Published in final edited form as:

Res Q Exerc Sport. 2017 March ; 88(1): 72–82. doi:10.1080/02701367.2016.1266459.

A Content Analysis of Physical Activity in TV Shows Popular Among Adolescents

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Abstract

Purpose—Previous research demonstrates that television has the potential to influence youth behaviors, but little evidence exists on how television depicts physical activity (PA), an important public health priority for youth. This mixed-methods study investigates depictions of television characters' participation in PA in the top 25 favorite shows ranked by a diverse sample of 2,793 adolescents.

Method—Randomly selected episodes from each show were content analyzed for PA incidents, reasons and context, and in relation to the gender and weight status of participating characters.

Results—A total of 374 incidents of PA were coded across 75 episodes, with an average of 5.0 incidents per episode. Although male and female characters were equally likely to engage in at least one incident of PA, male characters were involved in a statistically significantly larger proportion of PA incidents than female characters and were more likely to engage in PA for competitive sport. There was no statistically significant difference in engagement in PA or the proportion of PA incidents for characters coded as overweight compared to non-overweight characters.

Conclusions—Although female characters tended to be underrepresented in PA, this study reveals positive messages for how gender and weight are portrayed in relation to PA on TV.

Keywords

media; adolescents; content analysis

Evidence from multiple studies has shown that physical activity (PA) is an important behavior for health and quality of life, and *Healthy People 2020* includes it as a key area for improving the health of all people in the United States (Centers for Disease Control and Prevention (CDC), 2011a). To achieve the health benefits from PA, the CDC currently recommends children and adolescents (ages 6–17) get 60 minutes or more per day of moderate- or vigorous-intensity aerobic PA. Reaching recommended levels of PA may lower risk for numerous emotional and physical health conditions (Ahn & Fedewa, 2010; Blair et al., 1995; U.S. Department of Health and Human Services, 2008). Despite the evidence

supporting these recommendations, as few as one in four adolescents in the United States meet them; there has been little improvement over the past decade in meeting the recommendations; and as adolescents age, their amount of PA actually declines (Dumith, Gigante, Domingues, & Kohl, 2011; Song, Carroll, & Fulton, 2013). Identifying factors associated with low PA among youth is critical for informing future interventions to improve youth PA involvement.

Nationwide, 33% of high school students (grades 9–12) watch more than three hours of TV per day (CDC, 2014). Exposure to TV content may play an important role in the behaviors of U.S. youth (Strasburger, Jordan, & Donerstein, 2012), but little research is available on what youth are actually viewing when they watch TV.

While there are certainly many factors that influence PA among adolescents, the theory of Parasocial Interaction (PSI) offers some insight. PSI explains how children and adolescents may select certain characters in TV shows to look up to as role models or form “friendships” with, with similar qualities as face-to-face relationships (Giles, 2009). This concept is particularly relevant for TV shows because forming the relationship requires a certain amount of regularity of interactions so that viewers begin to look to TV personalities for guidance (Rubin, Perse, & Powell, 1985). Past research has shown that these types of relationships are fairly common among TV viewers (Perse & Rubin, 1989). This idea is especially important for youth, as stronger parasocial relationships are associated with more time spent watching specific TV characters (Rubin et al., 1985). One study tested the idea of PSI among a group of children (ages 7–12), finding they were more likely to form parasocial relationships with same-sex television characters, and they viewed these characters as both friends and role models (Hoffner, 1996). Such relationship-building, combined with the possibility of characters serving as models for behaviors, indicates the significance of understanding the health-related content and messages youth are getting from popular shows.

Although the literature on PA content portrayed on TV and through other modalities is somewhat limited, several studies have investigated this topic. In an extensive analysis of prime-time coverage of PA in TV news media from 1970–2001, Wallace and Leenders (2004) discovered most news reports connected health benefits to PA with emphasis on general health and heart disease using credible sources (e.g., professional organizations and universities). However, the amount of coverage for PA paled in comparison to coverage of other health topics such as smoking, and viewers were not made aware of current recommendations for PA after most broadcasts (Wallace & Leenders, 2004). A study of Australian print media yielded similar findings, with PA receiving much less screen time than obesity and tobacco (Chau, Bonfiglioli, Chey, & Bauman, 2009). This trend extends beyond news media and into entertainment media; an analysis of popular US films revealed food and drink to be shown much more frequently than exercise or sports (Bell, Berger, Cassady, & Townsend, 2005). These findings are important because emphasis in the media may shape audience perceptions of an issue’s importance and value (Scheufele & Tewksbury, 2007); therefore, limited portrayals of PA may have the effect of viewers undervaluing these behaviors.

Gender dynamics often play a prominent role in media coverage of PA. An analysis of toy ads determined that male characters were shown being active more often, but female characters were still frequently shown engaging in PA (Smith, 1994). There is some evidence that short-term exposure to advertisements such as these may not be enough to influence perceptions or behaviors related to PA, but more research is needed. Gender bias has been a common theme historically in both print and television media coverage of sport and PA, with content frequently being male-dominated (Koivula, 1999; Rowe, 2009). However, more recent investigations reveal trends are shifting with efforts to place girls and women on more equal footing and present positive and equal images of active female characters to children (Eagleman, Burch, & Vooris, 2014; Roper & Clifton, 2013).

Existing research on content analyses of media from other health domains, such as food, tobacco use, and weight indicates media depictions may stigmatize certain groups, are often inaccurate and have the ability to influence youth choices and attitudes (Eisenberg, Carlson-McGuire, Gollust, & Neumark-Sztainer, 2015; Evans, Farkas, Gilpin, Berry, & Pierce, 1995; Foltz, Goldberg, Economos, Bell, & Meltzer, 2006; Radnitz, 2009). However, there is limited research on PA content contained in TV shows. Considering the amount of time many youth spend watching TV, it is important to understand youth exposures to PA incidents on screen, including the characteristics of PA and the characters involved. These portrayals have the potential to shape subsequent youth behaviors (Strasburger et al., 2012). The main focus of this study is to explore incidents of PA contained in TV shows popular with adolescents. Analysis further explores commonly stated reasons for involvement in PA and differences in the portrayal of PA by characters' gender and weight status. Insights into common media portrayals of PA might contribute to the development of salient health promotion messages and programs for a youth audience.

Methods

This study uses a mixed-methods design, drawing from a large survey of adolescents to identify favorite TV shows, and conducting a content analysis of popular TV programs.

Participants

As part of EAT 2010 (Eating and Activity in Teens), a cross-sectional, population-based study designed to investigate eating, PA, and weight-related outcomes, a survey was completed by students from 20 middle and high schools in Minneapolis and St. Paul, Minnesota (N = 2,793) (Neumark-Sztainer, Wall, Larson, Story, Fulkerson et al, 2012). The sample included students in grades 6 through 12 with 46% from middle schools and 54% from high schools; similar percentages of boys (47%) and girls (53%) were included. The mean age of participants was 14.4 years. Participants came from a variety of racial and ethnic backgrounds with 29% identifying as African American or Black, 20% Asian American, 19% white, 17% Hispanic, 4% Native American, and 12% mixed or other backgrounds.

Study Design

As part of the survey, students were asked to list their top three favorite TV shows in response to an open-ended question. At least one show was listed by 2,130 students, and 653 unique shows were identified and ranked using a weighted system favoring shows listed higher in each student's response. The top 25 shows were selected based on the weighted rankings. Three episodes from the season aired during 2009–2010 were randomly selected from each show for coding and analysis for a total of 75 episodes. Episodes were viewed through online services (e.g., Netflix, Hulu) or network websites or purchased (e.g., iTunes, Amazon). When students listed networks (e.g., Disney, Nickelodeon, or MTV) or topic areas (e.g., sports, music), their responses were coded as missing. Additionally, shows with multiple spin-offs (e.g., CSI, CSI-New York, etc.) were combined as the original version of the show due to messages and content being similar (Eisenberg et al., 2015; Eisenberg, Larson, Gollust & Neumark-Sztainer, 2016). Four shows were excluded from the analysis (i.e., 106 & Park, Sportscenter, World Wrestling Entertainment and The Tyra Banks Show) since they lack a specific storyline from which to draw content. These were replaced by the next four highest ranked shows. All protocols used in EAT 2010 were approved and this study was determined to be exempt from review by the University of Minnesota's Institutional Review Board.

Coding Instrument

A coding instrument developed by the research team based on a content analysis of US news media (Gollust, Eboh, & Barry, 2012) was used for this study (see Appendix). The instrument assessed general show information (8 items), character demographics (11 items), and portrayal of PA (6 items). A codebook was developed along with the coding instrument to give detailed direction to coders.

Prior to beginning coding from chosen episodes, graduate student coders were trained in using the instrument and analysis of TV shows. All coders then completed several rounds of practice coding using older seasons of chosen shows to gain a sense of how to use the instrument and address any questions. For each round, coders individually analyzed TV shows, then met with a trainer or faculty members to go over what was coded, discuss common issues, and resolve any discrepancies.

Coding Categories

Characters—For analysis, character demographics and traits were assigned to main and supporting characters. Main characters were determined prior to coding episodes through viewing show information on network websites or from external sites (e.g., <http://www.imdb.com>). These characters held a regular role on the shows throughout the season and typically engaged in multiple speaking roles during each episode. Once identified, a list of main characters was developed with pictures and ID numbers for each show to assist with coding. Supporting characters had at least two speaking roles during an episode and needed to also be linked to a coded incident. Both main and supporting characters were assigned a unique ID number, which was used to link them to specific PA incidents and character demographics.

Physical activity—All PA content was coded by *type* as shown or referenced, meaning the incident was either visible on screen (e.g., characters were shown running) or referenced verbally (e.g., characters discussed a morning run). Shown and referenced incidents were combined to represent the total number of PA incidents. PA incidents were defined as any time characters engaged in activity that would cause them to breathe harder than normal. Once an incident was recorded as PA, the stated or implied *reason* for participation was coded based on verbal and visual cues as health, weight loss, muscle enhancing (to build muscle size, strength, or tone), competitive sport (e.g., high school soccer), fun/recreation, other (listed), or undeterminable/not implied. “Other” was used for activities that did not fit any of the other categories and included a description of the reason (e.g., active transportation), while undeterminable was used when the reason could not be assessed from the details given in the episode. After coding, “faster movement” was added as another reason for analysis due to a large number of “other” incidents fitting this description. This descriptor was used for incidents where the sole purpose of the activity was to move more quickly (e.g., running to class, chasing someone). As *gender* differences are well-documented in competitive sport news (Koivula, 1999; Rowe, 2009), a binary variable was created to specifically compare *competitive sport incidents* to all other incidents of PA.

Other information about the activity included the *extent of PA* (i.e., normal, excessive, or undeterminable) and *social context* (i.e., alone, with peers, with family, others nearby and not with character, or other-listed). The activity was listed as normal for the default classification, excessive for obviously abnormal levels of PA (e.g., running until exhausted), and undeterminable if the details provided in the episode were not enough for classification. Finally, an open-ended description of the activity was recorded by the coder.

The frequency of PA incidents was reported in two ways for analysis. First, the overall frequency of PA incidents was determined. This number represented each time PA was portrayed regardless of the number of characters involved and will be labeled as *episode incidents* (i.e., three characters shown running together coded as one incident). Second, to gain an understanding of the unique characteristics of individual characters involved and their associations with PA, incidents were also separated out by character. These will be labeled as *character incidents* (i.e., three characters running together coded as three separate incidents).

Gender—Characters were coded as male, female, or undeterminable. Only one character (a cartoon cat) was coded as undeterminable gender and was excluded from gender analyses.

Weight status—Characters were assigned one of the following codes: (1) “thin/underweight”; (2) “normal/average weight” (default); (3) “heavier than normal/overweight”; (4) “obese”; (5) “undeterminable.” The undeterminable category was only used when characters were referred to and not shown. “Thin/underweight” was selected if a character was portrayed as underweight or thinner than normal with obvious signs of protruding bones (e.g., rib cage). The default classification was “normal/average weight.” Characters with apparent excess body fat were coded as “heavier than normal/overweight”, while those with very excessive amounts of weight who would likely be classified with a BMI greater than 30 kg/m² were coded as “obese.” For analysis, a binary variable was created for weight status:

(1) underweight and normal/average; (2) heavier than normal/overweight and obese (which will be referred to below as “overweight”). Those of “undeterminable” weight were not included in analysis.

Show information—Two show characteristics were assessed, based on information provided in each show’s website or other online sources. *Show type* was coded as sitcom, cartoon, youth cartoon, or drama. *Parental Guide ratings* were also recorded for each show: TV-Y and TV-G (intended for a youth audience), TV-PG (general audience), and TV-14 and TV-MA (older audience).

Data Collection

Shows were coded in two batches; three graduate students coded the first 10 shows and two graduate students coded the last 15 shows. An experienced coder trained the two new coders to ensure consistency in applying the instrument.

Each episode was viewed three times to ensure all content of interest was coded accurately. During the first viewing, coders listed characters and incidents, making note of the time in the episode where incidents occurred. Actual coding using the coding instrument took place during the second viewing, and the final viewing was used to ensure all appropriate content was captured and correctly coded. After completion of coding for all 75 episodes, data were entered into a spreadsheet for analysis.

Intercoder Reliability

Cohen’s kappa (κ) was used to assess intercoder reliability; this measure is appropriate for categorical variables and takes into account agreement occurring by chance (Landis & Koch, 1977). The calculation was completed twice due to different individuals coding and analyzing the first 10 and final 15 shows. The mean kappas for the first 10 episodes were as follows: $\kappa = .85$ for PA incidents and $\kappa = .81$ for character demographics (including weight status, $\kappa = .86$). Mean kappas for the final 15 episodes included $\kappa = .97$ for PA and $\kappa = 1.00$ for character demographics. All kappas for this study were considered to have almost perfect agreement as defined by having a value $\geq .81$ (Landis & Koch, 1977).

Data Analysis

Stata was used to perform all analysis on data obtained from coding TV shows (StataCorp, 2013). Descriptive statistics included frequencies for PA incidents and distributions of gender and weight characteristics among main and supporting characters. Associations of gender and weight status with PA items were assessed using chi-square tests for comparisons across all characters and by type and reason for participation. Binomial tests were used to assess differences in the proportion of characters involved in PA incidents (versus all characters in the sample) based on individual variables (i.e., gender and weight status). All tests used an alpha level of 0.05.

Results

TV Shows

The top 25 shows selected by Minnesota youth are displayed in Table 1, and represent a variety of genres including 12 sitcoms, three cartoon sitcoms, one cartoon youth show, and nine dramas. TV ratings indicate the majority of the selected shows are intended for older audiences ($n = 20$).

Physical Activity

Almost all of the shows (96%) and 64 of the 75 coded episodes (3 episodes for each show) included at least one *episode incident* of PA, with a total of 374 unique episode incidents ($M = 5.0/\text{episode}$). Of the PA *episode incidents*, 271 (73%) were shown and 103 (28%) were referenced. Characteristics of PA episode incidents are included in Table 2. The most common reasons for participation in PA were fun/recreation (54%), competitive sport (16%), and faster movement (16%). Running and dancing were portrayed most often and were the sole activities for 33% and 12% of *episode incidents* respectively. A majority of incidents with determinable portrayals of the extent of PA ($n = 372$) displayed normal (91%) rather than excessive (9%) engagement in PA. The social context of most incidents involved characters performing PA with peers (54%) or alone (31%) while the remaining incidents were with family (4%) or in a location where others were participating in similar activities (12%).

Characters, Gender, and PA

In total, 366 main or supporting characters were coded in the overall sample of TV shows. Over half ($n = 192$, 53%) were not involved in any incidents of PA, while 174 (48%) participated in at least one PA incident. A determinable gender was coded for 365 characters. Table 3 provides further character gender and weight demographics based on involvement in at least one incident of PA. Specifically, 63% of characters involved in at least one PA incident were male, which was not statistically significantly different from the 59% of male characters in the sample overall ($\chi^2 = 2.56$, $p = .11$).

When separated by individual characters, 696 *character incidents* of PA occurred throughout the 75 episodes. Main or supporting characters were involved in 600 of the total *character incidents* of PA (referenced = 200, shown = 400). Distributions of PA incidents by gender and weight are shown in Table 4. Male characters were represented in a majority of the *character incidents* (69%), while female characters were present in less than one-third (31%). A binomial test revealed the proportion of PA incidents involving female characters was statistically significantly different from the hypothesized value of 41% based on the total proportion of female characters in this study ($p < .001$). For the 109 *character incidents* linked to a competitive sport reason for participation (with available gender data), 87 (80%) involved male characters and 22 (20%) involved female characters, which was statistically significantly lower than their representation in the character sample overall ($\chi^2 = 7.70$, $p = .01$).

Weight Status and PA

For characters with a determinable body weight ($n = 364$), 86% were considered underweight ($n = 2$) or average weight ($n = 311$), and 14% were coded as overweight ($n = 51$). No statistically significant association was found between weight status and engaging in at least one incident of PA ($\chi^2 = 0.035$, $p = .85$; Table 3).

Similarly, overweight characters participated in 15% of the 600 *character incidents* of PA linked to character demographics, which was not statistically significantly different from the hypothesized value of 14% based on the prevalence of overweight characters in the full sample ($p = .72$).

Discussion

PA is an important component of living a healthy lifestyle, especially for children and adolescents. The present study highlights some of the messages regarding PA that are being presented to a large portion of youth through TV shows. Almost all shows included at least one incident of PA, and by far the most common reason for TV character involvement in PA was for fun and/or recreation. In other words, youth viewers are consistently being exposed to the idea that PA can be fun rather than a chore or obligation, which has implications for maintaining the behavior. In accordance with past trends, girls' and women's involvement in PA does appear to be underrepresented on TV shows particularly when it comes to competitive sports. However, this result was not consistent for all levels of PA. When looking at whether characters engaged in any PA at all, female characters were just as likely to do so as male characters. This finding represents a potential shift in gender discrepancies common in media portrayals of physical activities (Koivula, 1999; Rowe, 2009). Results were more positive when looking at associations between weight and PA. Though fewer in number, overweight characters were just as involved in PA as average weight characters. This trend is promising for combatting stereotypes and perceptions of activity levels among overweight individuals.

While the coding instrument for this study did not examine incidents of tobacco or obesity in comparison to PA as was done in previous studies (Chau et al., 2009; Wallace & Leenders, 2004), our previous research with the same sample of TV shows found that foods and beverages were much more frequently (almost twice as often) displayed in entertainment media than PA incidents (Eisenberg et al., 2016; Eisenberg, Larson, Gollust, & Neumark-Sztainer, in press). This result indicates that similar to news media and film (Bell et al., 2005; Chau et al., 2009; Wallace & Leenders, 2004), PA may also be underrepresented in TV entertainment media watched by youth, suggesting a missed opportunity in messaging about the importance of routine PA. Though this is perhaps more due to the TV shows selected by youth than a representation of general trends, it indicates certain populations are being exposed more frequently to foods and beverages that are often unhealthy (Eisenberg et al., 2016; Radnitz, 2009) than possibly healthier messages surrounding the importance of routine PA.

In contrast to other studies that focused on analyzing media campaigns or PA content discussed in news programming, this study took a unique look at how PA is portrayed on

television shows, particularly those favored by adolescents. Research on parasocial interaction indicates it is necessary to understand the behaviors and qualities TV characters model with which youth may be identifying (Giles, 2009; Rubin, 1985). Considering the role visual representations play in modeling PA, it is promising to note that the majority of these PA incidents were shown rather than referenced. Also, most incidents involved a healthy level of PA rather than showing the extent of PA as excessive or unrealistic (e.g., impossible feats performed by cartoon characters). Realistic portrayals of PA are important for giving youth a better opportunity to relate to the TV characters and their behaviors through the presentation of activities that are healthy and could potentially be performed by members of the target audience. It also may be possible for public health professionals to draw attention to how TV characters engage in healthy and realistic levels of PA as a way to reinforce these behaviors among youth and create further awareness of the CDC's recommendations for PA.

Perhaps one of the most important messages included in the top 25 shows was the frequent portrayal of PA for fun and recreation. This represented the most common stated or implied reason for participation in PA and was portrayed over twice as often as the next two most frequently observed reasons, competitive sport and faster movement. There is a strong message here for youth that PA can be a part of enjoyable daily activities. Making PA fun is one of the CDC's recommended strategies for helping youth achieve adequate amounts of PA (CDC, 2011b); if children and adolescents are able to see their favorite characters participating in certain activities for fun this may help parents convince their children to participate in those activities as well. This finding is also promising because while time on high school sports teams must end once individuals reach adulthood, recreational activities are not bound by such limits. Although health was rarely implicated as a reason for PA, it is possible health reasons may hold less meaning for youth than adults. However, it may still be beneficial for youth to see visual representations of the health benefits of PA early on as part of the process for preventing the typical decreases in PA that occur as youth age (Dumith et al., 2011).

Linking character demographics to the incidents of PA provides additional insight into the lessons youth may be drawing from these media depictions. Gender discrepancies in sport and PA have been widely on display in news media (Koivula, 1999; Rowe, 2009), but this is an area that had not been investigated in fictional TV programming. However, the results from this study paint a similar picture with girls and women not only less likely to be involved in competitive sport throughout the top 25 shows, but also underrepresented in *character incidents* of PA. Despite this finding, recent studies have shown signs that this trend is shifting with evidence of more equal portrayals of men and women (Eagleman et al., 2014), and the current study reflects those trends as well. Although male characters may have been involved in more incidents of PA on average, there was no statistically significant difference between gender and engaging in at least one incident of PA. This means when looking at whether characters participated in PA or not, female characters were just as likely to do so as male characters. So, while young girls could certainly benefit from seeing girls and women be more active on screen especially when it comes to competitive sports, these results indicate a positive trend in how girls and women are represented in relation to PA.

The relationship between weight status and PA on TV shows is also a new area of research that this study investigated. Although characters coded as overweight were involved in a very small portion of the total PA incidents, they also represented only a small percentage of the total characters. While the underrepresentation of overweight characters in TV shows does not present a picture of true populations, this result is not surprising considering a previous study found these characters made up a much smaller proportion of all TV characters than of real populations (Greenberg et al., 2003). However, despite their low numbers, overweight characters engaged in PA at a level similar to average weight characters. Considering the negative and often inaccurate representations of overweight characters that frequently appear in TV shows as indicated by previous research (Eisenberg et al., 2015; Greenberg et al., 2003; Robinson et al., 2008), it appears that PA may be an area where the messages regarding these characters are more positive. An important finding here is that characters coded as overweight were portrayed as being physically active. This is in opposition to a stereotype that being overweight means individuals are inactive, which is not necessarily the case for real populations (Duncan, 2010). This represents an important message for preventing stereotypes and stigmatization. With obesity currently affecting a large number of youth and frequently transitioning to obesity in adulthood (Lakshman, Elks, & Ong, 2012), it is important for children and adolescents to be exposed to positive and healthy ways to prevent and/or reverse this condition.

Strengths and Limitations

This study offers a different look at the content in TV shows and has several strengths that improve its ability to contribute to existing and future research on factors influencing youth PA. One of the major strengths is the thorough training process provided to coders that enabled consistent coding across all episodes as indicated by almost perfect Cohen's kappa scores across all variables of interest. The actual process of coding was very rigorous and designed to ensure all content of interest was coded as directed by the coding instrument so that any drawn conclusions are as reliable as possible. Additionally, all shows in the sample were selected as favorites by youth themselves, rather than using a sample of shows targeting youth or with high ratings among the general population. Using a sample of the top 25 shows also enabled a large number of PA incidents to be coded and used to investigate associated content.

This study also has several limitations. For one, though random selection was used to choose episodes from each show, there is still a possibility that themed episodes (e.g., episodes focusing on a football game) led to an overrepresentation of the amount of PA content (e.g., many incidents of football or cheerleading) contained within individual shows. Secondly, while the selected shows were commercially successful (i.e., running 4–26 seasons as of 2015) indicating that they likely had wide national audiences, all were chosen by youth located in an urban area of Minnesota. So, it is possible popular shows for adolescents in other areas may be different, and these results may not be generalizable to the shows viewed by adolescents in other states or rural populations. The coding instrument also only allowed for recording whether a PA incident occurred and if it was normal or excessive; many factors, including length of exposure to the incident, were not included. This could be important for making a lasting impression in the memories of audiences and for PA incidents

to have the potential to influence behaviors. In addition, there are many options for youth to choose from when it comes to screen time including YouTube, video games, social media, etc. Media messages about PA are part of a complex web coming from multiple sources that extend far beyond what was contained in this study.

Implications and Conclusions

Screen time can be used to maximize healthy messages or at least attune youth audiences to beneficial content such as PA. Information on how specific shows portray PA can give public health professionals and parents insight into what shows to encourage youth to watch or when to suggest youth could try a healthy activity performed by a favorite character. With food advertisements successfully promoting the association of unhealthy products with having fun (Folta et al., 2006), drawing attention to favorite characters having fun while engaging in PA may have a similar impact.

The use of PA content in TV programming to promote health seems promising, but with no specific research to link this content to youth behaviors, its effect is largely unknown. Future research should concentrate on whether TV portrayals of PA impact youth engagement in PA or attitudes toward certain activities. Additionally, further content analysis of the amount of screen time dedicated to PA may be beneficial for determining if length of exposure has an effect on outcomes. This type of information would be useful for enhancing understanding of whether PA content contained in TV shows designed for entertainment purposes has the ability to positively influence youth behaviors.

Given the health benefits associated with regular engagement in PA and the concerning trends of youth failing to meet current PA guidelines, new methods for encouraging an active lifestyle may be necessary. Considerable evidence exists to support the idea that TV content has the ability to influence youth behaviors and preferences in the real world. Therefore, efforts to increase understanding of this content and maximize portrayals of healthier messages regarding PA could be very helpful for identifying additional avenues for increasing youth PA or changing attitudes regarding PA.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding

This study was supported by Grant Number R01HL084064 from the National Heart, Lung, and Blood Institute (PI: Dianne Neumark-Sztainer). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Heart, Lung, and Blood Institute, or the National Institutes of Health.

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What Does This Article Add?

This mixed methods study takes a novel approach to content analysis of TV programming by sampling shows nominated as favorites by a large and diverse sample of adolescents, and examining both the portrayal of PA as well as the characteristics of characters involved in on-screen PA. Key findings include that PA is commonly included in popular TV shows and often portrayed as fun and recreational, which has not been shown before. Although female characters were not shown engaging in PA as frequently as male characters, they were as likely to be involved in at least one PA incident, which represents a shift from previously noted gender disparities in on-screen PA. Similarly, overweight characters engaged in PA in proportion to their representation in this sample of shows, which also differs from earlier research showing reinforcement of stereotypes of overweight people (e.g., inactive). Because of the potential for on-screen activities to influence health behaviors of young viewers, this new evidence regarding the portrayal of PA suggests creative new opportunities for promoting PA among a population at risk for decreased activity and increased weight as they move through adolescence.

Table 1

Top 25 shows

Rank	TV Show	Show Genre	Show Rating
1	Family Guy	cartoon sitcom	TV-14
2	The Simpsons	cartoon sitcom	TV-PG
3	Spongebob	cartoon youth	TV-Y7 ^a
4	CSI	drama	TV-14
5	iCarly	sitcom	TV-G ^a
6	South Park	cartoon sitcom	TV-MA
7	Two and a Half Men	sitcom	TV-14
8	That 70's Show	sitcom	TV-PG
9	The Game	sitcom	TV-PG
10	George Lopez	sitcom	TV-PG
11	Everybody Hates Chris	sitcom	TV-PG
12	House	drama	TV-14
13	The Vampire Diaries	drama	TV-14
14	My Name is Earl	sitcom	TV-PG
15	Gossip Girl	drama	TV-14
16	The Office	sitcom	TV-PG
17	Degrassi	drama	TV-PG
18	Hannah Montana	sitcom	TV-G ^a
19	Wizards of Waverly Place	sitcom	TV-G ^a
20	Suite Life on Deck	sitcom	TV-G ^a
21	Secret Life of the American Teenager	drama	TV-14
22	Supernatural	drama	TV-14
23	NCIS	drama	TV-14
24	Bones	drama	TV-14
25	Scrubs	sitcom	TV-14

^aDesignated suitable even for younger audiences

Table 2

Episode incidents by reason, extent of PA, and company

PA item	Total incidents	Percent (of total)
Reason		
Health	7	1.9
Weight loss	2	0.5
Muscle enhancing	4	1.1
Competitive sport	60	16.0
Fun/recreation	200	53.5
Faster movement	60	16.0
Other	38	10.2
Undeterminable	3	0.8
Extent of PA		
Normal	337	90.6
Excessive	35	9.4
Social Context:		
Alone	114	30.5
Peers	202	54.0
Family	15	4.0
Others nearby	43	11.5

Table 3

Character demographics and involvement in PA

Characteristic	Frequency	% of Total	Involved in any PA		Chi-square test
			Yes (%)	No (%)	
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Gender					$\chi^2 = 2.557, p = .11$
Male	215	58.9	110 (63.2)	105 (55.0)	
Female	150	41.1	64 (36.8)	86 (45.0)	
Total:	365	100.0	174	191	
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Weight Status					$\chi^2 = 0.035, p = .85$
Normal/Average	313	86.0	149 (85.6)	164 (86.3)	
Overweight	51	14.0	25 (14.4)	26 (13.7)	
Total:	364	100.0	174	190	

Table 4

PA incidents by gender and weight status and results from binomial tests

Characteristic	Total incidents	Percent (of total)	Binomial test
Gender			$p < .001$
Male	412	68.7	
Female	188	31.3	
Total:	600	100.00	
Weight status			$p = .72$
Normal/average	513	85.5	
Overweight	87	14.5	
Total:	600	100.00	