

Original article

Television Viewing and Forms of Bullying among Adolescents from Eight Countries

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Abstract

Purpose: Based on theories suggesting that frequent television viewers act and react in hostile, malicious, malevolent, or verbally aggressive ways rather than being physically violent, the present study investigates relationships between television viewing and different forms of bullying.

Methods: Multilevel regression models were estimated based on cross-sectional data from 31,177 adolescents aged 11, 13, and 15 years from Canada, Estonia, Israel, Latvia, Macedonia, Poland, Portugal, and the United States who participated in the 2001–2002 Health Behavior in School-aged Children Survey.

Results: Although all different forms of bullying were associated with television viewing in bivariate analyses, only the verbal forms (i.e. “calling mean names” and “spreading rumors”) remained significant in multiple regression models. These relationships were observed consistently in all eight participating countries. However, the association between television viewing and physical forms of bullying such as kicking, pushing, or shoving around, varied across countries. In most weekend TV viewing cultures, frequent television viewers were prone to kick or push another student in addition to verbal forms of bullying, which was not the case in weekday viewing cultures.

Conclusions: These results demonstrate the importance of limiting adolescents' time engaged in unsupervised television watching, and the need to motivate adolescents to engage in joint family activities or organized after-school activities. © 2006 Society for Adolescent Medicine. All rights reserved.

Keywords:

Adolescents; Television viewing; Forms of bullying; Cross-cultural research; Multi-level models

Exposure to media is a contemporary issue that affects key aspects of human perception and behavior. By the mid-1980s, 65% of the participants of an American study agreed that their worldview was formed mainly through television [1]. Since that time, the portrayal of violence in media has increased [2–4]. In 2001, the American Academy

of Pediatrics recognized exposure to violence in media, including television, movies, music, and video games, as a significant risk that compromises the health of children and adolescents [5]. Meta-analyses of experimental studies revealed a highly significant association between exposure to television violence and aggressive or antisocial behavior among children and adolescents [6,7]. Relationships between television viewing in childhood and adolescence and aggressive and violent behaviors in adulthood have also been established via longitudinal research [8,9].

Not every adolescent acts violently in response to an

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exposure to violent media. Several theories (e.g., the arousal theory [10], the cultivation theory [11,12], the social information-processing model [13], the cognitive priming framework [14,15]) indicate that exposure to violent media changes the perception and interpretation of real-life events such that ambiguous situations or behaviors are more likely to be interpreted as aggressive. Frequent television viewers tend to see the world as a much nastier place than is actually the case. In the cultivation theory [11,12], misjudgment of the amount of violence in society is called the “mean world syndrome.” Hawkins and Pingree [16], for example, studied 1280 primary school children in Australia using viewing diaries and questionnaires. High levels of viewing were associated with a “television-biased” view of Australia as a “mean and violent” place.

This, however, does not mean that frequent television viewers necessarily act with physical violence. In a nationally representative study of students in Switzerland, Kuntsche [17] found that feeling unsafe at school and bullying other students were more strongly linked with excessive television viewing than were outcomes of physical violence, such as hitting and fighting. This study concluded that viewpoints learned from television might make the schoolyard appear to be a dangerous place, in most cases as a consequence of bullying and not physical aggression. Consistent with these results, Zimmerman et al [18] demonstrated that exposures to television viewing at age 4 years were associated with being a bully at ages 6 through 11 years.

Bullying, however, is not a homogenous concept but comprises interrelated [19,20] but nevertheless different forms including verbal forms of violence and physical forms of bullying [21–23]. To our knowledge, no study has investigated associations between the amount of adolescent television viewing per day and specific forms of bullying. Owing to the interrelatedness of different forms of bullying, in the present study we hypothesized that all forms are bivariate related to television viewing. In multiple models, however, we expected that verbal forms of bullying (i.e., “calling another student mean names, made fun of, or teased him or her” and “spreading false rumors and trying to make others dislike him or her”) were more closely related to television viewing than physical forms (i.e., “hitting, kicking, pushing, shoving around or locking him or her indoors”). Such results would be consistent with theories and empirical evidence suggesting that television viewing changes the perception and interpretation of real-life events rather than the actual behavior [10–12,17]. Additionally, evidence surrounding differences in the link between television viewing and different forms of bullying have the potential to affect prevention activities. Verbal forms of bullying are less visible at school than the physical ones and therefore difficult to recognize and to prevent.

In addition to studying TV-bullying relationships in individuals, we also examined whether relationships between

different forms of bullying and television viewing changed according to the “television viewing culture” in a country. Existing studies in European and North American countries report enormous differences in the cultural level/content of television viewing in general [24,25], and between weekday and weekend television viewing in particular [26]. Television viewing on weekends is purported to have different social impacts than on weekdays. Because adolescents may stay awake later in the evenings on weekends, it is more likely that they will be exposed to TV programs that are intended for adults. On weekdays, however, adolescents are more likely to watch TV together with family members and be exposed to family-oriented programs for family interactions (for a review see [27]). If a different relationship between a particular form of bullying and television viewing emerged across countries, one explanation could be differences in this television viewing culture between countries, i.e., the degree to which adolescents tend to watch television on weekends vs. weekdays.

Methods

Study design

The data used for the analyses were part of the “Health Behaviour in School-Aged Children (HBSC)” study [28]. HBSC surveys have been conducted every 4 years since 1982 in several (mostly European) countries and regions, in collaboration with the World Health Organization (WHO). In the 2001–2002 study, 35 countries and regions took part, of which 11 countries integrated a particular module on violence and injuries in their national questionnaires. Eight countries (Canada, Estonia, Israel, Latvia, Macedonia, Poland, Portugal, and the United States) that had complete data on salient exposures, outcomes and covariates were included in the current analysis. These countries were from North America and different geographical and cultural regions in Europe.

Data were collected on the basis of a written questionnaire distributed during the 2001–2002 school year. Students were selected using a clustered sampling design, where the initial sampling unit was either the school class or school, to obtain national representative samples of 11-, 13-, and 15-year-olds. To ensure that students were equally likely to be included, classes within schools were selected by using a weighted probability technique. In some countries, the sample was further stratified by salient demographic factors (e.g., regions, language, or religion). Despite the cultural and regional differences, in each country, every effort was taken to ensure that the international research protocol was followed to ensure consistency in survey instruments, data collection and processing procedures. At the student participant level, known response rates varied from 64.5% to 91.2% across countries (cf. [29]). Each participating country obtained approval to conduct the survey from

the ethics review board or equivalent regulatory body and from national and/or local authorities and/or school principals and/or parents. Detailed information about the survey procedures can be found in Roberts et al [30] and online at www.hbsc.org.

Measures

The questionnaire was developed by an interdisciplinary research group from the participating countries. Under supervision of the national research teams, the resulting questionnaire was translated into the national languages and, in each country, retranslations were done to guarantee translation quality. Details on the composition of the questionnaire can also be found in Currie et al [31] and online at www.hbsc.org.

Television viewing. The frequency of television viewing was surveyed separately for weekdays and weekend days by the item “About how many hours a day do you usually watch television (including videos) in your free time?” To obtain a linear measure of television viewing, the answers were coded in hours ranging from 0 hours per day for the category “not at all” to 7.5 hours for the highest category (“about 7 or more hours a day”). As an indicator of general television viewing, a summary score of weekday and weekend television viewing was created: TV_{sum} was defined as ($TV_{weekends}$ multiplied by 2 days plus $TV_{weekdays}$ multiplied by 5 days), divided by 7 days. TV_{sum} was used as a dependent variable in the regression models. To characterize the television viewing culture in a country according to weekend and weekday viewing, television viewing on weekdays was subtracted from television viewing on weekends ($TV_{diff} = TV_{weekends} - TV_{weekdays}$). The resulting difference score was aggregated at the country level to estimate the mean amount of TV viewing at weekends “additional” to the mean amount of weekday TV viewing of adolescents in each country.

Items used to measure *different forms of bullying* were taken from the revised Olweus Bully/Victim Questionnaire [23] and introduced by the sentence “How often have you bullied another student(s) in the past couple of months in the ways listed below?” From a battery including seven items, the following three items were used: “I called another student(s) mean names, made fun of, or teased him or her in a hurtful way,” “I spread false rumors about him or her and tried to make others dislike him or her,” and “I hit, kicked, pushed, shoved around, or locked him or her indoors.” The answer categories were “I have not bullied another student in this way in the last couple of months” (coded as 1), “Only once or twice” (coded as 2), “2 or 3 times a month” (coded as 3), “About once a week” (coded as 4), “Several times a week” (coded as 5). Items such as “I made fun of another student because of his or her race or color/religion” were not taken into account because these topics might have different meanings in the cultures included in this study. The three

selected items are interrelated ($r_{called\ names\ -\ spread\ rumors} = .46$, $r_{called\ names\ -\ kicked,\ pushed} = .55$, $r_{kicked,\ pushed\ -\ spread\ rumors} = .59$) demonstrating that they all measure aspects of bullying in general. Moreover, they have a good internal consistency (Cronbach $\alpha = .76$) only slightly lower than that of the original seven-item scale (Cronbach $\alpha = .79$).

Analytic strategy

Following Roberts et al [30], a sampling design effect of 1.2 was assumed because the sampling units were classes and not individuals, and the sample was down-weighted accordingly [17,32]. For most variables in most countries, missing values were below 3%. Adolescents who did not answer all questions relevant for the study (4.7% in total) were excluded from the analyses. The final sample consisted of 31,177 11-, 13-, and 15-year-olds (52.6% girls) from eight countries.

Although different forms of bullying were expected to be associated with television viewing in bivariate analyses, the aim of the present analysis was to determine whether some (namely the verbal forms) continued to be associated in multiple regression analyses. To assess bivariate relationships between television viewing and different forms of bullying, Pearson correlations were calculated for each country separately.

To determine which forms of bullying were specifically associated with television viewing, in a first model (individual-level-only model), we estimated gender- and age-adjusted multiple regression models with television viewing regressed against the different forms of bullying, with simultaneous control for important covariates. The possibility that different associations might exist in each of the participating countries (Canada, Estonia, Israel, Latvia, Macedonia, Poland, Portugal, United States) was recognized. To assess this, regression slopes were allowed to vary across countries, and we estimated regression models using the hierarchical multilevel software package HLM 5.04 [33]. This software was designed to appropriately estimate regression models with a nested data structure (in our case adolescents nested in different countries) [34].

HLM can also be used to determine if characteristics of the higher level structure, in our case the hypothesized “television viewing culture” (weekend vs. weekday) of a country, account for differences in individual associations, in our case different forms of bullying and television viewing [34,35]. Thus, if one or more of the regression slopes of the bullying variables “called names,” “spread rumors,” and “kicked, pushed” varied significantly across countries (in the individual-level-only model), we examined this variation by a characteristic of the countries, namely the difference score of weekend vs. weekday television viewing in a second model (individual and country level model). This score was obtained by aggregating the individual weekend-weekday TV viewing difference score to the country level.

Table 1
Mean level of daily television viewing and 12-month prevalence of different forms of bullying in eight countries

	Sample size (n)	Television viewing mean (SD)		Forms of bullying percent (SE) ^a		
		Weekdays	Weekends	Called names	Spread rumors	Kicked, pushed
Canada	4241	2.53 (1.7)	3.33 (2.0)	40.7 (.75)	11.6 (.49)	14.5 (.54)
Estonia	3974	3.20 (1.7)	4.00 (1.9)	43.4 (.79)	17.4 (.60)	28.1 (.71)
Israel	2422	3.53 (2.0)	3.33 (2.2)	29.8 (.93)	9.3 (.59)	13.5 (.69)
Latvia	3079	3.20 (1.8)	4.32 (2.0)	25.7 (.79)	10.7 (.56)	9.6 (.53)
Macedonia	3958	2.68 (1.8)	3.46 (2.1)	16.6 (.59)	10.1 (.48)	9.3 (.46)
Poland	6024	2.81 (1.8)	3.95 (2.0)	31.4 (.60)	12.4 (.42)	15.1 (.46)
Portugal	2842	2.89 (1.8)	3.95 (2.1)	26.3 (.83)	6.7 (.47)	9.9 (.56)
United States	4637	2.73 (2.0)	3.72 (2.3)	35.4 (.70)	13.4 (.50)	14.1 (.51)
Total	31,177	2.90 (1.8)	3.77 (2.1)	31.8 (.26)	11.9 (.18)	14.7 (.20)

^a Prevalence of forms of bullying (at least once in the past couple of months).

Additionally, we checked the results for outliers. This is important because outliers can bias the results by creating artificial relationships in the model. For this purpose, we constructed a Q-Q plot of the expected and observed values resulting from the final model [33,34]. Expected values were taken from the order statistics of the second level. Observed values were calculated using the Mahalanobis distance measure that measures the distance between the residual estimates for each culture relative to the expected distance estimated in the final model [33]. If this Q-Q plot resembles a 45-degree line, there is evidence that the random effects are normally distributed. Countries that are located far away from the diagonal can be identified as outliers.

Results

Across countries, adolescents average between 3 and 4 hours of television viewing per day (Table 1), with approximately 1 hour more per day on weekends than weekdays. One exception was Israel, where the level of television viewing was lower on weekends. The highest level of frequent television viewing was found in the Baltic countries Estonia and Latvia and the lowest in Canada and Macedonia.

Across countries, about one-third of the participants indicated that they called other students mean names and made fun of them at least once in the past couple of months. With prevalence rates of 12%–15% across countries, spreading false rumors and kicking/pushing were less frequent forms of bullying. Estonia, Canada, and the United States had the highest rates of different forms of bullying, whereas Macedonia and Portugal had the lowest rates.

In most countries, television viewing was significantly associated with all three forms of bullying in bivariate analyses (Table 2). The strongest associations were found in the United States, Poland, and Estonia. In Macedonia, no bivariate relationship between television viewing and different aspects of bullying was found.

Table 3 provides the results of the two multiple regres-

sion models. The intercept value reveals that, when all predictors are minimal (i.e., 11-year-old girls who indicated no bullying at all), adolescents across countries averaged three hours and 21 minutes of television ($B_{\text{intercept}} = 3.177$, i.e., 3 hours and 11 minutes [= 60 minutes *]) per day. Boys watched 11 minutes ($B = .186$, i.e., 60 minutes * = 11.16) more television per day than girls, but no effect was found across age groups (i.e., 11-, 13-, and 15-year-olds). In contrast to the bivariate analysis, in the multiple regression models, bullying in the form of “kicked and pushed” was not significantly related to television viewing, whereas “called mean names” and “spread rumors” remained significant predictors. For each category of these forms of bullying, adolescents watched about seven minutes more television. This indicates that compared with someone who did not call another student mean names, make fun of, or tease him or her in a hurtful way in the last couple of months, someone who did this several times a week watched about half an hour more television per day ($B = .116$ with four categories from the baseline “I have not bullied another student this way” means $4 * .116 * 60 \text{ minutes} = 27.84$ minutes per day).

Allowing regression slopes to vary across countries revealed no significant variation for “called mean names” (variance component of regression slopes in the different

Table 2
Relationships between television viewing and different forms of bullying in eight countries (bivariate Pearson correlations)

Television viewing in . . .	Called names	Spread rumors	Kicked, pushed
Canada	.10***	.08***	.07***
Estonia	.12***	.11***	.14***
Israel	.05*	.07**	.05*
Latvia	.08***	.09***	.07***
Macedonia	.03	-.00	-.02
Poland	.13***	.13***	.13***
Portugal	.12***	.09***	.11***
United States	.14***	.13***	.13***
Total sample	.10***	.09***	.10***

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3
Relationships between television viewing and different forms of bullying (HLM parameter estimates)

Individual level	Country level	Individual level only model			Individual and country level model		
		B	(SE)	t-ratio	B	(SE)	t-ratio
Intercept		3.177***	(.100)	31.86	3.178***	(.100)	31.84
Socio-demographics							
Gender		.186**	(.074)	2.53	.187**	(.073)	2.55
Age group		-.049	(.045)	-1.10	-.049	(.045)	-1.08
Forms of bullying							
Called names		.116***	(.014)	8.16	.118***	(.014)	8.57
Spread rumors	TV _{diff}	.119***	(.024)	4.96	.120***	(.025)	4.85
Kicked, pushed	TV _{diff}	.042	(.037)	1.15	.041	(.066)	.63
	TV _{diff}				.386***	(.064)	6.01

SE = Standard error.

^a No significant variation of regression slopes across countries emerged that could be explained by country level variables.

** $p < .01$; *** $p < .001$.

countries ($vcrs = .00031$; degrees of freedom (df) = 7; $\chi^2 = 3.74$; n.s.) and “spread rumors” ($vcrs = .00185$; $df = 7$; $\chi^2 = 6.05$; n.s.) but for “kicked and pushed” ($vcrs = .00817$; $df = 7$; $\chi^2 = 23.15$; $p < .01$). This suggests that, across countries, the same relationship exists between television viewing and “called mean names” and between television viewing and “spread rumors,” but a different relationship between television viewing and “kicked and pushed.”

In a second (multi-level) model, the variance of the relationship between television viewing and “kicked and pushed” across countries was explored according to the “difference score” of weekend vs. weekday television viewing (TV_{diff}) in each country. Results reveal that in countries in which adolescents tend to watch more television on weekends, there was a strong positive association between television viewing and physical bullying (kicked and pushed). In countries where weekend and weekday television viewing was balanced, there was weak evidence for such associations.

To illustrate the variation in regression slopes, country-specific measures of association are summarized in Table 4. In Canada, for example, adolescents averaged 2 hours and

44 minutes of television per day at baseline ($B_{intercept} = 2.74$, i.e., 2 hours and 44 minutes (= 60 minutes * .74). They watched 8 minutes (60 minutes * .13) more for each “called names” category and six minutes (60 * .10) more for each “spread rumors” category. With regression coefficients between $B = .08$ and $B = .16$ there is only a small variation for “called mean names,” with the exception of Macedonia, the regression coefficients for “spread rumors” varied only between $B = .06$ and $B = .20$ and most countries were in the range of $B = .10$ and $B = .17$. For “kicked and pushed,” however, the regression coefficients varied from $B = -.12$ to $B = .15$.

In the last column, the “difference score” of weekend vs. weekday television viewing in each country is provided. In Canada, for example, adolescents watch TV 2.52 hours per weekday on average and 3.33 hours on weekend days (i.e., a difference of .81 hours). Thus, they watch 49 minutes (60 minutes * TV_{diff} = .81) on average longer on weekend days than on weekdays. In Israel, adolescents watch TV 12 minutes longer on weekdays than on weekend days. Countries with stronger associations between television viewing and “kicked and pushed” had a high level of weekend television viewing (Poland, Portugal, and the United States), whereas

Table 4
Relationships between television viewing and different forms of bullying (HLM first model parameter estimates) and television viewing “difference score” (average weekend vs. weekday viewing) in eight countries

	Intercept	Called names	Spread rumors	Kicked, pushed	TV _{diff}
Canada	2.74	.13	.10	.00	.81
Estonia	3.38	.09	.12	.14	.80
Israel	3.47	.08	.17	.01	-.20
Latvia	3.54	.11	.20	-.07	1.12
Macedonia	2.91	.11	.03	-.12	.78
Poland	3.13	.12	.15	.06	1.14
Portugal	3.23	.16	.06	.15	1.06
United States	3.00	.15	.13	.12	.99

countries with modest associations (Israel, Macedonia, and Canada) had a lower level of weekend television viewing. Exceptions to this general trend were Latvia and Estonia.

Because there were exceptions, we checked the results for outliers. However, the constructed Q-Q plot revealed that all countries were located close to the regression line of expected and observed values that had a slope of approximately 45 degrees. Moreover, the regression line could even account for 97% of the country variance in the Q-Q plot. This demonstrates that no country was an outlier in the estimated multi-level models.

Discussion

Our study investigating the link between television viewing and different forms of bullying across several European and North American countries reveals that excessive television viewing is not a rare phenomenon. Across countries, about two-thirds of the participants watched television more than 2 hours a day, i.e., more than the recommended use of no more than 1 to 2 hours per day [36,37]. Together with the prevalence of different forms of bullying, such results are worrisome and should alert policymakers and trigger prevention efforts because excessive and unsupervised television viewing as well as bullying are clearly detrimental to adolescent health and development (e.g., [5,8,9,17,19–22]).

The findings confirmed that, although all different forms of bullying were associated with television viewing in bivariate analyses, only the verbal forms (i.e., “calling mean names” and “spreading rumors”) remained significant in the multiple regression models. These results are consistent with theories suggesting that frequent television viewers are more likely to act and react in verbally aggressive ways rather than being physically violent (e.g., [11,12,14]). Despite our robust sample size, physical forms of bullying such as kicking, pushing, or shoving around were no longer significant when verbal forms were accounted for in the models. Our multi-country study indicates that associations between TV viewing and these verbal forms of bullying were consistent across cultures. In all eight participating countries, frequent television viewers were more likely to call another student mean names, to make fun of, to tease in a hurtful way, to spread false rumors, and to make others dislike him or her.

Relationships between television viewing and physical forms of bullying such as kicking, pushing, or shoving around, varied across countries. It appears that in countries with a high level of weekend television viewing such as Portugal or the United States, there was an association with physical forms of bullying, whereas in countries with a low level of weekend television viewing such as Macedonia or Israel, there was no or even a negative relationship. This suggests that in most countries with a weekend television viewing culture, frequent television viewers are prone to kick or push another student in addition to verbal forms of

bullying. On weekends, adolescents probably stay awake later in the evenings than on weekdays and are therefore more likely to watch television or videos that are aimed at adults. In addition, adolescents normally spend more leisure time with peers on weekends (e.g., by watching violent videos and DVDs) and parents may have fewer opportunities for supervision.

It was unfortunate that no data were available in the present study addressing with whom (i.e., parents or peers) and what kind of television or videos adolescents watch. As the HBSC survey aims to monitor a broad variety of health indicators and behaviors among school-aged children, only a limited number of items for each topic can be included (cf. [31]). We had access to no information about the content of the broadcasts or videos, but studies clearly demonstrate that most of them involve violence [2,4,18,38], especially movies that broadcast late in the evenings or are watched together with peers [39,40]. In addition, due to the cross-sectional nature of the study, it was not possible to determine causal relationships. However, because there was a relationship between television viewing and verbal forms of bullying across countries, frequent television viewing can be considered an indicator (either as antecedence or consequence) of verbal and, in some countries, also of physical forms of bullying. Because particular verbal forms of bullying are difficult to recognize, restriction and supervision of adolescent television viewing as suggested by the American Academy of Pediatrics [36,37] might be a promising way to target related problem behaviors in adolescence. Moreover, students who bully others at school are also likely to be bullied themselves [19].

Restriction of unsupervised television viewing in adolescence can be done in several ways. Spending time in joint family activities, for example, has been shown to be negatively related to adolescent problem behaviors such as excessive alcohol use [41,42]. However, in low-income families where both parents work outside the home or for single parents it is not always easy to spend a large amount of time with their children after school [41]. In such cases, organized after-school activities have been demonstrated to promote academic success, motivation to achieve, and social adjustment and to restrict time for television viewing and other unsupervised activities [43,44].

Many other leisure, school, or family activities limit adolescents' time to watch television (e.g., [45]) in an unsupervised manner, and these might explain some of the differences between weekday and weekend television viewing cultures. For example, engagement in organized activities (e.g., sports, music) is common and promoted in Canada, and might explain the relatively low levels of weekday television viewing among Canadian adolescents. Similarly, adherence to religious practices might explain the low level of weekend television viewing among adolescents in Israel. Unfortunately, no data were available that would inform the present analysis as to whether these hypotheses are true.

Together with questions about with whom adolescents watch TV, and what kind of films adolescents watch, these issues remain tasks for future research.

To conclude, the present study provides further evidence that frequent television viewers are likely to act and react in verbally aggressive ways. In weekend viewing cultures, frequent television viewers were further prone to kick or push another student in addition to spreading rumors, calling mean names, and other verbal forms of bullying. These results reinforce the importance of limiting adolescents' exposures to television viewing as a public health intervention.

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