ORIGINAL ARTICLE

Unintentional injury depictions in popular children's television programs

D Glik, J Kinsler, W A Todd, L Clarke, K Fazio, R Miyashiro, M Perez, E Vielmetter, R C Flores

Injury Prevention 2005;11:237–241. doi: 10.1136/ip.2003.004184

See end of article for authors' affiliations

Correspondence to: Professor D C Glik, UCLA School of Public Health, Box 951772, Los Angeles, CA 90095, USA; dglik@ucla.edu

Accepted 3 March 2005

Objectives: The frequency and magnitude of depictions of risky events and unintentional injuries in top ranked children's animated and live action television programs was assessed.**Methods:** Qualitative and quantitative media content analysis were used. Scenes from television episodes were examined for the depiction of risky events and unintentional injuries.**Results:** A total of 201 actual and potential injury related events were tabulated in 99 episodes aired in 2003 and 2004. Only 26% of the risky events depicted led to an injury or physical consequence. More than 80% of the events involved behavioral or environmental risk factors. Safety factors were not present in over 90% of risky events depicted. The general tone and context of events was humor or indifference rather than concern or action, with little or no relevance to the plot.**Conclusion:** Unintentional injuries are the leading cause of death and disability for children, yet animated and live action television programs marketed to children continue to portray injury risk inaccurately. Working with the children's television production industry to improve injury depiction is a much needed advocacy activity.

Unintentional injury remains the leading cause of death and acquired disability for children.¹ Injury prevention often requires changes in cognitions about risk and risk avoidance behaviors—especially difficult for children to achieve. One factor that influences children's perceptions and behaviors is the mass media. Audiovisual media, especially television, are the most widely used source of communication in the United States today.^{2–5} Television is a powerful and pervasive cultural medium that depicts norms and values about a variety of health related issues. Children in the US watch an average of three to five hours of television every day.^{4 6 7} By graduation from high school the average child will have spent more time watching television than being in the classroom: 15 000 hours versus 12 000.^{2 4} Television has become society's most common and constant learning environment, forming the mainstream of American popular culture.^{9–12}

Many studies have been conducted to determine mass media effects on children's behaviors. Viewing specific television content can have an adverse effects on children's behaviors in areas of aggression, sexuality, body image, and nutrition.^{2 4 10 11} Conversely, embedding certain messages in programs can positively impact health and social behavior.^{12 13}

The few studies that look at unintentional injury related content in children's programs found that standardized safety behaviors were not portrayed accurately by characters,⁶ most injury depictions were relatively modest in nature,¹⁴ and many unsafe behaviors are not linked to injuries,¹⁰ a finding also true for children's films.⁵ Local television news programs also portray injury inaccurately as traumatic deaths reported differ greatly from types of injuries found in coroners' records.¹⁵

Both social and psychological differences mediate how content influences the receiver of mass media messages.¹⁶ Social learning theory posits that people model the attitudes and behaviors that characters portray.¹⁷ Moreover media content intended solely for entertainment purposes may result in unintended cognitive, affective, and behavioral impacts.¹³ However, how these impacts occur and what

generates individual differences with regard to media influence is less certain.⁸ According to cultivation theory, television programs actively shape viewers' perceptions of what is normal, common, and acceptable even though what is portrayed is fiction.¹⁸ Uses and gratifications theory suggest that people use the media for education, information, and escape.¹⁹ These theoretical ideas underpin the notion that exposure to media content influences learning and subsequent behaviors.

This study assessed the magnitude and accuracy of actual and potential injury depictions in current popular children's television programs. Objectives were to: (1) identify and evaluate the frequency, content, and context of actual and potential injuries depicted in popular children's television programs; (2) establish whether injury risk factors (environmental, social, behavioral) depicted in these programs result in actual injuries; and (3) examine whether injuries depicted in these programs are treated appropriately.

METHODOLOGY

Media content analysis comprises an important research approach for health communications research. Once a research concern has emerged, a specific type of media is identified, sampled, and then analysis is based on observations of the units of the media content selected.^{20 21} For children's television, specific programs were identified and episodes sampled. Depending on the research questions, specific events, storylines, themes, messages, locations, characters, roles, and behaviors are observed and coded. For this analysis, episodes comprised the primary sampling unit; injury and potential injury events were the units of analysis; and injury consequences, treatment, locations, characters involved, risk factors, safety behaviors, and context of each event (unit) were the basis for measures.

Sample

The sampling frame consisted of 99 episodes from children's animated and live action programs that aired on national network and cable television channels during the months of February, March, and April 2003 and then in January,

February, and March 2004. All shows aired during child appropriate viewing hours (weekday and weekend mornings after 7.00 am, weekend and after school weekday afternoons, and weekday and weekend hours no later than 9.30 pm) Programs in the sample were selected based on the latest Nielsen Media Research ratings of the most popular children's shows for age groups 2–11 years, 6–11 years, and 9–14 years previous to study phase commencement.²² Programs were comprised of single and multiple episodes, resulting in a total of 40.25 hours of media content analyzed. Variety programs, television specials, sports events, and reality television programs were not included in the study. Elimination of duplicative shows listed in more than one age group (for example, *The Simpsons* was listed on all three lists) resulted in a total of 31 different "series", returning programs with established characters and motifs. Data from advertisements, network and program promotions, and show credits were not included.

Instrument

The coding instrument developed consisted of 51 closed ended and open ended questions. Injury related events were assessed in terms of six main dimensions: (1) an event that led to an actual injury ("actual injury event"); (2) an event that had a high potential of causing an injury but did not lead to an actual injury ("potential injury event"); (3) characteristics of actual or potential injuries depicted; (4) vectors, causes, risk factors, behaviors, and locations associated with injury events; (5) characters involved with actual or potential injuries depicted; and (6) safety factors and behaviors linked to the actual or potential injury events.

Procedure

Graduate students assisted in developing the study and coding qualitative and quantitative data. All episodes were copied to allow coders to rewind, re-view, and code the media content for study variables. For consistency and reliability, each television program was independently viewed in its entirety by two different coders. One scene evaluation form was completed for each injury related event identified. After all the episodes were viewed, analyzed, and coded independently, the two coders met to discuss and mediate any conflicting findings or difficulties. Interrater reliability was high, as coders were usually in agreement. Consensus data were entered into SPSS 12.0 for Windows for quantitative and qualitative analysis (SPSS Inc, Chicago, IL, USA).

RESULTS

Outcome of injury related event

There were 201 injury related events tabulated for the 99 episodes viewed. Twenty seven percent were "actual injury events" resulting in an injury with physical consequences, most frequently a head injury (45.5%), followed by scratches and scrapes and fainting and unconsciousness (both 10.9%), burns (9.1%), and swelling and throbbing (7.3%). Most injury related events (73%, or 146 instances) that should have resulted in an actual injury did not, and thus were deemed potential injury events. A common potential injury event involved a character crashing or running into an object, wall, or another person (26.7%). Falling due to slipping or falling off a stationary object or person (both 12.3%) followed, then objects falling on or hitting characters (8.9%) and falling due to tripping (8.2%).

Cause of injury related event

Injury related events (both actual and potential) were primarily linked to characters' behavior (carelessness, lack of attention, clumsiness, impulsiveness), thus 57.7% of the events can be classified as self inflicted. Approximately one

Table 1 Distribution of actual and potential injury events by causation

	Frequency	%
Caused by victim	116	57.7
Caused by other person	33	16.4
Caused by object	33	16.4
Caused by non-human character	10	5.0
Other/not specified	9	4.5
Total	201	100.0

quarter of the events were caused by other characters (16.4%) and another one quarter (16.4%) was caused by objects falling on characters) (see table 1). Specific behaviors depicted between year one and year two were slightly different due to scenarios portrayed, but overall the types of actions were not consistently different. Because the total number of "actual injury incidents" between year one and year two was small (55), cross-tabulation analysis for differences in variables between years was focused on "potential injury" events (69 in year one, 77 in year two, totaling 146 instances).

Risk factors associated with injury related event

Half of the events surrounding actual or potential injuries (50.5%) involved behavioral risk factors (see table 2). Most injury related events were associated with behavioral and environmental risk factors. Behavioral risk factors involved characters not concentrating on a task or their surroundings, jumping on or off unsafe objects, and running without looking. One quarter of injury related events (26.4%) were associated with environmental risk factors, defined as the presence of dangerous objects, objects on the ground, unsafe climbing, and sitting or standing on an unstable or unsafe object. Depictions of social risk factors such as crowded conditions or insufficient supervision were rare (2.8%). In 19.4% of the injury related depictions, there were no risk factors in relation to an event (see table 2). There were no significant differences between risk factor categories for potential injury events between year one and year two.

Site of injury related event

The sites of the injury related events were categorized as: (1) outdoors, (2) indoors, (3) sports and recreation areas, (4) school grounds, (5) vehicles, and (6) questionable areas. Nearly half (45.0%) of the injury related events took place outside such as streets, sidewalks, outside of homes, forests, and jungles (see table 3). Approximately 18.5% of events occurred indoors: in homes, buildings, hotels, or restaurants. Another 18.5% of events took place at sports facility or recreation areas such as a baseball field, fantasy land, or amusement park. School ground depictions were less common (9.0%), as were questionable areas such as alleys, junkyards, and dumpsters (6.0%) and vehicles (3.0%)

Table 2 Risk factors for actual and potential injury events

	Frequency	%
Behavioral	109	50.5
Environmental	57	26.4
Social	6	2.8
Not specified	2	0.9
No risk factors identified	42	19.4
Total	216*	100.0

*More than one type of risk identified for some events.

Table 3 Locations of actual and potential injury events

	Frequency	%
Outdoors	90	45.0
Indoors	37	18.5
Sports and recreation areas	37	18.5
School grounds	18	9.0
Questionable area	12	6.0
Vehicle	6	3.0
Total	200	100.0

Table 4 Tone of actual and potential injury events

	Frequency	%
Humor	126	62.7
Indifference	34	12.9
Suspense	15	7.5
Surprise	1	0.5
Horror	2	0.9
Panic/fear	4	2.0
Tension	3	1.5
Other	1	8.0
Total	201	100

(table 3). School grounds were more common potential injury sites in year one than in year two (11 and 5, respectively), but sports and recreation areas were more prevalent in year two than in year one (19 and 7, respectively). These differences are mainly due to sampling variation: in year two there were more episodes of *Chalkzone*, where the main character spends a great deal of time in a magic fantasyland coded as a recreation area.

Profile of characters involved

Most injury related events (65.7%) involved a major character in the series. There were significantly more potential injury events involving minor or background characters in year two than year one (31 and 9, respectively). Three quarters of the characters involved in injury related events (71.1%) were humans, followed by aliens (18.9%). More than half (52.2%) of the actual and potential injury victims were male in both years, and 20.9% were non-human, although this finding is largely due to the presence of Nickelodeon's *SpongeBob Squarepants*, *My Life As a Teenage Robot* and *Chalkzone* in year two, whose central characters are non-human or alien. Of the characters whose ethnic group was identifiable, 53.7% were White, with other ethnic groups underrepresented, including African-American (5.0%), Asian (5.0%), and Latino (3.0%). A large category of characters (30.3%) could not be ethnically classified, as many were alien and non-human. It is worth noting that Asian representation rose in year two due to the presence of WB's *Jackie Chan Adventures*, and *Xiaolin Showdown*, whose main characters are Asian.

Contextual themes of injury related event

The general tone surrounding an injury related event was usually one of humor or indifference (62.7% and 16.9%, respectively). Less common were tones of horror, panic, surprise, suspense, fear, and tension (see table 4). There was a significant increase in the use of humor during potential injury events between year one and year two (29 to 54, respectively), as well as a decrease in sarcasm or indifference (24 and 6, respectively), again mainly attributable to sampling differences between years. Four percent of the actual injury related events noted were categorized as "extremely graphic" (for example, spurting blood, close up

of wounds), 17.4% as "moderately graphic" (for example, bump, cast, symptoms), and the remaining 78.6% categorized as "not graphic at all". The majority (75.1%) of the injury related events did not include verbal commentary. If the event was spoken about, lay language (23.4%) was used more often than technical jargon (1.5%). In terms of plot development, injury related incidents were mainly tangential to story lines, with 83.1% of all incidents having little or no relevance to the plot. This finding was even more evident in year two.

Safety factors and safety behaviors associated with injury related events

Safety factors, such as safety gates on stairs or fencing around a pool, were hardly seen the 99 episodes viewed. Most episodes did not depict safety factors before (95.0%) or after (96.5%) an injury related event. Safety behaviors, such as wearing a bike helmet or seatbelt, were rarely shown, with 93.5% of characters failing to engage in safety behaviors before injury related events, and 98.0% of characters failing to engage in safety behaviors after an event.

Events associated with injury outcomes

Only 27% of the injury related events resulted in an actual physical injury depicted, with head injuries, scratches and scrapes, loss of consciousness, burns, and swelling or throbbing most common. Injuries were severe in 20.4% of cases shown, moderate in 61.1%, and minor in 16.7%. The duration of injury depictions was short, with 56.4% momentary, 41.8% lasting for one scene, and 1.8% lasting for 2–3 scenes. Bystanders were present 89.1% of the time when actual injuries occurred. Few (18.3%) did something to help the victim, while 18.5% of the bystanders demonstrated sarcasm or antagonistic humor, 20.4% reflected indifference, and 38.8% made no response.

Comparisons between actual and potential injury events

Cross tabulations were run on the variables reported to test whether factors linked to actual injury events depicted differed significantly from factors linked to potential injury events. There were no significant differences on distributions of risk factors, causes, sites, safety factors or ethnicity of characters for actual and potential injury events. However, boys were more likely to sustain actual injuries than girls ($p < 0.001$), and non-human characters more likely to sustain actual injuries than human characters ($p < 0.001$). Younger children (ages 2–12 years) were more likely to be injured than teens (ages 13–19 years) ($p < 0.05$), and major characters were more likely to be injured than minor or background characters ($p < 0.01$). When an actual injury occurred, the scenes were less relevant to the overall storyline than when a potential injury occurred ($p < 0.05$).

DISCUSSION

Consistent with previous studies, results indicate that children are exposed to inaccurate depictions of injury related events on popular television programs.^{6 10 14} Although behavioral and environmental risk factors were commonly depicted, few characters suffered negative physical consequences as a result of risky behaviors or environments. Most events depicted that would in real life lead to a physical injury outcome did not. Instead, most events were depicted in a humorous manner devoid of graphic content. Bystanders usually did not respond or react to the event, further downplaying the severity or seriousness of risky behaviors or environmental hazards depicted, thereby normalizing indifferent behavior. Safety behaviors linked to actual and potential injury events were rarely depicted, and

the events usually had little relevance to the episode storylines. When injuries did occur, consequences were minimized.

Outcomes reported in this media content study do not differ markedly from those previously reported. However, they represent a more comprehensive approach. For example, Potts, *et al* (1991) focused on injury depictions.¹⁴ Subsequent papers by those investigators looked more closely at safety behavior depictions.⁶ Winston, *et al* (2000) looked at “non-contradicted unsafe behavior”, a concept similar to this study’s “potential injury events”.¹⁰ None of the previous studies compares actual events to potential injury events, nor do they explore in any depth the contextual or programmatic placement of injury content as reported here. Here, as in all previous studies, injury, safety, and risk taking behaviors are inaccurately portrayed in children’s popular media.^{5 6 10 14}

Lack of accurate injury depictions in children’s television programs may encourage children to engage in risk taking behaviors, as they may not be able to understand the real life consequences of their actions.¹⁰ Lack of depictions of safety behaviors and consequences for risky behaviors can prove fatal to unassuming children, who may mimic these depictions.¹⁴ There are several fatal examples of young adults and children imitating risky behaviors portrayed in popular media.²³ Children who spend more time watching television devote fewer hours to physical activities and games that could be potentially dangerous. These children are, paradoxically, at greater risk of experiencing events that cause physical injuries.²⁴ Children who view four hours of television daily are 4.3 times more likely to be hospitalized than children who watch no television at all.²⁴ How viewing inaccurate depictions of injuries on popular television programs impacts children is unclear because there is little research on this topic. Parallel literatures from the fields of violence prevention,^{25 26} tobacco control,^{27 28} and substance use²⁹ show there are important correlations between viewing media content and children’s behavior.

Not only is there little research about the impact of unintentional injury depictions on the audience, only a handful of published studies on unintentional injury related content in popular media were found.^{6 10 14 15} This contrasts with the hundreds of studies published on media violence and children. This study addresses this limitation, and offers insight and a better understanding of the magnitude of injury related depictions in television.

There are at least three main limitations associated with this study. The sample size of 99 episodes was limited, precluding more extensive multivariate analysis. Results may be biased due to the subjective nature in determining what constitutes an event that might lead to an injury. A concordance coding sheet completed by coders minimized subjectivity, and the frequency of events coded were similar to those found in a previous study with similar outcome measures,¹⁰ bolstering confidence that study data were coded accurately. Finally this research only looked at the most popular children’s television programs aired on national cable and network television in the US. Not considered were less popular programs, or those broadcast in other countries where television viewing among young children may approach or even exceed that of the US.

Future research should explore the direct relation between television depictions of unsafe behaviors without consequences and real life behaviors by children. In establishing such a relation, research can guide preventive measures for future unintentional injury campaigns for children’s programming. Future research should focus on popular prime time programming in relation to young viewers, as they comprise a considerable segment of its audience.

Constant exposure to inaccurate media depictions can cause individuals to develop distorted perceptions of what is

Key points

- Injury related events are not accurately depicted in children’s television.
- Most injury events depicted are not treated.
- Bystanders usually show no response or indifference to injury events.
- Injuries are often framed in the context of humor or dramatic effect.
- Behavioral risks are most often associated with injury related events.

real versus what is imaginary.^{18 24 30} This can, in turn, lead to unhealthy attitudes and behaviors. It is critical that health professionals become aware of the injury related and health impeding messages intentionally or unintentionally embedded in highly viewed television cable and network programs. The findings of this study are of significance for those who are developing strategies to influence media content. The integration of public health information into television programming can serve to improve the development of public health interventions.³¹

Authors’ affiliations

D Glik, J Kinsler, W A Todd, L Clarke, K Fazio, R Miyashiro, M Perez, E Vielmetter, R C Flores, UCLA School of Public Health, Los Angeles, CA, USA

REFERENCES

- 1 **Centers for Disease Control and Prevention.** National Center for Injury Prevention and Control. Childhood Injury Fact Sheet. Available at <http://www.cdc.gov/ncipc/factsheets/childh.htm> (accessed 15 August 2003).
- 2 **Bar-on ME.** The effects of television on child health: implications and recommendations. *Arch Dis Child* 2000;**83**:289–92.
- 3 **Graham J.** How television viewing affects children, bulletin #4100. *Family issue facts*. Available at <http://www.umext.maine.edu/onlinepubs/PDFpubs/4100.pdf> (accessed 15 August 2003).
- 4 **Liebert RM.** Effects of television on children and adolescents. *J Dev Behav Pediatr* 1986;**7**:43–8.
- 5 **Pelletier AR, Quinlan KP, Sacks JJ, et al.** Injury prevention practices as depicted in G-rated and PG-rated movies. *Arch Pediatr Adolesc Med* 2000;**154**:283–6.
- 6 **Potts R, Runyan D, Zerger A, et al.** A content analysis of safety behaviors of television characters: implications for children’s safety and injury. *J Pediatr Psychol* 1996;**21**:517–28.
- 7 **Campbell JR, Voelkl KE, Donahue PL.** Report in brief, NAEP 1996 trends in academic progress. Washington, DC: US Department of Education, Office of Educational Research and Improvement. National Center for Education Statistics; 2000. NCES 97–986r.
- 8 **Petty RE, Priester JR, Brinol P.** Mass media attitude change: Implications of the elaboration likelihood model of persuasion. In: Bryant J, Zillmann D, eds. *Media effects: advances in theory and research*. Mahwah, NJ: Lawrence Erlbaum Associates, 2002:155–98.
- 9 **Gerbner G, Gross L, Jackson-Beeck M, et al.** Cultural indicators: Violence profile No. 9. *J Commun* 1978;**28**:176–207.
- 10 **Winston FK, Woolf KD, Jordan A, et al.** Actions without consequences: injury-related messages in children’s programs. *Arch Pediatr Adolesc Med* 2000;**154**:366–9.
- 11 **Zuckerman DM, Zuckerman BS.** Television’s impact on children. *Pediatrics* 1985;**75**:233–40.
- 12 **Fisch S.** Vast wasteland or vast opportunity? Effects of educational television on children’s academic knowledge, skills, and attitudes. In: Bryant J, Zillmann D, eds. *Media effects: advances in theory and research*. Mahwah, NJ: Lawrence Erlbaum Associates, 2002:397–426.
- 13 **Singhal A, Rogers R.** *Entertainment education: a communications strategy for social change*. Mahwah, NJ: Lawrence Erlbaum Associates, 1999.
- 14 **Potts R, Henderson J.** The dangerous world of television: A content analysis of physical injuries in children’s television programming. *Children’s Environments Quarterly*. A Planning Project of the California Wellness Foundation: US, 1991;**8**:7–14.
- 15 **McArthur D, Magana D, Peek-Asa C, et al.** Local television news coverage of traumatic deaths and injuries. *West J Med* 2001;**175**:380–4.
- 16 **Shrum J.** Television and persuasion: Effects of the programs between ads. *Psychology & Marketing* 1999;**16**:119–40.

- 17 **Bandura A.** Social cognitive theory of mass communication. In: Bryant J, Zillman D, eds. *Media effects: advances in theory and research*. Mahwah, NJ: Lawrence Erlbaum Associates, 2002:121–54.
- 18 **Signorelli N.** Television's mean and dangerous world: A continuation of the cultural indicators perspective. In: Signorelli N, Morgan M, eds. *Cultivation analysis: new directions in media effects research*. Newbury Park, CA, 1990:85–106.
- 19 **Rubin AM.** The Uses-and-Gratifications perspective of media effects. In: Bryant J, Zillman D, eds. *Media effects: advances in theory and research*. Mahwah, NJ: Lawrence Erlbaum Associates, 2002:525–48.
- 20 **Berelson B.** *Content analysis in communications research*. New York: Free Press, 1952.
- 21 **Krippendorff K.** *Content analysis: an introduction to its methodology*. Beverly Hills, CA: Sage Publications, 1980.
- 22 **The Nielsen Media Research.** Available at: <http://www.nielsenmedia.com/> (accessed 15 August 2003 and 22 January 2004).
- 23 **Copycat Crimes-Issue Brief Series.** Available at <http://www.mediascope.org/pubs/ibriefs/cc.htm> (accessed 15 August 2003).
- 24 **Uberos J, Gómez A, Muñoz A.** Television and childhood injuries: is there a connection? *Arch Pediatr Adolesc Med* 1998;**152**:712–14.
- 25 **Paik H, Comstock G.** The effects of television violence on antisocial behavior: A meta-analysis. *Communic Res* 1994;516–46.
- 26 **Bushman BJ, Anderson CA.** Media violence and the American public: Scientific facts versus media misinformation. *Am Psychol* 2001;**56**:477–89.
- 27 **Sargent JD, Beach ML, Dalton MA, et al.** Effect of seeing tobacco use in films on trying smoking among adolescents: cross sectional study. *BMJ* 2001;**232**:1–6.
- 28 **Dalton MA, Sargent JD, Beach ML, et al.** Effect of viewing smoking in movies on adolescent smoking initiation: a cohort study. *Lancet* 2003;**362**:281–5.
- 29 **Robinson TN, Chen HL, Killen JD.** Television and music video exposure and risk of adolescent alcohol use. *Pediatrics* 1998;**102**:E54.
- 30 **Villani S.** Impact of media on children and adolescents: a 10-year review of the research. *J Am Acad Child Adolesc Psychiatry* 2001;**40**:392–401.
- 31 **Glik D, Berkanovic E, Stone K.** Health education goes to Hollywood: Working with primetime and daytime entertainment television for immunization promotion. *J Health Commun* 1998;**3**:263–82.

LACUNAE .....

Pea avalanche

A New Zealand teenager was trapped in a pea avalanche after he and two friends forced the door of a shipping container at Ashburton. The 17 year old victim was charged with recklessly damaging the peas.

The Age (Melbourne), May 2005. Contributed by Ian Scott.

Pranksters film rail “chicken game”

Children are using camera phones to film themselves playing “chicken” on rail lines, police warned yesterday. Officers highlighted the dangerous fad after two boys of 14 and 15 were killed by a train at Darlington, northern England, in March. One clip found on another teenager's phone showed him and a friend playing on a main line in Gloucestershire as an express raced towards them at 120 kph (75 mph). In the movie, a friend is heard yelling for the boy to jump seconds before a train thunders past. The file was found by a father and handed to police. The British Transport Police commented: “What they did beggars belief”.

From *Metro*, March 2005. Contributed by Anna Cronin de Chavez.