



Published in final edited form as:

J Media Lit Educ. 2014 ; 6(1): 1–14.

A Media Literacy Education Approach to Teaching Adolescents Comprehensive Sexual Health Education

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Introduction

During adolescence, young people are exposed to information about sex from a myriad of sources including mass media (Kaiser Family Foundation 2001). Adolescents frequently cite mass media as a primary source of information about sex (Sutton et al. 2002). Somewhat surprisingly, the media far outrank parents or schools as a source of information about birth control for 15–19-year-olds (Kaiser Family Foundation 2004). In fact, young teens (ages 13–15) rank entertainment media as their top source for information about sexuality and sexual health (Kaiser Family Foundation 2001).

Unfortunately, while the media are communicating a plethora of sexual messages, many of those messages would not be considered accurate or healthy. For example, while the amount of sexual content on TV has nearly doubled since 1997 (Kunkel et al. 2005), very few teen television shows mention *any* of the responsibilities or risks (e.g., using contraception, pregnancy, STIs) associated with sex and almost none of the shows with sexual content include precaution, prevention, or negative outcomes as the primary theme (Cope-Farrar and Kunkel 2002). In addition to television, other popular teen media also portray unhealthy sexual messages. Content analyses have revealed that close to 40% of popular music lyrics contained sexual references (Pardun, L’Engle, and Brown 2005; Primack et al. 2008), and the majority of the messages were sexually degrading and often accompanied mentions of other risk behaviors such as substance use and violence (Primack et al., 2008). Not only are music lyrics highly referential of sexual themes, the music videos associated with them are rife with sexual imagery (Pardun and McKee 1995; Greeson and Williams 1986), and sexually objectifying images of women constitute a large portion of this content (Sherman and Dominick 1986).

Some researchers have hypothesized that media may function as a “super-peer” that provide adolescents with scripts regarding how to act in romantic or sexual situations and hastens the onset of sexual activity (Brown, Halpern, and L’Engle 2005). A national survey found that 40% of teenagers said they had learned ideas about how to talk with their partners about sex directly from media portrayals (Kaiser Family Foundation 1998). Exposure to sexual content on television (Ashby, Arcari, and Edmonson 2006; Collins et al. 2004), sexually degrading music (Martino et al. 2006), and a “sexual media diet” (Brown et al. 2006) have all been

related to subsequent sexual behavior, even controlling for other etiological factors (e.g., demographics, connection with parents, religion, sensation seeking). Furthermore, exposure to sexual content on television was found to predict teen pregnancy even after adjusting for all covariates. Specifically, adolescents who were exposed to high levels of sexual content on television have been found to be twice as likely to experience a pregnancy in the subsequent three years, compared to those with lower levels of exposure (Chandra et al. 2008). Hence, these data suggest that media have a significant influence on relationship health. Based on these studies, media literacy education (MLE) may be a promising approach for sexual health programs. MLE has been shown to be an effective intervention for addressing the influence of unhealthy media messages on risky health decisions, specifically, intentions to use substances (Austin and Johnson 1997; Kupersmidt, Scull, and Austin 2010; Kupersmidt, Scull, and Benson 2012), and body image issues and eating disorders (Watson and Vaughn 2006; Yager and O’Dea, 2008).

Adolescents are at risk for negative health consequences associated with early and unhealthy sexual behaviors. Almost half of high school students in the U.S. have engaged in sexual intercourse (Centers for Disease Control and Prevention 2012), and nearly 40% of sexually active high school students did not use a condom during last intercourse (Centers for Disease Control and Prevention 2010). The early onset of sexual activity increases health risks and is associated with a greater likelihood of having multiple sex partners, having frequent intercourse, having sex while intoxicated, being involved in a pregnancy, and forcing a partner to have sex (O’Donnell, O’Donnell, and Stueve 2001), and increases the likelihood of acquiring a STI (Kaestle et al. 2005). Furthermore, adolescents involved in unhealthy romantic relationships (i.e., victims of dating violence) are more likely to engage in unhealthy behaviors including being sexually active, binge drinking, attempting suicide, and getting into physical altercations (Centers for Disease Control and Prevention 2006), and are at a higher risk for later victimization (Smith, White, and Holland 2003). Therefore, it is essential to educate adolescents about sexual health and healthy relationships prior to their first sexual encounter.

In an effort to aid youth in making healthy sexual decisions, the majority of middle and high schools in the United States provide students with education regarding sexual health (Kann, Telljohann, and Wooley 2007), but the content of programs varies greatly from school to school. While the most successful sexual health education programs stress abstinence while *also* educating adolescents about various methods of contraception (Kirby 2008), many schools teach students sexual health using abstinence-only programming (Kann, Brener, and Wechsler 2007). Overall, there remains little compelling evidence to date that abstinence-only programs positively affect teen sexual behavior (Kohler, Manhart, and Lafferty 2008; Kirby 2008). Given the findings from a growing body of research examining the effectiveness of sexual health education programs, states continue to move toward mandating comprehensive sex education and many have enacted regulations with specific mandates regarding the content of sexual health education in schools (e.g., North Carolina’s Healthy Youth Act of 2009).

Despite the fact that several comprehensive sexual health education programs have met the effectiveness criteria set by the U.S. Department of Health and Human Services (HHS) in

their pregnancy prevention research review, only one program, *Safer Choices*, teaches about the influence of media on adolescents' health decision-making (www.etr.org). Media influence is only addressed in one lesson. While this lesson provides an opportunity for students to learn and practice some media literacy skills, *Safer Choices* was not designed as a media literacy education program. Although research suggests that elementary media literacy skills can be taught in a single lesson (Austin and Johnson 1997), it is unlikely that students have the opportunity to learn and internalize the cognitive protective factors of media skepticism and media deconstruction skills.

In contrast, the *Take it Seriously: Abstinence and the Media (TISAM)* is a MLE program that consists of five lessons that are teen-led and abstinence-focused. The TISAM program has been evaluated using a pretest-posttest, quasi-experimental design with control groups (Pinkleton et al. 2012a). Compared to the control group, students who participated in the program had increased media literacy skills and more positive beliefs and attitudes about abstinence (Pinkleton et al. 2012a). Although these findings are promising and suggest the value of using MLE for sexual health education, the TISAM program is not a comprehensive sexual education program, is not designed to be led by teachers, and does not appear on the HHS evidence-based programming list. Due to the fact that states are moving toward having teachers implement comprehensive sex education programming, there is a need for the development and evaluation of teacher-led MLE programs that are evidence-based and provide comprehensive sexual health education.

The purpose of this study is to test the feasibility of a new, teacher-led program called *Media Aware Relationships (MAR)*, which incorporates comprehensive sex education for young adolescents in the context of media literacy education. The program was developed based upon the Message Interpretation Process (MIP) model (Austin and Freeman 1997) as the conceptual framework. The MIP model addresses the cognitive processes associated with the interpretation of media messages such that the *similarity* of media portrayals to self, the *realism* of media portrayals, and the *desirability* of media portrayals contribute to the level of identification with the media message. The model posits a direct relationship between the logic-based constructs of the model (i.e., similarity and realism) and identification. The level of identification with the media message predicts the valence of expectancies regarding the behavior, which in turn, influences behavioral choices.

The basic premise of MLE is that teaching critical thinking skills creates an active filter through which media messages can be processed. *MAR* was designed to provide students' with accurate sexual health information and teach them how to apply that information to critical analysis of media messages. For example, in some lessons, students compare information that is presented in media messages with factual health information (e.g., consequences of risky sexual behavior), and evaluate the realism of these media messages as well as the similarity between the "media world" and their "real world" experiences. Additionally, students are provided with opportunities to practice communication skills (e.g., sexual refusal skills, contraception negotiation) by rewriting media scripts to include accurate health and relationship information that was missing from the original script. The program's activities include: (1) learning media literacy skills; (2) practicing media deconstruction skills and applying them to media messages with sexual themes; and (3)

completing a media production activity. Such skill development is expected to change adolescents' cognitions and attitudes about risky sexual practices, beliefs about normative sexual practices, understanding of the negative consequences of risky sexual practices, and efficacy for controlling decisions about sexual activity (Pinkleton et al. 2008; Pinkleton et al. 2012). Changes in attitudes, beliefs, and efficacy, in turn, predict intentions. Intentions are predictive of behavior, which is consistent with the Theory of Reasoned Action (Ajzen and Fishbein 1980).

A substantial amount research has provided support for relationships among attitudes, beliefs, efficacy, intentions and behaviors within the context of sexual health. Personal cognitions and attitudes, such as holding positive attitudes toward abstinence, are related to a lower likelihood of initiating sexual activity (DiIorio et al. 2001) and delaying sexual intercourse (Carvajal et al. 1999). Self-efficacy for abstinence is associated with delaying sexual activity (DiIorio et al. 2004) and self-efficacy for sexual communication is related to engaging in safer sex (Noar, Carlyle, and Cole 2006). Normative beliefs favorable toward safe sex are associated with intentions to enact safe sex behaviors (Terry, Galligan, and Conway 1993; Basen-Engquist and Parcel 1992), while intentions are a stable predictor of actual sexual behaviors (Buhi and Goodson 2007; Terry, Galligan, and Conway 1993).

The health outcomes of the present study include those related to postponing sexual activity (i.e., decreased intentions to have sex and increased efficacy to refuse sexual behavior) and engaging in safe sex if sexual activity were to occur (e.g., increased intentions to use a condom). An additional desired outcome is for students to increase their intentions to engage in sexual communication (i.e., intentions to talk with partners, parents, and medical professionals prior to sexual activity), which is related to both postponing sexual activity and engaging in safe sex. People who are able to communicate about sexual topics with their partners are more likely to be older when they engage in first intercourse (Guzma et al. 2003), engage in safer sex (Noar, Carlyle, and Cole 2006), and are more likely to use condoms consistently once they initiate intercourse (Bryan, Fisher, and Fisher 2002; Widman et al. 2006). Additionally, adolescents who have more frequent discussions with their parents about sex are less likely to be sexually active (DiIorio, Kelley, and Hockenberry-Eaton 1999; Leland and Barth 1993).

Based on the MIP model and the literature regarding sexual health behaviors, exposure to *MAR* should result in positive sexual health outcomes through enhancing media literacy skills. MLE provides a relevant and approachable avenue for teachers to use when discussing sensitive topics such as sexual activity and relationships as well as providing a safe and comfortable context for students to talk with a knowledgeable adult and peers about sexual norms, attitudes, and facts. Throughout the program, students have the opportunity to learn and practice communication skills related to sexual decisions (e.g., sexual refusal and contraception negotiation skills).

The present paper was designed to examine two primary hypotheses. The first hypothesis was that exposure to *MAR* will result in the following health outcomes: (a) decreased intentions to have sex; (b) increased efficacy to refuse sexual behavior; (c) increased sexual health knowledge; (d) increased intentions to use a condom; and (e) increased intentions for

sexual communication. The second hypothesis was that exposure to *MAR* will result in the following media literacy outcomes: (a) increased media deconstruction skills; (b) decreased perceived realism of media messages; (c) decreased similarity to media characters; and (d) increased skepticism of media messages.

Method

Program Description

Media Aware Relationships (MAR) is an 8-lesson comprehensive sexual health MLE program designed to be led by trained educators and covers a wide range of sexual health topics including pregnancy and STI prevention, dating violence, and relationship health. The first part of the program teaches basic concepts and definitions used in media literacy education; focuses on identifying and analyzing gender stereotypes perpetuated in media messages; and addresses the tactics used by media creators to manipulate images. The middle of the program focuses on building critical thinking about the accuracy of media messages depicting sex and alcohol use as well as identifying healthy and unhealthy relationships in the media and in real life. The program ends by addressing information missing in sexual media messages regarding commitment, consequences (e.g., STIs and pregnancy), and contraception, and having students demonstrate what they have learned by creating media messages about healthy relationships. To complement the school-based lessons, the program also includes an e-module to provide basic sexual health information about STIs in a self-paced, interactive manner.

Development of the program included the common characteristics of programs found to be effective in changing behaviors that lead to STIs, HIV, and unintended pregnancy, as detailed in a *Tool to Assess the Characteristics of Effective Sex and STD/HIV Education Programs* (Kirby, Roller, and Wilson 2007). Lessons were created through consultation with middle school teachers, psychologists, media researchers, and sexual health experts. After the creation of each lesson, the lesson content was pilot tested in focus groups of adolescents and revised, as needed, prior to conducting the current study.

Participants

Participating teachers and classrooms constituted a convenience sample. One teacher of two 8th grade health education classes in a traditional school and two educators from afterschool programs that serve middle school students participated in this study. Students in the participating classes ($N=64$) completed pretest and posttest questionnaires. Five students did not participate in data collection (i.e., four did not return their parent permission forms and one parent refused his or her child's participation). Overall, 59 students completed the pretest questionnaire (92% participation rate). Three students were absent at posttest, which left a final sample of 56 students (5% attrition rate). Student demographic characteristics are as follows: gender - 60.7% female; race - 95% White/Caucasian and 5% Black/African-American; ethnicity - 35.7% Hispanic/Latino; SES - 34.6% receive reduced/free lunch; and age ($M=13$ yrs.; $SD=1.4$).

Measures

Adolescent Health Outcomes

Intentions to have sex: Four items measured participants' intentions to have sex in the future ($\alpha = .91$) (adapted from L'Engle, Brown, and Kenneavy 2006). Examples include: "How likely is it that you will...have sexual intercourse in the next year?" and "...have sexual intercourse before you graduate high school?" Response scales ranged from 1 ("Not at all likely") to 4 ("Extremely likely"). Mean scores were calculated.

Efficacy to refuse sex: Four items measured participants' efficacy to refuse sex ($\alpha = .80$) (adapted from Soet, Dudley, and Dilorio 1999). Examples include: "I know what things to say to refuse unwanted sexual attention." and "I can say no to someone who is pressuring me to have sex." Response scales ranged from 1 ("Strongly Disagree") to 4 ("Strongly Agree"). Mean scores were calculated.

Sexual health knowledge: Sexual health knowledge was measured using true/false questions (e.g., "If someone is drunk, they cannot give consent to have sex.") and multiple choice questions (e.g., "Which of the following are STIs? Choose all that apply."). Correct responses were summed and could range from a low of 0 to a maximum of 12.

Intentions to use a condom: To assess intentions to use a condom, participants' were asked one question, "If you were to decide to have sexual intercourse, how likely would you be to use a condom?" (adapted from Jemmott and Jemmott 1991). Response scales ranged from 1 ("Not at all likely") to 4 ("Extremely likely").

Intentions for sexual communication: Three items measured participants' intentions for sexual communication prior to sexual activity ($\alpha = .70$). Examples include: "If you were to decide to have sexual intercourse, how likely would you be to...discuss HIV/AIDs or other STIs with your partner?" and "...talk with your parents beforehand?" Response scales ranged from 1 ("Not at all likely") to 4 ("Extremely likely"). Mean scores were calculated.

Adolescent Media Literacy Outcomes

Media deconstruction skills: Students completed a performance measure of critical thinking about media messages by deconstructing a print alcohol advertisement using the following prompts as a guide: "Tell me about this advertisement in the space below (the more detail the better). How are advertisers trying to get someone to buy this product? Is there anything missing from the ad?" A trained coder scored these responses using a qualitative coding system using six coding categories designed to contribute to an aggregate score used to assess overall ability to deconstruct media messages: product ($\kappa = .79$); target audience ($\kappa = 1.00$); visual elements ($\kappa = .89$); language ($\kappa = .75$); implied messages ($\kappa = .68$); and missing information ($\kappa = .87$). Together, the scores across each coding category were summed to create an overall Deconstruction Skills composite variable ($\kappa = .83$) that could range from 0 to 15 with higher scores indicating more advanced media deconstruction skills. Approximately 20% of the responses were scored by another coder in order to establish inter-rater reliability of the measure. Excellent reliability and validity for a similar

measure has been previously reported (Scull et al. 2010; Kupersmidt, Scull, and Benson 2012).

The logical MIP constructs that follow were adapted from an evaluation of a peer-led media literacy program for adolescents with the goal of promoting abstinence (Pinkleton et al. 2008) and a teacher-led MLE program for adolescents with the goal of substance abuse prevention (Kupersmidt, Scull, and Benson 2012).

Realism: Eight items measured participants' perceived realism of portrayals of teens and sexual issues in the media ($\alpha = .76$). Examples include: "Teens in the media...have sex as often as average teens." and "...get pregnant as often as average teens." Response scales ranged from 1 ("Strongly disagree") to 4 ("Strongly agree"). Mean scores were calculated.

Similarity: Seven items measured participants' perceived similarity to media portrayals ($\alpha = .75$). Examples include: "The things I do in my life are similar to what I see in the media." and "I like the kinds of things that teens in the media like." Response scales ranged from 1 ("Strongly disagree") to 4 ("Strongly agree"). Mean scores were calculated.

Media skepticism: One item measured participants' skepticism of the media: "You can believe everything you see in the media." Response scale ranged from 1 ("Strongly disagree") to 4 ("Strongly agree").

Program Assessment and Fidelity of Implementation

Program Assessment: Teacher: After training, teachers provided feedback on the program (5-pt scale, Not at All to Extremely) on four items: 1) "do you think the program will be easy to use?"; 2) do you think the program materials are attractive?"; 3) "do you think your students will find the program engaging?"; and 4) "do you think your students will find the program informative?"

After teaching the program, teachers also rated how much they agreed with the following five statements (5-pt. scale, "Strongly Disagree" to "Strongly Agree"): 1) "This program is useful for helping students make healthier decisions in the future."; 2) "I would recommend this program to other teachers interested in teaching students about healthy relationships."; 3) "In this program, students learned new information."; 4) "Compared to traditional sexual education curricula, this program provided an easier avenue for introducing topics on relationships and sexual health."; and 5) "Compared to traditional sexual education curricula, MLE is an engaging way for students to learn information about relationships and sexual health."

Program Assessment: Student: Adolescent satisfaction with the program was assessed at the conclusion of the lessons by asking if students found the program interesting (4-pt scale, "Not Very Interesting" to "Very Interesting"), and whether they had learned something important from the program (4-pt scale, "Not Very Much" to "Very Much"). Additionally, students were asked the following open-ended questions: "What did you like best about the lessons?"; "What did you like least about the lessons?" and "Did you learn anything important that you can use in your own life? If so, what did you learn and how is it useful?"

Fidelity of Implementation: Information regarding how faithfully teachers implemented the program was obtained by teachers completing a fidelity checklist after teaching each lesson. The checklist is a standard reporting form that contains a list of the 50 subtopics covered across the lessons. Teachers were asked to rate how thoroughly they covered the different subtopics on a 4-pt. scale (i.e., Did you teach this part of the lesson? “Not at all” to “Thoroughly”) and to provide open-ended feedback on how the lessons were implemented in the classroom. Ratings of program dosage were summed across all the lessons (possible range of 0–200).

Procedure

Participating teachers received six hours of training. First, teachers were trained on teaching sex education topics to adolescents, which included developing an understanding of the developmental stages of adolescent sexuality, addressing teachers’ own assumptions regarding sexuality (e.g., norms, personal values), and role playing how to respond to students’ questions about sex. Next, the training covered an introduction of media influence on adolescent sexuality and an introduction to the MIP model. Finally, each *MAR* lesson was presented in detail including explaining how each lesson addressed the media literacy and sexual health goals of the program, and reviewing or modeling the activities included in each lesson plan.

Teachers taught *MAR* to all students in the participating classrooms. Students with parental permission and who assented completed a pretest questionnaire before beginning *MAR* and a posttest questionnaire after completing the program and were given a small incentive for participating in the study (i.e., a whiteboard). The average interval between pretest and posttest was 24 days (Range 14–56 days; $SD=26.7$). Teachers received a monetary incentive for participating in program training, providing program feedback after training and after teaching, and completing the fidelity checklists.

Results

Preliminary Analyses

Interscale correlational analyses were conducted for all pretest outcome variables (see Table 1). All interscale correlation coefficients were significant in the expected direction and ranged from a low of $-.02$ between intentions to have sex and media skepticism to a high of $.55$ between sexual health knowledge and intentions for condom use. Overall, the pattern of significant low to moderate associations between predictor and outcome variables suggests that they are distinct and do not need to be collapsed into composite variables.

Adolescent Outcome Analyses

Repeated measures analyses using SAS PROC MIXED were conducted on all student outcomes to examine changes in scores over time from pretest to posttest. Several significant effects of the intervention on sexual health outcomes were found (see Table 2). Intentions for condom use were higher at posttest than at pretest. In addition, intentions for sexual communication (i.e., intentions to talk to a parent, partner and medical professional prior to sexual activity) were higher at posttest than pretest. There was a trend for adolescents to

increase in their sexual health knowledge from pretest to posttest. However, no significant differences were found between pretest and posttest scores on intentions to have sex and efficacy to refuse sexual behaviors. There were also several effects of the intervention on media-related outcomes. Adolescents' media deconstruction skills were higher at posttest than at pretest. In addition, adolescents' perceived realism of teens in the media was lower at posttest than at pretest. Also, media skepticism was higher at posttest than at pretest. Adolescents' reports of similarity to people in media messages did not significantly change from pretest to posttest.

Program Assessment and Fidelity of Implementation

Teachers completed ratings of the program on a 5-point scale at two points in time. After completing the training, teachers reported highly favorable ratings about the program including ease of use ($M=4.00$; $SD=0.00$); attractiveness ($M=4.00$; $SD=1.00$); student engagement ($M=4.33$; $SD=.58$); and program informativeness ($M=4.67$; $SD=.58$). In addition, the teachers rated the program again after teaching it. Teachers unanimously agreed that the program was useful for helping students make healthier decisions in the future ($M=5.00$; $SD=0.00$). They reported that they would recommend this program to other teachers interested in teaching students about healthy relationships ($M=4.67$; $SD=0.58$) and agreed that in *MAR*, students learned new information ($M=5.00$; $SD=0.00$). Compared to traditional sexual education curricula, teachers felt that the *MAR* program provided an easier avenue for introducing topics on relationships and sexual health than traditional sexual health education programming ($M=4.00$; $SD=0.00$), and MLE was an engaging way for students to learn information about relationships and sexual health ($M=4.00$; $SD=0.00$). Finally, teachers reported their on their fidelity of implementing *MAR*. Teachers reports on their fidelity of implementation of the program ranged from teaching 77% to 93% of the program topics ($M=85.5\%$; $SD=6.61$).

Participating students also rated their experience with *MAR*. The majority (86% and 89%, respectively) of students reported that the lessons were interesting and that they learned something important from the lessons. Additionally, students were asked the following open-ended question: "Did you learn anything important that you can use in your own life? If so, what did you learn and how is it useful?" Fifty-four students responded, and each mentioned between one and three topics. The topics most frequently listed by students were that they learned information about STIs (12 responses), communicating about sex (10 responses), and refusal skills (8 responses). Additionally, students said they learned important information about self-respect, abstaining from sexual activity, contraception, pregnancy, alcohol, and media influence.

Discussion

This study provides support for the use of MLE as a promising avenue for comprehensive sexual health education. Teachers and students both evaluated *MAR* very favorably and teachers reported that it provided an easier avenue for introducing topics on relationships and sexual health than traditional sexual health education programming. Furthermore, to gather initial evidence of the feasibility of the program, the study tested whether or not

participation in the program was associated with positive effects on media- and sexual health-related outcomes, and the results were uniformly promising.

The most important finding was that using a MLE approach was related to an increase in participants' intentions to make healthy decisions regarding sexual behaviors. Specifically, after participating in the program, adolescents reported that they would be more likely to use a condom if a decision was made to have sex. While condoms are effective in reducing the risk of an unplanned pregnancy and acquiring an STI, both of which are serious issues among U.S. teens, adolescents often neglect to use a condom during intercourse (Centers for Disease Control and Prevention 2010). By increasing students' intentions to use a condom if they make the decision to have sex, their risk of acquiring an STI and/or being involved in an unplanned pregnancy would be reduced. In addition, after participating in *MAR*, adolescents were more likely to report the intention to talk to a partner, parent, or medical professional before having sex. The fact that adolescents reported that they would be more likely to intend to talk with others about their sexual decisions prior to having sex is of particular interest because sexual communication has been found to be a protective factor against risky sexual behaviors. Adolescents who have more frequent discussions with their parents about sex are less likely to be sexually active (DiIorio, Kelley, and Hockenberry-Eaton 1999; Leland and Barth 1993).

Significant results were not found for participants' intention to have sex. One possible reason for the lack of significant change in intent to have sex is that the majority (81%) of participants were not currently in a romantic relationship, and overall, the students indicated very low pretest intentions to have sex ($M=1.42$ on a 4-point scale). Therefore, it is possible that a floor effect can explain why the intervention did not appear to reduce intentions to have sex. Use of a larger sample in a future study may provide the variability and power needed to detect changes in this outcome.

As predicted, the evaluation of *MAR* also revealed positive changes in adolescents' media literacy outcomes. After exposure to the program, participants' had decreased perceived realism and increased skepticism of media messages. Media messages about sex and relationships are typically devoid of accurate sexual health information. When youth are less likely to automatically accept the validity of information about unhealthy sexual behaviors found in the media, they may be more likely to consider the negative consequences of early or risky sexual activity.

After participating in *MAR*, students improved on a performance-based measure of media deconstruction skills. Their responses at the post-test were more likely to include more nuanced descriptions of the product, details on the possible target audience(s) of the ad, descriptions of advertising techniques used to attract a target audience, implied messages about the benefits of the product, and health information related to use of the product that was missing in the ad. Increased sophistication in media deconstruction skills is important in that these skills have been found to mediate changes in intent to use alcohol and tobacco products in an evaluation of the effectiveness of a middle school MLE, substance abuse prevention program, *Media Ready* (Kupersmidt, Scull, and Benson 2012). One future direction for research is to conduct a mediator analysis to ascertain whether improved media

literacy skills also mediate change in sexual health decision making after being taught a MLE curriculum such as *MAR*.

The positive effects of *MAR* add to a growing body of research supporting the efficacy of MLE in promoting healthy behaviors in adolescents (Bergsma and Carney 2008). To date, one other MLE adolescent sexual health program has been evaluated with published results, *TISAM* (Pinkleton et al. 2008). Similar to the findings from the present study, exposure to the *TISAM* program resulted in positive sexual health and media literacy outcomes. While both *TISAM* and *MAR* are MLE programs for adolescent sexual health, there are key differences between them. *TISAM* was designed to be led by peers, whereas *MAR* is a teacher-led program. Each kind of program serves important functions in health education, and the promising evaluations of *TISAM* and *MAR* suggest that MLE has the potential for effective health promotion in both approaches. Additionally, *TISAM* was designed to provide abstinence-only education, whereas *MAR* provides comprehensive sexual education. Therefore, while both programs resulted in positive sexual health outcomes, the findings on the effects of the programs on health outcomes were consistent with the goals of each program. For example, *TISAM* resulted in increases in positive beliefs and attitudes related to abstaining from sexual activity (e.g., efficacy to delay sexual activity and more positive attitudes toward abstinence). In contrast, *MAR* resulted in increased intentions for engaging in protective sexual health behaviors (i.e., intentions to talk to a parent, partner and medical professional prior to sexual activity, and intentions for condom use).

High levels of both student and teacher satisfaction were reported for *MAR*. Teachers reported that *MAR* provided an easier way to approach the discussion of sexual health with students compared to their experiences using traditional sexual health education programming. Teachers agreed that using a MLE approach is an effective way to engage student learners in sexual health education topics. It is possible that an MLE approach allowed students and teachers to talk openly about the potentially uncomfortable topic of sex. Specifically, the use of media examples may have provided a relevant and engaging context to educate students about sexual health topics where students were given the opportunity to discuss the sexual decisions of media characters. In this way, students could explore their attitudes and beliefs without talking about themselves directly or about the people they knew.

There are three limitations of this study. The main limitation is that the research design for this pilot study was a single-group, pre-post design. Several threats to internal validity exist for this type of study including the effects of history (i.e., outside events that occurred between measurements that may affect the results); maturation (i.e., participants naturally changing over time); testing (i.e., taking the pretest may influence the answers on the posttest); and statistical regression to the mean. Nevertheless, the data on youth outcomes were very promising but cannot be concluded as being causal or definitive. Use of a randomized control group in an experimental design would allow for a direct test of the program's effectiveness for achieving positive youth outcomes. A second limitation is that this pilot study only included an immediate posttest assessment of the adolescents. However, behavior change may not be an immediate consequence of program participation. Future research should examine the effectiveness of the program using a longer-term follow-up

study, which would allow for measurement of behavior change as well as evaluation of whether any positive effects observed at the immediate post-test are sustained over time. A third limitation is that adolescents' behavioral intentions, rather than actual behaviors, were assessed at pretest and immediate posttest. Given the brief interval of time between the two test administrations, we did not expect to be able to detect and measure behavior change; therefore, self-reported sexual health behaviors were not assessed. Although intentions are strong predictors of sexual behavior (Buhi and Goodson 2007), future research should explore changes in actual patterns of behavioral change to strengthen the empirical basis behind using *MAR* for prevention purposes.

Despite these limitations, this study adds to the findings that MLE may be an effective approach to implementing sexual health education programs in schools and that *MAR*, in particular, is a promising program for increasing adolescents' cognitive and behavioral skills related to sexual health. The program helped adolescents to be more active rather than passive consumers of media messages. It teaches students to systematically critique the veracity and completeness of health information found in media messages containing sexual themes. Increasing critical thinking skills, media skepticism, and logical MIP processing skills, have been shown to influence health-related cognitions and may serve as a mediating mechanism between exposure to *MAR* and behavior change related to sexual health. The findings from this study provide a solid foundation for the feasibility, attractiveness, usability, and viability of *MAR* and suggest its potential for assisting adolescents in making healthy decisions about sexual behavior. Furthermore, this study contributes to the growing body of literature that illustrates the promise of using MLE for positively impacting adolescents on a variety of risky health behaviors such as substance use, body image, and sexual health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Research reported in this paper was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health under award number R43HD061193 to the first author. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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Table 1

Correlations between outcome variables

Outcomes	1	2	3	4	5	6	7	8	9
1. Intentions to have sex		-0.25	0.03	0.09	-0.28*	0.03	0.08	0.27*	-0.02
2. Efficacy to refuse sex			.28*	0.30*	0.37**	0.13	-0.22	-0.17	0.15
3. Sexual health knowledge				0.55***	-0.06	0.42**	-0.10	0.31*	0.27*
4. Intentions for condom use					0.15	0.35**	0.07	0.33*	0.34**
5. Intentions for sexual communication						-0.08	-0.11	-0.20	0.13
6. Media deconstruction skills							-0.09	0.15	0.48***
7. Realism								0.42**	-0.38**
8. Similarity									0.03
9. Media skepticism									

Note:

* p<.05;

** p<.01;

*** p<.001

Table 2

Pretest means, posttest means, *F*-values, and effect sizes for repeated measures analyses of program impact on adolescent health and media literacy outcomes

Outcome	Pretest <i>M</i> (<i>SD</i>)	Posttest <i>M</i> (<i>SD</i>)	<i>F</i> -value	Effect size (<i>d</i>)
Sexual Health				
Intentions for sexual communication	2.27 (2.92)	2.59 (2.92)	(1,55) = 14.37 **	.30
Intentions for condom use	3.32 (.92)	3.52 (.90)	(1,55) = 4.10 *	.22
Sexual health knowledge	10.20 (2.92)	11.08 (2.92)	(1,58) = 3.58 ±	.30
Intentions to have sex	1.42 (.70)	1.51 (.67)	(1,55) = 1.40	
Efficacy to refuse sexual behaviors	3.25 (.54)	3.32 (.52)	(1,55) = .75	
Media Literacy				
Media deconstruction skills	4.61 (2.30)	5.78 (2.32)	(1,55) = 11.24 **	.51
Realism	2.23 (.46)	2.08 (.45)	(1,54) = 7.34 **	.33
Media skepticism	3.44 (.77)	3.68 (.75)	(1,55) = 4.31 *	.32
Similarity	2.00 (.46)	1.97 (.45)	(1,55) = .37	

Note:

± = p<.10;

* = p<.05;

** = p<.01;

*** = p<.001

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