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ADOLESCENT SUBSTANCE ABUSE (T CHUNG, SECTION EDITOR)

The Viability of Media Literacy in Reducing the Influence of Misleading Media Messages on Young People's Decision-Making Concerning Alcohol, Tobacco, and Other Substances

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Abstract Significant portions of media programming and advertising consumed by young people contain glamorized, fictionalized portrayals of substance use, sex, and other potentially concerning behaviors. Research indicates that media use including advertising exposure contribute significantly to young people's tobacco use, abusive alcohol consumptions, and substance use. As a result, experts have examined media literacy as a potentially effective way to equip young people with critical-thinking skills necessary to distinguish truthful media-based information from unhealthy or deceptive information. The results of numerous studies indicate that, while questions remain and additional testing is needed, media literacy has strong potential as a substance-abuse prevention campaign strategy. In order to more fully understand and realize the benefits of media literacy education, researchers must continue working to answer existing questions concerning media literacy and extend the methods they use to include longitudinal, repeated-measures study designs. This will allow them to more fully understand media literacy training and tailor programs to the specific needs of audience members.

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Introduction

The lives of young people are saturated with misleading media content [1, 2], potentially contributing to negative individual and public health outcomes. Although experts have expended considerable effort to reduce adolescents' substance use and improve their health-related decision-making, significant portions of media programming and advertising consumed by young people contain glamorized, fictionalized portrayals of sex, alcohol, tobacco, and other substances [3]. As young people's use of media has migrated from traditional media to digital and social media, so have marketing tactics and media-based displays of risky behavior [4–6].

Given the ability of digital and social media to provide largely unimpeded access to an overabundance of misleading and unsafe media content, health experts and others have expressed concerns over the role of media-message exposure in young people's decision-making. Scholars have examined relationships of media consumption to negative health-related outcomes in a variety of contexts including alcohol abuse [7–9], tobacco use [10–12], substance use [13], and sexual decision-making [14–18] among other topics. While not conclusive, a variety of empirical research provides strong evidence supporting the negative influence of media exposure on young-peoples' decision-making and behaviors [3, 13, 15]. Research findings emphasize the need for interventions that can disrupt the flow of incorrect and overly idealized messages about substance use to adolescents and increase their ability to detect and use correct, realistic information. As a result, many experts have examined media literacy as a

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potentially effective way to equip young people with critical-thinking skills necessary to distinguish truthful information from unhealthy or deceptive information.

The Influence of Media Exposure on Tobacco, Alcohol, and Other Substances

Despite over 50 years of warning about the dangers of smoking, nearly 42 million adults and more than 3.5 million middle and high school students smoke cigarettes; smoking kills nearly 500,000 people in the USA each year [19]. Aggressive and misleading marketing tactics used by cigarette manufacturers including advertising and related promotional efforts contribute significantly to first-time smoking by adolescents and young adults, and their nicotine addiction keeps them smoking [19]. Most tobacco users start before they are 18 years of age and many die prematurely as a result of their tobacco use [19]. Cigarette manufacturers target their advertising to young people. Longitudinal research by Hanewinkle and colleagues [11] using an ad-exposure measure that included frequency and cued-brand recall indicates that cigarette advertising associates with initiation of smoking, even after controlling for established risk factors. In addition, analyses indicated that the association between tobacco advertising and smoking initiation was specific to tobacco marketing and not simply a marker of adolescent receptivity to marketing more broadly.

Hanewinkle and colleagues suggest that the aspirational images used in tobacco advertising are purposefully selected to appeal to young people because the images associate tobacco use with desirable characteristics such as masculinity, independence, or sex appeal. Consistent with this perspective, research by Scull and colleagues [20] indicates that wishful identification with and perceived similarity to models used in tobacco and alcohol advertising associates with adolescents' actual and future substance-use intentions. Adolescents' identification with and perceived similarity to movie stars and other media personalities may also explain the influence of movie portrayals of smoking on young people's tobacco use. Specifically, research by Dal Cin et al. [10] indicates that exposure to smoking in movies predicts an increased rate of smoking initiation while longitudinal research by Primack and colleagues [12] found that adolescents' early exposure to smoking in movies associated with a 73 % increase in established smoking—a greater influence on adolescents' smoking than even parent, sibling, or peer smoking.

Similarly, research indicates that young people's exposure to advertising and digital-marketing tactics associates with an increase in their drinking and problematic drinking behavior [7, 9, 21, 22]. Abusive drinking is an epidemic among American college students, and alcohol abuse among adolescents and young adults poses a considerable public

health concern. The results of a nationally representative survey of high school students indicates that more than 65 % of high school students in the USA have had a drink with nearly 35 % categorized as current drinkers and nearly 21 % having engaged in recent binge drinking. At US colleges and universities, 80 % of all underage students drink [23], and each year, alcohol is a factor in nearly 600,000 college student injuries and more than 1800 student deaths [24]. Part of the blame for the high number of negative outcomes associated with college student drinking is attributable to students' binge drinking (consumption of >4/5 drinks per occasion for females/males). Research indicates that 44 % of college students binge drink [23], and among student and nonstudent members of the general population, those aged 18–24 consume an average of 9.5 drinks while binge drinking—the highest rate of consumption among any population subgroup [17, 25].

Alcohol is the principal substance featured in television programs, many of which portray alcohol use as normative [3]. In addition, young people are exposed to large amounts of alcohol advertising [26] which associates with increases in the initiation of drinking and higher levels of alcohol consumption [7, 22]. Research by Siegel and colleagues [21] found evidence of a robust relationship between underage youth exposure to alcohol-brand advertising and the prevalence of past 30-day brand consumption. Study participants were more than five times more likely to consume brands advertised on national television indicating advertising influence on brand choice among young people who consume alcohol. In addition, research by Primack and colleagues [13] found independent links between adolescents' exposure to movies and their use of alcohol, and adolescents' exposure to music and their use of marijuana. At the collegiate level, students' exposure to online and digital alcohol-marketing tactics such as immersive environments and alcohol-themed games and wallpapers associates with higher levels of consumption and problem drinking behaviors [9]. How do media portrayals influence drinking among young people?

As Scull and coauthors [20] note, media messages concerning alcohol and other substances present their use as normative in fictitious portrayals that are exciting, glamorous, and typically free of negative consequences. Storylines show substance use as a good way to fit in with others, relax after a hard day at work, or relieve stress. Ultimately, media play an important socializing role in shaping adolescents' attitudes toward alcohol and other substances [3], and young people's positive affect toward highly desirable media portrayals may circumvent more logical aspects of their decision-making [27•]. In fact, research indicates that young people's exposure to alcoholic-beverage advertising and their positive affect toward those ads influence under-aged drinking and the emergence of alcohol-related problems later in adolescence [8]. In light of the influence of media messages on young

peoples' substance use, researchers have recommended media literacy—which includes educating young people about media to enable and encourage their critical processing of media messages—as a way to forestall negative media effects on substance-related attitudes and behaviors [8, 20].

Media Literacy's Role in Reducing the Influence of Misleading Media Messages

To create persuasive messages that sell alcoholic beverages, tobacco, and related products, marketers rely on attractive images and well-targeted social cues that associate desirable characteristics and consumption with resulting social rewards. Advertising for tobacco relies on purposefully selected aspirational images, for example, that are especially appealing to young people because the images associate tobacco use with desirable characteristics such as masculinity, independence, or sex appeal [11]. Similarly, alcohol advertising succeeds by relying on creative advertising appeals and enticing characters, action, and music [28]. Even when marketing messages contain obviously fictitious storylines and events, research has shown that young people develop an appreciation for and assign meanings to messages concerning alcohol that, while often incorrect, affect their appreciation for alcohol and actual drinking behavior [29, 30]. Ultimately, these techniques impact the thinking of young people, positively predisposing them to the consumption of alcohol and tobacco.

As a result, many experts have recommended media literacy as a potentially effective way to equip young people with critical-thinking skills and help negate the influence of unhealthy or deceptive information contained in many media messages [3, 11, 20, 31–33]. While scholars have yet to settle on a specific definition, media literacy generally refers to an individual's ability to access, analyze, evaluate, and communicate messages using a wide range of communication tools and forms [34•]. Typically, media literacy education helps increase individuals' skepticism toward media messages by strengthening their critical-thinking skills and facilitating their reflective, logic-based information processing to diminish the unhealthy impact of media messages [27•, 35, 36]. As a result, the objective of media literacy education programs is to help individuals—most commonly adolescents—develop the proficiencies needed to evaluate the veracity of media messages and use them effectively in decision-making [3].

Media-literate individuals possess capabilities that develop with maturation, such as the cognitive sophistication necessary to control attentional processes, relevant competencies resulting from vicarious and/or personally experienced learning, and the skills necessary to apply competencies as appropriate [37, 38]. The successful acquisition of health information, for example, requires individuals to access appropriate information sources and assess the credibility of claims and assertions regarding health threats and treatment—skills that are a major contributor to self-efficacy [39]. Decision-making is a learned skill, and scholars suggest that adolescents who improve their critical-thinking abilities tend to make better, healthier decisions [40, 41]. These adolescents will have an improved ability to understand and deconstruct media messages as well as a better understanding of the varied intentions of message producers. This will help produce skepticism toward media messages and more realistic expectancies in young people [27•].

The influence of media literacy education should be most evident through assessments of individuals' beliefs related to decision-making processes because an increased understanding of media messages should alter their decision-making influence [42]. Media literacy evaluations typically rely on concepts and constructs from social cognitive theory [43], expectancy theory [44], and theories of heuristic and systematic message processing [45]. These concepts and related constructs are associated with the Message Interpretation Process (MIP) Model—consistent with the Integrative Model of Behavioral Prediction [46]—because it treats decision-making as a process of message evaluation and understanding rather than as a simple response to message stimuli [37, 47].

Scholars have conducted a number of reviews concerning media literacy and related topics [48, 49, 50•, 51]. In their meta-analysis of media literacy research, Jeong and colleagues [50•] concluded that media literacy interventions typically produce effects on outcomes they classify as either media relevant or behavior relevant. Media-relevant outcomes include measures of media-based knowledge and individuals' understanding of the persuasive intent of advertising, awareness of media influence, their skepticism toward media messages, and the like. Behavior-relevant outcomes include individuals' normative perceptions of behavior, expectancies and attitudes toward engaging in behaviors, and perceived self-efficacy to perform behaviors such as refusing tobacco or alcohol. Jeong and colleagues [50•] indicate that media literacy programs generally are effective as interventions producing desired outcomes on most media- and behavior-relevant outcomes, although the authors suggest media literacy education may have greater effects on media-relevant outcomes than on behavior-relevant outcomes. These authors suggest that media literacy curricula can successfully equip people to resist potentially harmful message effects.

Consistent with this perspective, public health advocates and others generally suggest that media literacy education provides a valuable strategy for substance-abuse prevention. Research concerning antismoking media literacy educational

programs indicates that media literacy programs can provide significant benefits including increasing knowledge, correcting misperceptions regarding peers' norms, increasing critical thinking and skepticism, and increasing perceived efficacy [20, 31, 33, 42, 47, 52, 53]. In a comparison of a media literacy-based antismoking education program to a typical antismoking educational program, for example, Primack and colleagues [33] found that students in the media-literacy program experienced improved media literacy skills and normative understanding related to smoking when compared to other participants in the typical program. Consistent with these findings, participants in evaluations of media literacy education commonly report increased perceptions of self-efficacy to resist media-message influence and control their choices [42, 47, 53].

Qualitative analyses of media literacy programming indicate that students consider media literacy programming to be a positive and compelling experience [54]. Other participants note the lack of veracity of tobacco advertising, the failure of tobacco producers to provide truthful, health-related information and express greater suspicion toward the tobacco industry [55]. Even while students report they appreciate and benefit from media literacy education, they also may continue to express an appreciation for clever commercial advertising [55]. In addition, in at least one study, participants in a media-literacy intervention were no more likely to suggest that they might change their health-related behavior than participants in a traditional antismoking program [54]. Even so, media literacy programs have shown an ability not only to increase participants' self efficacy but also to demonstrate links to behavioral outcomes. For example, boys in one media-literacy program expressed less interest in alcohol-branded merchandise than control-group participants as a result of their participation [53]. More significantly, the results of a survey of 3600 college students by Primack and colleagues [54] indicated that higher media literacy concerning smoking independently associated with lower incidence of current smoking.

Caveats Regarding the Evaluation of Media Literacy Programs

Media literacy is not a panacea for an unhealthy, manipulative message environment, and the successful evaluation of media literacy programming requires a clear understanding the needs of the individuals receiving a curriculum and also the specific, intended outcomes of the curriculum. Most adolescents are awash in sexualized media content, advertising for harmful substances, music with violent or highly sexualized themes and the like. As a result, it is important for researchers conducting evaluation work to keep distinctions clear between what amounts to a manipulation check for a media literacy

program (e.g., did participants learn media literacy content or principles?) and the outcomes or effects of media literacy education which tend to be reflected in changes in participants' attitudes, beliefs, and behaviors attributable to media literacy education.

As part of this process, researchers should be aware of the potential for bias in measurement in media literacy evaluation. In particular, the National Association for Media Literacy Education (NAMLE) notes that media literacy is about teaching skills for good decision-making and avoiding presumptions concerning what participants should determine as a "right" or "correct" decision. In addition, it is useful to keep distinctions clear between critical thinking (the process of critically evaluating messages) and skepticism (the results of critical thinking). In this context, skepticism typically refers to an individual's potentially malleable state of disbelief that preserves openness to new information, while cynicism refers to a more intransigent state of disbelief generally closed to new information. Ultimately, media-literate information consumers likely will be motivated to consult multiple sources of information to weigh their veracity and seek reliability among information sources.

In addition, some media literacy-based experiments and intervention evaluations have provided counter-intuitive results, apparently increasing some detrimental attitudes and behaviors in addition to improving beneficial ones [42, 47]. Some scholars have suggested this occurs if material is not carefully matched to the developmental sophistication of children or if researchers do not pretest materials interactively [56]. Also, Nathanson [57] has suggested that media literacy interventions can have unintended effects among lighter viewers if they are drawn to the novelty of material they have not seen before.

These are important considerations and deserving of more study as researchers continue to examine the efficacy of media literacy education. One issue requiring additional research is the potential role measurement or analysis may play in identifying "boomerang" effects [56, 58]. Research concerning participants' reports of increased message desirability as a result of media literacy training, for example, appeared to indicate a boomerang effect. This created a need to consider whether participants' responses to media literacy training reflected an improved awareness of message-design techniques—and therefore, a successful intervention—rather than a confusing or problematic outcome. In an analysis of data from two media literacy evaluations [27•], results indicated no boomerang effect after all: even though desirability levels had not decreased, the media literacy treatments had negated the effect of perceived desirability on participants' attitudes and reduced the effect of desirability on participants' expectancies. In addition, the treatment reduced the effect of desirability on participants' efficacy in one study. Ultimately, these results supported what the researchers deemed the

"double-edged desirability hypotheses," that media literacy education can diminish the influence of desirable but glamorized, fictionalized media messages whether or not it decreases people's message affinity [27•].

The limits of media literacy also need more investigation. Theorizing about media literacy tends to assume that media-literate individuals process messages at a deeper level of involvement than less media-literate individuals do [59]. Yet research on processing of media messages indicates that individuals have a limited capacity for message processing and that message designers can take advantage of these limitations [60]. For example, individuals may recall content without recalling the source of the information or the context surrounding the content, putting them at risk for believing inaccurate or untruthful content. Because people cannot apply deep levels of dispassionate cognitive involvement to every media encounter, it will be important to study the intersections of active and automatic processing for more and less media-literate individuals, such as to determine the extent to which more media-literate individuals may have increased levels of processing effectiveness. Similarly, more study is needed regarding the extent to which media literacy skills taught in a general context or to a particular context such as nutrition, violence, body image or sex can and will be applied by individuals to other contexts such as substance use. The ability and likelihood to do so may depend on developmental maturity, cognitive involvement, and other factors such as sociocultural development. Related to these points, researchers need to examine the developmental, socio-cultural, and environmental conditions under which individuals gain more or less from media literacy education. Some studies, for example, have found that those who have less media literacy knowledge or are younger and presumably less cognitively developed may gain more from media literacy intervention [29] but it seems likely that different aspects of or levels of sophistication concerning media literacy education will be most appropriate for different developmental and cultural situations.

In terms of future research, it will be important for scholars to continue working to both understand message receivers' decision-making processes and to test and refine media construct measurement and evaluation of media literacy. One of the biggest limitations of previous media literacy evaluations has been the cross-sectional nature of evaluation data which makes it impossible to draw conclusions about causality. In addition, evaluation findings typically are limited to single samples (e.g., college students or adolescents in a single state or region). Because decision-making models typically hypothesize that media message interpretations contribute to decisions over time, it is important for researchers to replicate and extend evaluation studies in a longitudinal, repeated-measures design.

Conclusion

Currently, the preponderance of research evidence indicates that media literacy education has tremendous potential in substance-abuse and other forms of health programming. Research findings indicate that those who receive media literacy education can gain increased knowledge of media, advertising, and specific health-related topics such as smoking or alcohol consumption. In addition, media literacy training can provide an improved understanding of persuasive intent of advertising, improved critical-thinking skills, and greater resistance toward advertising influences, correction of norms misperceptions, increased skepticism and critical-thinking skills, and increased efficacy to control their choices related to substance use. In order to more fully realize the benefits of media literacy, researchers must continue working to answer existing questions and extend the methods they use to include longitudinal, repeated-measures research designs. This will allow health-promotion experts to tailor media literacy programs to the specific needs of audience members and take full advantage of the benefits media literacy training provides.

References

Papers of particular interest, published recently, have been highlighted as:
• Of importance

1. Lenhart A, Purcell K, Smith A, Zickuhr K. Social media & mobile internet use among teens and young adults. [Internet]. [place unknown]: Pew Research Center; 2010 February 3 [cited 2015 November 18]. Available from: http://pewinternet.org/Reports/2010/Social-Media-and-Young-Adults/.
2. Rideout VJ, Foehr UG, Roberts DF. Generation M^2: Media in the lives of 8- to 18-year olds. [Internet]. [place unknown]: [publisher unknown]; 2010 January 20 [cited 2015 November 18]. Available

from: http://kff.org/other/report/generation-m2-media-in-the-lives-of-8-to-18-year-olds/.

3. Brown JD, Bobkowski PS. Older and newer media: patterns of use and effects on adolescents' health and well-being. J Res Adolesc. 2011;21(1):95–113.

4. Chester J, Montgomery K, Dorfman, L. Alcohol marketing in the digital age [Internet]. [place unknown]: [publisher unkown]; 2010 [cited 2015 November 18]. Available from: http://www.digitalads.org/documents/BMSG-CDD-Digital-Alcohol-Marketing.pdf.

5. Gaudiosi J. Jim Beam is using virtual reality to make you think you're a shot of bourbon. [Internet]. [place unknown]: Fortune, Time Inc.; 2015 May 29 [cited 2015 November 18]. Available from: http://fortune.com/2015/05/29/jim-beam-virtual-reality/.

6. Moreno MA, Parks MR, Zimmerman FJ, Brito TE, Christakis DA. Display of health risk behaviors on MySpace by adolescents: prevalence and associations. Arch Pediatr Adolesc Med. 2009;163(1):27–34.

7. Anderson P, de Bruijn A, Angus K, Gordon R, Hastings G. Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies. Alcohol Alcohol. 2009;44(3):229–43.

8. Grenard JL, Dent CW, Stacy AW. Exposure to alcohol advertisements and teenage alcohol-related problems. Pediatrics. 2013;131(2):e369–79.

9. Hoffman EW, Pinkleton BE, Austin EW, Reyes-Velazquez W. Exploring college students' use of general and alcohol-related social media and their associations with alcohol-related behaviors. J Am Coll Heal. 2014;62(5):328–35.

10. Dal Cin S, Stoolmiller M, Sargent JD. When movies matter: exposure to smoking in movies and changes in smoking behavior. J Health Commun. 2012;17(1):76–89.

11. Hanewinkel R, Isensee B, Sargent JD, Morgenstern M. Cigarette advertising and teen smoking initiation. Pediatrics. 2011;127(2):e271–8.

12. Primack BA, Longacre MR, Beach ML, Adachi-Mejia AM, Titus LJ, Dalton MA. Association of established smoking among adolescents with timing of exposure to smoking depicted in movies. J Natl Cancer Inst. 2012;104(7):549–55.

13. Primack BA, Kraemer KL, Fine MJ, Dalton MA. Media exposure and marijuana and alcohol use among adolescents. Subst Use Misuse. 2009;44(5):722–39.

14. Bond BJ, Drogos KL. Sex on the shore: wishful identification and parasocial relationships as mediators in the relationship between jersey shore exposure and emerging adults' sexual attitudes and behaviors. Media Psychol. 2014;17(1):102–26.

15. Collins RL, Martino SC, Elliott MN, Miu A. Relationships between adolescent sexual outcomes and exposure to sex in media: robustness to propensity-based analysis. Dev Psychol. 2011;47(2):585.

16. O'Hara RE, Gibbons FX, Gerrard M, Li Z, Sargent JD. Greater exposure to sexual content in popular movies predicts earlier sexual debut and increased sexual risk taking. Psychol Sci. 2012;23(9):984–93.

17. Ragsdale K, Porter JR, Mathews R, White A, Gore-Felton C, McGarvey EL. "Liquor before beer, you're in the clear": binge drinking and other risk behaviours among fraternity/sorority members and their non-Greek peers. J Subst Use. 2012;17(4):323–39.

18. Strasburger VC. Adolescents, sex, and the media. Adolesc Med-State Art Rev. 2012;23(1):15.

19. U.S.A. Department of Health and Human Services. *The health consequences of smoking: 50 years of progress. A report of the surgeon general*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.

20. Scull TM, Kupersmidt JB, Parker AE, Elmore KC, Benson JW. Adolescents' media-related cognitions and substance use in the context of parental and peer influences. J Youth Adolesc. 2010;39(9):981–98.

21. Siegel M, Ross CS, Albers AB, DeJong W, King III C, Naimi TS, et al. The relationship between exposure to brand-specific alcohol advertising and brand-specific consumption among underage drinkers–United States, 2011–2012. The American journal of drug and alcohol abuse. 2015 October [cited 2015 November 18]; Available from: http://www.tandfonline.com/doi/pdf/10.3109/00952990.2015.1085542.

22. Snyder LB, Milici FF, Slater M, Sun H, Strizhakova Y. Effects of alcohol advertising exposure on drinking among youth. Arch Pediatr Adolesc Med. 2006;160(1):18–24.

23. Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. Monitoring the future national survey results on drug use, 1975–2011: volume II, college students and adults ages 19–50. Ann Arbor: Institute for Social Research, the University of Michigan; 2012.

24. Hingson RW, Zha W, Weitzman ER. Magnitude of and trends in alcohol-related mortality and morbidity among US college students ages 18–24, 1998–2005. Journal of Studies on Alcohol and Drugs, Supplement. 2009;(16):12–20.

25. Naimi TS, Nelson DE, Brewer RD. The intensity of binge alcohol consumption among US adults. Am J Prev Med. 2010;38(2):201–7.

26. CDC. Youth Exposure to alcohol advertising on television—25 markets, United States, 2010. [Internet]. [place unknown]: [publisher unknown]; 2013 November 8 [cited 2015 November 18]. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6244a3.htm?s_cid=mm6244a3_w.

27.• Austin EW, Pinkleton BE, Chen Y, Austin BW. Processing of sexual media messages improves due to media literacy effects on perceived message desirability. Mass Commun Soc. 2015;18(4):399–421. **In an analysis of data from two media literacy evaluations, the results of this analysis indicated that even though desirability levels had not decreased, the media literacy treatments had negated the effect of perceived desirability on participants' attitudes and reduced the effect of desirability on participants' expectancies. In addition, the treatment reduced the effect of desirability on participants' efficacy in one study. Ultimately, these results demonstrated that media literacy education can diminish the influence of desirable but glamorized media messages whether or not it decreases people's message affinity.**

28. Chen M-J, Grube JW, Bersamin M, Waiters E, Keefe DB. Alcohol advertising: what makes it attractive to youth? J Health Commun. 2005;10(6):553–65.

29. Austin EW, Chen MJ, Grube JW. How does alcohol advertising influence underage drinking? The role of desirability, identification and skepticism. J Adolesc Health. 2006;38(4):376–84.

30. Wills TA, Gibbons FX, Sargent JD, Gerrard M, Lee H-R, Dal CS. Good self-control moderates the effect of mass media on adolescent tobacco and alcohol use: tests with studies of children and adolescents. Health Psychol. 2010;29(5):539.

31. Chen Y. The effectiveness of different approaches to media literacy in modifying adolescents' responses to alcohol. J Health Commun. 2013;18(6):723–39.

32. Hobbs R, RobbGrieco M. African-American children's active reasoning about media texts as a precursor to media literacy in the United States. J Child Media. 2012;6(4):502–19.

33. Primack BA, Douglas EL, Land SR, Miller E, Fine MJ. Comparison of media literacy and usual education to prevent tobacco use: a cluster-randomized trial. J Sch Health. 2014;84(2):106–15.

34.• Aufderhide P. National leadership conference on media literacy. Conference report. Washington, D.C.: Aspen Institute; 1993. **This**

publication is seminal in the field and scholars typically cite it when defining and explaining media literacy.

35. Pinkleton BE, Austin EW, Chen Y, Cohen M. The role of media literacy in shaping adolescents' understanding of and responses to sexual portrayals in mass media. J Health Commun. 2012;17(4): 460–76.

36. Pinkleton BE, Austin EW, Chen Y, Cohen M. Assessing effects of a media literacy-based intervention on US Adolescents' responses to and interpretations of sexual media messages. J Child Media. 2013;7(4):463–79.

37. Austin EW. A bicycle riding theory of media literacy. In: Silverblatt A, editor. The Praeger handbook of media literacy, vol. 2. Santa Barbara: ABC-CLIO; 2014. p. 538–43.

38. Pinkleton BE, Austin EW. Media literacy. In: Kim DK, Dearing JW, editors. Health communication research measures. New York: Peter Lang; 2016. p. 65–76.

39. Austin EW, Pinkleton BE, Austin BW, Van de Vord R. The relationships of information efficacy and media literacy skills to knowledge and self-efficacy for health-related decision making. J Am Coll Heal. 2012;60(8):548–54.

40. Elias MJ, Branden-Muller LR, Sayette MA. Teaching the foundations of social decision making and problem solving in the elementary school. In: Baron J, Brown RV, editors. Teaching decision making to adolescents. Hillside: Lawrence Erlbaum Associates; 1991. p. 161–84.

41. Fischhoff B. Assessing adolescent decision-making competence. Dev Rev. 2008;28(1):12–28.

42. Pinkleton BE, Weintraub Austin E, Cohen M, Miller A, Fitzgerald E. A statewide evaluation of the effectiveness of media literacy training to prevent tobacco use among adolescents. Health Commun. 2007;21(1):23–34.

43. Bandura A. Social foundations of thought and action: a social cognitive theory. [Internet]. Prentice-Hall, Inc; 1986 [cited 2015 Nov 18]. Available from: http://psycnet.apa.org/psycinfo/1985-98423-000/.

44. Goldman M, Brown S, Christiansen B. Expectancy theory: thinking about drinking. In: Blane H, Leonard D, editors. Psychological theories of drinking and alcoholism. NY: Guilford Press; 1987. p. 181–226.

45. Chen S, Chaiken S. The heuristic-systematic model in its broader context. In: Chaiken S, Trope Y, editors. Dual-process theories in social psychology. New York: Guilford Press; 1999. p. 73–96.

46. Fishbein M, Cappella JN. The role of theory in developing effective health communications. J Commun. 2006;56(s1):S1–17.

47. Austin EW, Pinkleton BE, Hust SJ, Cohen M. Evaluation of an American Legacy Foundation/Washington state department of health media literacy pilot study. Health Commun. 2005;18(1): 75–95.

48. Bergsma LJ, Carney ME. Effectiveness of health-promoting media literacy education: a systematic review. Health Educ Res. 2008;23(3):522–42.

49. Hobbs R. The state of media literacy: a response to Potter. J Broadcast Electron Media. 2011;55(3):419–30.

50.• Jeong S-H, Cho H, Hwang Y. Media literacy interventions: a meta-analytic review. J Commun. 2012;62(3):454–72. **This comprehensive, meta-analytic review provides a summary of the general effects of media literacy interventions, examines the effects of interventions on different types of outcomes and specifies the moderators that influence intervention-effect sizes. The results generally indicate that media literacy interventions are effective, having positive effects on most outcomes**.

51. Potter WJ. The state of media literacy. J Broadcast Electron Media. 2010;54(4):675–96.

52. Bickham DS, Slaby RG. Effects of a media literacy program in the US on children's critical evaluation of unhealthy media messages about violence, smoking, and food. J Child Media. 2012;6(2):255–71.

53. Kupersmidt JB, Scull TM, Austin EW. Media literacy education for elementary school substance use prevention: study of media detective. Pediatrics. 2010;126(3):525–31.

54. Primack BA, Fine D, Yang CK, Wickett D, Zickmund S. Adolescents' impressions of antismoking media literacy education: qualitative results from a randomized controlled trial. Health Educ Res. 2009;24(4):608–21.

55. Chen Y, Kaestle CE, Estabrooks P, Zoellner J. US children's acquisition of tobacco media literacy skills: a focus group analysis. J Child Media. 2013;7(4):409–27.

56. Byrne S, Linz D, Potter WJ. A test of competing cognitive explanations for the boomerang effect in response to the deliberate disruption of media-induced aggression. Media Psychol. 2009;12(3):227–48.

57. Nathanson AI. Factual and evaluative approaches to modifying children's responses to violent television. J Commun. 2004;54(2): 321–36.

58. Byrne S. Media literacy interventions: what makes them boom or boomerang? Commun Educ. 2009;58(1):1–14.

59. Greene K, Yanovitzky I, Carpenter A, Banerjee SC, Magsamen-Conrad K, Hecht ML, et al. A theory-grounded measure of adolescents' response to media literacy interventions. J Media Lit Educ. 2015;7(2):35–49.

60. Lang A. Using the limited capacity model of motivated mediated message processing to design effective cancer communication messages. J Commun. 2006;56(s1):S57–80.