Chapman University
Chapman University Digital Commons

Communication Faculty Articles and Research   School of Communication

Entertainment-Education Videos as a Persuasive Tool in the Substance Use Prevention Intervention "keepin' it REAL"

Young Ju Shin
Arizona State University

Michelle Miller-Day
Chapman University, millerda@chapman.edu

Michael L. Hecht
REAL Prevention LLC

Janice L. Krieger
University of Florida

Follow this and additional works at: https://digitalcommons.chapman.edu/comm_articles

Part of the Broadcast and Video Studies Commons, Cognitive Psychology Commons, Communication Technology and New Media Commons, Curriculum and Instruction Commons, Curriculum and Social Inquiry Commons, Educational Assessment, Evaluation, and Research Commons, Educational Methods Commons, Educational Psychology Commons, Experimental Analysis of Behavior Commons, Health Communication Commons, Other Communication Commons, Other Education Commons, Other Psychology Commons, School Psychology Commons, Social Psychology Commons, and the Substance Abuse and Addiction Commons

Recommended Citation

Entertainment-Education Videos as a Persuasive Tool in the Substance Use Prevention Intervention "keepin' it REAL"

Comments

This is an Accepted Manuscript of an article published in *Health Communication*, volume 33, issue 7, in 2018, available online at . It may differ slightly from the final version of record.

Copyright

Entertainment–Education Videos as a Persuasive Tool in the Substance Use Prevention Intervention "keepin' it REAL"

YoungJu Shin[a], **Michelle Miller-Day**[b,c], **Michael L. Hecht**[c], and **Janice L. Krieger**[d]

[a]Hugh Downs School of Human Communication, Arizona State University

[b]Department of Communication Studies, Chapman University

[c]REAL Prevention, LLC

[d]College of Journalism and Communications, University of Florida

Abstract

Based on social cognitive theory and narrative engagement theory, the current study examined hypothesized indirect effects of engagement with *keepin' it REAL* (*kiR*) curriculum entertainment–education (E–E) videos on youth alcohol use via youth drug offer refusal efficacy. Students in 7th grade ($N = 1,464$) at 25 public schools in two Midwestern states were randomly assigned to one of the two versions of the *kiR* curriculum, the *kiR* urban version and the *kiR* rural version. Each version had their own set of five culturally-grounded E–E videos depicting communicative skills to refuse drug offers. Differential effects for engagement components were expected depending on the degree of cultural matching. Pre/post surveys were administered at the beginning and the end of 7th grade. Structural equation modeling analysis resulted in partial support for the research hypotheses. Rural youth receiving the urban curriculum who reported higher interest in the E–E videos were more likely to report having higher refusal efficacy, and in turn, less likely to use alcohol. Rural youth receiving the rural curriculum who identified with the E–E video main characters were more likely to report having higher refusal efficacy, and in turn, less likely to use alcohol. Implications for E–E health promotion are discussed.

Children and adolescents are increasingly exposed to mass media depictions of substance use behaviors such as drinking and smoking (Sargent, Gibson, & Hatherton, 2009; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). A survey by the Center on Alcohol Marketing and Youth (2009) reports that U.S. youth exposure to alcohol advertising increased by 71% between 2001 and 2009. More importantly, the same survey points out that adolescents' reported exposure to alcohol advertisement was 44% higher than that for adults above 21 years old. These messages tend to depict substance use as normative and consequently may socialize adolescents to believe that substance use is more prevalent among their peers than it is in actuality (Heatherton & Sargent, 2009; Scull, Kupersmidt, Parker, Elmore, & Benson, 2010). Most concerning is evidence that media depictions of substance use influence adolescents to initiate and continue substance use (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Dal Cin et al., 2009; Sargent et al., 2009).

CONTACT YoungJu Shin, Youngju.Shin@asu.edu, Hugh Downs School of Human Communication, Arizona State University, 950 S. Forest Mall, P.O. Box 1205, Tempe AZ 85287, USA.

Although some scholars view media as a socialization agent that negatively impacts youth development, health communication researchers also view various media as viable channels for promoting healthy behaviors (Beacom & Newman, 2010; Klein, 2011; Ye & Ward, 2010). In particular, media messages developed to entertain as well as promote health appear particularly promising for prevention interventions. Labeled as entertainment–education (E–E), this approach to prevention utilizes messages conveyed through television, film, literature, and other entertainment forms to increase knowledge, shape attitudes, and change behaviors (Singhal. & Rogers, 1999). The persuasive health messages contained in entertainment–education interventions have proven to influence a variety of health practices (Hether, Huang, Beck, Murphy, & Valente, 2008; Morgan, Movius, & Cody, 2009; Tian & Yoo, 2015; Unger, Molina, & Baron, 2009). However, the causal mechanisms for these effects are less clear. This study conceptualizes E–E prevention messages through the lens of social cognitive theory (Bandura, 2002) and narrative engagement theory (Miller, Hecht, & Stiff, 1998; Miller-Day & Hecht, 2013) in order to better understand the underlying mechanisms of change in the context of adolescent substance use prevention.

E–E Effects on healthy behaviors

In the health domain, E–E has been used for health promotion and public prevention interventions across a variety of health domains from HIV/AIDS (Kuhlmann et al., 2008; Schouten, Vlug-Mahabali, Hermanns, Spijker, & Van Weert, 2014) to substance use prevention (Warren et al., 2006). Recent research has begun to unpack the effects of E–E on health knowledge, attitudes, and behaviors (Tukachinsky & Stokunaga, 2013). For example, E–E television dramas appear to successfully increase a lay audience's health knowledge of breast cancer by raising awareness of the importance for self-care, early breast cancer detection, and possible treatment options in the United States (Hether et al., 2008; Wilkin et al., 2007). Similarly, E–E has been used to improve reproductive health behaviors and HIV/ AIDS prevention in the developing countries (Roberto, Murray-Johnson, & Witte, 2011). Several studies have found that E–E increased health knowledge about family planning and modern contraceptives in Tanzania (Rogers & Vaughan, 2000), the Peruvian Amazon (Sypher, McKinley, Ventsam, & Valdeavellano, 2002), and in Bangladesh (Do & Kincaid, 2006).

In addition to awareness and knowledge improvement, E–E has the potential to encourage healthy behavior changes in other ways. Previous studies indicate that exposure to E–E programs about HIV significantly increased intentions to test for HIV (Lapinski & Nwulu, 2008), to use modern contraceptives as a preventive behavior against HIV infection (Do & Kincaid, 2006), and to engage in safe sex practices (Moyer-Gusé, Mahood, & Brookes, 2011). In the context of diabetes prevention, the intention to practice healthy behaviors such as exercising and developing eating habits that include an abundance of fruits and vegetables significantly increased among those who read an E–E booklet illustrating a dramatic story of a character diagnosed with diabetes (Unger et al., 2009).

These studies demonstrate the promise of E–E messages for health promotion across a variety of domains. They also demonstrate that E–E works by raising awareness, increasing knowledge, and changing intentions (Moyer-Gusé, Mahood, et al., 2011b; Schouten et al.,

2014). However, this provides an incomplete picture of the causal process. Many message types increase awareness and knowledge and most behavior change theories use intent as a mediator or proxy for actual change. So, while these studies provide a firm basis for E–E research (e.g., demonstrate effects and begin to articulate causal mechanisms) it is now time to expand the range of health domains and continue to refine underlying causal mechanisms.

Adolescent substance use creates considerable social problems and exacts tremendous societal costs (Shield, Parry, & Rehm, 2013). Fortunately, prevention science has advanced to the point where there are cost effectiveness of prevention efforts (Baan et al., 2007; Bouchery, Harwood, Sacks, Simon, & Brewer, 2011; Degenhardt & Hall, 2012). These efforts appear to have resulted in decreased adolescent use of some substances like tobacco while the use of others like alcohol is increasing (Johnston, O'Malley, Bachman, & Schulenberg, 2013). For example, appropriately 30% of youth have consumed alcohol by 8th grade and 40% of youth have smoked cigarettes by 12th grade (Johnston et al., 2013). The future advances in prevention science will require innovative strategies such as E–E messages.

An E–E perspective on substance use prevention

E–E interventions are often guided by social cognitive theory (SCT) (Bandura, 2004) in which E–E characters serve as *role models* to demonstrate how to perform a desirable behavior in a specific health context. SCT starts with the premise that individuals vicariously learn healthy behaviors by observing and modeling characters' behaviors depicted in E–E interventions. These models are seen as enhancing self-efficacy for performing the recommended health behavior and that, in turn, results in behavior change. SCT predicts that the key causal mechanism is self-efficacy, which mediates the relationships between the E–E messages and recommended behavior changes. Studies support the significant role of self-efficacy in mediating the effects of E–E program messages on behavioral intentions such as HIV/AIDS preventive behaviors (Smith, Downs, & Witte, 2007; Sood, 2002) and behavioral outcomes (i.e., talking about sexual health) (Moyer-Gusé, Chung, & Jain, 2011). The self-efficacy also plays a key role in substance use prevention (Choi, Krieger, & Hecht, 2013). However, we believe SCT's role modeling explanation does not fully explain the power of E–E messages. If all that were needed was a role model, the entertainment component of the E–E message would not be important. Existing social influence and normative- based interventions can increase self-efficacy without necessarily being entertaining (Marsch et al., 2015). It may be the specific narrative characteristics of the E–E messages that drive their effects.

Narrative health messages are a particular type of E–E message. Narratives, which utilize story form consisting of plot, character, setting (Fisher, 1989), are effective because of their unique ability to gain the audience's attention and maintain engagement during messages processing (Green, Strange, & Brock, 2002; Larkey & Hecht, 2010). The narrative engagement theory (NET) was articulated to explain these effects (Miller et al., 1998; Miller-Day & Hecht, 2013). The Narrative Engagement Theory (NET) explains narrative influence in terms of the audience's engagement in the story (Miller-Day & Hecht, 2013). According to NET, engagement is conceptualized on the continuum of high vs. low

cognitive and emotional distance from the performance. This level of engagement can be understood in terms of the audience's attention to the performance message called *interest*, involvement in the story named *realism*, and involvement in the characters titled *identification with characters*. In this current study, interest is conceptualized as the intensity of attention to the E–E message (i.e., the general story of the E–E videos). Realism refers to the story's perceived believability for the audience. Perceived similarity with characters, identification with characters, and wishful involvement with characters (i.e., wanting to be like characters) represent the various aspects of identification with E–E characters (Smith et al., 2007).

A successful preliminary test of NET is presented in Lee, Hecht, Miller-Day, and Elek (2011) who demonstrated that interest and realism affects substance use intentions and behaviors. Using cross-sectional data, a path analysis was run to test the associations between interest and realism and youth outcomes. It was found that interest was inversely related to positive cigarette use expectancies whereas realism was negatively related to positive alcohol use expectancies and intent to use alcohol. Not only does this study support the heuristic value of the theory but it also suggests the differential effects of the various components. In this respect, one of the primary goals of the current paper is to examine the narrative engagement theory by evaluating audience engagement with E–E prevention media and youth alcohol use behavior. Overall, it is hypothesized that engagement with an E–E narrative message should increase self-efficacy for the modeled behavior in the E–E media.

We also predict that each of the components will drive effects. We argue that if the viewer is not interested in the E–E message, the modeling presented is unlikely to be persuasive. Previous work demonstrates that disinterested viewers are less likely to pay attention to the E–E message and consequently, less likely to remember the E–E messages (Green, 2006; Slater, Rouncer, & Long, 2006). In other words, a lack of interest in the media may negatively impact viewers' efficacy in enacting the behaviors modeled in any E–E media.

At the same time, perceptions of realism mean that the plot or situation reflects real life situations for the viewer. This realism should aid learning and lead to greater efficacy (Miller-Day & Hecht, 2013). Evidence supports this claim that individuals who identify with characters tend to adopt recommended health behaviors (Moyer-Gusé, Chung, et al., 2011; Smith et al., 2007; Wilkin et al., 2007) or change their behavior (Murphy, Frank, Moran, & Patnoe-Woodley, 2011). We postulate that identification with E–E narratives should not only lead to behavior change but we anticipate that these effects are mediated by efficacy. On the other hand, viewers who do not identify with the main character or role model who is enacting behaviors to resist offers of alcohol or other drugs are unlikely to learn much from the messages because they will not see the behavior as relevant to people like them. Thus, refusal efficacy should be positively related to identification with the E–E message.

To explore this further, the current study investigates the effects of E–E substance use prevention videos on US adolescents. We hypothesize that adolescents' interest, realism and identification with the E–E drug prevention narratives will be mediated by their self-efficacy to enact desired behaviors. Based on previous literature suggesting that E–E intervention has been found effective in promoting youth substance use prevention (Guttman, Gesser-

Edelsburg, & Israelashvili, 2008; Mitschke, Loebl, Tatafu, Matsunaga, & Cassel, 2008), we test these ideas within the context of school-based substance use prevention intervention called *keepin' it REAL* (*kiR*), which is an intervention consisting of ten lessons with five E–E videos teaching youth knowledge, motivation, and communication skills to refuse drug offers (Gosin, Marsiglia, & Hecht, 2003; Hecht & Miller-Day, 2009). *kiR* has been proven to be effective in reducing substance use in three group randomized trials (Elek, Wagstaff, & Hecht, 2010; Hecht, Graham, & Elek, 2006; Pettigrew et al., 2014). Guided by NET, *kiR* was based on adolescent narratives in drug offer situations (Hecht & Krieger, 2006; Krieger et al., 2013). The narratives were used to create scenarios for role playing and decision making, as well as five narrative videos that, following SCT, model alcohol-free behavior in appropriate youth contexts. There is evidence of significant effects of *kiR* E–E video on youth behavioral outcome. For instance, it was found that exposure to the E–E videos influenced youth's substance use (Warren et al., 2006) while *kiR* E–E videos were significantly related to positive substance use expectancies and intention to use substances (Lee et al., 2011). *kiR* is a particularly prominent exemplary of SCT and NET-based E–E since it has long been noted as "evidence-based" by SAMHSA's National Registry of Evidence-based Programs and Practices (2006), the Safe and Drug Free Schools Community Act Programs, and CrimeSolutions among others as well as the recommendation of the 2016 Surgeon General's report on addiction (Murthy, 2016). Given the potentially positive effects of E–E on health practices, particularly youth substance use, the present study further explores the persuasive processes of *kiR* E–E messages directed at reducing youth substance use. Among various types of substances, the present study specifically focuses on alcohol, the most prevalent drug that adolescents use (Johnston et al., 2013). Based on previous research and SCT and NET, we pose the following set of research hypotheses:

> **H1a:** Youth perception of interest in the *kiR* E–E videos is positively related to refusal self-efficacy, which in turn is inversely related to youth alcohol use behavior.
>
> **H1b:** Youth perception of realism in the *kiR* E–E video story is positively related to refusal self-efficacy, which in turn is inversely related to youth alcohol use behavior.
>
> **H1c:** Youth perception of identification with *kiR* E–E main characters is positively related to refusal self-efficacy, which in turn is inversely related to youth alcohol use behavior.

Message context is an important element of any narrative message (Hecht et al., 2006). The power of story lies not only in its plot and character but the situations in which characters find themselves. This is particularly true when the health promotion messages are culturally grounded (Hecht & Miller-Day, 2009; Miller-Day & Hecht, 2013). *kiR* was originally developed for an urban population whose demographics span Latino, Black and White ethnicities. In other words, the curriculum was grounded in the urban setting for these ethnic groups. Until the current study it had not been tested outside that context. Would *kiR* be equally effective when transported to a different cultural context? One interesting theoretical question this study raises is whether the match or mismatch between the story and the viewer's particular cultural context matters. Does a story told in a particular cultural context retain its power when the viewer does not share that context? For example, some have argued for the need for cultural matching between the story and the viewer (Hecht &

Krieger, 2006). This would argue for a contextual match in E–E messages and mean that while powerful stories may entertain and engage, they may not retain their full behavioral influence if the cultural context of the message does not match the audience's cultural context. The current study examined how well the urban version of *kiR* transports to a rural culture. Evidence shows that rural youth is more inclined to engage in early onset and frequent use of substances than urban youth and, thus, are at high risk for the targeted behavior (Johnston et al., 2013; Pruitt, 2009). That is, youth substance use is influenced by the physical and social contexts (Miller, Alberts, Hecht, Krizek, & Trost, 2000; Pettigrew, Miller-Day, Krieger, & Hecht, 2011) and environmental factor such as the issue of rurality requires a further investigation (Moreland, Krieger, Hecht, & Miller-Day, 2013).

In addition to larger cultural differences, youth in urban and rural communities differ their substance use offers and reasons for substance use that are the basis for the *kiR* narrative messages (Pettigrew et al., 2011, 2012). For example, rural youth are more likely to cite an "anti-use identity" as an explanation for turning down drug offers as well as avoiding in order to be accountable to parents (Pettigrew et al., 2011). In addition, rural youth are more likely to cite loss of control as a risk based on vicarious experiences (Moreland et al., 2013). As a result, cultural matching of E–E messages to the audience may place a prominent impact on the *kiR* message outcomes and this lead to the development of a rural version of the curriculum that matches the context of the intended audience. The present study seeks out to understand how this match/mismatch influenced narrative engagement and, as well, whether the components of engagement differentially impact substance use depending on the degree of match. However, since little is known about these contextual effects we posit the following research question:

> **RQ1:** Do the mediation models of the narrative effects of the *kiR* E–E videos on youth alcohol use behavior differ depending on the match between the narrative grounding (i.e., rural versus urban) and the target audience's context?

Methods

Procedures

The data for the current study were collected as part of a larger evaluation study investigating curriculum adaptation (Miller-Day et al., 2013) and implementation processes (Pettigrew et al., 2014) of the school-based substance use prevention curriculum. Students were randomly assigned to the urban or rural version of *kiR* intervention curriculum or the control conditions (see Graham et al., 2013 for review). Self-reported data were collected from 7th grade students in 25 public middle schools in rural areas of two Midwestern states to evaluate the overall intervention. For purpose of the current study, 7th grade surveys in fall 2009 prior to the intervention in the treatment schools and in spring 2010 30 days after the intervention in the treatment schools were used to evaluate effects of the E–E videos. Students participating in the control schools were excluded because they did not view the videos. Prior to the data collection, parents provided active informed consent and students provided informed assent for participation. The institutional review board approved all procedures.

Two versions of the ten-lesson curriculum were implemented in this study. The original version of *kiR* has proved to be effective in reducing substance use (Hecht et al., 2003; 2006). We label this the "urban *kiR*". The "rural *kiR*" was adapted for rural culture based on the principle of cultural grounding (Hecht & Krieger, 2006; Hecht & Miller-Day, 2009). This process is described in greater detail in Colby et al. (2013). In addition to adapting decision making and role playing scenarios, each version includes their own set of five E–E video messages teaching drug offer resistance skills but they differed based on culture. For example, drug offer situations were differently portrayed in the context of urban *kiR* from rural *kiR*. Main characters described in the *kiR* E–E videos were also different based on race/ethnicity of two conditions.

One of the key narrative elements to the curriculum are a series of five videos presented in E–E form that teach drug offer resistance skills. These consist of an introductory video that overviews the curriculum and four videos teaching refusal skills (*Refuse, Explain, Avoid, and Leave*). The videos present narratives based on the findings from qualitative research investigating adolescents' refusal skills in drug offer situations and were written, performed, and produced by high school students, targeting middle school students living in rural areas (Hecht & Miller-Day, 2009; Miller-Day & Hecht, 2013). The five E–E videos in each curriculum ranged from 4 minutes and 55 seconds to 5 minutes and 40 seconds and are designed to teach resistance skills and change norms. Students in each condition watched the appropriate five *kiR* E–E videos over five different days and completed the post-test surveys after watching all of the videos.

Participants

Seventh grade students participated in the current study ($N = 1,464$). Of the total participants, 501 students were in the urban version and 963 students were in the rural version. Based on the data, 50.8% were male and 49.2% were female. The mean age was 13.76 years (SD = .45). Of these, 95% self-identified as European American and 5% were Hispanic. This demographic information represents the rural areas of geographic population.

Measures

Perception of E–E video (post-test)—Nine items assessed youth perception of E–E videos. Six items were taken from perception of narrative performance to measure realism and interest (Lee et al., 2011) and 3 items were modified to measure identification with characters (Smith et al., 2007). Students responded to the items using a 4- point scale indicating their agreement of the statement (from "not at all" to "very much"). Sample items include "How interesting was the videos?", "How believable were the stories in the videos?", and "How much do you want to be like the main character(s) in the videos?" Higher scores represented more positive perceptions of the videos. Cronbach's alpha for the urban version was .89 for interest ($M = 2.71$, SD = .72), .86 for realism ($M = 2.59$, SD = .85), and .79 for identification with main characters ($M = 1.94$, SD = .74). Cronbach's alpha for the rural version was .85 for interest ($M = 2.56$, SD = .79), .73 for realism ($M = 2.60$, SD = .87), and .80 for identification with main characters ($M = 2.19$, SD = .82). See Table 1 for bivariate correlations.

Refusal self-efficacy (post-test)—Four items from Hansen and McNeal (1999) were modified to measure students' self-efficacy to refuse alcohol offer, using a 4-point type scale (1 = very heard to 4 = very easy). Sample items include "Suppose someone you know offered you a drink of alcohol, and you did not want it. How easy would it be for you to refuse it?". Higher scores indicated greater certainty of refusal self-efficacy. Cronbach's alpha for the urban condition was .99 (M = 3.31, SD = .74) and for the rural condition was .99 (M = 3.38, SD = .71). This measure was validated in other studies (Choi et al., 2013).

Past 30-days alcohol use (post-test)—A single item measure was used to ask youth about their use of alcohol in the past 30 days (Hansen & Graham, 1991). Students responded to the single question asking frequency of alcohol use using 9-point scale (e.g., "How many days in the past 30 days have you had alcohol to drink?"). Higher scores indicated more substance use (Urban conditions M = 1.45, SD = 1.15; Rural conditions M = 1.41, SD = 1.05). Inter-item correlations, reliability and CFAs could not be examined due to the single item measure for alcohol use. See Table 2 for descriptive statistics of alcohol use in each condition.

Lifetime alcohol use (pre-test)—Single item asked about the frequency of lifetime use of alcohol using 9-point scale (Hansen & Graham, 1991). This item was included to control for the prior substance use (e.g. "How many days in your entire life have you had alcohol to drink?"). Higher scores indicated more substance use in terms of frequency (Urban conditions M = 2.07, SD = 1.49; Rural conditions M = 2.07, SD = 1.49).

Demographics (pre-test)—Age (1 = 11 or under; 2 = 12; 3 = 13; 4 = 14; 5 = 15; 6 = 16; 7 = 17 or older) and gender (0 = male; 1 = female) are included as controlling variables.

Analysis summary

Prior to the structural equation modeling (SEM) analyses, descriptive statistical analyses and confirmative factor analyses (CFAs) were conducted to test the dimensionality of the items. Since human subject concerns related to educational settings precluded collecting attendance for dates *kiR* was taught, we used an "intent-to-treat" model of analysis, which is common in intervention research, and included all students in the analyses (Salim, Mackinnon, Christensen, & Griffiths, 2008; Spoth et al., 2007).

To handle data missingness, full maximum likelihood method (FMLM) was employed since FMLM yields estimate of unbiased parameters than traditional missing procedures (Enders & Bandalos, 2001; Graham, 2012). Two sets of CFAs were run, one for each condition, to test the measures of latent variables such as interest, realism, identification with main characters, and youth refusal self-efficacy using Mplus (Muthén & Muthén, 1998–2014). To evaluate the practical model fit of the CFA and SEM models, the root mean square error of approximation (RMSEA <. 08), the comparative fit index (CFI > .90), the standardized root mean square residual (SRMR < .08) were used as the primary fit indices (Hu & Bentler, 1999; Kline, 2005). Since the value of chi-square is influenced by sample size, we excluded the χ^2 value from the model fit criteria. The models were well fitted (Urban conditions: χ^2 [24] = 97.24; RMSEA = .07; CFI = .96; SRMR = 0.03; Rural conditions: χ^2 [24] = 73.47;

RMSEA = .05; CFI = .99; SRMR = 0.02). After confirming the model fit criteria and factor loadings, we started by examining the research question to determine if separate analyses were needed for the two versions of the videos. Two sets of SEM analyses were conducted to test the proposed mediation model separately for the urban and rural conditions. SEM analysis examines indirect paths from the exogenous variables to the endogenous mediating variables, along with direct paths from the exogenous variables to the rest of the endogenous variables (Preacher & Hayes, 2008). As portrayed in Figure 1, this study tested a direct path from perception of narrative performance (i.e., interest, realism, identification with main characters) to youth refusal self-efficacy, a path from youth refusal self-efficacy to the past 30-days alcohol use. Also, the indirect paths from each perception of narrative performance variable to the past 30-days alcohol use were examined. Age, gender, and lifetime substance use were also entered into the model as exogenous variables, from which pathways were drawn to youth refusal self-efficacy and the past 30-days substance use to control for the effects of demographic variables. In addition, 95% of bias-corrected confidence intervals were obtained to test the indirect effects of *kiR* E–E videos on youth alcohol use behavior via refusal self-efficacy. As recommended (Preacher & Hayes, 2008), bootstrapping was chosen to deal with the non-normality of adolescents' reports on past 30- days alcohol use (skewness = 3.28, kurtosis = 12.48 for the urban conditions; skewness = 3.35, kurtosis = 12.76 for the rural conditions) for the indirect effect testing.

Results

Each of the SEM models fit the data well: (Urban conditions: χ^2 [110] = 335.24; RMSEA = .07; CFI = .92; SRMR = 0.08; Rural conditions: χ^2 [110] = 334.36; RMSEA = .05; CFI = .96; SRMR = 0.07). Figures 2 and 3 show the results for the mediation model with standardized path coefficients and unstandardized path coefficients are reported below.

Research question

The research question asked if effects of the *kiR* E–E videos on youth alcohol use behavior differed depending on the match between the narrative context and the target audience's context. The analysis revealed that youth in the urban conditions perceived the *kiR* E–E videos differently from those in the rural conditions. For the urban conditions, interest (b = .29, SE = .13, p < .05) was significantly related to youth refusal self-efficacy, whereas realism (b = .05, SE = .13, *ns*) and identification with main characters showed non-significant associations with youth refusal self-efficacy and realism (b = .01, SE = .08, *ns*). The findings for the rural conditions, on the other hand, indicated that identification with main characters showed a significant association with youth refusal efficacy and realism (b = .11, SE = .05, p < .05), whereas interest (b = .06, SE = .08, *ns*) and realism (b = .03, SE = .07, *ns*) were not significantly related to youth refusal self-efficacy. The results also showed that youth refusal self-efficacy was inversely associated with youth recent alcohol use (Urban conditions b = −.47, SE = .13, p < .001; Rural conditions b = −.42, SE = .07, p < .001).

Research hypotheses

Next, we tested the individual sub-hypotheses (H1a, H1b, H1c). Given the differences between the conditions, we examined the hypotheses separately in each condition. For each, youth perception of E–E narrative engagement variables exerted significant indirect effects on youth recent alcohol use via refusal self-efficacy. For the urban conditions, youth interest in the *kiR* E–E videos was positively related to refusal self-efficacy, which in turn was inversely related to youth alcohol use behavior (indirect $b = -.13$; 95% $CI = -.261, -.005$) (H1a supported). For the rural conditions, youth perception of identification with main characters was positively related to refusal self-efficacy, which in turn was inversely related to youth alcohol use behavior (indirect $b = -.05$; 95% $CI = -.093, -.003$) (H1c supported). Youth perception of realism in the E–E video story was not significantly related to youth outcomes for both class and rural conditions. Thus, the results partially supported H1a and H1c but no evidence was found for H1b.

Discussion

The current study tested a model of narrative engagement by investigating the effects of culturally matched and mismatched *keepin' it REAL* E–E videos on youth alcohol use behavior. This study was guided by social cognitive theory (Bandura, 2004) and narrative engagement theory (Miller et al., 1998; Miller-Day & Hecht, 2013) positing a multidimensional model predicting that the effects of engagement with the *kiR* E–E videos on past 30-day alcohol use would be mediated by refusal self-efficacy. Overall, the findings support the hypothesized model. However, results for sub-hypotheses only garnered partial support although all of the direct and indirect effects were in the expected direction. In addition, one research question was posed to examine the effects of urban and rural E–E videos and supported the contextual distinction. The findings revealed that youth perceptions of the *kiR* E–E videos differed depending on the culturally matched/mismatched versions.

Culturally matched and mismatched intervention

The research question asked if narrative engagement functions similarly when E–E messages are matched or mismatched to cultural context. The *kiR* E–E videos were created from interviews and other formative research to culturally ground the E–E narrative in either the urban cultural context (urban *kiR*) or rural cultural context (rural *kiR*) (Colby et al., 2013; Hecht et al., 2003). Both the urban and rural E–E videos were presented to a rural audience.

For rural youth in the culturally mismatched urban video conditions, only interest was a significant predictor for their refusal self-efficacy and alcohol use behaviors whereas realism and identification with main characters were not. These findings suggest that in order for mismatched messages (urban messages to a rural audience) to be effective, an audience must be highly interested in the E–E depictions. Interest appears to influence audience members to consider the role models more closely, leading to greater attention to the message and higher refusal self-efficacy, which in turn, led to decreased recent alcohol use. The findings are consistent with previous literature noting that E–E narrative messages that effectively grab the audience's attention and maintain engagement enhance the self-efficacy (Moyer-Gusé, Chung, et al., 2011; Smith et al., 2007; Sood, 2002).

At the same time, results regarding realism and identification were not statistically significant for those rural youth viewing the urban E–E videos. While effects were in the desired direction (e.g., more realism and identification related to more efficacy), perceptions of the realism of the urban E–E message and identification with main characters did not significantly affect refusal self-efficacy of rural youth. In a sense, the urban cultural contexts depicted in the videos may not have been realistic for the rural, largely White sample and the multiple ethnicities of main characters who populated these videos were not peers with whom the rural youth could identify. Without interest, identification may not matter and it may not be possible for mismatched videos to be seen as personally realistic. Thus, realism and identification may not have reached the levels needed to activating engagement.

For youth in the rural conditions for whom the E–E messages matched their cultural context, identification with main characters was the only significant predictor for refusal self-efficacy and alcohol use behavior. Identification with main characters may have been particularly salient because rural youth rarely see positive portrayal of rural peers such as depicted in the E–E videos; instead, media often present negative stereotypes of rural youth that, to some extent, have been internalized (Pettigrew et al., 2012). Associations for interest and realism while in the predicted positive direction did not achieve statistical significance. Despite identification with the E-E messages and main characters, these portrayals were less interesting and as a result, both interest and realism were relatively less predictive of refusal self-efficacy or alcohol use behavior.

Practical implications and future directions

Overall, these findings support NET by suggesting that E–E interventions, in particular those targeting adolescents, should be designed to enhance youth's engagement with the message and characters. It would be interesting to examine identification with a broader range of characters such as a negative model who portrays an undesirable behavior or a translational model who engages in an undesirable behavior and later changes to preform a desirable behavior, rather than the main characters in the *kiR* videos who depicted a positive model enacting a desirable behavior. Such efforts can possibly enhance youth's ability to refuse substances in drug offer situations. It may be that, as suggested by these findings, there are important moderators (i.e., match/mismatch of culture) that determine which of the engagement factors are most salient. If supported by future research, this suggests a modification of NET to identify these moderators as well as incorporate consideration of activation levels.

A second implications involves cultural grounding (Hecht & Krieger, 2006). Previous research with *keepin' it REAL* suggested multicultural messages (e.g., grounding or including elements of many cultural contexts) are more effective than a culturally targeted one regardless of the culture of the target (Hecht et al., 2006). Neither of the videos could be consider geographically multicultural for rural students. The rural version was targeted to only that one cultural feature potentially ignoring other identities. One useful distinction appears to be geographic and these findings suggest that targeting based on rural versus urban contexts and identities is important. This supports our previous theorizing about cultural targeting (Hecht & Krieger, 2006). Future research should examine the processing

of culturally matched, mismatched, and culturally mixed E–E messages based on geographic distinctions (e. g., urban, suburban, rural) to further clarify this issue. The present study makes a significant contribution to the relatively unexplored area of E–E research in substance use prevention for U.S. adolescents and future research should expand this line of thinking. For example, emotional involvement in the video was not accounted for in the study. Although past research showed that emotional involvement in E–E was a positive predictor for changes of the audiences' self-efficacy (Smith et al., 2007; Sood, 2002), norms (Bae, 2008), and behavioral intentions (Morgan et al., 2009; Movius, Cody, Huang, Berkowitz, & Morgan, 2007), the previous researchers used a series of television drama or radio soup operas to promote health messages, which are contextually different from the *kiR* E–E videos as part of *kiR* lessons. That is, emotional involvement may be considered as a strong indicator for the E–E effects in one genre, while other genre may be processed through different constructs. Future research needs to contextualize cognitive message processing based on E–E genres and identify potential predictors for E–E persuasion.

The construct of identification also needs further investigation and perhaps elaboration. The perception of narrative performance scales developed based on NET is limited to examining identification with the main character. Guided by past literature on narrative persuasion, narrative persuasion process should further explore the complex layers of involvement with characters such as wishful identification, perceived similarity, parasocial interaction, and liking (Moyer-Gusé, 2008).

Similarly, the conceptualization of interest was defined as the intensity of E–E messages in general and conceptualized as unidimensional. One can argue that accessing youth attention to the persuasive intent (e.g., refusal skills from the E–E videos) adds more explanation to NET, given there are unique, distinctive implications of interest in the general E– E storyline and persuasive intent from the E–E messages. More efforts are needed in theory building and testing to better understand the construct of interest in narrative persuasion for youth substance use prevention research.

In addition, although the present study was theoretically guided by SCT highlighting the importance of role modeling in E–E videos, it was limited to testing a mediating role of self-efficacy in narrative persuasion. Future research can more fully test SCT predictions (e.g., knowledge, outcome evaluation) and, perhaps, those derived from other theories such as the theory of planned behavior that point to different mediators (e.g., norms, attitudes, intentions) and might produce different results. Due to the scope of the present study, the frequency of the viewership was not taken account for the mediation analysis. Previous research (Warren et al., 2006) indicated that repeated exposure of E–E messages would enhance the intention to desired outcomes. Future research should count for the viewership as a moderating variable to disentangle persuasive processes of the *kiR* E–E videos.

Lastly, while this study investigated the narrative persuasion of E–E videos guided by a strong theoretical framework, the findings were limited to the context of school-based intervention. There is ample evidence of parental and peer influences on youth substance use behavior (Kam, Matsunaga, Hecht, & Ndiaye, 2009; Shin & Miller-Day, 2017). Future

research should take into consideration how E–E intervention and parental and peer influences generate positive effects on youth substance use.

Conclusion

E–E messages have been used widely to promote public health and their effectiveness across a variety of health domains has been well documented. The present study extends this line of E–E research by testing an explanatory model based on social cognitive theory and narrative engagement theory suggesting that engagement with E–E prevention videos play a critical role in youth self-efficacy to refuse drug offers. As predicted, youth who perceived the E–E videos to be more engaging reported significantly greater refusal self-efficacy than those with less positive perceptions. The specific components of engagement that drove the effects, however, differed depending on whether messages were culturally matched or mismatched. Our findings support the use of E–E messages in promoting healthy behaviors such as substance-free lives and presents research implications for E–E intervention for youth substance use prevention.

Acknowledgments

References

Anderson P, Bruijin A, Angus K, Gordon R, Hastings G. Impacts of alcohol advertising and media exposure on adolescent alcohol use: A systematic review of longitudinal studies. Alcohol & Alcoholism. 2009; 44:229–243. DOI: 10.1093/alcalc/agn115 [PubMed: 19144976]

Baan R, Straif K, Grosse Y, Secretan B, El Ghissassi F, Bouvard V, Cogliano V. on behalf of the WHO International Agency for Research on Cancer Monograph Working Group. Carcinogenicity of alcoholic beverages. The Lancet Oncology. 2007; 8:292–293. DOI: 10.1016/S1470-2045(07)70099-2 [PubMed: 17431955]

Bae H. Entertainment-education and recruitment of cornea donors: The role of emotion and issue involvement. Journal of Communication. 2008; 13:20–36. DOI: 10.1080/10810730701806953

Bandura A. Social cognitive theory of mass communication. In: Bryant J, , Zillmann D, editorsMedia effects: Advances in theory and research Mahwah, NJ: Lawrence Erlbaum Associates; 2002 121154

Bandura A. Social cognitive theory for personal and social change by enabling media. In: Singhal A, Cody MJ, Rogers EM, , Sabido M, editorsEntertainment-education and social change: History, research, and practice Mahwah, NJ: Lawrence Erlbaum Associates; 2004 7596

Beacom AM, Newman SJ. Communicating health information to disadvantaged populations. Family Community Health. 2010; 33:152–162. DOI: 10.1097/FCH.0b013e3181d59344 [PubMed: 20216358]

Bouchery EE, Harwood HJ, Sacks JJ, Simon CJ, Brewer RD. Economic costs of excessive alcohol consumption in the US, 2006. American Journal of Preventive Medicine. 2011; 41:516–524. DOI: 10.1016/j.amepre.2011.06.045 [PubMed: 22011424]

Center on Alcohol Marketing and YouthExecutive summary: Youth exposure to alcohol advertising on television, 2001–2009 The Johns Hopkins Bloomberg School of Public Health; 2009 Retrieved from http://www.camy.org/_docs/resources/reports/youth-exposure-alcohol-advertising-tv-01-09-exec-sum.pdf

Choi HJ, Krieger JL, Hecht ML. Reconceptualizing efficacy in substance use prevention research: Refusal response efficacy and drug resistance self-efficacy in adolescent substance use. Health Communication. 2013; 28:40–52. DOI: 10.1080/10410236.2012.720245 [PubMed: 23330857]

Colby M, Hecht M, Miller-Day M, Krieger JL, Syvertsen A, Graham JW, Pettigrew J. Adapting school-based substance use prevention curriculum through cultural grounding: An exemplar of adaptation processes for rural schools. American Journal of Community Psychology. 2013; 51:190–205. DOI: 10.1007/s10464-012-9524-8 [PubMed: 22961604]

Dal Cin S, Worth KA, Gerrard MG, Gibbons FX, Stoolmiller M, Wills T, Sargent JD. Watching and drinking: Expectancies, prototyes, and friends' alcohol use mediate the effects of exposure to alcohol use in movies on adolescent drinking. Health Psychology. 2009; 28:473–483. DOI: 10.1037/a0014777 [PubMed: 19594272]

Degenhardt L, Hall W. Extent of illicit drug use and dependence, and their contribution to the global burden of disease. The Lancet. 2012; 379:55–70. DOI: 10.1016/S0140-6736(11)61138-0

Do MP, Kincaid L. Impact of an entertainment-education television drama on health knowledge and behavior in Bangladesh: An application of propensity score matching. Journal of Health Communication. 2006; 11:301–325. DOI: 10.1080/10810730600614045 [PubMed: 16624796]

Elek E, Wagstaff DA, Hecht ML. Effects of the 5th and 7th grade enhanced versions of the *keepin' it REAL* substance use prevention curriculum. Journal of Drug Education. 2010; 40:61–79. DOI: 10.2190/DE.40.1.e [PubMed: 21038764]

Enders CK, Bandalos DL. The relative performance of full information maximum likelihood estimation for missing data in structural equation models. Structural Equation Modeling. 2001; 8:430–457. DOI: 10.1207/S15328007SEM0803_5

Fisher WR. Clarifying the narrative paradigm. Communication Monographs. 1989; 56:55–58. DOI: 10.1080/03637758909390249

Gosin M, Marsiglia FF, Hecht ML. Keepin' it REAL: A drug resistance curriculum tailored to the strengths and needs of preadolescents of the Southwest. Journal of Drug Education. 2003; 33:119–142. DOI: 10.2190/DXB9-1V2P-C27J-V69V [PubMed: 12929705]

Graham JW. Missing data: Analysis and design New York, NY: Springer; 2012

Graham JW, Pettigrew J, Miller-Day M, Krieger JL, Zhou J, Hecht ML. Random assignment of schools to groups in the drug resistance strategies rural project: Some new methodological twists. Prevention Science. 2013; 15:516–525. DOI: 10.1007/s11121-013-0403-9

Green MC. Narratives and cancer communication. Journal of Communication. 2006; 56:163–183. DOI: 10.1111/j.1460-2466.2006.00288.x

Green MC, , Strange JJ, , Brock TC. Narrative impact: Social and cognitive foundation Mahwah, NJ: Lawrence Erlbaum Associates; 2002

Guttman N, Gesser-Edelsburg A, Israelashvili M. The paradox of realism and "authenticity" in entertainment-education: A study of adolescents' views about anti-drug abuse drama. Health Communication. 2008; 23:128–141. DOI: 10.1080/10410230801968070 [PubMed: 18444000]

Hansen WB, Graham JW. Preventing alcohol, marijuana, and cigarette use among adolescents: Peer pressure resistance training versus establishing conservative norms. Preventive Medicine. 1991; 20:414–430. DOI: 10.1016/0091-7435(91)90039-7 [PubMed: 1862062]

Hansen WB, McNeal RB. Drug education practice: Results of an observational study. Health Education Research. 1999; 14:85–97. DOI: 10.1093/her/14.1.85 [PubMed: 10537950]

Heatherton TF, Sargent JD. Does watching smoking in movies promote teenage smoking? Current Directions in Psychological Science. 2009; 18:63–67. DOI: 10.1111/j.14678721.2009.01610.x [PubMed: 20160916]

Hecht ML, Graham JW, Elek E. The drug resistance strategies intervention: Program effects on substance use. Health Communication. 2006; 20:267–276. DOI: 10.1207/s15327027hc2003_6 [PubMed: 17137418]

Hecht ML, Krieger JL. The principle of cultural grounding in school-based substance abuse prevention: The Drug Resistance Strategies Project. Journal of Language and Social Psychology. 2006; 25:301–319. DOI: 10.1177/0261927X06289476

Hecht ML, Marsiglia FF, Elek E, Wagstaff DA, Kulis S, Dustman P, Miller-Day M. Culturally grounded substance use prevention: An evaluation of the *keepin' it R.E.A.L* Curriculum. Prevention Science. 2003; 4:233–248. DOI: 10.1023/A:1026016131401 [PubMed: 14598996]

Hecht ML, , Miller-Day M. Drug resistance strategies project: Using narrative theory to enhance adolescents' communication competence. In: Frey LR, , Cissna KN, editorsRoutledge handbook of applied communication research New York, NY: Routledge; 2009 535557

Hether HJ, Huang GC, Beck V, Murphy ST, Valente TW. Entertainment-education in a media-saturated environment: Examining the impact of single and multiple exposures to breast cancer storylines on two popular medical dramas. Journal of Health Communication. 2008; 13:808–823. DOI: 10.1080/10810730802487471 [PubMed: 19051115]

Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling. 1999; 6:1–55. DOI: 10.1080/10705519909540118

Johnston LD, , O'Malley PM, , Bachman JG, , Schulenberg JE. Monitoring the Future national results on drug use: Overview of key findings, 2012 Ann Arbor, MI: Institute for Social Research, The University of Michigan; 2013

Kam JA, Matsunaga M, Hecht ML, Ndiaye N. Extending the theory of planned behavior to predict alcohol, tobacco, and marijuana use among youth of Mexican heritage. Prevention Science. 2009; 10:41–53. DOI: 10.1007/s11121-008-0110-0 [PubMed: 18985451]

Klein B. Entertaining ideas: Social issues in entertainment television. Media, Culture & Society. 2011; 33:905–921. DOI: 10.1177/0163443711411008

Kline RB. Principles and practice of structural equation modeling 2. New York, NY: Guilford Press; 2005

Krieger JL, Coveleski S, Hecht ML, Miller-Day M, Graham JW, Pettigrew J, Kootsikas A. From kids, through kids, to kids: Examining the social influence strategies used by adolescents to promote prevention among peers. Health Communication. 2013; 28:683–695. DOI: 10.1080/10410236.2012.762827 [PubMed: 23980520]

Kuhlmann AKS, Kraft JM, Galavotti C, Creek TL, Mooki M, Ntumy R. Radio role models for the prevention of mother-to-child transmission of HIV and HIV testing among pregnant women in Botswana. Health Promotion International. 2008; 23:260–268. DOI: 10.1093/heapro/dan011 [PubMed: 18407924]

Lapinski MK, Nwulu P. Can a short film impact HIV-related risk and stigma perceptions? Results from an experiment in Abuja, Nigeria. Health Communication. 2008; 23:403–412. DOI: 10.1080/10410230802342093 [PubMed: 18850388]

Larkey LK, Hecht ML. A model of effects of narrative as culture-centric health promotion. Journal of Health Communication. 2010; 15:114–135. DOI: 10.1080/10810730903528017 [PubMed: 20390982]

Lee JK, Hecht ML, Miller-Day M, Elek E. Evaluating mediated perception of narrative health messages: The perception of narrative performance scale. Communication Methods and Measures. 2011; 5:126–145. DOI: 10.1080/19312458.2011.568374 [PubMed: 21822459]

Marsch LA, Guarino H, Grabinski MJ, Syckes C, Dillingham ET, Xie H, Crosier BS. Comparative effectiveness of web-based vs. educator-delivered HIV prevention for adolescent substance users: A randomized, controlled trial. Journal of Substance Abuse Treatment. 2015; 59:30–37. DOI: 10.1016/j.jsat.2015.07.003 [PubMed: 26293644]

Miller M, Hecht M, Stiff J. An exploratory measurement of engagement with live and film media. Journal of the Illinois Speech and Theatre Association. 1998; 49:69–97.

Miller MA, , Alberts JK, , Hecht ML, , Krizek RL, , Trost M. Adolescent relationships and drug abuse New York, NY: Routledge; 2000

Miller-Day M, Hecht ML. Narrative means to preventative ends: A narrative engagement framework for designing prevention interventions. Health Communication. 2013; 28:657–670. DOI: 10.1080/10410236.2012.762861 [PubMed: 23980613]

Miller-Day M, Pettigrew J, Hecht ML, Shin Y, Graham J, Krieger JL. How prevention curricula are taught under real-world conditions: Styles of and reasons for teacher curriculum adaptations in 7th

grade drug prevention curriculum. Health Education. 2013; 113:324–344. DOI: 10.1108/09654281311329259 [PubMed: 26290626]

Mitschke DB, Loebl K, Tatafu E, Matsunaga DS, Cassel K. Using drama to prevent teen smoking: Development, implementation, and evaluation of Crossroads in Hawaii. Health Promotion Practice. 2008; 11:244–248. DOI: 10.1177/1524839907309869 [PubMed: 18323535]

Moreland JJ, Krieger JL, Hecht ML, Miller-Day M. The conceptualization and communication of risk among rural Appalachian adolescents. Journal of Health Communication. 2013; 18:668–685. DOI: 10.1080/10810730.2012.743620 [PubMed: 23448190]

Morgan SE, Movius L, Cody MJ. The power of narratives: The effect of entertainment television organ donation storylines on the attitudes, knowledge, and behaviors of donors and nondonors. Journal of Communication. 2009; 59:135–151. DOI: 10.1111/j.1460-2466.2008.01408.x

Movius L, Cody M, Huang G, Berkowitz M, Morgan S. Motivating television viewers to become organ donors. Cases in Public Health Communication & Marketing. 2007; 1:1–21.

Moyer-Gusé E. Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. Communication Theory. 2008; 18:407–425. DOI: 10.1111/j. 1468-2885.2008.00328.x

Moyer-Gusé E, Chung AH, Jain P. Identification with characters and discussion of taboo topics after exposure to an entertainment narrative about sexual health. Journal of Communication. 2011; 61:387–406. DOI: 10.1111/j.1460-2466.2011.01551.x

Moyer-Gusé E, Mahood C, Brookes S. Entertainment-education in the context of humor: Effects on safer sex intentions and risk perceptions. Health Communication. 2011; 26:765–774. DOI: 10.1080/10410236.2011.566832 [PubMed: 21707390]

Murphy ST, Frank LB, Moran MB, Patnoe-Woodley P. Involved, transported, or emotional? Exploring the determinants of change in knowledge, attitudes, and behavior in entertainment-education. Journal of Communication. 2011; 61:407–431. DOI: 10.1111/j.1460-2466.2011.01554.x

Murthy VH. Facing addiction in the United States: The surgeon general's report of alcohol, drugs, and health. Journal of American Medical Association. 2016; 317:133–134. DOI: 10.1001/jama. 2016.18215

Muthén LK, , Muthén BO. Mplus user's guide 6. Los Angeles, CA: Muthén & Muthén; 1998–2014

Pettigrew J, Graham JW, Miller-Day M, Hecht ML, Krieger JL, Shin Y. Adherence and delivery quality: Implementation quality and outcomes of 7th grade keepin' it REAL program. Prevention Science. 2014; 16:90–99. DOI: 10.1007/s11121-014-0459-1

Pettigrew J, Miller-Day M, Krieger JL, Hecht ML. Alcohol and other drug resistance strategies employed by rural adolescents. Journal of Applied Communication Research. 2011; 39:103–122. DOI: 10.1080/00909882.2011.556139 [PubMed: 21552345]

Pettigrew J, Miller-Day M, Krieger JL, Hecht ML. The rural context of illicit substance offers: A study of Appalachian rural adolescents. Journal of Adolescent Research. 2012; 27:523–550. DOI: 10.1177/0743558411432639 [PubMed: 25620838]

Preacher KJ, , Hayes AF. Contemporary approach to assessing mediation in communication research. In: Hayes AF, Slater MD, , Snyder LB, editorsThe Sage source book of advanced data analysis methods for communication research Thousand Oaks, CA: Sage Publication; 2008 1354

Pruitt LR. The forgotten fifth: Rural youth and substance abuse. Stanford Law and Policy Review. 2009; 20:259–304.

Roberto AJ, , Murray-Johnson L, , Witte K. International health communication campaigns in developing countries. In: Thompson TL, Parrott RL, , Nussbaum JF, editorsThe Routledge handbook of health communication 2. New York, NY: Routledge; 2011 203219

Rogers EM, Vaughan PW. A staged model of communication effects: Evidence from an entertainment-education radio soap opera in Tanzania. Journal of Health Communication. 2000; 5:203–227. DOI: 10.1080/10810730050131398 [PubMed: 11185022]

Salim A, Mackinnon A, Christensen H, Griffiths K. Comparison of data analysis strategies for intent-to-treat analysis in pre-test–post-test designs with substantial dropout rates. Psychiatry Research. 2008; 160:335–345. DOI: 10.1016/j.psychres.2007.08.005 [PubMed: 18718673]

SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP) 2006 Retrieved from http://nrepp.samhsa.gov/AllPrograms.aspx

Sargent JD, Gibson J, Hatherton TF. Comparing the effects of entertainment media and tobacco marketing on youth smoking. Tobacco Control. 2009; 18:47–53. DOI: 10.1136/tc.2008.026153 [PubMed: 18948391]

Sargent JD, Wills TA, Stoolmiller M, Gibson J, Gibbons FX. Alcohol use in motion pictures and its relation with early-onset teen drinking. Journal of Studies on Alcohol. 2006; 67:54–65. DOI: 10.15288/jsa.2006.67.54 [PubMed: 16536129]

Schouten B, Vlug-Mahabali M, Hermanns S, Spijker E, Van Weert J. To be involved or not to be involved? Using entertainment-education in an HIV-prevention program for youngsters. Health Communication. 2014; 29:762–772. DOI: 10.1080/10410236.2013.781938 [PubMed: 24299216]

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. Journal of Youth and Adolescence. 2010; 39:981–998. DOI: 10.1007/s10964-009-9455-3 [PubMed: 19795197]

Shield KD, Parry C, Rehm J. Focus on: Chronic diseases and conditions related to alcohol use. Alcohol Research: Current Reviews. 2013; 35:155–173. [PubMed: 24881324]

Shin Y, Miller-Day M. A longitudinal study of parental anti substance-use socialization for early adolescents' substance use behaviors. Communication Monographs. 2017; Advance online publication. doi: 10.1080/03637751.2017.1300821

Singhal AR, , Rogers EM. Entertainment-education: A communication strategy for social change Mahwah, NJ: Lawrence Erlbaum Associates; 1999

Slater MD, Rouncer D, Long M. Television dramas and support for controversial public policies: Effects and mechanism. Journal of Communication. 2006; 56:235–252. DOI: 10.1111/j.1460-2466.2006.00017.x

Smith RA, Downs E, Witte K. Drama theory and entertainment education: Exploring the effects of a radio drama on behavioral intentions to limit HIV transmission in Ethiopia. Communication Monographs. 2007; 74:133–153. DOI: 10.1080/03637750701393048

Sood S. Audience involvement and entertainment-education. Communication Theory. 2002; 12:153–172. DOI: 10.1111/j.1468-2885.2002.tb00264.x

Spoth R, Redmond C, Shin C, Greenberg M, Clair S, Feinberg M. Substance-use outcomes at 18 months past baseline: The PROSPER community–university partnership trial. American Journal of Preventive Medicine. 2007; 32:395–402. DOI: 10.1016/j.amepre.2007.01.014 [PubMed: 17478265]

Sypher BD, McKinley M, Ventsam S, Valdeavellano EE. Fostering reproductive health through entertainment-education in the Peruvian Amazon: The social construction of Bienvenida Salud. Communication Theory. 2002; 12:192–205. DOI: 10.1111/j.1468-2885.2002.tb00266.x

Tian Y, Yoo JH. Connecting with the biggest loser: An extended model of parasocial interaction and identification in health-related reality TV shows. Health Communication. 2015; 30:1–7. DOI: 10.1080/10410236.2013.836733 [PubMed: 24579692]

Tukachinsky R, Stokunaga R. The effects of engagement with entertainment. Annals of the International Communication Association. 2013; 37:287–322. DOI: 10.1080/23808985.2013.11679153

Unger JB, Molina GB, Baron M. Evaluation of sweet temptations, a fotonovela for diabetes education. Hispanic Health Care International. 2009; 7:145–152. DOI: 10.1891/1540-4153.7.3.145

Warren JR, Hecht ML, Wagstaff DA, Elek E, Ndiaye K, Dustman P, Marsiglia FF. Communicating prevention: The effects of the *keepin' it REAL* classroom videotapes and televised PSAs on middle-school students' substance use. Journal of Applied Communication Research. 2006; 34:209–227. DOI: 10.1080/00909880600574153

Wilkin HA, Valente TW, Murphy S, Cody MJ, Huang G, Beck V. Does entertainment-education work with Latinos in the United States? Identification and the effects of a telenovela breast cancer storyline. Journal of Health Communication. 2007; 12:455–469. DOI: 10.1080/10810730701438690 [PubMed: 17710596]

Ye Y, Ward KE. The depiction of illness and related matters in two top-ranked primetime network medical dramas in the United States: A content analysis. Journal of Health Communication. 2010; 15:555–570. DOI: 10.1080/10810730.2010.492564 [PubMed: 20677058]
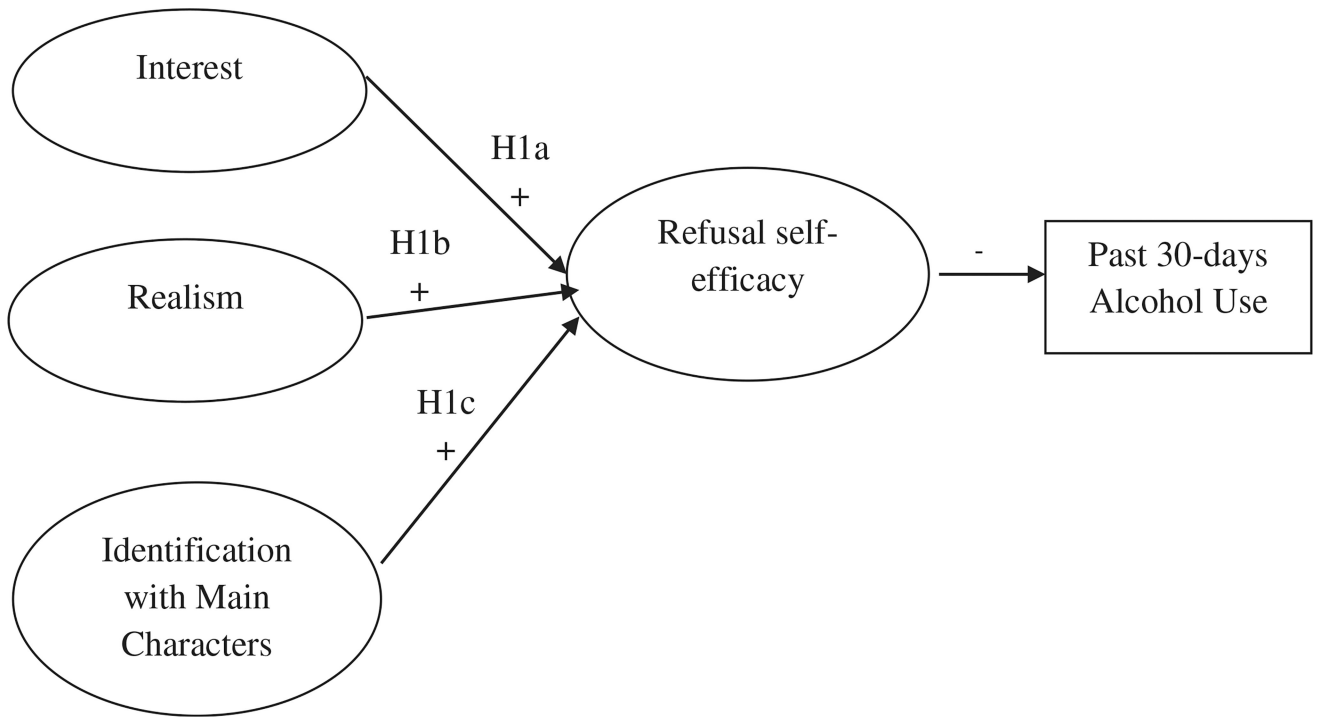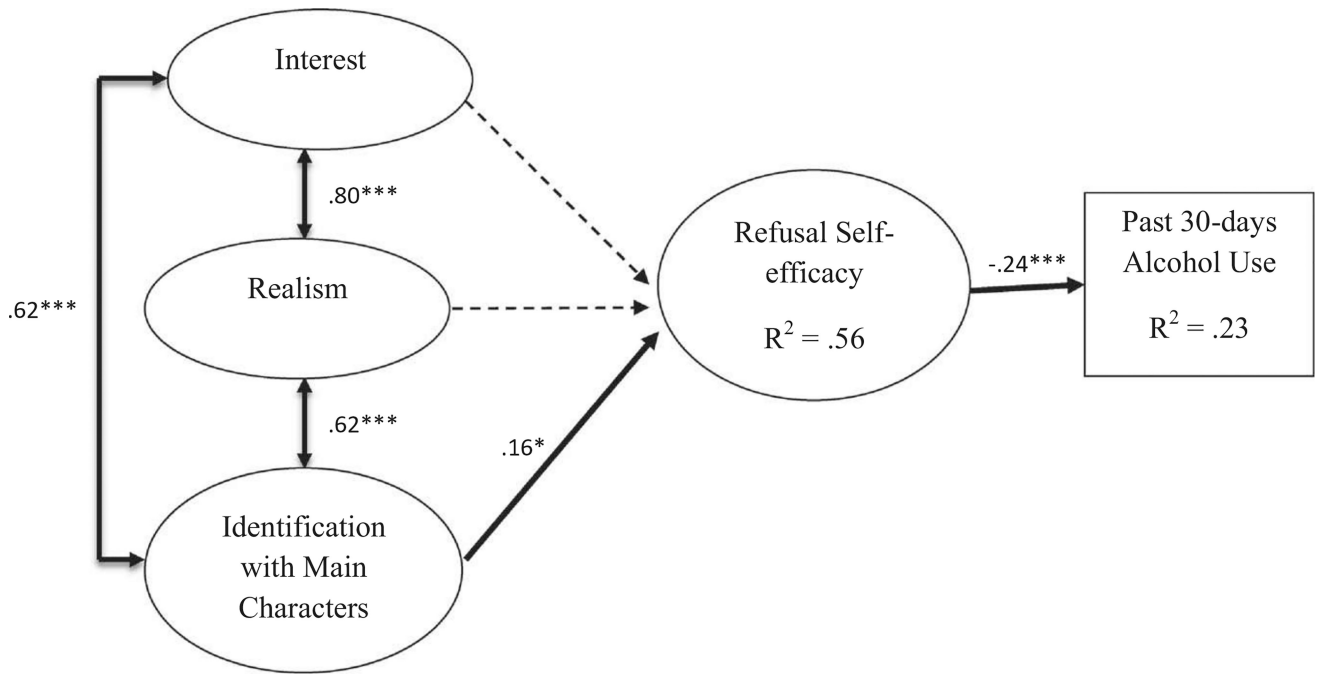
Figure 1.
Proposed conceptual mediation model.
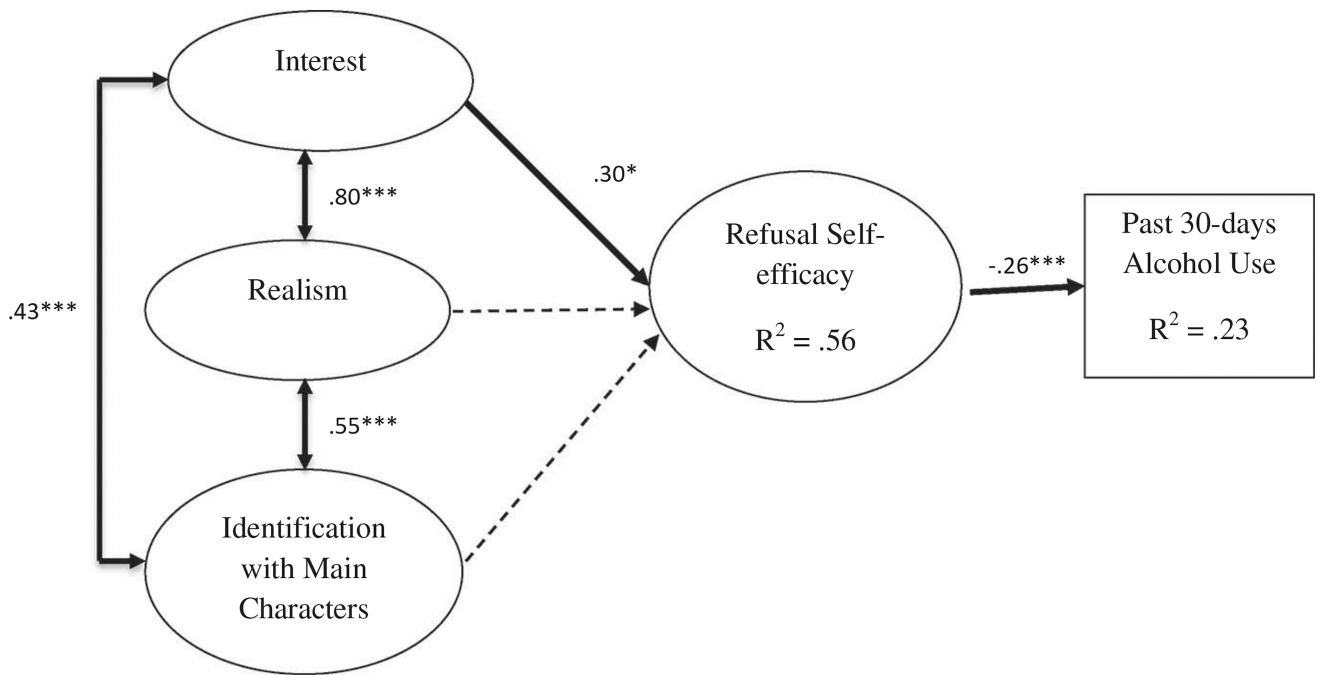
Figure 2.
Mediation model for urban E–E videos.

Note. Path coefficients in the figure are standardized and only significant pathways and correlations are highlighted by boldface (χ^2 [110] = 335.24; RMSEA = .07; CFI = .92; SRMR = 0.08). Effects of gender, age, and prior use of substances were controlled but the pathways are not shown in the figure for clarity. *$p < .05$; **$p < .01$; ***$p < .001$.

Figure 3.
Mediation model for rural E–E videos.

Note. Path coefficients in the figure are standardized and only significant pathways and correlations are highlighted by boldface (χ^2 [110] = 335.36; RMSEA = .05; CFI = .96; SRMR = 0.07). Effects of gender, age, and prior use of substances were controlled but the pathways are not shown in the figure for clarity. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 1

Bivariate correlations.

| **Urban** | | | | | | |
Variable	IN	RE	ID	EFF	PAU	LAU
IN	1					
RE	.66**	1				
ID	.36**	.43**	1			
EFF	.29**	.21**	.11*	1		
PAU	−.31**	−.28**	−.16**	−.34**	1	
LAU	−.20**	−.19**	−.15**	−.20**	.46***	1
Rural						
IN	1					
RE	.67**	1				
ID	.51**	.48**	1			
EFF	.21**	.17**	.19**	1		
PAU	−.18**	−.16**	−.18**	−.31**	1	
LAU	−.15**	−.14**	−.16**	−.24**	.42**	1

NOTE. IN = interest, RE = realism, ID = identification with main characters, EFF = refusal efficacy, PAU = past 30 day alcohol use (post-test), LAU = lifetime alcohol use (pre-test).

*
$p < .05$,

**
$p < .001$ (2-tailed).

Table 2

Descriptive statistics of alcohol use.

Frequency	Urban Lifetime alcohol use (pre)	Past 30 day alcohol use (post)	Rural Lifetime alcohol use (pre)	Past 30 day alcohol use (post)
1	243 (48.5%)	404 (80.6%)	463 (48.1%)	769 (79.9%)
2	82 (16.4%)	36 (7.2%)	215 (22.3%)	93 (9.7%)
3	86 (17.2%)	28 (5.6%)	157 (16.3%)	42 (4.4%)
4	25 (5%)	16 (3.2%)	40 (4.2%)	23 (2.4%)
5	20 (4%)	7 (1.4%)	28 (2.9%)	20 (2.1%)
6	9 (1.8%)	5 (1%)	22 (2.3%)	1 (.1%)
7	1 (.2%)	3 (.6%)	10 (1%)	6 (.6%)
8	4 (.8%)	0	7 (.7%)	4 (.4%)
9	0	2 (.4%)	2 (.2%)	0
10	2 (.4%)	n/a	2 (.2%)	n/a
Missing	29 (5.8%)	0	17 (1.8%)	5 (.5%)
Total	501	501	963	963
	Mean = 2.07	Mean = 1.45	Mean = 2.07	Mean = 1.41
	SD = 1.49	SD = 1.15	SD = 1.49	SD = 1.05