.9 (389)
No	41.1 (271)
Social isolation	
No	84.5 (552)
Yes	15.5 (101)
Health and health-related characteristics	
Psychological difficulties	
No	85.3 (556)
Yes	14.7 (96)
Self-rated health	
Good	91.7 (611)
Poor	8.3 (55)
Regular athletic activity, times/mo	
>1	49.3 (330)
≤1	50.7 (339)
Pregnancy/childbirth in preceding year	
No	79.8 (532)
Yes	20.2 (135)
Juvenile characteristics (1999)	
History of overweight (≥25 kg/m^2)	
No	92.9 (615)
Yes	7.1 (47)
History of regular TV use*	
No	93.8 (625)
Yes	6.2 (41)
Parental characteristics	
Parental income	
Intermediate/high	68.5 (438)
Low	31.5 (201)
Parental overweight (≥25 kg/m^2)	
No	50.7 (334)
Yes	49.3 (325)
Media use	
Regular Internet use†	
No	78.0 (515)
Yes	21.0 (145)
Regular video game use‡	
No	79.9 (536)
Yes	20.1 (135)
Adult overweight (≥25 kg/m^2)	
No	81.7 (548)
Yes	18.3 (123)

* Juvenile history of regular TV use: >2 h/d (vs. ≤2 h/d).
† Regular Internet use: >2 h/d (vs. ≤2 h/d).
‡ Regular video game use: >1 time/wk (vs. ≤1 time/wk).

questionnaire. Participants had previously participated in the GAZEL Youth study in 1991 and 1999, and their parents took part in the GAZEL cohort study.[9] Compared to study nonparticipants, participants were more often female, came from higher–socioeconomic-status or intact families, and had parents who were less likely to smoke tobacco and abstain from alcohol. Here, we studied TEMPO participants who responded in 1999 and 2009 (n = 674) and whose characteristics are comparable to those of the full 2009 sample.

TEMPO was approved by France's committee for health-related research and the National Committee for Data Protection.

Measures. Interactive media use was assessed by the following questions: "In the preceding 6 months, outside of your studies or work, on average, how many days per week did you use the Internet. On average, how much time did you spend on the Internet on days when you were connected?"; "In the preceding 6 months, how often did you play video games?" These questions were validated in a pilot test. Based on data distribution, regular Internet use was defined as >2 h/d, and regular video game use as >1 time/wk. Current overweight was defined as body mass index (BMI) ≥25 kg/m^2. Potential covariates included participants' age (<30 vs. ≥30 years), sex (male vs. female), education level (≤high school vs. >high school degree), living situation (without a partner vs. with a partner), social isolation (no vs. yes), psychological difficulties (measured using the ASEBA Youth Self-Report and dichotomized at the 85th percentile[10]: absent vs. present), self-rated health (good vs. poor), regular athletic activity (≤1 vs. >1 time/month), pregnancy or childbirth in the preceding 12 months (yes vs. no), juvenile overweight (≥25 vs. <25 kg/m^2 in youths ≥18 years; using age- and sex-appropriate BMI cutoffs in youths 12–18 years[11]), juvenile regular TV use (>2 vs. ≤2 h/d), parental income in 2002 (<€2592 vs. ≥€2592), and parental overweight in 1999 (≥25 vs. <25 kg/m^2).

Analysis

All analyses were carried out using logistic regression in SAS V9 (SAS

Table 2
Association of Interactive Media Use and Other Variables With Overweight in the French TEMPO Study (2009, Age 22–35 Years, N = 674)*

	% Overweight	Univariate OR	(95% CI), *p*	Multivariate OR	(95% CI), *p*
Media use					
Regular Internet use†					
No	17.5	1	(0.83–2.09), 0.24	—	—
Yes	21.8	1.32			
Regular video game use‡					
No	15.6	1	(1.42–3.42), 0.0004	1	(1.15–3.28), 0.013
Yes	28.9	2.20		1.94	
Sociodemographics					
Age, y					
>30	16.9	1	(0.54–1.19), 0.28	—	—
≤30	20.2	0.81			
Sex					
Female	14.4	1	(1.29–2.85), 0.001	1	(1.19–3.17), 0.01
Male	24.3	1.92		1.94	
Education level					
>High school	17.0 (89)	1	(0.88–2.26), 0.16	1	(0.70–2.15), 0.47
≤High school	22.3 (29)	1.41		1.23	
Lives with partner					
Yes	15.9 (77)	1	(0.51–1.15), 0.20	1	(0.38–1.06), 0.08
No	20.0 (43)	0.76		0.63	
Social isolation					
No	18.5 (96)	1	(0.78–2.21), 0.30	—	—
Yes	21.8 (22)	1.31			
Health and health-related characteristics					
Psychological difficulties					
No	18.8 (104)	1	(0.53–1.64), 0.80	—	—
Yes	17.7 (17)	0.93			
Self-rated health:					
Good	17.7 (108)	1	(0.86–3.10), 0.14	1	(0.70–3.64), 0.27
Poor	25.9 (14)	1.63		1.59	
Regular athletic activity, times/mo					
>1	22.6 (45)	1	(1.23–2.76), 0.003	1	(0.79–2.04), 0.33
≤1	13.7 (76)	1.84		1.27	
Pregnancy/childbirth in preceding year					
No	17.2 (91)	1	(0.92–2.30), 0.11	1	(0.70–2.25), 0.46
Yes	23.1 (31)	1.45		1.25	
Juvenile characteristics (1999)					
History of overweight (≥25 kg/m^2):					
No	14.5 (89)	1	(5.49–19.59), <0.0001	1	(4.08–17.43), <0.0001
Yes	63.8 (30)	10.37		8.43	
History of regular TV use§					
No	17.0 (106)	1	(1.38–5.44), 0.004	1	(0.48–3.10), 0.67
Yes	35.9 (14)	2.74		1.22	
Parental characteristics					
Parental income					
Intermediate/high	21.0 (77)	1	(0.82–1.89), 0.31	—	—
Low	17.6 (42)	1.24			
Parental overweight (≥25 kg/m^2)					
No	12.4 (41)	1	(1.59–3.63), <0.0001	1	(1.30–3.36), 0.002
Yes	25.3 (82)	2.41		2.09	

* OR indicates odds ratio; CI, confidence interval.
† Regular Internet use: >2 h/d (vs. ≤2 h/d).
‡ Regular video game use: >1 time/wk (vs. ≤1 time/wk).
§ Juvenile history of regular TV use: >2 h/d (vs. ≤2 h/d).

Corporation, Cary, North Carolina) and controlling for covariates associated with overweight at $p < .20$.

RESULTS

Table 1 presents sample characteristics. Notably, 21.0% and 20.1% of participants engaged in regular use of the Internet or video games; 18.3% were overweight. As described in Table 2, only regular video game use, and not Internet use, was associated with overweight (odds ratio [OR] 2.20, 95% confidence interval [CI] 1.42–3.42). Additionally, overweight was also associated with being male, lack of regular physical activity, and juvenile or parental history of overweight. Accounting for these factors, regular video game use remained significantly associated with overweight (multivariate OR 1.94, 95% CI 1.15–3.28). We found no sex interactions.

DISCUSSION

In a community sample, young adults who reported playing video games more than once a week had a twofold likelihood of being overweight. This association was stronger than that observed between Internet use and overweight, and persisted even after adjusting for demographic, juvenile, and parental characteristics.

Our study's limitations are (1) a small sample; (2) lack of data on concurrent TV use, although we adjusted for adolescent TV habits, which persist[6]; (3) self-reported weight data, which may be underestimated; (4) lack of precision on types of video games played; (5) the possibility that Internet and video game usage could be the same activities; and (6) lack of dietary (particularly snacking) data. Our study's strengths are (1) a focus on young adults, who are at high risk of weight gain; (2) longitudinal data on juvenile overweight and TV use; and (3) parental overweight ascertained independently from youths' assessments.

Why Is Video Game Use Associated With Overweight?

Time spent in front of a screen (TV, computer) predicts cardiovascular risk factors, including overweight/obesity.[1,12] Longitudinal data suggest that this association is primarily due to changes in BMI consequent to TV/computer use rather than selection phenomena.[13] This may reflect (1) reduced physical activity and energy expenditure due to time constraints[14] and (2) increased energy intake through snacking on high-energy foods in front of the TV or the computer.[15]

Our data add to the current literature showing that video game use is distinctly associated with overweight in young adults. It may be that this exposure is easier to characterize and therefore measured with greater precision than TV or Internet use. It may also be that youths who regularly play video games do so in addition to TV and computer use and have the highest overall levels of screen-based activities. There is a need for additional studies that tease out the role of specific aspects of video games or their use.

Conclusion

Video game use appears to be independently associated with overweight in young adults. Time spent in screen-based activities should be a relevant target for interventions aiming to decrease the burden of overweight in youths.

SO WHAT? Implications for Health Promotion Practioners and Researchers

What is already known on this topic?

Time spent watching TV and using the computer is associated with a higher likelihood of overweight and obesity in children. Patterns of screen-based activities among youths are rapidly evolving, and TV use is probably not the only predictor of overweight.

What does this article add?

In young adults, regular video game use appears to be distinctly associated with overweight.

What are the implications for health promotion practice or research?

Time spent in screen-based activities should be a relevant target for interventions aiming to decrease the burden of overweight in youths.

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