***Continuing Education Contact Hour Opportunity Pending**

Pretty Risky Behavior: A Content Analysis of Youth Risk Behaviors in *Pretty Little Liars*

Cougar Hall, Joshua West and Patrick C. Herbert

Abstract

Adolescent consumption of screen media continues to increase. A variety of theoretical constructs hypothesize the impact of media content on health-related attitudes, beliefs, and behaviors. This study uses a coding instrument based on the Centers for Disease Control and Prevention Youth Risk Behavior Survey to analyze health behavior contained in 95 episodes of the popular American teen drama series *Pretty Little Liars.* This content analysis identified several risk behaviors such as being bullied on school property, youth consumption of alcohol, and failure to use condoms or other birth control during sexual activity. Illegal or unethical behaviors related to lying, trespassing, vandalism, and age of consent violations were also identified. The analysis reveals several positive health behaviors frequently included in *Pretty Little Liars* episodes such as fruit and vegetable consumption, physical activity, and avoidance of tobacco products. Health education efforts to increase media literacy skills and assist students in analyzing the influence of media messages on behavior are warranted. Parents concerned about their child's exposure to unhealthy, dangerous or illegal behavioral depictions may benefit from seizing opportunities provided by programs such as *Pretty Little Liars* to engage adolescents in discussions about expectations for health behavior.

Introduction

Screen media, including television, videos/DVDs, and movies, continue to dominate young people's media exposure (Roberts, Foehr, & Rideout, 2010). On average, 8- to 18-year-olds spend more than 7 hours each day with media (Rideout, Foehr, & Roberts, 2010). Despite the massive proliferation of cell phones and social networking sites, television remains the most consumed screen media platform for this age group in the United States. Access to television is widespread for teens in the U.S. where the average household includes more televisions sets (3.01) than people (2.53), and where approximately 63% of adolescents report having a television set in their bedroom (Bleakley, Vaala, Jordan, & Romer, 2014). With a reported 4 hours and 15 minutes of total non-interactive screen media consumed each day, this medium can have a powerful influence on young people and their health behaviors. Screen media provides one possible venue to expose adolescents to inappropriate or unhealthy behaviors. It can also reinforce such behaviors, reduce existing behavioral inhibitions, and increase motivation to model these behaviors (Perse, 2001). For example, exposure to health and risk behaviors in screen media may increase substance use among adolescents. Initiation of cigarette smoking among youth has been associated with viewing both television (Gidwani, Sobo, Dejong, Perrin, & Gortmaker, 2002) and movies (Sargent et al., 2005), and exposure to alcohol messages in media influences decisions, attitudes, and beliefs related to alcohol among adolescents (Austin, Chen, & Grube, 2006). Similarly, the impact of media exposure on adolescents has been documented for dietary (Calado, Lameiras, Sepulveda, Rodriguez, & Carrera, 2010), violence (Boxer, Huesmann, Bushman, O'Brien, & Moceri, 2008; Friedlander, Connolly, Pepler, & Craig, 2013), and sexual risk behaviors (Collins et al., 2004; Pardun, L'Engle, & Brown, 2005).

Research on media consumption suggests that with added exposure, teens largely adopt health and risk behaviors in screen media as normative (Shrum, 1999). Such findings support multiple theories on human behavior including Social Cognitive Theory, Cultivation Theory and Super-Peer Theory. These theories link messages and themes observed in screen media with personal attitudes, beliefs, or behaviors. In Social Cognitive Theory, media characters are behavioral models that influence others through a process called observational learning (Bandura, 1977). In Cultivation Theory, "mediated reality" results when that which is seen or heard most becomes that which is most believed (Gerbner, Gross, Morgan, & Signorielli, 1994). An individual is increasingly shaped by what she sees and experiences through a screen and less by what she experiences directly (Gerbner, 1969; Shanahan & Morgan, 1999). According to Super-Peer Theory, media is a powerful factor in defining social norms for teens (Strasburger, 2002; Strasburger & Wilson, 2002), insomuch as media can become a super-peer, and without a counterbalance, even exceed the influence of traditional peer groups (Strasburger, 1997). Each of these theories links messages and themes observed in an increasingly media saturated environment with personal attitudes, beliefs, and behaviors.

Pretty Little Liars is an American teen television drama series based upon the Harper Teen Novels of the same name, which premiered on ABC Family in 2010. The show

*Patrick C. Herbert, Ph.D., CHES, Assistant Professor, Department of Health Science, Towson University, Linthicum Hall 101E, Towson, MD 21252. Phone: 410-704-4973; Fax: 410-704-4670; Email: pherbert@towson.edu

Cougar Hall, PhD, CHES, Associate Professor, Department of Health Science, Brigham Young University, 2140 LSB, Provo, UT 84602. Phone: 801-422-5656; Fax: 801-422-0273; Email: coughall@gmail.com

Joshua West, PhD, Associate Professor, Department of Health Science, Brigham Young University, 2139 LSB, Provo, UT 84602. Phone: 801-422-3444; Fax: 801-422-0273; Email: josh.west@byu.edu

* Corresponding Author

follows the lives of four high school girls (Aria Montgomery, Spencer Hastings, Hanna Marin and Emily Fields) in a fictional Pennsylvania town. The girls' clique falls apart after their friend and "queen bee" Alison DiLaurentis suspiciously disappears during a sleepover. The girls largely go their separate ways when, a year following her disappearance, Alison's deceased body is found under her family's former home. Soon after the girls each begin receiving text messages from a mysterious source known only as "A", threatening to reveal each girl's deepest secrets. Appropriately titled *Pretty Little Liars*, the four well-dressed and affluent girls engage in a web of deceit and dishonesty in protecting themselves' from "A" who is somehow privy to their most personal secrets (i.e., shoplifting and other illegal behavior, alcohol and other drug abuse, sexual activity with adults, and lies relating to family, social, and romantic relationships). *Pretty Little Liars* has received some criticism for adult themes considered by some to be inappropriate for the show's TV-14 rating from the Federal Communications Commission. For example, the series has been criticized for depicting teen sex and drug use without portraying consequences of such behaviors. Despite criticism, popularity has remained strong over the first four seasons of the show, maintaining an average viewership of over 2.5 million per episode, making it the most viewed series on the ABC Family network ("Pretty Little Liars," n.d.). *Pretty Little Liars* is especially popular among adolescent viewers, winning 19 *Teen Choice Awards* during its first three seasons alone. The show's popularity continued following Season 4 as it was nominated for two People's Choice Awards. Season 5 began in June of 2014, the same month that the ABC Family network signed on to air a sixth and seventh season. The purpose of this study was to conduct a content analysis of health and risk behaviors in the first four seasons of *Pretty Little Liars.*

Methods

Sample

This study's sample comprised the first four seasons of *Pretty Little Liars.* These seasons totaled 95 episodes, with 22 episodes in Season 1, 25 episodes in Season 2, 24 episodes in Season 3, and 24 episodes in Season 4. The principal investigator purchased each season on DVD and distributed discs from each season to the research assistants so that each assistant coded approximately six 42-minute episodes per season.

Instrumentation

The 2011 National High School Youth Risk Behavior Survey (YRBS) was used to develop the coding instrument. Questions included within the YRBS collect data on the following priority health and risk behaviors: 1) behaviors that contribute to unintentional injuries and violence; 2) tobacco use; 3) alcohol and other drug use; 4) sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases including HIV infection; 5) dietary behaviors; 6) physical activity; and 7) obesity, overweight, and weight control. Items related to each of the questions from the 2011 National High School YRBS were used in creating the coding instrument for the current study. For example, the 2011 YRBS asks: *When you rode a bicycle during the past 12 months, how often did you wear a helmet?* For this YRBS item, the coding instrument including the following primary question: *Was a youth shown riding a bike in this episode?* (Yes/No). If "yes", then the following question applied: *Did a youth riding a bike wear a helmet in this episode?* (Yes/No). If "yes", then coders were asked to answer the following questions: 1) *How many youth were shown riding bikes and wearing helmets in this episode?*; and 2) *How many times was a youth or youth shown riding bikes and wearing helmets in this episode?* This pattern of questions continued and included a total of 60 primary questions each with the necessary follow-up items to be answered if the specific behavior occurred during the episode. In addition coders were instructed to record illegal or unethical behaviors not included in the YRBS in the "other" section of the coding instrument. Coders were instructed to consider stealing or theft, cheating in school, cheating on a romantic partner, bribery or extortion, trespassing, vandalism, and any other behavior that may be considered illegal or unethical while coding each episode. These "other" behaviors not included in the YRBS were included due because they are commonly cited points of criticism for screen media popular among adolescents.

Procedure

Four undergraduate research assistants were trained on coding instructions and measures. This training consisted of the principal investigator reviewing all coding instructions with each of the coders and modeling how to code various scenes and health behaviors. This coder training included the principal investigator and research assistants watching and coding multiple episodes together followed by detailed discussion of coding guidelines, definitions, and measures. The following coding guidelines, definitions and measures were applied:

Reviewing previous episodes: Scenes from previous episodes ("previously on Pretty Little Liars…") shown at the beginning of a new episode were not included in the analysis.

Scene: Scenes were separated by time or distance. A new setting constituted a new scene. The same setting an hour later constituted a new scene. Cutting back and forth between different story lines did not constitute a new scene.

Flashbacks: Occurrences included in a flashback within the original/same episode were not coded. In other words, these scenes were only coded the first time they were shown. However, flashbacks to occurrences from earlier episodes were coded again. For example, a scene involving alcohol consumption shown in episode 3 and then shown again in episode 5 during a flashback was coded again during episode 5.

How many youth: Number of youth ("how many youth") participating in a behavior referred to the total number of youth participating in that particular behavior during the episode. For example, if 6 youth smoked cigarettes in one scene and 4 youth smoked cigarettes is a later scene, then the total number of youth participating in the behavior was 10. Also, if the same youth smoked in multiple scenes, the youth was counted multiple times, one count for each scene.

How many times: Number of distinct occurrences ("how many times") refers to the total number of unique events throughout the episode, separated by scene (either time or location). If 6 youth smoked cigarettes in one scene and 4 youth smoked cigarettes in a later scene, then the total number of times smoking occurred was 2.

Each research assistant then individually coded common episodes from Season 1, episodes 1 and 12; Season 2; episodes

1, 12, and 24; Season 3, episodes 1 and 12; and Season 4, episodes 1 and 12. This process was done to establish inter-rater-reliability and ensure agreement among each of the research assistants. With an acceptable rater reliability established (Cohen's Kappa = .81), DVDs from each season were then assigned to each research assistant so that no coder was assigned consecutive discs from a particular season. For example, one research assistant was assigned to code the following: Season 1, Disc 1 (episodes 1, 2, 3, 4, and 5); Season 2, Disc 4 (episodes 15, 16, 17, and 18); Season 3, Disc 3 (11, 12, 13, 14, and 15); Season 3, Disc 5 (episodes 21, 22, 23, and 24); and Season 4, Disc 1 (episodes 1, 2, 3, 4, and 5). Non-continuous season, disc, and episode assignments were made purposefully to prevent coders from focusing more on the show's storyline than on the content analysis. All episodes from the first four seasons were coded in this study. Episodes initially coded by all research assistants to establish inter-rater-reliability were each re-assigned and re-coded. While viewing each episode, research assistants had a paper copy of both the coding instructions and the questionnaire. Coding of each episode was first completed using paper and pencil before being recorded into an electronic database.

Data Analysis

Stata 12.1 for Mac was used to conduct analyses. The data were downloaded from the electronic database and converted into a Stata data file for analyses. Descriptive values were computed for each of the study variables, which were organized thematically based on the categories represented in the YRBS. Specifically, the occurrence of a risk or health behavior in an episode was calculated, accompanied by the percentage of episodes out of 95 total. The number of youth engaging in the risk or health behavior and the number of times the risk or health behavior was depicted were also calculated.

Results

Unintential Injuries

The frequency and prevalence of behaviors that contribute to unintentional injury, including violence, bullying, and suicide are shown in Table 1. The most commonly coded risk behavior contributing to unintentional injury was being bullied on school property, with 40 separate occurrences impacting 50 different youth. This count does not include occurrences of "A" bullying the show's main characters via text message and email, which is a major premise of the show. The next most commonly coded risk behavior in this category was driving or riding in a motor vehicle without wearing a seatbelt which occurred in 20 different episodes involving 28 scenes and 48 youth. The third most commonly coded risk behavior in this category was getting in a physical fight (46 youth) and carrying a weapon (37 youth).

Tobacco Use

The frequency and prevalence of tobacco use are shown in Table 2. Only one occurrence of tobacco use was coded for involving just one individual.

Alcohol and other Drug Use

The frequency and prevalence of alcohol and other drug use are shown in Table 3. Youth alcohol consumption was coded in 22 episodes involving a total of 106 individuals in 39 scenes. Additionally, six episodes included binge drinking by a total of 34 youth. In 10 episodes a youth was given alcohol by someone else.

Sexual Behaviors

The frequency and prevalence of sexual behaviors that contribute to unintended pregnancy and STDs, including HIV infection are shown in Table 4. It was implied that sexual intercourse involving youth occurred in 10 episodes including 18 youth in 11 scenes. A condom was used during intercourse in one of the 11 scenes. No additional use of birth control (pill, patch, ring, shot, etc…) was used and no youth were tested for HIV/AIDS. One scene included two youth each drinking alcohol or using drugs prior to engaging in sexual intercourse.

Dietary Behaviors

The frequency and prevalence of dietary behaviors are displayed in Table 5. Youth were shown eating fruit or drinking fruit juice in 21 episodes, including 24 scenes involving a total of 30 youth. Youth were shown eating vegetables in 15 episodes, including 17 scenes involving a total of 24 youth. One youth was shown drinking milk one time in five different episodes while a total of 28 youth drank soda or pop across 12 episodes and 15 scenes.

Physical Activity

The frequency and prevalence of physical activity are shown in Table 6. Twenty-two episodes include youth participating in physical activity for a total of 69 youth across 32 scenes. In addition, 59 youth were shown participating or playing on a sports team. Computer use occurred in 54 episodes involving a total of 162 youth and 106 scenes. Twenty-one scenes involving a total of 47 youth across 10 episodes involved television viewing.

Weight Control

The frequency and prevalence of obesity, overweight, and weight control are shown in Table 7. A youth described herself as overweight in 8 episodes, was trying to lose weight in two episodes, ate less to keep from gaining weight in one episode, and vomited or took laxatives to lose weight or keep from gaining weight in one episode. No youth were shown exercising to lose weight, taking diet pills, powders, or liquids to lose weight, or not eating for 24 hours or more to lose weight.

Illegal and Unethical Activity

Occurrences of youth behavior that may be considered illegal or unethical are shown in Table 8. Lying was the most frequently coded of these behaviors (58), followed by trespassing (28), vandalism (8), and personal/bodily harm including attempted murder and kidnapping (6). A romantic and sexual relationship between a minor and an adult, more specifically a student and her teacher, that continues throughout the first four seasons violates the Age of Consent/Corruption of Minor statute in Pennsylvania where *Pretty Little Liars* occurs. Rather than code each individual correspondence between these individuals, the entire relationship is presented here as an illegal and unethical behavior consistently portrayed in the episodes coded. Similarly, disrespect for authority, not included in the YRBS, was identified by all coders as a prominent theme. Occurrences of youth disrespecting parents, teachers, law-enforcement, and other authority figures were frequent throughout each episode.

Table 1.

Unintentional Injury

	# of Times behavior was shown?		
Behavior	N (%)	# youth	# times
Was a youth shown riding a bike in this episode?	7 (7.37)	-	-
Did a youth riding a bike wear a helmet in this episode?	6 (6.32)	8	8
Did a youth ride a motorcycle in this episode?	2 (2.11)	-	-
Did a youth riding a motorcycle wear a helmet in this episode?	2 (2.11)	2	2
Was a youth shown riding or driving a motor vehicle in this episode?	51 (53.68)	-	-
Did a youth wear a seat belt while driving or riding in a motor vehicle in this episode?	20 (21.05)	48	28
Did a youth ride with a driver who had been drinking alcohol in this episode?	1 (1.05)	1	1
Did a youth drive when drinking alcohol (or when under the influence of alcohol) in this episode?	1 (1.05)	1	1
Did a youth text or email while driving in this episode?	1 (1.05)	1	1
Did a youth carry a weapon (gun, knife, club) in this episode?	19 (20.00)	37	26
Did a youth carry a weapon on school property in this episode?	3 (3.16)	3	3
Did a youth get in a physical fight in this episode?	22 (23.16)	46	24
Did a youth get injured in a physical fight in this episode?	12 (12.63)	12	12
Was a youth threatened or injured with a weapon on school property in this episode?	1 (1.05)	1	1
Was a youth involved in a fight on school property in this episode?	7 (7.37)	14	7
Was a youth bullied on school property in this episode?	29 (30.53)	50	40
Was a youth bullied electronically by “A” in this episode?	68 (71.58)	197	131
Was a youth bullied electronically by someone other than “A” in this episode?	7 (7.37)	11	11
Did a youth not go to school because of safety concerns in this episode?	3 (3.16)	3	3
Did a youth have property stolen or damaged on school property in this episode?	6 (6.32)	6	6
Did a youth experience dating violence in this episode?	5 (5.26)	5	5
Was a youth forced to have sexual intercourse in this episode?	0	-	-
Did a youth feel sad or hopeless almost every day for 2 or more weeks in a row?	15 (15.79)	16	16
Did a youth seriously consider attempting suicide in this episode?	3 (3.16)	3	3
Did a youth make a suicide plan in this episode?	0	-	-
Did a youth attempt suicide?	1 (1.05)	1	1
Was a suicide attempt treated by a doctor or nurse in this episode?	0	-	-

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 2.

Tobacco

	N (%)	# youth	# times
Did a youth smoke a cigarette in this episode?	1 (1.05)	1	1
Did a youth smoke a cigarette on school property in this episode?	0	-	-
Did a youth try to quit smoking cigarettes in this episode?	0	-	-
Did a youth use smokeless tobacco in this episode?	0	-	-
Did a youth use smokeless tobacco on school property in this episode?	0	-	-
Did a youth smoke a cigar in this episode?	0	-	-
Did a youth buy cigarettes in a store or gas station in this episode?	0	-	-

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 3.

Alcohol and Other Drugs

	N (%)	# youth	# times
Did a youth drink alcohol in this episode?	22 (23.16)	106	39
Did a youth engage in binge drinking (five or more drinks in a row) in this episode?	6 (6.32)	34	6
Did a youth drink alcohol on school property in this episode?	3 (3.16)	12	3
Did a youth use marijuana in this episode?	2 (2.11)	3	2
Did a youth use a drug other than tobacco, alcohol, and marijuana in this episode?	10 (10.53)	24	16
Did a youth use ATOD on school property in this episode? Yes	0	-	-
Was a youth offered, sold, or given an illegal drug on school property in this episode?	1 (1.05)	1	1
Was a youth given alcohol by someone in this episode?	10 (10.53)	22	11

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 4.

Sexual Behaviors

	N (%)	# youth	# times
Did a youth have sexual intercourse in this episode?	10 (10.53)	18	11
Was a condom used in this episode?	1 (1.05)	NA	NA
Was birth control used (pill, patch, ring, shot, etc...) in this episode?	0	NA	NA
Did a youth drink alcohol or use drugs before sexual intercourse in this episode?	1 (1.05)	2	1
Was a youth tested for HIV/AIDS in this episode?	0	-	-

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 5.

Nutrition	N (%)	# youth	# times
Did a youth eat fruit or drink fruit juice in this episode?	21 (22.11)	30	24
Did a youth eat vegetables in this episode?	15 (15.79)	24	17
Did a youth drink milk in this episode?	5 (5.26)	5	5
Did a youth drink soda or pop in this episode?	12 (12.63)	28	15

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 6.

Physical Activity

	N (%)	# youth	# times
Did a youth engage in physical activity (a workout) in this episode?	22 (23.16)	69	32
Did a youth use a computer in this episode?	54 (56.84)	162	106
Did a youth watch TV in this episode?	18 (18.95)	47	21
Did a youth play on a sports team in this episode?	10 (10.53)	59	13

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Table 7.

Obesity

	N (%)	# youth	# times
Did a youth describe themselves as overweight in this episode?	8 (8.42)	8	8
Was a youth trying to lose weight in this episode?	2 (2.11)	2	2
Did a youth eat less, fewer calories, or low fat foods to lose weight or to keep from gaining weight?	1 (1.05)	1	1
Did a youth exercise to lose weight or to keep from gaining weight in this episode?	0	-	-
Did a youth not eat for 24 or more hours to lose weight or to keep from gaining weight?	0	-	-
Did a youth take diet pills, powders, or liquids to lose weight or to keep from gaining weight?	0	-	-
Did a youth vomit or take laxatives to lose weight or to keep from gaining weight?	1 (1.05)	1	1

Note: N (%) = episodes with risk behavior (the proportion of total episodes including the risk behavior, out of the total 95 episodes); # youth = the number of youth depicted engaging in the risk behavior; # times = the number of times a youth is shown engaging in the risk behavior.

Discussion

The purpose of this study was to conduct a content analysis of health and risk behaviors in the first four seasons of *Pretty Little Liars*. The rates of risk and health behaviors from this study are juxtaposed against national rates from the YRBS because the data collection tool for this study was comprised of YRBS items. Many occurrences of specific health and risk behaviors measured in the YRBS were identified in the episodes coded. Some of these health and risk behaviors were common in *Pretty Little Liars* and others were rare or non-existent. Drawing meaningful comparisons between the prevalence of health and risk behaviors presented in *Pretty Little Liars* with actual health and risk behaviors of U.S. teens as measured by YRBS results is challenging. For example, the majority of YRBS items include time variables, such as “for three or more hours”, “in the past seven days”, or “ever”, that are impossible to account for while coding *Pretty Little Liars*. Given these obvious limitations this discussion only presents YRBS data for the health and risk behaviors identified in *Pretty*

Little Liars in an attempt to draw general conclusions relative to the program's potential impact on adolescent viewers.

The most commonly coded risk behavior contributing to unintentional injury was being bullied on school property. Twenty-percent of teens reported being bullied on school property in 2013 (Kann et al., 2014). In recent years bullying behavior in schools has become part of the national consciousness impacting school policies, procedures, and curricula (Rigby, 2010). Driving or riding in a motor vehicle without wearing a seatbelt was the second most common health risk behavior observed in this category. This health risk behavior has decreased over time due to mandatory seatbelt laws, increased enforcement of laws, as well as health education and promotion efforts. Currently only 7.6% of youth report never or rarely wearing a seat belt in the U.S. (Kann et al., 2014). The next most commonly coded health and risk behaviors in this category were getting in a physical fight and carrying a weapon. Both behaviors represent real threats in the U.S. where 25% of youth report being in a physical fight in the past year and 18% report carrying a weapon in the past month (Kann et al., 2014).

Tobacco and alcohol use represent perhaps the two most significant long-term health risks to young people. Tobacco use has been stigmatized and largely fallen out of favor in the U.S. in recent years. Once common in prime-time programming, depictions of smoking on television have become increasingly rare. However, a recent study identified tobacco use in 26% of episodes with a TV-14 rating (Cullen et al., 2011). To its credit, smoking is incredibly rare in *Pretty Little Liars*, which contained just one smoking scene involving one youth during its first four seasons. Such decreases have been credited in aiding the significant decrease in U.S. adolescent smoking over the past two decades (Jamieson & Romer, 2010). For example, 30.5% of high school students reported smoking at least once during the past 30 days in 1993, yet 30-day use had dropped to just 15.7% by 2013 (CDC, 2014). In the case of tobacco use, popular media such as *Pretty Little Liars,* may have a positive impact on adolescent health behavior.

In general alcohol depictions on television greatly outnumber those of tobacco, which is also true in *Pretty Little Liars.* Youth alcohol consumption was one of the most prevalent health and risk behaviors in the current study, coded in 22 episodes involving a total of 106 individuals in 39 scenes. While rates of 30-day use have declined dramatically over the past 20 years (1993 = 48.0%; 2013 = 34.9%) (CDC, 2014), alcohol remains the most abused substance by adolescents in the U.S. Six *Pretty Little Liar* episodes included binge drinking by a total of 34 youth, a high risk behavior engaged in by 20.8% of U.S. teens and accounting for more than 90% of the alcohol consumed by this demographic (Kann et al., 2014; Office of Juvenile Justice and Delinquency Prevention, 2005). Additionally, adolescent alcohol use contributes to sexual risk behaviors. In 2013, approximately 22% of teens reported drinking alcohol or using other drugs before their most recent sexual intercourse (Kann et al., 2014), a behavior observed just once in 95 episodes of *Pretty Little Liars*. In their analysis of substance use in prime-time programming, Murphy, Hether, and Rideout (2008) found one-third of episodes featured alcohol. While episodes depicting alcohol were comparatively low in *Pretty Little Liars* (23%), the majority of scenes analyzed in the current study portrayed underage drinking. Juxtaposed with research establishing a strong association between exposure to alcohol use in media and increases in drinking initiation among non-drinkers as well as higher rates of consumption among current underage drinkers (Anderson, de Bruijn, Angus, Gordon, & Hastings, 2009), depictions of adolescent alcohol use in *Pretty Little Liars* is a concern.

With its TV-14 rating, sexual intercourse is not explicitly shown on *Pretty Little Liars*, however, intercourse was implied in 11 scenes throughout the first four seasons. While the actual percentage of youth who have ever had sexual intercourse declined from 1991 (54%) to 2001 (46%), it is relatively unchanged over the past 12 years (CDC, 2014). With nearly half of all high school students having had sex, inclusion of sexual intercourse in 12% of *Pretty Little Liars* episodes may not be cause for alarm. Unfortunately, a condom was used during intercourse in just one of these 11 scenes. Actual condom use among youth at last intercourse increased from 1991 (46%) to a peak in 2003 (63%) before a decrease to 59% in 2013 (CDC, 2014). Other than one occurrence of condom use, no additional use of birth control occurred in *Pretty Little Liars*. Media portrayals of sexual activity without the use of contraception normalizes this risk behavior adding to the misconception that such risk taking is expected of youth. In reality very few teens are taking such risks as according to 2013 YRBS results, only14% of sexually active youth did not use any method to prevent pregnancy during their most recent sexual intercourse (Kann et al., 2014). Finally, no testing for HIV/AIDS was shown or discussed in *Pretty Little Liars.* Such testing is relatively uncommon with just 13% of 2013 YRBS respondents reporting ever being tested for HIV/AIDS (Kann et al., 2014). Inclusion of HIV/AIDS testing in a Pretty Little Liars episode could help promote and model this responsible sexual behavior. Sexual behaviors observed in media can help viewers form behavioral expectations and establish sexual scripts about how romantic and other sexual relationships unfold (Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002). Such sexual scripts, particularly when established by female characters in popular media, are believed to educate and encourage female viewers to pursue similar scripts and sexual behaviors (Brown, Halpren, & L'Engle, 2005, Strasburger, Wilson, & Jordan, 2009). For this reason, depictions of positive sexual behaviors such as condom use and HIV/AIDS testing, or navigating a risky sexual situation, in popular media could be an effective avenue for health promotion and skill development (Brown, El-Toukhy, & Ortiz, 2014; Nightingale, 2014).

Just under a quarter (23%) of *Pretty Little Liars* episodes included youth engaged in physical activity and 59 youth were shown participating or playing on a sports team. Approximately 54% of youth in the U.S. participate on at least one sports team, yet less than half (47%) of youth report being physically active for at least 60 minutes per day on five or more days of the week (Kann et al., 2014). Computer and television use were both frequently depicted in *Pretty Little Liars,* and remain popular activities among youth according to the 2013 YRBS with approximately one-third of U.S. youth watching television and over 40% playing video games for more than three hours each day (Kann et al., 2014).

Overweight, obesity, and weight loss are infrequent topics in *Pretty Little Liars.* Overweight and obesity remain a concern for U.S. youth with approximately 30% of teens in these categories (Kann et al., 2014). While males have more

weight to lose, females are considerably more concerned about weight loss. Nearly 65% of females report trying to lose weight (males = 33%) with 19% not eating for 24 or more hours to do so (males = 7%), and just over 6% taking diet pills, powders, liquids, laxatives, or vomiting to lose weight (males = < 3%) (Kann et al., 2014). In spite of national data where males are more overweight, depictions of these related topics in this study all involved females.

Dietary behaviors portrayed in *Pretty Little Liars* may help to support healthy eating behaviors among youth. A total of 30 youth were shown eating fruit or drinking 100% fruit juice during the first four seasons. Fruit consumption is rare among U.S. teens where in 2013 only 22% of youth reported eating fruit or drinking 100% fruit juice three or more times per day during the previous seven days (Kann et al., 2014). *Pretty Little Liars* also included 24 youth shown eating vegetables. Although up almost 2% overall in recent years, adolescent vegetable consumption remains extremely low with just 16% of youth reporting three or more vegetable servings per day (CDC, 2014). *Pretty Little Liar's* frequent display of soda consumption (15 scenes involving a total of 28 youth) compared to only five youth shown consuming milk is discouraging. Actual rates are very similar, with 12.5% and 11.2% of youth reporting three or more glasses/cans of milk and soda respectively each day in the U.S (Kann et al., 2014).

This content analysis identified several positive and negative health and risk behaviors included in the first four seasons of *Pretty Little Liars* which have implications for health educators. Multiple theories suggest that content viewed in television programming impacts attitudes, beliefs, and behaviors of viewers. Provided the importance of the health and risk behaviors coded for in this study, along with the extensive exposure that young people have to screen media, helping students develop and practice the skills necessary to process the media messages they are frequently exposed to represents a health education priority. Unfortunately, the U.S. currently lags behind other Western nations when it comes to media literacy efforts (Brown, 2007). While the National Health Education Standards include the need to help students analyze the influence of family, peers, culture, media technology, and other factors on health behaviors (Joint Committee on National Health Education Standards, 2007), and non-profit groups have created classroom resources for increasing media literacy skills among students (Media Literacy Project, n.d.)), greater efforts in this area are likely needed. Use of content analysis by health educators, including learning activities requiring students to analyze, deconstruct, and challenge media messages represents an important step toward developing and increasing media literacy skills in health education.

Parental regulation of television viewing has become increasingly challenging. No longer do homes contain just one television located in a fixed and central location where programing can be viewed during a regularly scheduled timeslot. Similarly, teens can view television on their bedroom TV when they like using a digital recording system or when and where they prefer by streaming to a mobile device with the aid of an Internet, Wi-Fi, or cellular connection. Increased availability provided by these new mobile platforms create an additional challenge for parents hoping to regulate a child's television programing consumption. The result is decreased parental opportunities for co-viewing and subsequent "instructive mediation" where parents can discuss and frame with their child the themes or events viewed in a program (Valkenburg, Krcmar, Peeters, & Marseille, 1999). Missed opportunities for "instructive mediation" are indeed opportunities lost. For example, the inappropriate sexual relationship occurring in *Pretty Little Liars* between a student and her teacher provides a valuable opportunity for a parent-child discussion related to this particular sexual script. Many parents report considerable concern over the media content their children are exposed to (Bleakly et al., 2014). When compared with efforts to limit all programming content deemed unacceptable by a parent, teen exposure to television events representative of potential real-life situations combined with "instructive mediation" may be more supportive of desired positive health behaviors. If this is to occur, parents must not only be aware of when and what their child is viewing, they themselves must also view this programming and take the time to ask questions, discuss salient themes, and share or confirm familial values and expectations related to the content viewed.

Limitations

This study has several key limitations. First, while an acceptable inter-rater reliability measure was established in this study, content analysis is a limited research methodology prone to rater bias. Second, creation of a coding instrument based upon the YRBS presents challenges for drawing meaningful comparisons with a television series. Comparing the prevalence of actual health and risk behaviors among U.S. teens over the span of a lifetime, year, month, or week with the health and risk behaviors included in a television episode where a largely unspecified amount of elapsed time is condensed into approximately 42-minutes of programing is limited. Finally, this study is descriptive in nature and is unable to determine the impact of exposure to health and risk behavior in *Pretty Little Liar* programming on actual adolescent attitudes, beliefs, or behaviors. Future studies should explore potential correlations between exposure to specific media content and health behavior.

Conclusion

Pretty Little Liars, and other popular entertainment options among adolescents, may provide opportunities for modeling healthy behaviors and potentially shaping attitudes, beliefs and intentions. In many instances, *Pretty Little Liars* may already be having such an impact for good, especially in instances of healthy eating, where, for example, the show frequently depicts fruit consumption. The extent to which the show actually impacts behavior is unknown, but future studies could measure the impact in a systematic way—to the benefit of both adolescents and child advocates trying to navigate this space of popular media and healthy lifestyles. Health education efforts designed to increase media literacy skills and assist students in analyzing the influence of media messages on behavior are warranted. Furthermore, parents and other adults with concerns related to adolescents' exposure to unhealthy, dangerous or illegal behavioral depictions may benefit from seizing opportunities provided by programs such as *Pretty Little Liars* to engage adolescents in discussions about expectations for normal, healthy and safe behaviors.

References

Anderson, P., de Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use: A systematic review of longitudinal studies. *Alcohol and Alcoholism, 44*, 229-243.

Austin, E. W., Chen, M. J., & Grube, J. W. (2006). How does alcohol advertising influence underage drinking? The role of desirability, identification and skepticism. *Journal of Adolscent Health*, *38*, 376-384.

Bandura, A. (1977). *Social Learning Theory.* Englewood Cliffs, NJ, Prentice Hall.

Bleakley, A., Vaala, S., Jordan, A. B., & Romer, D. (2014). The annenberg media environment survey: Media access and use in U.S. homes with children and adolescents. In A. B. Jordan & D. Romer (Eds.), *Media and the Well-Being of Children and Adolescents* (pp. 11-19). New York, NY: Oxford University Press.

Boxer, P., Huesmann, L. R., Bushman, B. J., O'Brien, M. & Moceri, D. (2009). The role of violent media preference in cumulative developmental risk for violence and general aggression. *Journal of Youth and Adolescence*, *38*, 417-428.

Brown, J. D. (2007). Media literacy has potential to improve adolescents' health. *Journal of Adolescent Health*, *39*, 459-60.

Brown, J. D., El-Toukhy, S., & Ortiz, R. (2014). Growing up sexually in a digital world: The risks and benefits of youths' sexual media use. In A. B. Jordan & D. Romer (Eds.), *Media and the Well-Being of Children and Adolescents* (pp. 90-108). New York, NY: Oxford University Press.

Brown, J. D., Halpern, C. T., & L'Engle, K. L. (2005). Mass media as a sexual super peer for early maturing girls. *Journal of Adolescent Health*, *36*, 420-427.

Calado, M., Lameiras, M., Sepulveda, A. R., Rodriguez, Y., & Carrera, M. V. (2010). The mass media exposure and disordered eating behaviors in Spanish secondary students. *European Eating Disorders Review*, *18*, 417-427.

Centers for Disease Control and Prevention, 2011 Youth Risk Behavior Survey. Available at: www.cdc.gov/yrbs. Accessed on January 10, 2014.

Centers for Disease Control and Prevention. (2014). *National Trends,* 1991-2013. Retrieved from http://www.cdc.gov/healthyyouth/yrbs/factsheets/index.htm#results

Collins, R. L., Elliott, M. N., Berry, S. H., Kanouse, D. E., Kunkel, D., Hunter, S. B., & Miu, A. (2004). Watching sex on television predicts adolescent initiation of sexual behavior. *Pediatrics*, *112*(5), 280-289.

Cullen, J., Sokol, N. A., Slawek, D., Allen, J. A., Vallone, D., & Healton, C. (2011). Depictions of tobacco use in 2007 broadcast television programming popular among US youth. *Archives of Pediatrics and Adolescent Medicine*, *165*, 147-151.

Friedlander, L. J., Connolly, J. A., Pepler, D. L., & Craig, W. M. (2013). Extensiveness and persistence of aggressive media exposure as longitudinal risk factors for teen dating violence. *Psychology of Violence, 3*(4), 310-322.

Gerbner, G. (1969). Toward 'cultural indicators': The analysis of mass mediated message systems. *AV Communication Review, 17*(2), 137-148.

Gerbner, G., Gross, L., Morgan, M., & Signorielli, N. (1994). Growing up with television: The cultivation perspective. In: J. B. D. Zillmann (Ed.), *Media effects: Advances in theory and research* (pp. 17-41). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gerbner, G., Gross, L., Morgan, M., Signorielli, N., & Shanahan, J. (2002). Growing up with television: Cultivation processes. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (2nd ed.) (pp. 43-67). Mahwah, NJ: Lawrence Erlbaum Associates.

Gidwani, P. P., Sobol, A., Dejong, W., Perrin, J. M., & Gortmaker, S. L. (2002). Television viewing and initiation of smoking among youth. *Pediatrics, 110*(3), 505-508.

Jamieson, P. E., & Romer, D. (2010). Trends in US movie tobacco portrayal since 1950: A historical analysis. *Tobacco Control, 19*, 179-184.

Joint Committee on National Health Education Standards. (2007). *National Health Education Standards: Achieving Excellence.* 2nd ed. Atlanta, GA: American Cancer Society.

Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Hawkins, J., Harris, W. A., . . . Zaza S. (2014). Youth Risk Behavior Surveillance – United States, 2013. *MMWR, 63*(4), 1-172.

Madisonmom. (2010, August 8). All member reviews for Pretty Little Liars [Online forum comment]. Retrieved from https://www.commonsensemedia.org/tv-reviews/pretty-little-liars/user-reviews?page=1

Media Literacy Project (n.d.) What We Do. Retrieved from http://medialiteracyproject.org/what-we-do/.

Murphy, S. T., Hether, H. J., & Rideout, V. (2008). How healthy is prime time? An analysis of health content in popular prime time television programs. Retrieved from http://kaiserfamilyfoundation.files.wordpress.com/2013/01/7764.pdf

Nightingale, M. (2014). Behind the scenes: Working with Hollywood to make positive social change. In A. B. Jordan & D. Romer (Eds.), *Media and the Well-Being of Children and Adolescents* (pp. 201-225). New York, NY: Oxford University Press.

Office of Juvenile Justice and Delinquency Prevention. (2005). *Drinking in America: Myths, realities, and prevention policy*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Pardun, C. J., L'Engle, K. L., & Brown, J. D. (2005). Linking exposure to outcomes: Early adolescents' consumption of sexual content in six media. *Mass Communication & Society, 8*(2), 75-91.

Perse, E. (2001). *Media effects and society.* Mahwah, NJ: Lawrence Erlbaum Associates.

Pretty Little Liars (n.d.). In *Wikipedia*. Retrieved September 10, 2014, from http://en.wikipedia.org/wiki/Pretty_Little_Liars_(TV_series)

Rigby, K. (2010). *Bullying interventions in schools: Six basic approaches*. Malden, MA: Wiley-Blackwell.

Roberts, D. F., Foehr, U. G., & Rideout, V. (2010). *Generation M^2: Media in the lives of 8- to 18-year-olds.* Menlo Park, CA: Henry J. Kaiser Foundation. Retrieved November 20, 2010 from http://www.kff.org/entmedia/mh012010pkg.cfm

Sargent, J. D., Beach M. L., Adachi-Mejia, A. M., Gibson, J. J., Titus-Ernstoff, L. T., Carusi, C. P., . . . Dalton, M. A. (2005). Exposure to movie smoking: Its relation to smoking initiation among US adolescents. *Pediatrics, 116*(5), 1183-1191.

Shanahan, J. & Morgan, M. (1999). *Television and its viewers: Cultivation theory and research*. London, England: Cambridge University Press.

Shrum, L. J. (1999). The relationship of television viewing with attitude strength and extremity: Implications for the cultivation effect. *Media Psychology, 1*, 3-25.

Strasburger, V. C. & Wilson, B. J. (2002). *Children, adolescents, and the media*. Thousand Oaks, CA: Sage.

Strasburger, V. C. (1997). "Sex, drugs, rock 'n' roll" and the media–are the media responsible for adolescent behavior? *Adolescent Medical: State of the Art Reviews, 8*, 403-414.

Strasburger, V. C. (2002). Alcohol advertising and adolescents. *Pediatric Clinics of North America, 49*, 353-376.

Strasburger, V. C., Wilson, B. J., & Jordan, A. B. (2009). The family and media. In V.C. Strasburger, B. J. Wilson, & A. B. Jordan (Eds.), *Children, Adolescents, and Media* (2nd ed.) (pp. 499-18). Los Angeles, CA: Sage.

Valkenburg, P. M., Krcmar, M., Peeters, A. L., & Marseille, N. M. (1999). Developing a scale to assess three styles of television mediation: "Instructive mediation," "restrictive mediation," and "social coviewing." *Journal of Broadcasting & Electronic Media, 43*(1), 52-66.

This article may provide one
Continuing Education Contact Hour Opportunity for CHES (Approval Pending)
Instructions and self-study questions may be found on page 29

EDITORIAL ASSOCIATES